



CRISES IN THE ENVIRONMENT OF BUSINESS ENTITIES AND CRISIS MANAGEMENT

*Dariusz Prokopowicz*¹⁾, *Mirosław Matosek*²⁾



¹⁾ PhD, Institute of Economics and Finance, Faculty of Social and Economics Cardinal Stefan Wyszyński University in Warsaw
Wóycickiego 1/3 St, 01-938 Warsaw, Poland

* Corresponding author: e-mail: darprokop@poczta.onet.pl
ORCID: <https://orcid.org/0000-0001-6383-916X>



²⁾ PhD, Stenotype and Foreign Language School Complex in Warsaw
Ogrodowa 16 St, 00-896 Warsaw, Poland

* Corresponding author: e-mail: miroslawmatosek@op.pl
ORCID: <https://orcid.org/0000-0002-5960-7160>

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Abstrakt

In recent years, there have been many different crises such as the dotcom crisis in the late 1990s, the global financial crisis of 2007-2009, the pandemic economic crisis and the global economic recession of 2020, the rise in commodity prices and the increase in inflation from 2021, the outbreak of war in Ukraine, the energy and food crisis that occurred in 2022 in many countries. In addition, the climate crisis is also increasingly developing, which is generated primarily by the still high level of civilization's greenhouse gas emissions and the accelerating process of global warming. As the scale and frequency of various crises increase, more and more business entities and public institutions are taking various anti-crisis measures, creating and improving risk management systems, early warning systems and contingency plans, carrying out corrective and developmental restructuring processes, creating innovative solutions to flexibly adapt to the changing environment. As the climate crisis is likely to develop for many years to come, so the importance of achieving the goals of sustainable development and urgently carrying out a green transformation of the economy is growing. In the context of the issues outlined above, the importance of efficient organizational management, information management and crisis management is growing. The improvement of the management processes of economic entities, including crisis management, has been realized in recent years through the implementation of new ICT information technologies and technologies typical of the current fourth technological revolution, Industry 4.0, into information systems.

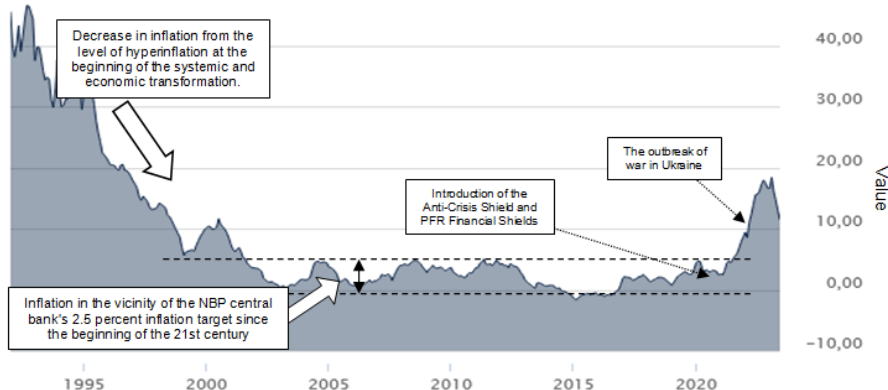
Keywords: *Information management, crisis management, economic crisis, financial crisis, climate crisis, Industry 4.0*

Statement of the problem in general outlook and its connection with important scientific and practical tasks

There have been many different crises since the beginning of the 21st century, and there is little indication that this would change in the years to come. The dotcom crisis at the turn of the 20th/XXI century, the global financial crisis of 2007-2009, the 2020 global economic recession[15] triggered by the interventionist measures carried out during the 1st wave of the SARS-CoV-2 coronavirus pandemic (Covid-19)[5], the overly lenient monetary policy carried out during the pandemic,[33] the strong rise in inflation[67] and the risk of stagflation in 2020, the currently unfolding energy crisis, the currently unfolding food crisis in some poorer countries, the already ongoing climate crisis that will intensify in the coming decades[24]. As the levels of various risks increase, the scale and frequency of various crises increases, more and more public institutions, government agencies, NGOs but also local government units are taking various anti-crisis measures. Currently, the currently developing crises in many countries are: the economic downturn caused by high inflation[2]; the energy crisis caused by high fuel and energy prices and low levels of energy self-sufficiency and underdevelopment of renewable energy sources[84]; the climate crisis (and in some countries also the food crisis), the consequences of which include severe heat and droughts causing a decline in the production of agricultural crops, increased energy consumption and other negative effects. The climate crisis is likely to develop for many more years.

Increasingly frequent crises expose the weaknesses of the Polish economy, hinder business operations and are a challenge in the context of business management[4]. One of the shortcomings that has been hidden until now is that only a few organizations have effective crisis management programs[102]. Managing under uncertainty, conducting business under crisis situations is not a new phenomenon. After the global oil crisis of the 1970s, dealing with uncertainty became a focus of scholarly interest and a key factor in the effective management of a business entity[51]. Emerging financial and economic crises of various types motivate companies and enterprises to carry out remedial and/or developmental restructuring processes of the business they conduct. An efficiently restructured business entity allows it to survive the crisis and increase the security of the conducted business in the context of the possibility of possible future crises[36]. On the other hand, without efficiently carried out business restructuring, it is in the conditions of economic crisis that the probability of bankruptcy of the company significantly increases.

