UNIVERSITY OF TARTU

Faculty of Social Sciences

School of Economics and Business Administration

Sofiia Popovska

CORPORATE CRISIS MANAGEMENT UNDER THE EXTERNAL SHOCKS: THE CASE OF UKRAINIAN ENERGY COMPANIES IN THE AFTERMATH OF THE RUSSO-UKRAINIAN WAR

Bachelor Thesis

Supervisor: Lecturer in Accounting and Finance Mariia Chebotareva

Tartu 2025

I have written this Bachelor Thesis independently. Any ideas or data taken from other authors or other sources have been fully referenced.

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Introduction

The energy sector is an essential element of any contemporary economy, which gives other sectors and industries one of the most vital resources – energy. The success of energy companies depends on capable and competent responses to crises, which is important for the successful performance of companies and ensures their competitiveness and stability. However, external shocks like wars, pandemics, and natural disasters negatively impact not only the crisis management but also the performance of the energy companies. While the energy sector exists under external shocks, it faces fluctuations in electricity prices, changes in demand and supply, and the destruction of power stations.

On 24 February 2022, the Russian Federation launched a military invasion of Ukraine, which has become a significant external shock for the economy of Ukraine and its energy sector companies. It has been observed that "since 24 February 2022, the global energy problem resulting from the COVID-19 pandemic have been exacerbated by the war erupted in Ukraine, turning the situation into a full-blown crisis" (Jing, 2023, p. 1). The Russian attacks resulted in the destruction of approximately 50% of the energy infrastructure and 60% of power generation stations, as they are the main targets to destroy (Jayanti, 2024). Russia's attacks on Ukraine's energy integrity have provoked a number of difficulties and restrictions for the country and its inhabitants. As more than half of the power generation stations and plants were destroyed, Ukraine faced an energy crisis that was caused by systematic military attacks. Kulish (2024) considers the losses of the electricity generation objects to be the highest among others in the energy industry and estimates it around 8.5 billion dollars out of 16.1 billion dollars of total energy sector losses. Kilfoyle (2023) explains the negative consequences of the Russian invasion of Ukraine as the "global economic disaster", mentioning that already in the first year of the military conflict Ukraine lost approximately 30-35% of its GDP, which is considered to be the most significant and largest recession in the history of Ukraine.

According to the World Bank (2023), Ukraine needs immediate investments in the repairment of the energy infrastructure, hospitals, schools, bridges and roads as the approximate cost for it is more than $411 billion over the next 10 years. With the change in the economic situation caused by the Russo-Ukrainian war, Ukrainian energy companies are forced to quickly respond to the crises associated with the current economic and political situation to increase resilience to the risks and achieve sustainable growth for the company despite external shocks. Therefore, it is important to understand the measures taken by the energy sector in response to the crises influenced by military conflicts.

As for today, to the best of the author's knowledge, there are two studies regarding corporate crisis management in the Ukrainian energy sector. Gernego, Liakhova, and Dyba (2022) conducted a study on the topic of the impact of COVID-19 on crisis management in the energy sector. Anisimova et al. (2024) made a research regarding the proactive crisis diagnostics in the energy sector on the example of the EBSO companies. However, these studies do not reflect on how the military conflict affects crisis management in energy companies. Accordingly, no study could nowadays contribute to comprehending how Ukrainian energy companies responded to the crises in the aftermath of the Russo-Ukrainian war. Thus, the author of this study will try to cover the existing gap in the research area.

The aim of the thesis is to clarify what measures were taken in response to the crisis in Ukrainian energy companies in the aftermath of the Russo-Ukrainian war. The measures are distinguished by the pre-crisis, preparation, crisis and post-crisis stages. While mentioning the energy companies, the author identifies them as energy generation and energy distribution companies that produce and transmit energy for further distribution and consumption. Since the energy generation sector has been mostly affected, the author chose it to show the evident influence of the war on the crisis management of the energy companies. The author applies the qualitative approach to evaluate the data allocated from the interviews with crisis managers of Ukrainian energy companies, concentrating on the crisis management changes. Also, the author plans to conduct interviews with the crisis manager of Ukrainian energy companies and find out if there is a difference in the crisis management measures implemented in Eastern, Southern, Central and Western regions of Ukraine in order to gain a full understanding of how different companies managed the crisis according to the territorial location and all the external shocks that are observed there.

The result of the thesis is an in-depth understanding of what measures have been applied by Ukraine's energy companies in conditions of crisis and shock in the aftermath of the Russo-Ukrainian war.

To reach the result, the author sets the following research tasks:

- to describe the models and causes of corporate crisis management;
- to discuss the measures for the corporate crisis management;
- to provide an overview of previous studies on corporate crisis management in energy companies;
- to develop a list of questions for interviews with the representatives of Ukrainian energy companies;

- to conduct interviews with the representatives of Ukrainian energy companies.
- to analyse and discuss the results of the study.

An understanding of different measures in corporate crisis management is essential to recognizing the most optimal responses that can be taken during external shocks. Being aware of what corporate crisis management measures have been taken in external shock situations allows for an understanding of which changes have been applied and provides crucial and valuable insights for the beneficiaries – energy companies, stakeholders, investors, managers, and policymakers. The research provides them with relevant information on what corporate crisis management measures in energy companies have been applied in conditions of external shocks, enabling more informed decisions and changes in their corporations.

The thesis consists of two chapters: theoretical and empirical. The theoretical chapter covers the definition of crisis management as well as its models, causes and aspects in the energy sector. Also, in the theoretical part, the author provides an overview of previous studies on the energy companies' responses to the crisis under external shocks. In the empirical part, the author explains the research methodology and describes the data used. In the second part, the author presents the outcomes of the study, which are followed by a discussion of the results.

Keywords: Corporate crisis management, energy sector, Ukrainian energy companies, Russo-Ukrainian war, crisis.

1. Crisis management in the energy companies – theoretical foundations

1.1. Models, stages and causes of corporate crisis management

In this subchapter, the author explores the concept of a "crisis", examining its definitions and underlying causes. The author also focuses on analysing the stages and models of crisis management to explore which stages the companies face during the crisis and which strategies and tools they use to deal with it.

To understand the causes of a crisis, its stages, and models, firstly, it is necessary to define the meaning of the term "crisis" and how it is interpreted by different authors. Fontanella (2022) states that a crisis is an uncontrollable internal or external problem that occurs in the company and threatens its stability. Appelbaum, Keller, Alvarez and Bedard (2012) consider crises as an acute form of change that becomes a turning point in the life of the organisation, determining its future through successful dealing with it or the failure, while Weick (1988) expands the meaning by mentioning the negative consequences of the crisis on

the primarily objectives of the organisation. Coombs and Sherry (2002) added that a crisis leads to the disruption of the organisation's operations and damage to its reputation, so communicative responses are needed to protect the organisation. Moreover, Muhhamad and Naved (2020) added that crisis creates extraordinary conditions that require extra recourses to cope with, while Sun (2023) supported the argument mentioning that in the crisis state the organisation has limited time to use the enterprise's recourses in order to deal with it. In the author's opinion the crisis is an unexpected and negative event that often is out of control of the organisation. Also, it threatens not only organisational processes but also the existence of the company itself, forcing it to take measures. Therefore, while a crisis is unforeseen and often uncontrolled, it is the factor that forces companies to rethink their approach to crisis management that influence the quickness and effectiveness of the response of corporations to crises. It is also important to note that the crisis has internal and external causes of its appearance, which affects the crisis management of organizations. In this research, the author focuses on the external factor of the energy crisis in Ukraine, which was caused by military actions. However, it is important to classify crises by their types in order to see a full picture of their relationship with external and internal causes.

To begin with the classification of crisis, it can be divided into two categories such as internally and externally caused (Hayes, 2024). Henderson (2007) also suggested examples of the causes of the crisis. Table 1 illustrates the internal and external examples of the causes of the crisis.

Table 1

Classification of crisis causes by internal and external

Factor	External causes of the crisis	Internal causes of the crisis
Political	International relations	
	Terrorism	
	Instability	
	Governmental policies	
Environmental	Natural disasters	Degradation
	Pollution	Overdevelopment
Socio-cultural	Crime	Cultural conflicts
	Unrest	
Technological	Failure of the computer systems	Transport accidents
	Mechanical failure	
Economical	Taxation	Decreased profit
	Recession	Increased costs
	Fluctuations of the currency	Decreased revenues

Source: Compiled by the author based on Henderson (2007), Hayes (2024)

Accordingly, since the main focus of this study is on the military conflict between Russia and Ukraine, that type of crisis relates to terrorist actions and issues with international relations that are considered to be external causes. Kangro (2022) states that Estonia declared Russia a terrorist regime, which received 88 votes in the Parliament of Estonia, confirming that the military actions of the Russian Federation against Ukraine are considered to be terrorist actions.

Kukreja (2017) classified the types of crises as financial, technological, malevolence, and natural. However, Fontanella (2022) also added workplace violence and organizational and personnel crises. Table 2 illustrates the classification of crisis by causes and types.

Table 2

Classification of crisis by its types and internal and external causes

Crisis Type	Internally caused	Externally caused
Financial Crisis	Poor financial management, internal fraud	Economic downturns, market fluctuations
Personnel Crisis	Employee misbehaviour, internal HR issues	Employee harassment by external parties
Organizational Crisis	Ineffective leadership, operational failures	Regulatory changes, external audits
Technological Crisis	Outdated infrastructure, system failures, etc	Cyberattacks, third-party tech failures
Natural Crisis	–	Earthquakes, floods, etc
Confrontation Crisis	Workplace conflicts, employee strikes	Activist pressure, public protests
Workplace Violence Crisis	Violence among employees	Terrorism, physical attacks
Crisis of Malevolence	Sabotage by employees	Sabotage by competitors

Source: Compiled by the author based on Hayes (2024), Kukreja (2017), Fontanella (2022)

Since the main focus of this study is on the energy sector, the author would like to discuss the causes that influence it and cause an energy crisis. Manieniyan, Thambidurai and Selvakumar (2009) distinguished a few causes of the crisis for the energy sector:

- attacks by terrorists or military on the energy infrastructure;
- over-consumption;
- pipeline failures;
- organised strikes;

- government embargoes;

To understand which practices the managers of the companies take in the situation of a crisis, its occurrence, or recovery after it, it is essential to discuss models for crisis management. The crisis management model refers to the basics of the preparation for the crisis, overcoming and preventing it. With the help of crisis management models, managers are able to use the best practices with a view of the situation through the model. (Marker, 2022) Also, the crisis management model helps managers not only to visualise the events but to strengthen the ability of the organization to cope with the crisis and have the ability to anticipate it (Aradavoaicei, Badele & Lucian, 2022). Each crisis management model applies to the crisis management stages companies go through in crisis situations. Therefore, it is essential to mention the most common stages of crisis management to connect them to the periods of the practices during it.

There are 3 main stages of crisis management that the companies face in the times of crisis. Pre-crisis is the first stage, which occurs in the aftermath of the detection of the threats to the business and searching for solutions for the minimisation of the risks. (Birt, 2024) Moreover, the pre-crisis stage should also include the risk assessment to prepare for a crisis and anticipate its scenario (SPM Communications, 2024). The second stage is the crisis itself, which requires a quick response as well as preparedness for it (Birt, 2024). Frandsen and Johansen (2016) added that during the crisis stage, the organisation faces the most difficult challenge of activating the crisis properness plan at the right time and place. The last stage is the post-crisis phase, when the company returns to the market after the crisis, subsequently changing its approach to business (Birt, 2024).

Crisis management models refer not only to the three stages that were discussed previously, some authors state more stages that the companies face during the crises. For example, Hough and Spillan (2005) suggested a model that corresponds to more than three stages of the crisis and refers to the reactive and proactive stances. The authors included preparation and defence stages that reflect the approach the company used during the crisis. The reactive approach does not prevent the crisis and consider the warning signals, but goes through the defence stage by quickly reacting to it and creating a crisis plan as the solution, while the proactive stance includes the planning and preparation stage for it with the aim of minimising the losses during the crisis. (Hough & Spillan, 2005) Nowadays, the proactive approach is considered to be an essential management style, where the tasks of the managers are based on the daily detection of possible threats and crises (Vasickova, 2020).

These two approaches differ from each other since the losses for the companies that used the reactive approach are relatively higher than those who created a plan and prepared in advance, using the proactive approach. Hough and Spillan (2005) provided instruments for each proactive and reactive approach for the crisis management models, which are used in the post-crisis stage. To illustrate the approaches, models, and differences proposed by Hough and Spillan (2005), the author created Figure 1.

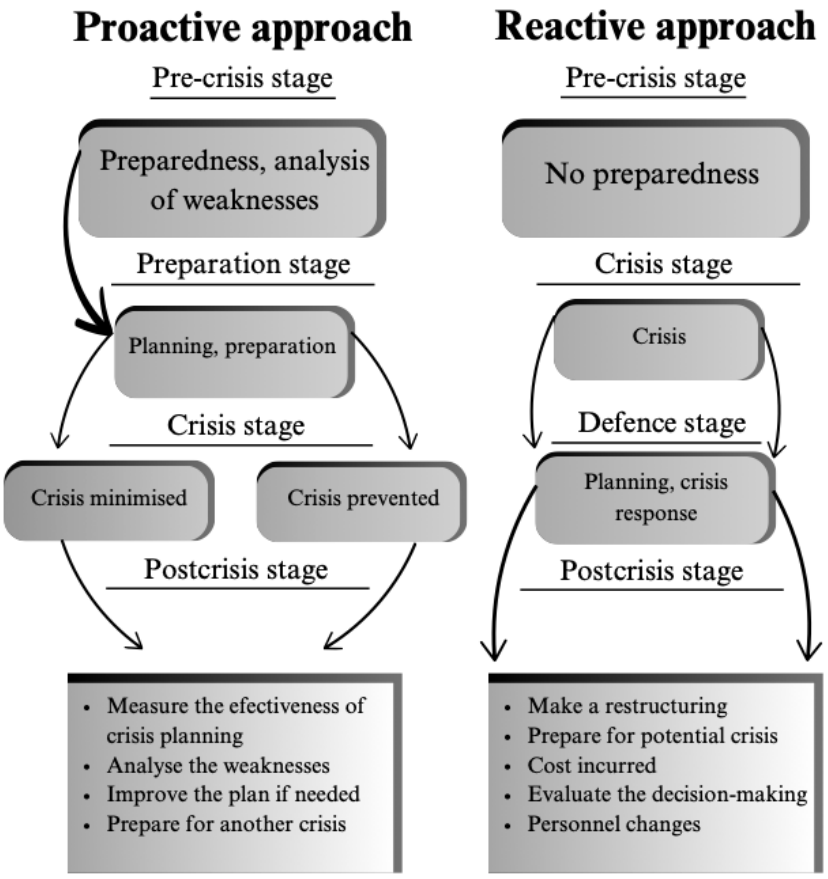

Figure 1. Crisis management model of proactive and reactive approach
Source: Compiled by the author based on Hough & Spillan (2005)

Considering this model in the context of the Russo-Ukrainian war, the author finds it incomplete because while Hough & Spillan (2005) have included additional stages of defence and preparation for a crisis, the model lacks practical advice and tools that could be used during each crisis stage. The need for tools at each stage of crisis management is explained by the fact that it is necessary to apply them and make conclusions also throughout the pre-crisis crisis and preparation stages, not only when the company returns to its normal state in the post-crisis stage. There are also other models to compare in the context of tools applicable

at each stage, which is why different approaches to crisis management models should be discussed more broadly.

The second model that the author would like to highlight also supports the idea of proactive and reactive approaches, but in contrast with the previous model, it has more stages that are important for crisis management. Table 3 illustrates the model and instruments of crisis management.

Table 3

Model and instruments of crisis management

Approach	Stage	Action	Key action
Proactive	1. Detection	Prevention and preparation	Simulate a crisis and prepare for it
		Prefixing	–
		Learning	Redesign the company's system, expand the detection
	2. Crisis	Pre-assessment	–
		Coping with it	The crisis is contained and isolated
		Prevention and preparation	Prepared for a crisis
	3. Repair	Prefixing	–
		Coping with it	Contain the business and isolate
		Recovery	Returning to normalcy
	4. Assessment	Recovery	Returning to normalcy
		Learning	Redesign the company's system, expand the detection
		Pre-assessment	–
Reactive	1. Crisis	Pre-assessment	–
		Coping with it	Contain the business and isolate
	2. Repair	Prefixing	–
		Coping with it	Contain the business and isolate
		Recovery	Returning to normalcy
	3. Assesment	Recovery	Returning to normalcy
		Learning	Redesign the company's system, expand the detection
		Pre-assessment	–

Source: Compiled by the author based on Mitroff, Shrivastava, and Udwadia (1987)

Mitroff, Shrivastava, and Udwadia (1987) created a model that explains how to deal with the crisis through proactive and reactive approaches. A proactive approach is connected

to the prevention and preparation stages. The model of proactive approach contains the detection stage earlier than the prevention since it is harder to prevent a crisis that was not detected before by the monitoring systems or management information (Mitroff, Shrivastava & Udwadia, 1987). It is important to mention that, unlike the previous model that was discussed, this model contains prefixing action that is bound to the detection as well as to the repair stages during the crisis, so the company should prefix the issues that were detected on the detection phase before the preparation actions in order to be already prepared to the changes that may be caused by the crisis situation. Mitroff, Shrivastava, and Udwadia (1987) also illustrated a pre-assessment action that is directly connected to the crisis and assessment stages in the model. Also, the author of the study found out that even though the Mitroff, Shrivastava & Udwadia (1987) described the number for each stage, the stages in the model do not have a specific sequence, so each stage is bound to three more stages, which allows the building of a strong connection between them to support the company relying not only on the instruments and measures that are applicable to one stage. Moreover, it is essential to note that by using a reactive approach, the company skips the preparation stage and, accordingly, the benefits through pre-fixing, prevention, and learning that support it. Companies that use a proactive approach going through the preparation and prevention stage are already prepared for the crisis and can minimize losses or even skip it.

The last model of crisis management that the author would like to discuss is suggested as a cluster with non-linear elements that form a relational crisis management model in the crisis. Jaques (2007) suggested a model that is illustrated as the sphere divided by crisis and pre-crisis management, which has core elements such as post-crisis management, crisis preparedness, crisis prevention, and crisis incident management inside it, as well as the instruments for each of it. Comparing this model to the previous models, the author can state that it has more comprehensive steps for each stage of crisis and instruments for dealing with it. Moreover, Jaques (2007) confirmed the flexibility of his model by mentioning that the elements are not in the sequence that needs to be taken step by step because some elements have a temporal connection to each other, which can be seen as overlapping with each other or happening at the same time. It is worth mentioning that sometimes, even unconnected elements such as warning signs and crisis recognition are bound to each other or have similarities, which also may provide the lessons of crisis preparedness for different companies through early warning in the post-crisis stage. (Jaques, 2007) Going back to the previous model, Mitroff, Shrivastava, and Udwadia (1987) supported the same idea of

similarities and connections between prevention and detection stages, making it obvious that the connection of these elements is important for overcoming the crisis on the early stages.

The author created Table 4 to illustrate the model and its core instruments that were created and developed by Jaques (2007).

Table 4

Model and instruments of crisis management

Category	Subcategory	Actions that need to be taken
Crisis management	Post-crisis management	Post crisis issue impacts Business recovery Evaluation and modification
	Crisis Incident management	Crisis management System response and activation Crisis recognition
Pre-crisis management	Crisis preparedness	Planning process Training and simulations
	Crisis prevention	Early scanning and warnings Issue and risk management Quick responses

Source: Compiled by the author based on Jaques (2007)

After discussing the three main models of crisis management, the author would like to come up with a synthesized models of crisis management that covers all the unfulfilled aspects that were discussed before and unites it all together, making a developed model for both proactive and reactive approaches.

Figure 2 illustrates the proactive approach that, in contrast with the reactive approach, has the detection stage and prevention and preparation actions. The model is divided into the four stages of crisis. The first stage is pre-crisis, which takes into account the detection and prefixing. The second stage is the preparation stage, which focuses on making conclusions and analysis for improvement. The third stage is the crisis stage, which concentrates on coping with the crisis, making pre-assessment, and repairing. The last stage is the post-crisis stage, which is as well as the crisis stage bound to cope with the crisis and contains recovering, prefixing, pre-assessment, and learning. To sum up, this model reflects a situation where a company takes a measured and thoughtful approach to the risk of an approaching crisis, thinking ahead about its actions to minimize or overcome it and preparing all the necessary resources for this. Accordingly, a proactive approach requires more funds and

investments, which increase company costs but are fully justified in practice, minimizing losses.