Figure 1 Change in the level of inflation in Poland from January 1992 to June 2023.



Source: own compilation based on: Bankier.pl financial portal (www.bankier.pl), after: data from the Central Statistical Office.

Analysis of latest research where the solution of the problem was initiated

The issue of the key determinants of crisis management in business entities, described in this paper, has been addressed in recent years in various and numerous scientific publications authored by scholars operating in different scientific circles and originating from different countries. As a result, these issues scientifically studied are obtaining a global character. The increase in scientific interest in this issue is due to its topicality and high level of relevance. The growth of interest in this issue in the scientific community is due to the increasing scale, frequency and significance of the occurrence of various types of economic[101, 102], financial[107], social, political[24], climatic[27, 42], natural and other crises over the past few decades of time. Besides, due to the increasingly frequent occurrence of crises, the importance of building in business entities and improving early warning systems, contingency plans, risk management systems, as well as the use of ICT information technologies and technologies typical of the current fourth technological revolution, Industry 4.0[14, 93, 105] for this purpose is increasing.

From the verification of the opinions, considerations, conclusions and research theses of the cited publications, the main research aspects and a picture of the issue of the key determinants of the crisis management process in business entities were formulated first. The formulated main research aspects and image of the analyzed topic served as the basis for determining the research objectives and methods used in this study. The research objectives and methods are presented in the next subsection of this article. The basis for these main components of the research process carried out in this article was to determine a synthetic picture of the problematic of the main factors for improving the crisis management process in companies and enterprises after collecting analytical data and verifying the conclusions of the cited publications. The synthetic picture of the problematic of crisis management can be described as follows: In recent years there have been many different crises such as the dotcom crisis in the late 1990s, the global financial crisis of

2007-2009[3, 17, 24, 74, 77], the economic crisis of 2020[97, 15] caused indirectly by the coronavirus (Covid-19) pandemic[53, 54], the increase in commodity prices and the rise in inflation from 2021[5, 67, 71], the outbreak of war in Ukraine[73,82], the energy crisis[6, 56] and the food crisis that occurred in 2022 in many countries. In addition to this, the climate crisis[27, 42], which is generated primarily by the still high level of civilization's greenhouse gas emissions and the accelerating process of global warming[42], is also developing successively. Some of the aforementioned crises were caused by objective, external factors, independent of the economic policies pursued. However, on the other hand, economic and other crises are also caused by misguided government fiscal and budgetary policies[20, 90] and mistakes made in the monetary policies conducted by central banks[72, 76, 95]. According to the long-term forecasting models of climatologists, geophysicists, ecologists, etc., the climate crisis already underway will intensify in the coming decades[75, 42]. As a result, the levels of various risks may increase and the conditions for doing business and managing a business entity[4] may be further complicated in the future. As the scale and frequency of various crises increases, more and more business entities and public institutions are taking various anti-crisis measures, creating and improving risk management systems[100], early warning systems and contingency plans, carrying out restorative and developmental restructuring processes, creating innovative[65] solutions to flexibly adapt to the changing environment. The improvement of crisis management processes has been realized in recent years through the implementation of new ICT information technologies[26, 30, 39] and technologies typical of the current fourth technological revolution, Industry 4.0, into information systems. Besides, in the improvement of computerized information systems, new Internet media[91, 61, 80] are increasingly used as both a source of data and information and as a medium for the development of Internet marketing communication channels[63] conducted with customers and potential consumers[25].

Before proceeding with the study, collecting and compiling the results of the research on various aspects of crisis management issues in business entities, the authors of this paper reviewed the literature on the above-mentioned issues. The definition and specification of the research problem, which was then characterized and analyzed in this article, was preceded by a review of literature publications and available source materials, in which the key issues of the crisis management process conducted in business entities had already been considered[60, 66]. The literature review shows that the individual issues described in various publications on the key determinants of the crisis management process carried out in companies, enterprises and other business entities, the importance of implementing ICT information technologies[91, 26] and technologies typical of the current fourth technological revolution, Industry 4.0[39, 80] in order to improve these processes, the role of marketing communications, the issue of information security[14, 27, 40], the circulation of information and sensitive data in business entities and the importance of the media in the context of crisis management[51, 89] have been studied only in selected issues, while no previous attempt has been made to make a synthetic treatment of this issue, i.e. one that would integrally cover various key aspects of crisis management in business entities, the considerations undertaken would have the attribute of interdisciplinarity and the conclusions of the research would also be derived from a fully synthetic approach. It

is precisely this type of research approach that was used in this study. One of the key methodological premises of the issues of determinants of crisis management in business entities undertaken in this study was the use of a synthetic research approach in order to achieve an interdisciplinary combination of various aspects of the described and studied issues. The key conclusions that are formulated in the concluding section are derived from the aforementioned synthetic research approach applied.

The authors of this article have studied and described some aspects of the crisis management process[89, 101] in business entities broadly in their earlier scientific works, but only in this article has a fully synthetic and multifaceted approach to this issue been applied. The mentioned earlier scientific works and publications are listed in footnotes and in the bibliography at the end.

Based on the analysis of source data, it was observed that in order to improve early warning and risk management systems, ICT information technologies[26, 91] and technologies typical of the current fourth technological revolution, Industry 4.0[39, 80, 86, 87] are being implemented into business entities. A review of the cited literature shows that researchers of the described issue also state that the climate crisis is likely to develop for many more years, so the importance of achieving the goals of sustainable development[9] and the urgent implementation of the green transformation of the economy[21] is growing. In the context of the above issues, the importance of efficient organizational management[96], information management and crisis management is growing. Conclusions and suggestions resulting from the previously conducted research described in the content of the studied literature were used to formulate the key research theses and objectives of the undertaken research.

Aims of paper. Methods

In view of the above, this article analyzes in a synthetic approach the issue of the key determinants of the crisis management process carried out in companies, enterprises and other business entities, the importance of the implementation of ICT information technologies[26, 30, 91] and technologies typical of the current fourth technological revolution, Industry 4.0[39, 80, 86, 87] to improve these processes, the role of marketing communications, information security issues[37], the circulation of information and sensitive data in business entities and the importance of the media in the context of crisis management[51, 60, 66].

The analysis of the source materials shows that the studied issues of the topic of the determinants of crisis management[89, 101] in business entities have been described and considered in the existing scientific literature only in selected few aspects. On the other hand, there has been no previous attempt to conduct research that would consist of developing a synthetic treatment of this issue. A full synthetic treatment would cover in an integrated way various key aspects of crisis management carried out in companies, enterprises, financial and public institutions, the considerations undertaken would have the attribute of interdisciplinarity and the conclusions of the research would also acquire the attribute of synthetic treatment. It is precisely this type of research approach that was used in this study. One of the key methodological premises of the crisis management issues undertaken in this study was the use of a fully objective description of all the premises,

determinants, components of the analyzed topic and factors affecting the various aspects of risk analysis and control, risk management and crisis management. Analyzing the key issues of determinants of crisis management in business entities, the authors of this study verified the theses and conclusions formulated by the authors of the cited publications.

Various research methods were used during the conducted research, which are listed below. Various research methods were used in the study, including descriptive and comparative method, inductive inference, deductive inference, descriptive-vector method, media observation method. The choice of methods was determined by the type of research materials, in which various aspects of the studied issue of crisis management in business entities were described. In order to present the key issues of the subject undertaken, to clarify the particularly important dependencies, connections, correlations occurring between the components of the broadly understood problem of the determinants of the crisis management process, the descriptive method was mainly used. The comparative method was used primarily in comparisons of selected aspects of the studied problematic of organizational management, taking into account various key areas of business activities of economic entities. Inductive inference was used to select unambiguous facts and aspects of the problems of the development of economic, financial and other crises that meet the condition of indisputability in their experimental verification. Deductive inference was commonly used through rationalistic formulation, selection and ordering of axioms, which did not have to be certainties. However, they had to meet the condition of being able to represent complex problems in the form of models and diagrams. The axioms formulated by this method were built and developed through a process of logical binding of facts. The descriptive-vector method was applied in this article by highlighting the relevant factors of the problem of the importance and role of the media in the context of organizational management with an indication of the appropriate direction of influence for them. The literature review was also carried out using the method of media observation, which consists in observing selected issues of the studied subject matter described by publicists specializing in specific areas of economic issues.

Therefore, guided by the principle of scientific objectivity, impartiality and syntheticity of the research approach, the following main research theses were formulated on the basis of the verification of the content of the cited publications for the purpose of this study: As the scale and frequency of various crises are increasing, more and more business entities and public institutions are taking various anti-crisis measures, creating and improving risk management systems, early warning systems and contingency plans, carrying out restorative and developmental restructuring processes, creating innovative solutions to flexibly adapt to changing environmental conditions. In view of the fact that the climate crisis is likely to develop for many more years, so the importance of achieving the goals of sustainable development[9] and urgently carrying out a green transformation of the economy[28] is growing. In the context of the issues outlined above, the importance of efficient organizational management, information management and crisis management is growing. The improvement of the processes of management of business entities, information and crisis situation is realized in recent years through the implementation of new ICT information technologies[32] and technologies typical of the current fourth techno-

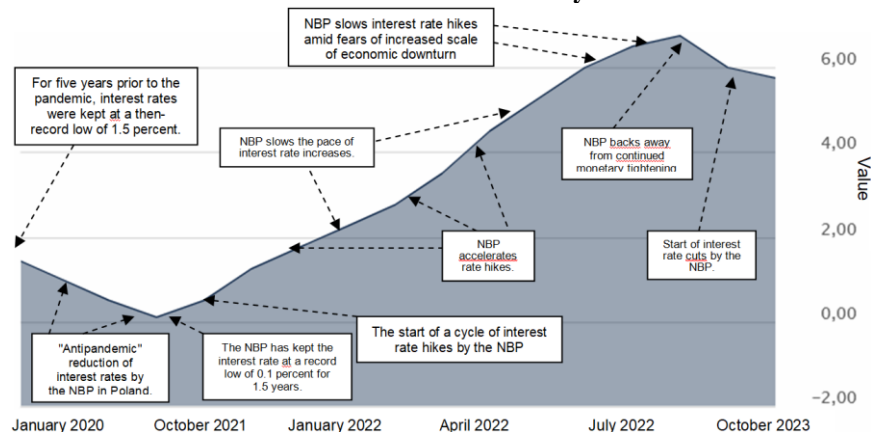
logical revolution, Industry 4.0[83], into information systems. Based on the research conducted, all the research theses mentioned above were confirmed.