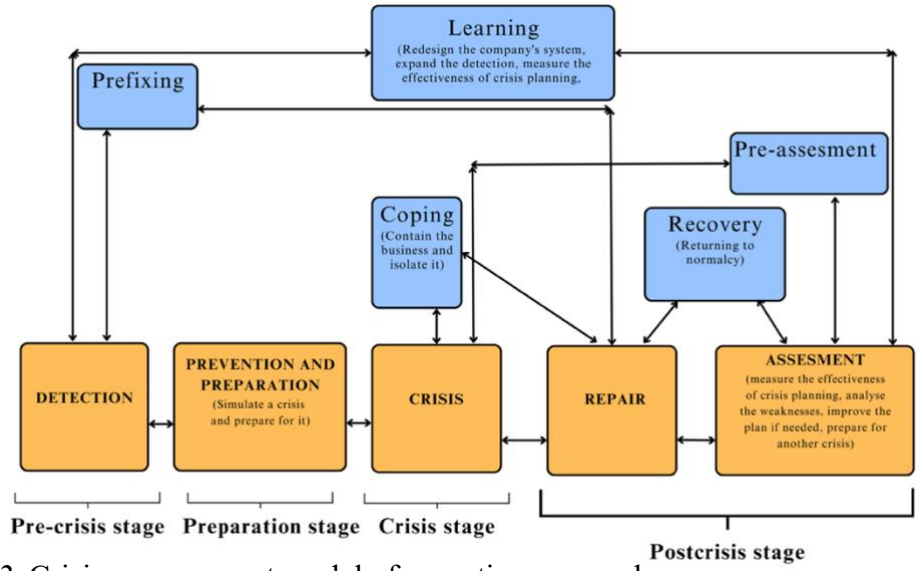

Figure 2. Crisis management model of proactive approach

Source: Compiled by the author based on the Mitroff, Shrivastava, and Udwadia (1987), Jaques (2007), Hough & Spillan (2005)

The next model that the author wants to discuss is a reactive approach to dealing with external or internal shocks in the companies, which differs from the proactive approach not only in different stages but also in approaches for overcoming the crisis. The model is illustrated in the Figure 3.

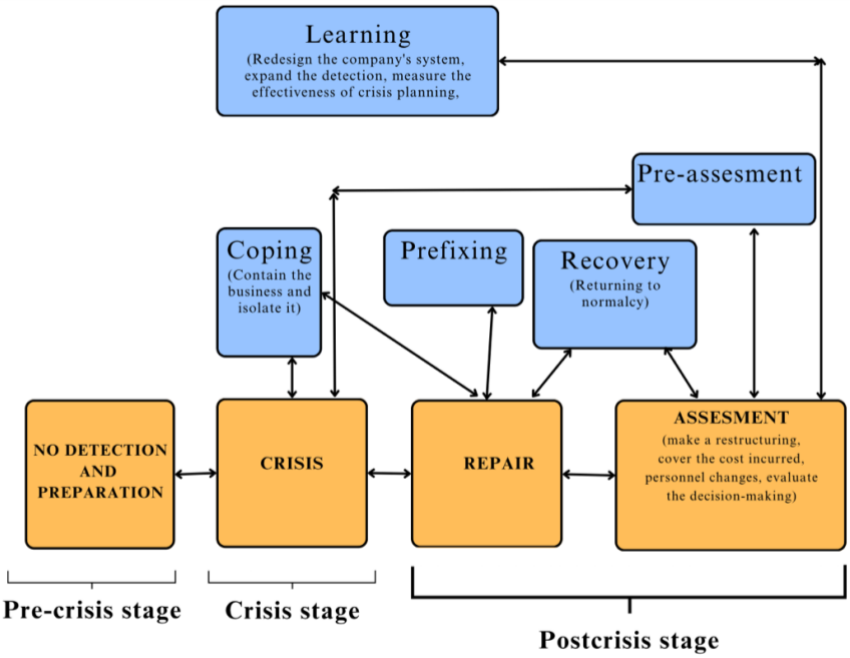

Figure 3. Crisis management model of reactive approach

Source: Compiled by the author based on Mitroff, Shrivastava, and Udwadia (1987), Jaques (2007), Hough & Spillan (2005)

In commonality, the models of reactive and proactive approaches include both actions and stages during the crisis, while taking into account different steps for coping with it. In today's world, which is full of external and internal shocks for the crucial energy sector, it is difficult to predict the current situation of the company, but having a structural and systematic view of stages and related actions that should be taken, it can significantly minimize or overcome the crisis. Accordingly, energy companies should consider those models not only in order to minimise the losses for the company but also to prevent or overcome a crisis.

In the next subchapter, the author would like to examine the existing research by other authors on the topic of crisis management in energy companies. The author's primarily goal is to analyse various studies and to create a list of the measures and actions that were taken by energy companies during the crisis. Understanding what measures were taken by companies in situations of exogenous shocks will not only help to deepen understanding of the topic but also form a view on further empirical research on measures that were taken by Ukrainian companies during the war.

1.2. Energy companies' response to the crisis – overview of previous studies

To identify the existing research gap and conduct a comprehensive study on crisis management within the Ukrainian energy sector, the overview of the relevant studies on a similar topic is covered in the subchapter. Before detailed research on the crisis management of Ukrainian energy companies and the measures applied in the context of the Russo-Ukrainian war, several studies on crisis management in energy-related industries were identified. These studies address issues that are comparable to those faced by the Ukrainian energy sector. In addition, this subchapter provides an analysis of the different data collection methods and research approaches that other authors used in their studies to understand how these methods contributed to the main findings. Also, the analysis of the methodologies used in similar studies about energy-related industries is useful for the empirical part of the study to understand which method could be applied by the author. However, before analysing the scientific researches of other authors on the topic of crisis management in the energy sector and showing the similarities and differences in the methodologies of each study, a summary table is provided before the detailed overview. Table 5 is presented to provide a structured and visual representation of the main aspects of selected studies, such as the study title and authors, research design method, and the main findings to demonstrate a foundation for understanding the broader research context.

Table 5

Overview of previous studies on crisis management in the energy sector

Authors and year	Research method	Main findings
Jong, Wouters & Sterkx (2010)	Case-based approach – authors concentrate on the case of the 2009 Russian-Ukrainian gas dispute.	The authors found out the EU's weaknesses in crisis management during the Russo-Ukrainian gas dispute.
Somosi & Sarolta (2012)	Qualitative approach – authors synthesis the data from international and domestic studies to analyse the effect of crisis in the energy sector.	Examine the connection between the state crisis management and energy companies, impact of the crisis on demand, investments and energy prices.
Gernego, Liakhova & Dyba (2022)	Qualitative approach – authors rely on expert assessments, involving the detailed examination and synthesis of existing literature, reports, and case studies.	The study examines the theoretical principles and instruments of crisis management in the energy sector, outlines practical approaches relevant to Ukraine and proposes strategies to strengthen energy sector.
Brinzaru et al. (2023)	Quantitative approach – authors analysed a sample of 150 companies in the power generation sector, using financial indicators.	The authors developed a model for an assessment of financial sustainability under crisis conditions of electricity generating companies and suggested a measures that may improve it.
Florek et al. (2024)	Quantitative approach – authors used a financial indicators and variable analysis.	The authors examined the financial condition of energy companies during political and economic instability and found out the measures to enhance the efficiency of it during the crisis.
Anisimova et al. (2024)	Qualitative approach – authors used a systemic approaches, analogies, modelling, and abstraction.	Ukrainian ESCO companies, highlighting the importance of proactive crisis diagnostics measures and stating that they require the recognition of an additional external subsystem of direct action information support.

Source: Compiled by the author based on the Gernego, Liakhova, Dyba (2022); Somosi & Sarolta (2012); Jong, Wouters & Sterkx (2010); Brinzaru et al. (2023); Florek et al. (2024); Anisimova et al. (2024)

All the studies have a common topicality of crisis management in the energy sector, but the research methods differ from each other. The diversity in methods of research is caused by the difference in objectives that were set by the authors. Accordingly, it is essential to consider various research approaches to develop a methodology that fulfil the research objectives of this study and discuss the reasons for the chosen methodology.

For instance, Gernego, Liakhova, and Dyba (2022) used a qualitative approach by relying on expert assessments and synthesis of existing reports, while Somosi & Sarolta (2012) chose the same qualitative approach but different sources of international and domestic studies to analyse the effect of the crisis in the energy sector. Similarly, Anisimova et al. (2024) conducted research applying a qualitative approach but using a different set of analogies, modelling, and abstraction techniques.

In contrast, there are also a few studies that use the quantitative method of research. Brinzaru et al. (2023) paid primarily attention to the quantitative perspective of the research by analysing a sample of 150 companies in the power generation sector, using financial indicators to develop a model for an assessment of financial sustainability under crisis conditions, while at the same time, Florek et al. (2024) considered the quantitative approach, using not only the financial indicators, but also a variable analysis to examine the financial condition of energy companies during political and economic instability. Unlike choosing the only financial indicators analysis, variable analysis allowed authors to show the connection between selected groups of energy companies and examine the financial situation of the companies more deeply. However, the author also would like to highlight the importance of mentioning one more methodology of the study that was reviewed. Jong, Wouters and Sterkx (2010) applied the case-based approach that is based on the EU statements, Council Working Group Reports, Commission documents and press releases to fully concentrate on the situation of the 2009 Russian-Ukrainian gas dispute to draw lessons for crisis management of the European Union in the aftermath of this conflict. From the author's perspective, it is essential to remember the disputes from the past that became not only costly lessons but also an area for improvement of crisis management in the energy sector.

All the authors discussed measures and actions that need to be taken by the energy companies during the crisis to prevent or recover from it. Nevertheless, it is essential to consider not only the measures that were implemented by the energy corporations but also the state and EU's measures that were applied during the crisis by the government since energy companies are often controlled by the government and impacted by it, so it often changes the capital structure due to the changes in policies from the government's side.

Unlike the other studies, Somosi and Sarolta (2012) and Brinzaru et al. (2023) find it relevant to focus on the fact that the government implements state crisis management measures for energy companies to stabilize the economy and prevent economic crises. In contrast with the Brinzaru et al. (2023) study, Somosi and Sarolta (2012) state that the super-taxes and selling the corporate assets measures applied to the energetic companies are suitable for providing the government with short-term income. According to this theory, the fastest measure that is known in inland practice applies to the energetics and retail trade. Also, Somosi and Sarolta (2012) discussed the Hungarian reform that was made in order to decrease the cost of the distance heating, so in 2010 the government increased the rate of the tax, which caused the introduction of a new burden in the energetics and the income that was directly used to correct the budget deficit of the country. The authors state that the super-taxes and other profit-decreasing measures decreased the assets of the companies, which unfavourably impacted the privatisation of the energy companies, but even taking into account the consequences of that regulation for the energy companies, the other European countries such as Slovakia and Greece decided to have the same way of budget balancing. For instance, Brinzaru et al. (2023) brought an example of the German government measures that are in contrast with the Hungarian and Slovakian are implemented in order to help energy companies through subsidies to cover the short-term procurements, storage, and other costs, while Somosi and Sarolta (2012) also took into account the case of the countries that had the privatisation of the energy companies earlier, then the government uses a converse tool that is applied in the way of handling budgetary or debt problems by the setback of an essential level of state ownership in stable, long-term dividend income.