Exposition of main material of research with complete substantiation of obtained scientific results. Discussion

Crisis and crisis management of business entities

In recent years, such terms as economic downturn, economic crisis, slowing economic growth rates can be determined by such factors as the war in Ukraine[73], high fossil fuel and energy prices, turmoil in the financial markets, rising costs in business entities, high interest rates on loans offered by commercial banks, a significant decline in the creditworthiness of citizens and a decrease in the level of sales of bank loans[18], shrinking order portfolios in enterprises, the influx of so-called "technical" grain in Ukraine and strikes by farmers. "technical" grain from Ukraine and farmers' strikes, reduced export rates[79] and, consequently, weaker financial performance and an increase in the scale of enterprise bankruptcies.

Chart 2. NBP reference interest rate from January 2020 to October 2023.

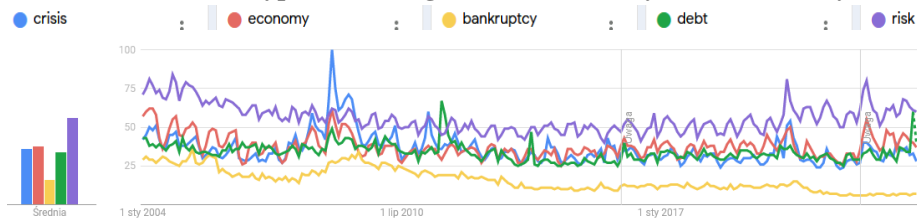


Source: own compilation based on: Financial portal Bankier.pl (www.bankier.pl), after: data from the Central Statistical Office. (Latest figure: 5.75 percent as of 5/10/2023).

Until a few decades ago and earlier, many economic crises were initiated by objective factors that were difficult to predict in advance. Such events, mainly from the end of the 20th century, include the Chernobyl nuclear power plant accident, the leak of poisonous gases at the Union Carbide pesticide plant in Bophal, the Exxon Valdez tanker leak, the sinking of the nuclear submarine Kursk, the alleged glass crumbs in the Gerber corporation's nutritional supplements and the September 11 terrorist attack that was carried out at the World Trade Center. Such situations have also occurred in recent years. For example, the emergence of the coronavirus and the declaration of the Covid-19 pandemic state in early March 2020[71] and the outbreak of war in Ukraine in late February 2022 were events that triggered specific economic crises[12]. These were events

categorized as so-called "black swans," i.e. sources of economic crises that the vast majority of companies and enterprises could not foresee[103]. In the past, there were also situations in which locally or regionally emerging economic crises were initiated by the occurrence of natural and environmental disasters. In the future, due to the ongoing climate change, the progressive process of global warming[29], the frequency and scale of occurrence of climate anomalies, natural disasters and natural catastrophes may increase[44]. In addition, such negative phenomena may become increasingly international or global in nature. In addition to objective factors, economic and financial crises can also be generated by misguided economic policies, including fiscal and budgetary policies pursued by the government and/or misguided monetary policies pursued by central banking[107]. Economic and financial crises can also be generated by inappropriate or excessive government economic state interventionism[20].

Chart 3. Analysis of Internet users' global interest in economic crisis issues based on selected search terms typed into Google between January 1, 2004 and July 2, 2023.



Source: own compilation based on: Google Trends.

The chart above shows an increase in Internet users' interest in crisis issues during periods when the biggest economic, financial and other crises occurred on a global scale, i.e., the onset of the global financial crisis of 2007-2009[3], the pandemic economic crisis[54] and the recession of the world economy in Q2 2020[97], and the outbreak of war in Ukraine and the energy crisis in Q2 2022[6]. These periods also show strong correlations occurring in terms of information searched on the Internet[38] regarding issues of crisis, economy, bankruptcy of business entities, debt and risk.

The various sources of crises cited above determine the occurrence of different types of crises, different types of economic and financial crises. However, despite this considerable diversity in the sources and nature of the aforementioned crises, the essence of the crisis usually means the same thing. Well, according to B. Wawrzyniak, a pioneer of the study of this issue in Poland, "in a colloquial understanding, a crisis means a difficult situation that occurs at a given moment, or may occur." In such terms, a crisis is, for example, a slump in the world economy, as well as a stressful situation for an employee as a result of difficulties arising in the course of work. It can be felt more or less acutely, it can vary in scope and duration, it can vary in nature, and so on. However, always a crisis means a significant change between two qualitatively different phases of the cycle of a specific process or operation of a specific business entity[60].

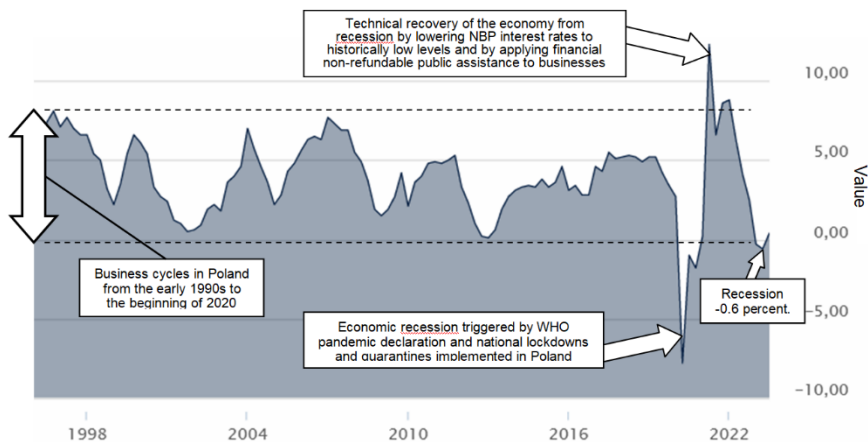
Crisis management is, on the one hand, an activity involving the implementation of the adopted strategy of the organization[43], within which the possibility of a situation of

economic, financial or other crisis negatively affecting the economic entity is taken into account, and, on the other hand, it is the process of managing a company, enterprise, financial institution or other type of entity when a specific crisis has already occurred in the organization[46].

The importance of the environment in the context of crisis development

Most business entities learn about the situation of the macroeconomic environment[106] from certain financial, economic or other online portals and other types of media[34]. The macroeconomic and sectoral environment of business entities presented in the media is mainly based on several indicators that act as macro-determinants of the aforementioned description. An example is the Gross Domestic Product treated as the main indicator informing about changes in the rate of economic growth of a country, economic region or on a global scale.

Chart 4. Change in the level of GDP in Poland between January 1996 and September 2023.



Source: own compilation based on: Bankier.pl financial portal (www.bankier.pl), after: data from the Central Statistical Office. The last value for Q3 2023 was 0.4%.

However, in recent years, a growing number of economists aware of progressive climate change, the accelerating process of global warming and the role of the development of civilization in the issue of greenhouse gas emissions point to the urgent need for a green transformation of the economy[50] involving the construction of a sustainable, zero-emission, green closed-loop economy[68]. An important part of building a sustainable, zero-emission, green closed-loop economy[10,104] is also the realization of the Sustainable Development Goals, as defined according to the system of 17 UN-ET Sustainable Development Goals[1,9].

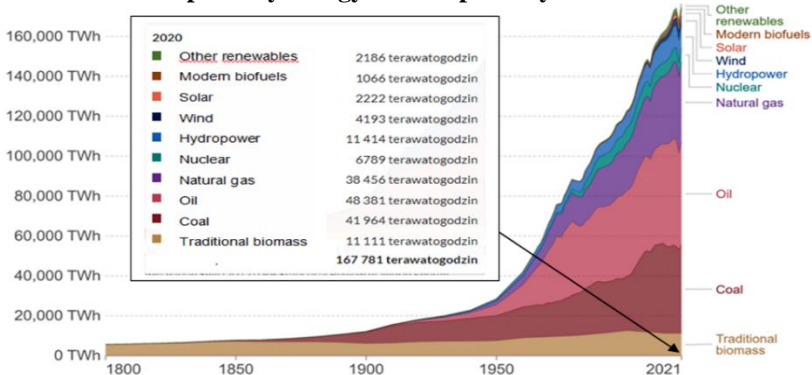
Graph 1. 17 Sustainable Development Goals according to the UN



Source: Sustainable Development Goals (in:) United Nations website, United Nations, July 2023 (<https://www.un.org.pl>).

In addition to this, in order to reduce the scale of a future climate catastrophe that is no longer far away in several decades, it is necessary to carry out the green transformation of the economy smoothly and quickly[41]. An important element of this transformation is to reduce the use of natural resources in manufacturing processes[23], to increase the scale of recycling[64], to generate energy from renewable and emission-free sources[81], to develop electromobility, sustainable organic agriculture, to replace the process of deforestation of areas with afforestation, etc., but also not to treat the GDP indicator as a key determinant of prosperity in the context of prospective future economic development[7].

Chart 5. Global primary energy consumption by source from 1800-2021.

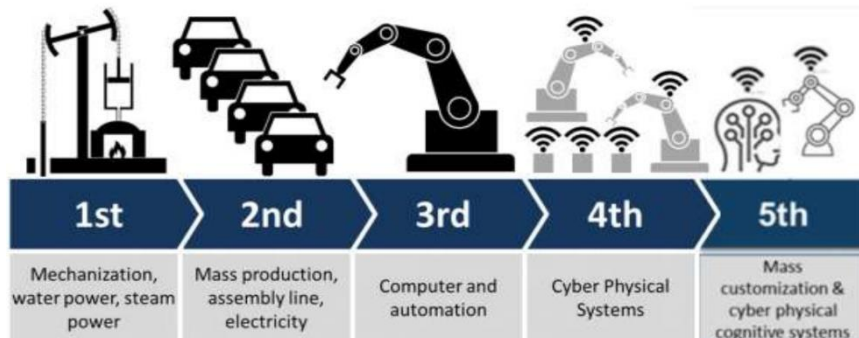


Source: calculations made by the "Our World In Data" portal, April 2022 (<https://ourworldindata.org/grapher/global-energy-substitution>) based on Vaclav Smil (2017) and BP Statistical Review of World Energy (<https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html>; <https://vaclavsmil.com/2016/12/14/energy-transitions-global-and-national-perspectives-second-expanded-and-updated-edition>). Primary energy is calculated based on the "substitution method," which takes into account, among other things, inefficiencies in the production of fossil fuels by converting non-covalent energy into required energy inputs if they had the same conversion losses as fossil fuels.