In contrast with the Somosi and Sarolta (2012) and Brinzaru et al. (2023), Jong, Wouters and Sterkx (2010) focused on the European Union's crisis management measures and tools introduced by the Lisbon Treaty before the dispute between Russia and Ukraine in 2009. Mentioning the measures that were taken by the EU during the crisis, Jong, Wouters and Sterkx (2010) state that The Lisbon Treaty has tools, such as the solidarity instrument, the energy competence framework, and external relations, which could improve the EU's ability to handle identical crises in the future. However, while the authors discuss the effectiveness of The Lisbon Treaty, they also mention the disadvantages of the solidarity mechanism, which was not fully adopted and delivered because of the different understanding of "solidarity" among European countries in times of crisis. The authors concluded with a statement about the weak cohesion between the European countries, which constrains the immediate response to the energy crisis. Thus, the solution in the form of The

Lisbon Treaty and its instruments was presented and discussed as a set of new structures that may benefit the cohesion between EU countries to react to the crisis in diplomatic cooperation. Therefore, while Jong, Wouters and Sterkx (2010) stated that the reaction from the European countries suffers from the lack of cohesion and the quickness of the response, Somosi and Sarolta (2012) discussed the fastest measures that are implemented by the government of the specific country without a connection with the other European countries, which allows making it faster and more efficiently, but with the negative consequences for the domestic energy companies.

To demonstrate a range of different measures for dealing with the crisis on European and state levels that the European Union and government applied through the state regulations implemented towards energy companies that impacted them not only positively but also negatively, Somosi & Sarolta (2012) mentioned the following list of measures:

- The implementation of super-taxes;
- Selling the corporate assets measures;
- Support of energy companies through subsidies to cover the short-term procurements, storage, etc;
- Handling budgetary or debt problems in energy companies by the setback of an essential level of state ownership in stable, long-term dividend income;
- The Lisbon Treaty tools, such as the solidarity instrument, the energy competence framework, and external relations;

Due to the strategic importance of the sector, it is relevant to mention not only the corporations but also the state and EU measures that may impact the energy companies through taxes and other regulations. Choosing and comparing these studies for an overview helped to understand the scope of the possible regulations and measures not only from the corporations but also from the state and EU side, which may negatively impact the energy companies' resilience and ability to respond to the crisis, so it is essential to consider the regulations and measures from the government and EU sides for the Ukrainian energy companies while doing the empirical part of the research.

The author of the study would like to further discuss the crisis management measures that were implemented by the companies. Gernego, Liakhova, and Dyba (2022) mention the practical measures of crisis management in the energy sector, considering it to be one of the most important aspects since they contribute to enhancing and restructuring the Ukrainian energy sector under external shocks, at the same time Anisimova et al. (2024) added that it is

also needed by energy companies to cover the initial investments and stabilise its position on the market, while Florek et al. (2023) stated that during the crisis it is hard to achieve stable financial conditions of the energy generating companies. Florek et al. (2023) stated that paying more attention to the liquidity and profitability financial indicators for energy companies is more relevant than concentrating on external issues such as climate change. In contrast, while Anisimova et al. (2024) also focused on the measures of preliminary identification and monitoring of the financial conditions to analyse and identify the external and internal shocks, they stated that only financial monitoring of indicators is not enough during the identification of the crisis, because the energy companies should also consider the information regarding the external and internal negative tendencies causes. Gernego, Liakhova and Dyba (2022) propose instruments that are concentrated on improving the small generation systems, decentralisation of the generation systems and innovative evolution of electrical and energy engineering. Moreover, Gernego, Liakhova and Dyba (2022) made an interesting conclusion that the external shock, which was presented as COVID-19, has not only a negative impact on the energy sector but also a positive since it increased the demand for energy-saving technologies and the popularisation of renewable energy. Florek et al. (2023) supported the idea of Gernego, Liakhova and Dyba (2022) regarding the renewable energy, stating that it positively impacted the firms, increasing the profitability index. At the same time, as one of the crisis-management measure, Florek et al. (2023) stated that primarily attention should be given to the cost control of energy and storage, which should reduce the high costs respectively, because the implementation of the cost-cutting strategy helped companies to overcome the losses and cope with the crisis and increase the profitability index.

Figure 4 demonstrates the measures that were suggested by the authors as instruments for the energy companies to implement under the external shocks to prevent or overcome the crisis. Also, the figure illustrates the essential measures, processes, and stages each crisis goes through. For example, the detection process that relates to the pre-crisis stage includes the measures relevant for the monitoring of the crisis. The prevention and preparation processes that are bound to the preparation stage is responsible for the forecasting of the probability of the crisis. The crisis stage is related to the crisis measures that should be implemented during it, while the last stage, the post-crisis, consists of the repair and assessment processes.

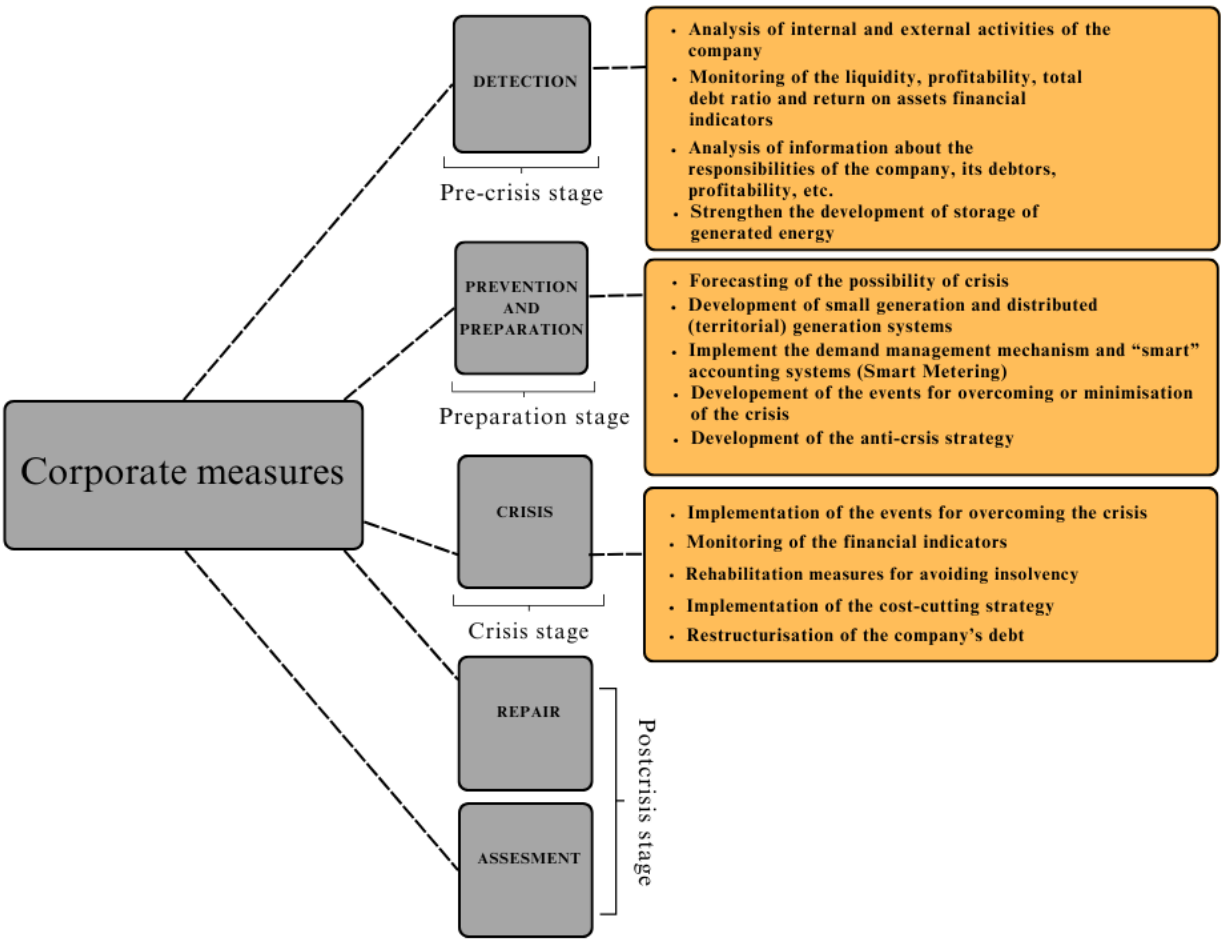

Figure 4. Corporate crisis-management measures

Source: Compiled by the author based on the Gernego, Liakhova & Dyba (2022), Somosi & Sarolta (2022), Florek et al. (2024), Anisimova et al. (2024)

All studies that were mentioned in the overview concentrate on the same topic of crisis management in the energy sector. By selecting these studies for review, the author aimed to explore and compare the various methods used by the authors and gain insights into potential research approaches. Nevertheless, even considering that a few studies mentioned in the overview discuss energy crisis management in Ukraine, two studies by Anisimova et al. (2024) and Gernego, Liakhova & Dyba (2022) reflect on the measures of energy companies discussing mainly the detection and preparation stages but lack the further research regarding the crisis, assessment and repairment stages mainly in the energy corporates in the situation of the Russian-Ukrainian war that has begun in 2022 and its impact on the energy crisis management measures. The author considers it essential to conduct in-depth research discussing not only the prevention and preparation stages but also the crisis, repairment and post-crisis stages in the energy companies, as the author considers them the most important in

the aftermath of the war. As a result, in the empirical part, the author wants to research the question of how Ukrainian energy companies responded to this energy crisis and what measures they used to overcome the crisis.