An important element of the aforementioned green transformation of the economy[75] may be to take seriously the concept of zero economic growth, created several decades ago, which should be pursued in properly transformed economic systems. In this regard, more and more economists share the view that it is high time to stop fetishizing the GDP indicator, and more specifically, the idea is that the determinant of a good current and short-term prospective economic situation should not be the question of the highest possible level of economic growth. In this way, within the framework of a real sustainable economy, the level of indebtedness of the public finance system, the scale of the use of natural resources in manufacturing proxies[59], the scale of greenhouse gas emissions, environmental pollution, deforestation, overproduction of food and waste of resources will be less. Thus, the scale of the future and, according to the long-term predictions of climatologists, geophysicists, ecologists, etc., the already imminent future climate catastrophe will also be smaller.

On the other hand, modern technology, including biotechnology, green energy technologies, eco-innovation,[70] but also new ICT information technologies and technologies typical of the current fourth technological revolution, technologies related to the concept of Industry 4.0,[26] can help in the smooth and rapid implementation of the aforementioned green transformation of the economy. On the one hand, these technologies are helpful in the smoothly conducted process of green transformation of the economy. On the other hand, these technologies, and especially those mentioned at the end, i.e. new ICT information technologies and technologies co-creating Industry 4.0, are helpful in the creation of computerized early warning systems about the increase in the levels of certain risks[31], forecasting future processes, including macro-processes and the increase in the probability of a certain crisis, including financial, economic, social, climate, natural, etc.[91].

Graph 2. Five industrial revolutions.

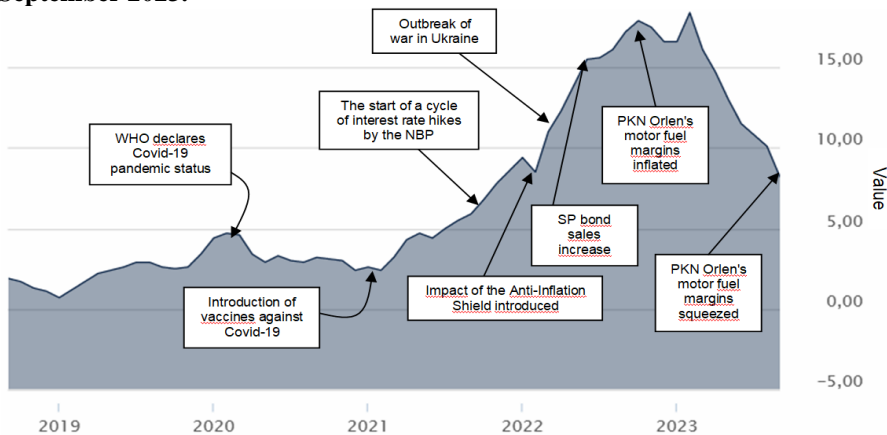


Source: A. Clim (2019). *Cyberbezpieczeństwo poza erą Przemysłu 4.0. A Short Review on a Few Technological Promises* (in:) *Informatica economic*, July 2019, Vol. 23, No. 2/2019, DOI: 10.12948/issn14531305/23.2.2019.04.

Another important issue in the context of forecasting future crises is the role of so-called "soft" aspects of management of the organization[47], business entity, information[34],

crisis situation, etc. Well, in estimating the potential level of risk, forecasting threats and future crises, sometimes too little importance is assigned to "soft" aspects of management such as interpersonal communication[35], the organizational culture of the enterprise and the emotions of employees. Such an approach raises the danger of the breakdown of one of the key elements of the anti-crisis strategy, i.e. the system of internal communication with the enterprise environment[85]. Functioning managers in companies and enterprises, treating the issue of business profitability as a key one, may not allow into their consciousness that serious economic and other crises often arise as a result of the simultaneous appearance of the growth of many different categories of risk and, consequently, to the collapse of economic, financial, social, technical and other systems at the same time. The phrase "and others" added at the end is related to the increasing magnitude of the climate and nature crises and the so-called black swans appearing with increasing frequency, which include, for example, the occurrence of the 2008 global financial crisis[17], the 2020 pandemic economic crisis[45], the outbreak of war in Ukraine and the food crisis[82] and the 2022 energy crisis[56]. During all of these crises, the level of economic activity[62] of companies and enterprises declined significantly, and as a result, the level of economic growth also declined, the level of unemployment[98] grew, the level of citizens' income[99] declined, the level of tax revenue to the state budget declined, the level of production for export[101] declined, the level of indebtedness of economic entities and the level of bankruptcy of companies and enterprises increased. During some economic crises, inflation also rose, which, when it reached double-digit levels or higher, became an additional factor in deepening the crisis.