2. Response measures to the crisis in the Ukrainian energy companies

2.1. Research methodology and data collection

For nearly 3 years, the Russian Federation has been constantly attacking the infrastructure of Ukraine, targeting its power plants. Unfortunately, the military actions caused by the Russian invasion of Ukraine affect not only the Ukrainian energy companies but also the Ukrainian's daily life. Accordingly, in order to cope with those restrictions, inhabitants need to have an electric generator to cope with the energy distractions and limitations. World Energy Outlook (2022) suggested an explanation of the key changes to the energy sector of Ukraine post-invasion by Russia, concluding that Russia's invasion has a global effect on the energy crisis that affects businesses, households, and economies, requiring a more rapid and short-term response by the government to avoid the risk of energy disruptions and provide the protection for the energy industry. As was mentioned before, the Russian invasion of Ukraine has negative consequences not only for Ukraine but also globally, including the European countries. For example, Pilar (2022) mentioned France's Resilience Plan to mitigate the negative impact of military conflict by strengthening their energy sovereignty, cybersecurity of businesses, and supporting the companies that had the most part of expenditures for electricity costs. It is essential to highlight that the Council of the EU (2025) explained that in the aftermath of the Russo-Ukrainian war, the European Commission created a REPowerEU plan that is aimed at increasing the energy autonomy of the European Union so the European countries work together to adopt and reach the goals of the plan.

To achieve the objectives of this thesis, the author uses a qualitative research method of semi-structured interviews with the crisis managers, which has been identified as the most suitable method to fullfill the research gap. In the empirical part of the study the author examines how Ukrainian energy companies have responded to and managed challenges from external shocks in the aftermath of the war between Russia and Ukraine. The author would like to explore and find the main measures, strategies, and actions that the energy companies have implemented overcome or minimise the crisis. Additionally, as was found out in the overview of the Somosi & Sarolta (2012) study, the state and EU measures also play a massive role in the crisis management of the energy companies, impacting their structure and further actions. Accordingly, the author wants to explore the measures of the European Union

and Ukrainian states that were implemented to support the energy companies in Ukraine in the aftermath of the war. Also, the author would like to conduct in-depth research that considers not only the pre-crisis and crisis stages but also the post-crisis stage of the Ukrainian energy companies.

To achieve the goals, the author conducts interviews with the crisis managers of Ukrainian energy companies, since they have access to relevant information and knowledge in the field of crisis management as well as its implementation in the energy companies. Also, this approach allows for identifying all the crucial details and nuanced experiences that might be difficult to capture through quantitative methods. Thelwall and Nevill (2021) found out that the method of interview is not only the most prevalent qualitative approach for obtaining the data but also two times more widespread than the case studies approach since it focuses not only on the technical or equipment side but uses natural methods of people-focused approach. Accordingly, the interview approach relates to the qualitative method of the research, which was previously used by Esaulov (2024) to successfully fulfill the research gap in the study about the same area of crisis management in hospitality companies. This study demonstrates in-depth research on the topic related to crisis management, using the qualitative interview approach to fulfil the research gap through the examination of the questions for the interview participants and a detailed analysis of the answers. Figure 5 illustrates the scheme for choosing the methodology for the study.

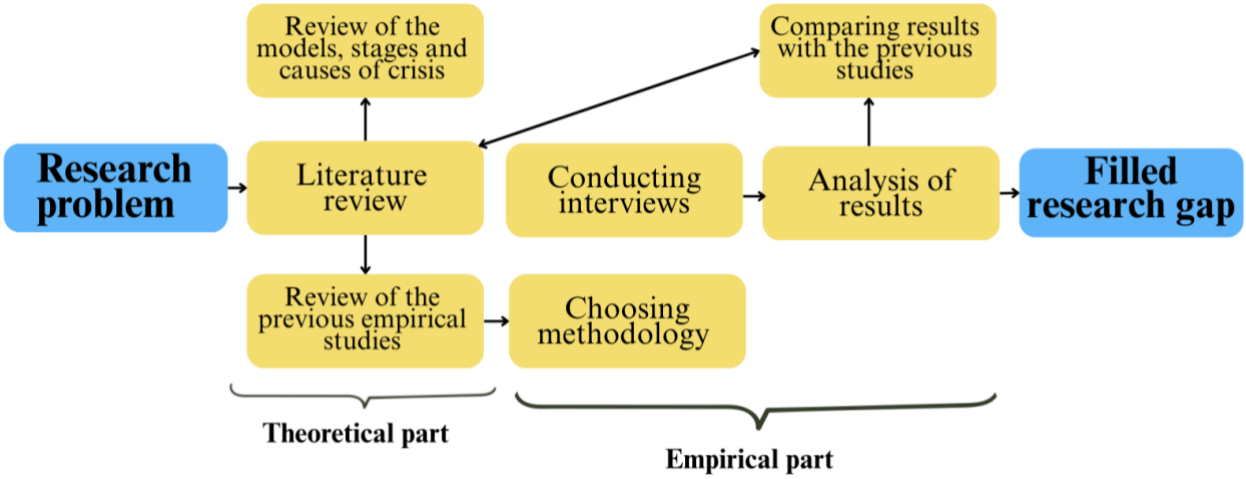

Figure 5. Methodology for the thesis

Source: Compiled by the author

In this study, potential participants for the interviews were identified through personal networks, news and LinkedIn. It is worth mentioning that not all the selected participants agreed to be interviewed since the information regarding crisis management in Ukrainian energy companies may be confidential, and it requires plenty of time to prepare the written

answer to questions for the interview. It is important to mention that since Ukraine is under martial law, the crisis managers of the Ukrainian energy companies agreed only to a written form of the interview and refused to sign the Consent Form because of considerations about the confidentiality and the law of the country in the period of military situation, respectively. Still, the author is fully aware of the importance of signing the Consent Form for the participants for the interviews and prepared the Participant Information Sheet, which is shown in Appendix B, as well as the Consent Form that guarantee confidentiality of interviewee responses, which is demonstrated in Appendix C. Since the written format of the interview may constrain opportunities for clarification, the author decided to agree in advance with each interviewee to ask additional follow-up questions, if the answers require the further specification to address the research objectives.

Questions for the representatives of the Ukrainian energy companies were created based on the theoretical part of the study regarding crisis management in energy companies. The list of questions and their connection to the theoretical background are demonstrated in Appendix A. Each question that was asked by the author reflects different aspects of crisis management under external shocks.

In the analysis of the results of the interviews, the author applies the deductive coding approach in combination with inductive development of categories and codes to analyse and discuss the qualitative outcomes. The thematic analysis was made according to the structure suggested by Braun and Clarke (2006). The structured process of analysing the interview data is demonstrated in Appendix D.

The themes were created based on the theoretical background. In contrast, the categories and codes were defined after the analysis of the transcripts of interviews with the crisis managers, using the inductive approach. The coding table with the themes, categories and codes is demonstrated in Appendix E.

The author wants to discuss steps to follow for the empirical part of the study to obtain all the necessary information and achieve the objectives. First of all, the author started searching and selecting the Ukrainian energy companies according to the energy generation and energy distribution types of activities. As soon as the companies were chosen, the author contacted the interviewees to decide on the format that may be suitable for both sides as well as start adopting and developing a set of questions appropriate for each participant. After the pilot interview with the first crisis manager was made, the author decided to make some changes to the set of questions by adding a follow-up question for the rest of the participants. Due to the reason author plans to research not only the measures that the Ukrainian energy

companies took in the aftermath of the Russo-Ukrainian war but also find out if the measures taken differ depending on the region, the additional follow-up questions were asked from the crisis managers and the results for different areas of Ukraine were placed in separate groups for further analysis.

The author conducted interviews with the four Ukrainian energy companies. The selected companies and their number are justified by their coverage and representativeness across the whole energy sector. The author wants to explore the differences in the crisis management measures that were taken to overcome the crisis depending on the regions. Due to the fact that Ukrhydroenergo and Ukrenergo are state-owned energy generation and energy distribution companies with wide operations across all 24 regions in Ukraine, the author has valuable insights into the companies' internal processes from a crisis management perspective for all regions. Moreover, DTEK and Elementum Energy are privately owned companies with a strategic focus on specific regions. DTEK operates in the energy generation and energy distribution type of activity, focusing more on Ukraine's eastern and central regions. In contrast, Elementum Energy operates in energy generation and focuses primarily on the southern and southeastern regions. Accordingly, the selected companies collectively ensure the diversity of activities and geographical coverage, reflecting on the thesis's objective by providing services for all 24 regions of Ukraine, which makes the number of interviews taken reliable, and the data obtained sufficient.

The list of companies that were interviewed, their type of activity, and the number of years that the company has been operating in Ukraine are described in Table 6.

Table 6

The list of companies, the type of activity of the companies, and the number of years operating in Ukraine.

Corporation / Company	Type of activity	Number of years operating
Ukrhydroenergo	Energy generation	30
Ukrenergo	Energy distribution	27
DTEK	Energy generation, energy distribution	20
Elementum Energy	Energy generation	6

Source: Compiled by the author

To introduce the information about the representatives of Ukrainian energy companies and familiarise the reader with the detailed information regarding each of the participants of the interview before the analysis of the results, the table with the information regarding the

position the participant holds, number of years working in the company, and current workplace are introduced in Table 7.

Table 7

The description of the sample

Participant	Number of years working in the company	Current workplace	Position held
P1	10+	DTEK	Crisis manager
P2	15	Ukrhydroenergo	Crisis manager
P3	8	Ukrenergo	Crisis manager
P4	C/I	Elementum Energy	Crisis manager

Notes. C/I stands for confidential information

Source: Compiled by the author

In the next subchapter, the author analyses the results received from the representatives of Ukrainian energy companies in order to understand what measures have been applied by Ukraine's energy companies in conditions of crisis in the aftermath of the Russo-Ukrainian war and how the representatives of the energy companies responded to the crisis.

2.2. Results of the interviews and discussion of crisis management measures

In this subchapter, the author demonstrates and discusses the respondents' answers to the questions that were aimed at finding out what measures have been applied by Ukraine's energy companies in conditions of crisis and shock in the aftermath of the Russo-Ukrainian war, considering the pre-crisis, crisis, preparation and post-crisis stages. As mentioned before, the author uses a deductive coding approach combined with an inductive development of categories and codes to structure the discussion of the results. Accordingly, the themes will be separated into categories to present the answers and discuss the outcomes.

Pre-crisis stage. Detection and monitoring measures. When asked about the instruments the Ukrainian energy companies use as risk detection and monitoring tools for potential external shocks, such as political instability or market fluctuations, crisis managers provided relevant information. Therefore, addressing the theory, each company uses a proactive approach, an essential management style, where the managers detect possible threats and crises daily (Vasickova, 2020).