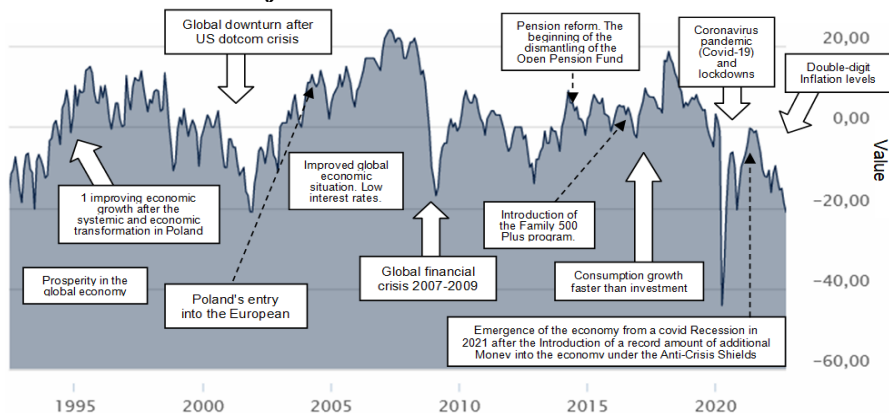
Chart 6. Change in the level of inflation in Poland between September 2018 and September 2023.



Source: own compilation based on: Bankier.pl financial portal (www.bankier.pl), after: data from the Central Statistical Office.

In addition, during periods of economic crises, the level of prosperity in various sectors of the economy, including industries, usually also declines. This issue is shown in the chart below.

Chart 7. Industrial conjuncture in Poland from June 1992 to October 2022.



Source: own compilation based on: Bankier.pl financial portal (www.bankier.pl), after: data from the Central Statistical Office. Latest value: -21.10 points (Oct 2022).

Researchers of crisis management issues from the University of Southern California, I. J. Mitroff and C. M. Pearson in the model they created advise to analyze organizations in the context of a crisis like an organism similar in structure to an onion. Unveiling more layers allows one to see the deeper layers of the problem, bring them to the surface and understand the interdependence of subsystems, their importance and interrelationships in the whole of a certain economic system, taking into account other spheres related to economics[66].

According to the aforementioned model, among the various aspects of organizational management[4], the technology subsystem may be analyzed first. Its readiness to respond to a crisis situation may be determined by the construction of early warning systems operating in the machinery park of the enterprise, and the effectiveness of the operation of these systems may be linked to the certificates obtained for management and quality control, systems for controlling the observance of instructions for the operation of machinery and equipment, employees' compliance with rules and internal regulations on health and safety rules, effectively functioning early warning systems for potential failures, the growth of certain risks beyond acceptable levels, and risk management systems built and used in the organization[16].

Another important element that should be taken into account in the framework of efficiently conducted crisis management is the organizational infrastructure of the enterprise taking into account the applied technologies that improve the circulation of information in the organization, i.e. new ICT information technologies and Industry 4.0[30]. Internal computerized information systems operating in the organization improve

the circulation of information between the various departments and divisions of the business entity. An integrated information system, which plays a particularly important role in the efficiency of the internal information system, facilitates the circulation of information between strategic and operational management levels, between finance departments and departments managing the core business of a company or enterprise, between production logistics departments and supply and distribution logistics departments, between plants responsible for specific stages of the manufacturing process and research and development centers, where innovations are created to improve the manufacturing process and increase the efficiency of the process and the economic profitability of the business entity[11]. Efficiently functioning internal computerized information systems in the organization increase the flexibility of the form or enterprise's response to emerging new crisis situations. Within the framework of the mentioned flexible response to crisis situations, restructuring processes are launched and contingency plans are incorporated, taking into account such factors as the additional activities performed by individual employees in accordance with their competencies and within the scope of assigned responsibilities, the issue of team and individual responsibility of employees, the application of a leadership style appropriate to the situation, the activation of additional personnel training[78], increasing the importance of the issue of reliably conducted risk and crisis management. In addition to this, in the context of effectively conducted business nowadays, the importance of achieving sustainability goals and increasing the scale of conducting sustainable, green business is also growing[104]. More and more companies and enterprises are adding to their missions and development strategies the issues of realization of certain sustainability goals and are remodeling their business to be greener, i.e. to fit in with the current trends of green transformation of the economy. Accordingly, the issue of achieving sustainability goals and conducting business in such a way as to be more pro-environmental, pro-climate, pro-environmental, green is being incorporated into the organization's management processes[57].

It is widely accepted that the most valuable asset of any organization is competent and experienced human resources in the context of the specifics of the business. In caring for the well-being of employed personnel[58] and the level of preparedness for a crisis situation, it is necessary to examine, among other things, the issue of workload, exceeded levels of acceptable stress and assess psychophysical predispositions. Through feedback communication channels,[88] the extent of discrepancies between management requirements and their understanding and expectations on the part of employees should be examined and assessed. Taking into account critical comments, opinions and constructive suggestions from the workforce can prevent emerging irregularities. According to management problem researcher L. Clarke, the mere reorganization of the organizational structure may turn out to be "a rearrangement of deck chairs on the deck of the Titanic"[92], i.e. a superficial action that reinforces the existing apparent order, but does not produce the expected results, for example, in terms of significant improvement in the efficiency of business operations, preparation of the organization for a situation of crisis and an efficiently conducted process of crisis management, once it occurs in the

environment of the company or enterprise, or when the crisis also develops inside the business entity[13].