According to the written response from Participant 1, the representative of DTEK energy company, the company uses a comprehensive approach for detection and monitoring by conducting market trend analysis and scenario planning. Also, it is essential to mention

that some companies rely not only on their internal capabilities but also on external ones, as noted by Participant 1:

"Our teams regularly collaborate with external consultants and analytical agencies to forecast possible shocks, such as changes in energy prices or political instability" (Participant 1).

The DTEK company is not alone in integrating external expertise. Similarly, others also adopt the externally-oriented instruments. As noted in the written response from Participant 2 from Ukrhydroenergo, the company actively cooperates with international financial organisations to assess potential threats. Moreover, the company applies the risk management system in the pre-crisis stage and reviews the economic trends. In contrast, Participant 3, the representative of Ukrenergo energy company, emphasised in their written response that they are not relying on external capabilities, and have a separately dedicated risk management unit that uses real-time systems to monitor the grid and analyse the macroeconomic data. Besides, Elementum Energy company and its crisis manager, Participant 4, outlined internal detection and monitoring processes of the company:

"Key events and news that may impact the company's operations are discussed at meetings of the executive board of directors. The company's Commercial Director analyses electricity market fluctuations on a daily basis, as these can affect electricity sales" (Participant 4).

A key finding from the written responses is the commonality among all four companies, as each of them conducts an analysis of the geopolitical risks to detect and monitor the potential threats. At the same time, there is a difference between companies' reliance on external and internal monitoring tools since not all companies expand the monitoring process externally. The outcomes suggest that external collaboration is relevant and can be applied not only in the crisis or post-crisis stages but also at the pre-crisis stage to detect global tendencies and gain an expert's support with the help of collaboration. This practical insight also supports the theoretical background. Anisimova et al. (2024) discussed that preliminary identification and monitoring of the financial conditions are not enough to analyse and identify the external and internal shocks, and stressed the fact that companies also must evaluate the underlying causes of negative tendencies, both internal and external.

To sum up, all the Ukrainian energy companies have a proactive approach in managing the crisis, incorporating the monitoring and detection instruments as a part of the pre-crisis stage. The shared experience among all of the companies was the geopolitical risk analysis, which helped to assess the warning signals and do scenario planning. However, the

respondents demonstrated different perspectives on the internal and external capabilities of cooperation. While the DTEK and Ukhydroenergo started an external cooperation with the international financial institutions and the consultants, Ukrenergo highlighted the dedicated internal risk management unit as well as real-time grid systems for the macroeconomic analysis. In the monitoring and detection stage, Elementum Energy also mentioned the internal capabilities by conducting daily meetings with the executive board of directors to discuss the key events that may impact the company and the analysis of the electricity market fluctuations by the commercial director.

Preparation stage. Preparedness and planning measures. As was found out, each Ukrainian energy company has detection and monitoring tools to predict the crisis. However, the full-scale Russian invasion of Ukraine was an unpredictable and unlikely situation for all. As one of the crisis managers responded:

"Before the full-scale aggression, like most enterprises in Ukraine, the company considered military risks to be unlikely" (Participant 2).

As the responses showed, even though each energy company did not consider the full-scale aggression to be possible, most of them already had an emergency plan and prepared action protocols. For example, as noted in the written response from Participant 4, representative of Elementum Energy, an action protocol was planned to be activated on the day the war began. While other companies had little or no experience dealing with military external shocks, the DTEK company has been operating in the conditions of war since 2014. According to the written response from Participant 1, even considering that the company already had a developed protocol in place, they were forced to adopt and quickly change to improve their preparedness actions to manage the crisis, because it was no longer applicable due to the scale of the war. In the case of Ukrenergo, the emergency preparedness plans for the possible Russo-Ukrainian war were already in place, but the war on that scale required immediate and urgent actions of the company:

"We rapidly reorganized operations, strengthened infrastructure protection, and began cooperating closely with the military" (Participant 3).

Moreover, according to the written response from Participant 3 from Ukrenergo, the company began close cooperation with the military, and as was found out by the author, it relates not only to their interests, but also to national security. Even though the company did not mention external cooperation in its pre-crisis stages, it has the ability to react rapidly to internal capacity, which is a relevant operational skill.

In contrast with other companies, the crisis manager of the Ukrhydroenergo company did not mention the existence of preparedness plan actions for the Russo-Ukrainian war in the written response. However, before the war, the company had already started the process of disconnection from the energy systems of Russia and Belarus, which positively impacted its future resilience to the crisis:

"The company actively participated in the process of disconnecting from the energy systems of Belarus and Russia, testing the autonomous operation of Ukraine's energy system" (Participant 2).

As a result, the disconnection from the energy systems also turned out to be a part of its preparedness, as it removed the connections with the aggressors preventively.

The author also decided to ask the crisis managers of the Ukrainian energy companies about the adoption of renewable energy sources or energy-saving technologies as part of their crisis preparation. Recalling the theoretical background, Gernego, Liakhova, and Dyba (2022) mentioned renewable energy and energy-saving technologies as having a positive impact on the energy sector, stating that they increase the profitability index and gain a high demand.

In the DTEK organisation's case, as noted in the written response from Participant 1, the company implemented renewable energy sources as a part of its crisis preparedness already before the war, while also mentioning the obstacles:

"Prior to the war, we actively invested in wind and solar energy. Although many facilities were damaged, we continue working on restoring and expanding green generation as part of our resilience strategy" (Participant 1).

As from the written responses from Participant 1 from DTEK company, the Participant 2 from Ukrhydroenergo, Participant 3 from Ukrenergo and Participant 4 from Elementum Energy companies also supported the fact that the companies started using renewable energy technologies, implying that it is a relevant technology that enhances the resilience of the company with the use of renewable energy methods. In the case of Elementum Energy and Ukrhydroenergy companies, crisis managers in the written responses noted the active development and adoption of the energy-saving technologies for the development of the energy storage technologies to ensure the stable operation of renewable energy sourses and allow the storage of excess electricity generated during the period of high production for the future use during peak demand times.

Overall, each of the companies emphasised the usage of renewable energy sources or energy-saving technologies as part of its crisis preparedness, since it not only increases the

profitability index but also creates storage for future use in crisis times, optimises production, and reduces losses.

Preparation stage. Financial stability measures. Another key aspect of the preparation stage is the role of financial indicators and stability within it. Focusing on the liquidity and profitability financial indicators for energy companies is more relevant than paying attention to the irrelevant external issues, such as climate change. (Florek et al., 2023) In the written response from Participant 2, representative of Ukrhydroenergo, the company considers the liquidity and profitability financial indicators as essential for the stable operation of the company and engaging the investors, since they are interconnected with the implementation of the strategic projects and raising funds for the possible reconstruction of the power plants. According to the written response from Participant 4, Elementum Energy company also agrees that maintaining the required level of funds is one of the core factors for resilience. Moreover, as was noted in the written response from Participant 1, DTEK's crisis manager, they perceive that indicator as essential for surviving a crisis and maintaining long-term development. At the same time, Ukrenergo's crisis manager states that the liquidity indicator is important for the quick response:

"Liquidity is critical for rapid response, and stable income is key for long-term planning" (Participant 3).

All the companies view financial indicators as instruments that should be maintained at a good level to be perceived by investors and international financial institutions as reliable indicators for financial agreements. Florek et al. (2023) stated that it is difficult to achieve stable financial conditions for energy-generating companies during the crisis. Nevertheless, the financial indicators should be at a sufficient level in the preparation stage to be a part of the strategy, which is supported by external funding sources.

In order to clarify the crisis prevention strategy and specific steps companies take to ensure resilience in terms of financial stability and energy security, the author asked the crisis managers to describe their strategies and actions related to it.

According to the written responses of Participant 2 from Ukrhydroenergo and Participant 1 from DTEK energy company, integration into the European energy market is a key component of their long-term resilience strategy. Also, as was noted in the written response from Participant 2, the representative of the Ukrhydroenergo company, the integration into the EU energy grid and the strengthening of cooperation with European regulators with the aim of energy security were mentioned. In contrast, as mentioned in the written responses from Participant 3 and Participant 1, the companies have a shared

perspective in their resilience strategy and energy security by also considering a decentralisation of the systems and grids as a priority. This corresponds to the Gernego, Liakhova, and Dyba (2022), who proposed a number of instruments that focus on the decentralisation of energy systems as a part of crisis preparation. Also, as was noted in the written response from Participant 1, Participant 3, and Participant 4, the importance of the actions related not only to energy security and decentralisation, but also to the financial reserves of the company. The resilience to future crises through decentralised energy systems can be viewed not only with the aim of safeguarding power plants but also as a risk management approach that can be applied to diversify the renewable energy portfolio. According to that, as noted in the written response from Participant 4, the company considers the distance from the possible military destruction and nearby front lines, with the aim of minimising the risks:

"The company optimises the renewable energy portfolio with a focus on wind generation and regions distant from the front lines to minimise the risks, considering it as a business model diversification from the risk management considerations" (Participant 4).

As the crisis managers' answers demonstrated, each company agreed on the importance of financial stability and energy security when preparing for a future crisis. However, the strategies and steps for maintaining resilience differ in focus and approach. Ukrhydroenergo and DTEK perceive integration into the EU energy market as a long-term perspective of resilience. Decentralisation of the energy system is a commonality that was found between DTEK and Ukrenergo, and it is important not only to ensure the protection of the infrastructure but also as an approach for financial stability. The DTEK and Ukrenergo view decentralisation only as a risk management tool to avoid the destruction of most of the energy systems and as an instrument for financial stability. However, Elementum Energy has a different perspective and approach regarding the necessity for optimisation of the renewable energy portfolio based on the decentralised wind generation that is far from the front line. Also, Elementum Energy, Ukrenergo, and DTEK companies consider having financial reserves to be a part of creating and maintaining financial stability in the face of external shocks. That is an essential commonality among energy companies because it draws attention to the necessity of attracting investors and collaborating with external financial institutions.

Preparation stage. Collaboration measures. The topicality of external collaboration for energy companies that was previously mentioned by crisis managers raised the author's interest from the perspective of managing or even preventing crises in the beginning stage. Moreover, it is an essential factor that has supportive external measures for the company,

which helps to have a proactive approach, rather than a reactive one. For example, Jong, Wouters, and Sterkx (2010) stated that the EU countries have a lack of collaboration and cohesion between each other, which directly impacts the rapidness of the crisis responses and their prevention. Nevertheless, the situation of the Russo-Ukrainian war became a real-world example of the cooperation of Ukrainian energy companies with the European Union.