The basic assumptions of organizational culture can be difficult to diagnose by researchers analyzing from the outside the functioning of a particular business entity. The essential elements of an organization's culture may result from the awareness of this issue of the individual among the organization's personnel, i.e. from the managerial staff to departmental and operational employees[69]. If the culture of the organization shapes the mentality of the staff in an uncritical belief in the perfection of their enterprise, this means that it is a culture that may not be prepared for perhaps future crisis situations. The level of frustration that manifests itself in a crisis situation can cause paralysis in making decisions that are appropriate to the situation,[48] which can make it much more difficult to respond flexibly to a changing situation and effectively incorporate contingency plans. The aforementioned researchers at the University of Southern California's Center for Crisis Management gave examples of the following bulleted statements from senior managers who showed a dismissive attitude toward possible future crises[66]:

- a) crises do not happen in well-run companies,
- b) the use of special procedures in a crisis situation is an unnecessary luxury,
- c) priority economic goals justify the use of risky methods,
- d) the company is staffed by very dedicated people, they can be trusted unreservedly,
- e) we don't see problems until procedures and instructions need to be replaced,
- f) violations of the law are enough to include in the cost of doing business,
- g) major crises are rare, each situation is unique, so it is impossible to prepare,
- h) crisis is just a problem of failure in technology,
- i) crisis management can be compared to an insurance policy - it's just a financial problem,
- j) we know how to manipulate journalists and mass media[8].

In the midst of the onion model mentioned above, I. J. Mitroff and C. M. Pearson located the sphere of organizational behavior resulting from emotions. The assessment of the emotional aspect of the employee in the face of the crisis assumes, first of all, the possibility of free and sincere bottom-up and horizontal communication at all levels of the organizational structure, as well as the feeling that in difficult situations one can count on understanding and support from superiors and colleagues. According to the above concept, a crisis is not an unambiguously negative phenomenon, as it forces its participants to make changes, both radical and ongoing adjustments. The crisis motivates the restructuring of the organization, the creation and improvement of early warning systems, risk management systems, contingency plans, flexible response to diagnose as early as possible the symptoms of a developing crisis in the environment or inside the business entity. It happens more than once that crisis situations motivate business entities to seek and create innovative solutions as part of the business restructuring processes undertaken[22]. A crisis should be turned into an opportunity in a company or enterprise, it should be used to gain new competencies and develop the entire organization. Thanks to the flexible and agile adaptation of the business entity to the constantly changing environment, what could originally be interpreted as a threat to development should be interpreted as an opportunity for the development of the company or enterprise.

Conclusions

Organizations that are well prepared for an increase in risks, various potential crises, use risk management systems built and continuously improved, adapted to the changing environment, early warning systems, contingency plans, crisis management systems thanks to which they are able to diagnose early emerging symptoms of an impending crisis, carry out corrective and developmental restructuring, respond flexibly to changes in the economic environment, and turn potential threats into developmental opportunities. Management and employees should be aware of systemic barriers and organizational and procedural constraints. Especially in large corporations characterized by a complex, multi-level organizational structure, the circulation of information within the organization can be particularly difficult. In such a situation, new ICT information technologies and technologies identified with Industry 4.0 come to the rescue. Thanks to these technologies, it is possible to create in a company or enterprise an efficient early warning system, a risk management system and a contingency plan adapted to the specific conditions of the organization's operation and flexibly adapting to the changing environment.

Therefore, the creation of an effective crisis management strategy and the improvement of internal information systems, communication systems contribute to a significant reduction in the negative effects of new crises that occur both in the environment of business entities and inside them. The issue of early warning systems built and improved in companies and enterprises, risk management systems, contingency plans, implemented processes of corrective and developmental restructuring, increasing flexibility in adapting the economic entity to the changing conditions of the economic environment, improved internal information systems, improved systems for forecasting future economic processes and others is related not only to the issue of more or less effective survival of the difficult situation of a new crisis. An important issue that is a derivative of how an economic entity copes with a crisis situation is also the question of the reputation and image of the organization,[94] including the reputation and image formed through the media[49] and the opinion about a particular company or enterprise and its product or service offerings, the opinion formed in the minds of customers and potential consumers of certain product and service offerings.

A company's good image and reputation is built up over years. On the other hand, what is built for years can be lost in a much shorter period, for example, in a few days in a situation where a business entity that is unprepared for a crisis due to decision-making mistakes made by management[55] loses some of its development opportunities and may also lose its good image and reputation. In maintaining the good reputation of a company or enterprise, it is also important to conduct efficient public relations using the techniques of the crisis communication system. In the situation of a deep financial[52] or economic crisis developing in the environment of business entities, an efficient public communication system in the maintenance of reliable relations with stakeholders may prove to be an important factor in surviving the crisis, carrying out a proper diagnosis of the sources of the crisis[19], carrying out corrective and developmental restructuring and sometimes also an important factor in success after emerging from the crisis. Such a

system will probably prove helpful in maintaining the good image and reputation of a company or enterprise as a reliable and deserving of customers' trust.

In view of the above, under the conditions of the increasing scale of volatility of various factors of the environment of business entities, the increasing scale of frequency and negative impact of emerging new economic, financial, social, political, natural, pandemic, climate crises, etc., the improvement of information management and crisis management systems is becoming one of the key factors for the prospective business success of companies and enterprises.

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