All the respondents mentioned the cooperation with the Ukrainian government. As Somosi and Sarolta (2012) and Brinzaru et al. (2023) noted in their studies, they consider it essential that the government implements state crisis management measures for energy companies to prevent the economic crisis and stabilise the economy overall. For example, according to the written responses from Participant 2, Participant 4, Participant 3, and Participant 1, all companies stated that they actively work with the Ukrainian government, which demonstrates that the companies relied on government support not only before the full-scale invasion of Ukraine, but even before it. Moreover, as was confirmed by the energy companies, DTEK, Ukrenergo, and Ukrhydroenergo are connected to each other by being members of the United Energy System of Ukraine. For example, as was mentioned in the written response, Participant 3 outlined the cooperation with the DTEK energy company and international partners such as ENTSO-E.

At the same time, DTEK's crisis manager mentioned cooperation with Ukrenergo and other international organisations as the response to the question:

"We work closely with the Government of Ukraine, Ukrenergo, and international organizations such as the EBRD and USAID to coordinate efforts and attract resources" (Participant 1).

There is also a commonality in the way of cooperation between the companies, since the representative of the Ukrhydroenergo energy company stated the following:

"The company is actively cooperating with ENTSO-E, the European Investment Bank, the World Bank, the EBRD, the Ukrainian government, and partners from the United Energy System of Ukraine" (Participant 2).

Overall, the responses of DTEK, Ukrhydroenergo, and Ukrenergo confirmed the cooperation between the companies in the United Energy System of Ukraine. Moreover, it is the largest energy system in all of Europe that is interconnected across the regions (Ministry of Energy of Ukraine, n.d). DTEK and Elementum Energy companies are privately owned companies, which raises the question of why the DTEK company closely cooperates with the government and exists as a member of the United Energy System of Ukraine. The reason is that the Ministry of Ukraine adopted an "Electricity Market Law" that states the obligation of

all market participants to ensure the public interests while operating on the energy market, providing the services to support and enhance the generation capacity of Ukraine (Energy Community, 2020). At the same time, the Elementum Energy company signed a pilot agreement with the Ukrainian government to stabilise the energy prices, protect the country from price fluctuations, and minimise the volatility on the market (Elementum Energy, 2025). Accordingly, Elementum Energy is also under the "Electricity Market Law" and provides services for the public and the country's interests, while not being a part of the United Energy System of Ukraine.

To sum up, all the companies highlighted the collaboration with the government of Ukraine and international organisations, since it plays a crucial role in the crisis management strategies during the preparation stage. The example of the DTEK, Ukrenergo, and Ukrhydroenergo companies demonstrated the collaboration within the United Energy System of Ukraine, which remains the largest in Europe and helps all the members to strengthen their crisis management approaches in times of crisis. Also, the Elementum Energy company shows that not being a part of the United Energy System of Ukraine does not mean that the company does not collaborate with the government and brings no contribution to the energy sector in Ukraine, because its public, country, and international interest focus only enhances the strategy of cooperation within and outside the country.

Crisis stage. Measures for protection of infrastructure. As the study's objective, the author wants to explore what measures were taken by the Ukrainian energy companies to respond to the external shock caused by the Russo-Ukrainian war to mitigate the crisis. As the interviews showed, all the energy companies rapidly decided to implement the measures associated with the protection of infrastructure, since the Russian military actions towards Ukraine destroyed most of the energy facilities. For example, the crisis manager of Ukrhydroenergo answered how the measures for the protection of infrastructure were implemented in their company:

"At the beginning of the war, we responded to the threat of shelling by safeguarding the critical infrastructure facilities and ensuring the backup power sources and reserves" (Participant 2).

Having a backup power source is a measure mentioned in the written response by Participant 2 from Ukrhydroenergo and also noted in the written responses by Participant 1 from DTEK and Participant 3 from Ukrenergo energy companies. Having an essential reserve of power, even when the threat of infrastructure failure arises, is not only about the protection of the company's facilities. First of all, it demonstrates that all the companies are aware that

the protection of the infrastructure from their side, most of the time, is not possible, and they are ready to provide the services for the whole country even when there is a threat of destruction.

Moreover, as was mentioned in the written response by Participant 3 and Participant 1, the companies not only created a reserve of power, but also organized the emergency repair crews, which deal with the recovery of the energy sources, while the reserves are actively used to ensure the stability of energy in Ukraine.

According to the written response from Participant 3, the crisis manager of Ukrenergo, the company has cooperation with the Army forces of Ukraine before and during the crisis, since the beginning of the war, the company has donated more than 154 million UAH in the form of drones, military equipment, and other weapons to support the Ukrainian military forces. (Kushnikov, 2025). The enormous amount of money received and close cooperation with the military from the Ukrenergo supported the Army of Ukraine, ensured the protection of infrastructure and proved that the military external shock should be treated not only at the company level, but also on a country level, which is a good example of the crisis response for other companies. Therefore, cooperation with the military forces of Ukraine could also be viewed as a measure that would enhance the protection of Ukraine's critically important energy infrastructure.

Crisis stage. Measures for protection of personnel. The protection of human resources is also an essential measure that has been outlined by all energy companies. The emergency protocol of Elementum Energy company, which was developed as a preparation for a possible crisis, was activated on the day when the war started:

"We assisted and coordinated the evacuation of the employees who did not want to stay in the cities where the company's offices are located" (Participant 4).

According to the written responses from Participant 2 and Participant 1, companies also implemeted the safety measures towards its employees, by ensuring the maximum employee safety and implementing the remote work wherever possible.

Crisis stage. Measures for protection of cybersecurity. The Russo-Ukrainian war demonstrated that the Russian Federation tries to destroy all the relevant elements and structures of the energy companies, including cybersecurity. Hacking groups from Russia have enhanced cyberattacks against Ukrainian energy systems since the full invasion in 2022, and lately expanded the attacks to the rest of Europe, including the Baltic countries (Politico, 2025). Accordingly, the protection of companies' cybersecurity is one more factor that requires the measures taken by the energy companies to respond to the crisis. As was noted

by the Participant 4, the crisis manager of Elementum Energy, the company has decided to strengthen its cybersecurity since it is threatened by the military conflict. According to the written response from Participant 4, in the crisis stage Elementum Energy started an external cooperation with international experts to conduct cyber audits and improve the security of its information systems. Accordingly, the external consulting helps with the strategic analysis and provides valuable input for the companies, while improving their strategic planning (Miller, 2024).

In April 2022, the Cabinet of Ministers of Ukraine adopted a resolution of the cybersecurity procedures as an important aspect for Ukraine's safety by including the preparation, detection, analysis, and recovery stages for efficient response measures (Ioulianou, 2023). In accordance with that fact, the energy companies of the United Energy System of Ukraine, DTEK, Ukrhydroenergo, and Ukrenergo also strengthened their cybersecurity. The importance of it is was also proved by Yurii Shatylo, the Head of the Information and Cyber Security department at DTEK's company. Yurii stated that the example of Ukraine's enhanced cybersecurity is an important lesson for other countries, demonstrating that it is an important aspect of the resilience of the business and for the country, respectively (DTEK, 2025).

Crisis stages. Cost control measures. With the beginning of the full-scale invasion of Ukraine, energy companies decided to review their operational budgets and pay more attention to the distribution of finances during the crisis. As for example, according to the written responses, all the participants underlined the necessity of reassessment of the resources needed for the company and optimisation of the expenditures. As was noted in the written responses by Participant 1, Participant 2, Participant 3, and Participant 4, all the energy companies supported the measure of optimisation of the expenses. Also, according to the written response from a Participant 4, a representative of Elementum Energy company, they added the review of non-critical processes with the purpose of identifying the additional cost-reduction strategies and insurance mechanisms to protect investments from war-related risks. All the companies decided to reassess their priority projects. It can be explained by the fact that the companies implemented the comprehensive cost-control approach, since they faced financial instability and the need for the reconstruction of the energy facilities after the missile and drone attacks. A similar practice for the energy companies was mentioned by Florek et al. (2023), who stated that the energy companies should prioritise the cost control of energy and storage, because it reduces costs and helps to cope with the crisis.

The main commonality between the energy companies is that they are all seeking an

external funding. The cooperation with the financial institutions and the international banks in the preparation stage, which each energy company mentioned, became an important step towards the monetary support for them in the crisis stage. All the participants highlighted the need for grants, international donors, or loans, which indicated that the cost control measures are insufficient in the crisis stage, and external funding is urgently needed. All the information provided by the companies leads to the conclusion that internal and external funding is necessary for the preparation and the crisis stage, especially in wartime.

Post-crisis stage. Recovery measures. When the crisis managers were asked about the most effective measures that were implemented in the post-crisis stage to overcome it, almost all the respondents noted that they are still in it but are already actively planning for recovery after the crisis and have already implemented measures at the initial stage of overcoming it. For instance, as was noted in the written response by Participant 4, representative of Elementum Energy, the company actively diversifies its portfolio and expands to the trade market, by establishing an Energy Trade. Therefore, the main concentration of the company during the post-crisis strategy is on market decentralisation and the expansion of its capacity towards long-term stability and independence.

Similarly, in the written response of the representative of DTEK, Participant 1, the diversification was mentioned, but in terms of energy sources as a plan for recovery that is intended to enhance resilience. Also, the crisis manager added the principle, according to which the company will recover:

"We are still in the midst of the crisis, but we are already planning recovery based on the "build back better" principle by incorporating the modern technologies" (Participant 1).

The "Build Back Better" principle applies when disaster-affected communities need to build resilience through recovery and sustainable solutions (Mannakkara, Wilkinson, & Francis, 2014). This means that the recovery of the DTEK company will focus not only on the reconstruction of the existing infrastructure and decentralisation but also on modernisation and enhancement to build long-term resilience.

As the representative of DTEK, the crisis manager of Ukrenergo, Participant 3, also shared the plans of the modernisation:

"We are planning to modernize the grid, taking into account decentralization and increasing its resilience to attacks" (Participant 3).

Also, as was noted in the written response from Participant 4 from Elementum Energy and Participant 3 from Ukrenergo, the company considers that the rapid network restoration is an important measure to avoid the total collapse of the energy system. The same mind was

shared in the written response by the Participant 2, the crisis manager of Ukrhydroenergo, who also emphasised the relevance of restoring.

A common approach for the recovery strategy among companies is the external funding and cooperation, which are relevant for the post-crisis stage to both survive and stay resilient. For example, Ukrhydronergo concentrated on the government authorities to ensure the funding and reconstruction efforts. In contrast, Elementum Energy, in its post-crisis strategy, relies on the strategy of financial diversification and the international financial institutions. At the same time, DTEK company also considers the external cooperation with the international partners as a relevant tool for the recovery. The crisis manager of DTEK, Participant 1, explained the importance of it:

"Cooperation with international partners and the swift mobilization of internal resources allowed us to partially restore operations. These measures preserved our operational capacity" (Participant 1).

The strategic view of DTEK's recovery in the post-crisis stage was previously explained by the principle that the company adopted as an orientation towards which the external funding and investments should be used for the modernisation of the technologies.

Post-crisis stage. Lessons learned. Although the Ukrainian energy companies remain in the crisis stage, as was found out by the author, they have already started planning and implementing the measures towards recovery and long-term resilience. The author considers it essential to ask the representatives about what valuable lessons their company has learned from managing the crisis, because, as recalled in the literature, Jong, Wouters & Sterkx (2010) state that it is important to learn from past crises. While discussing the valuable lessons learned in the crisis, each of the crisis managers highlighted the flexibility and adaptation to the new challenges and tasks as the most relevant skills in the written responses. Moreover, the crisis manager of Elementum Energy mentioned the importance of having the team as a support and inspiration for the company in difficult times:

"Without retaining the team, it would have been impossible to adapt to new challenges. The team remains the main driver not only of survival but also of business development" (Participant 4).

As was previously found out, all companies always search for international support and specialists outside the company at each stage of the crisis. For instance, the crisis manager of Ukrhydroenergo added the importance of an effective corporate governance system as one more lesson learned during the crisis:

"The crisis also confirmed that the effective corporate governance system implemented in the company, aligned with OECD Principles, builds a positive image and trust in cooperation with international partners" (Participant 2).

Summing up, even considering the fact that the war is still going on and all the companies remain in the crisis stage, each of them already has a plan for recovery and has a vision for future resilience and recovery strategies. Elementum Energy company implements measures towards the reconstruction of power plants, entering the trade market, and reducing its reliance on the government purely, by engaging international funding and partners. DTEK company also shared the vision for rebuilding and modernising the technologies, while adopting the "build back better" principle. The Ukrenergo and Ukrhydroenergo rely mainly on the government's financial support, while also attracting external funds, in order to maintain the quick network restoration and the production of energy. All the energy companies derived the essential lessons from the crisis and became aware of the areas for improvement and the strengths they have. One of the most important lessons that was mentioned is the quick adaptation to the conditions of war and new challenges that arise with that external shock. Particularly, Elementum Energy company highlighted the importance of having a team that inspires, drives, and keeps the business on track, even in a war situation. Another valuable lesson that the Ukrainian energy companies realised is that having international partners is necessary to have strong support. Ukrhydroenergo's crisis manager even mentioned the importance of the OECD principles in the corporate government system, which built a great image for the company and made it reliable for the partners.

Regional differences. Southern and Eastern regions. The full-scale invasion of Russia expanded to each Eastern, Southern, Central, and Western part of Ukraine. However, the risk of missile attacks differs according to the location. Previously, the author discussed that the representativeness of the Ukrainian energy companies selected covers all the regions, so a full understanding of what the crisis management measures are applied to the crisis, according to the regional differences and the external shocks observed, can be obtained.

Since Ukrenergo, DTEK, and Ukrhydroenergo are interconnected within the Unified Energy System of Ukraine, the crisis management measures applied by the companies follow the same official protocol. The crisis manager of Ukrhydroenergo mentioned the connection on the regional level of the companies:

"The measures implemented on the different regional levels are the same, because Ukrhydroenergo, Ukrenergo, and DTEK are interconnected within the Unified Energy System of Ukraine" (Participant 2).

Moreover, the differences in the type of work the companies operate were refuted by the crisis manager of Ukrenergo. Nevertheless, a representative of the DTEK energy company outlined the peculiarity of the internal processes of the company:

"The differences exist only at the level of operational activities of regional companies within DTEK" (Participant 1).

According to the written response of Participant 1, the Southern and Eastern regions are the most challenging, requiring different crisis management measures compared to the rest of the territories, due to the constant shelling, active war actions, and equipment damage. Among the measures that the Southern and Eastern regions require, the representative mentioned the following:

- Rapid implementation of emergency repairs;
- Quick adoption of the supply logistics;
- Creation of the repair funds to immediately restore the functionality of the energy system;

The peculiarities of the Southern and Eastern regions force DTEK to react rapidly to constant external shock situations, and the list of measures discussed by the crisis manager proves the necessity of adapting to those conditions on the internal operational level of the company.

Regional differences. Central and Western regions. Mentioning the Central and Western regions of Ukraine, as was noted in the written response by the representative of DTEK almost the same measures that the company applies:

- Swift repair of the distribution networks;
- Quick repair of the electricity supply network;

Also, as mentioned in the written response of Participant 1 and Participant 4, the crisis response measures for the Central and Western parts of Ukraine are implemented by the central company and executed locally in accordance not only with the protocols, but also with the territorial location.

However, the representative of Elemetum Energy did not share the particulars in measures applied for the different regions of Ukraine, since, under the Ukrainian martial law, providing the information on the activities of energy companies that may cause negative consequences for the company is prohibited.

Summing up, Ukrainian energy companies such as DTEK, Ukrenergo, and Ukrhydroenergo are united in the Unified Energy System of Ukraine, which follows the same

official protocols and directly impacts crisis management approaches for the different regions of Ukraine. Nevertheless, the DTEK representative highlighted that there are differences at the operational level of activities of the regional companies in DTEK, mentioning the differences of the Southern, Eastern, Central, and Western regions' peculiarities. As was found out, the Southern and Eastern areas require quicker responses to emergency situations since they are the most challenging. In contrast, the crisis responses in Central and Western regions are executed in accordance with the protocols and instructions of the central company. All the crisis managers agreed that even though there is no significant difference, the decisions are mainly based on the situations and circumstances, and the proximity to the front line.

Results of the interviews. As a summary for the empirical part, the author wants to present the crisis management model, which demonstrates the key findings from the answers of the crisis managers of DTEK, Ukrenergo, Ukrhydroenergo, and Elementum Energy. Appendix F illustrates the measures that were applied by the Ukrainian energy companies in their pre-crisis, preparation, crisis, and post-crisis stages in the aftermath of the Russo-Ukrainian war.

Conclusion

The full-scale Russo-Ukrainian war demonstrated the importance of crisis management, which became a necessity for businesses in many industries, especially in the energy sector. On the day of 2022, 24 February, the Ukrainian energy companies faced uncertainty and destructive conditions that forced them to activate the measures of crisis management to respond rapidly to the external shocks associated with the military actions. Accordingly, this study contributed to exploring the measures applied by the Ukrainian energy companies in the pre-crisis, preparation, crisis, and post-crisis stages.

In the theoretical part of the study, the author reviewed different models of corporate crisis management, the stages each crisis corresponds to, and the classification of the crisis causes. Also, as the outcome of the theoretical part of the study, the author discussed and synthesised a crisis management model out of several models suggested by different authors to find the key stages of crisis management for the theoretical framework and demonstrated the difference between the proactive and reactive approaches. Moreover, the author synthesised the corporate crisis management measures applicable to each stage as the result of the overview of a previous studies.

In the empirical part of the study, the author conducted interviews with the crisis managers of the Ukrainian energy companies that operate in the energy generating and energy distribution types of activities, such as DTEK, Ukrhydroenergo, Ukrenergo, and

Elementum Energy companies. The purpose of the interviews was to find out what crisis management measures were applied by the Ukrainian energy companies in the pre-crisis, preparation, crisis, and post-crisis stages to predict, overcome, and recover from the crisis. As an outcome of the empirical part the author matched the results of the interviews with the theory and created a figure that corresponds to the pre-crisis, preparation, crisis and post-crisis measures applied. Also, for the author, it was interesting to understand the lessons learned during the crisis stage and the differences in the measures according to the regions of Ukraine.

As was found out, the Ukrainian energy companies demonstrated their preparedness by using the proactive crisis management approach. Considering that most of them were preparing in advance, by doing geopolitical monitoring and scenario planning, not all predicted the size of the Russian invasion. Hence, not every protocol created for emergency situations was applicable in war conditions. However, the Ukrainian energy companies rapidly adapted to the external shocks by relocating their employees, cooperating with the government, protecting the infrastructure, and using the financial and energy reserves. The author was impressed by the fact, that in the conditions of crisis and war, the representatives of energy companies shared the measures and principles that are already taken and used as transition to the post-crisis stage, emphasising the relevance of the personnel, international cooperation with the partners, digitalisation and building the resilience even remaining in the conditions of crisis. Accordingly, information provided by the representatives of the Ukrainian energy companies inspires and gives an understanding of the positive vision towards the future.

However, the author wants to mention, that despite the in-depth research she did on the topic of crisis management, the author was not able to cover all the aspects, because of the limitation associated with the martial law of Ukraine. It restricts the Ukrainian energy companies from sharing in-depth information about the processes within the companies and also impacted the sample size of the companies that were ready to take part in the interviews. The representatives of Ukrainian energy companies were provided with the consent form but refused to sign it from the perspective of martial law and confidentiality which also led to the written format of the interview. In future research, the author would like to explore the energy sector of Estonia, concentrating on the post-crisis measures that were applied in association with the disconnection from the Russian energy systems. Also, the author finds it interesting to compare the energy sectors of different countries that were disconnected from

the Russian energy systems and analyse the crisis management strategies they used to react to it.

Summarising the study, the author wants to mention that despite the difficult context of the Russo-Ukrainian war and the challenges the Ukrainian energy companies face, the preparation, adaptability, and cooperation turned out to be the strongest abilities to react to the crisis. As for the future, energy companies move towards innovative decisions and a reliable partnership with the European Union and integration into the EU energy system. Accordingly, the experience and the valuable insights brought out by the crisis managers are a great practical example of what measures should be implemented to build a resilient energy system not only in Ukraine but across all of Europe.

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Appendices

APPENDIX A.

Interview questions to the Ukrainian energy companies

Theme	Question	Source
Introduction	How long have you been in that position in the company?	Compiled by the author
	How long has the "corporation" you are working for been operating in Ukraine?	Compiled by the author
Pre-crisis stage	What tools or methods does your company use to monitor potential external shocks, such as political instability or market fluctuations, that could lead to a crisis?	Anisimova et al. (2024), mentioned early detection and monitoring of external and internal shocks.
	Was your company prepared for the impact of the 2022 Russian-Ukrainian war on the energy sector, using tools such as crisis monitoring, planning, and analysis of the weaknesses? Could you describe the strategies and measures that were used?	Compiled by the author based on Hough & Spillan (2005)
	What renewable energy or energy-saving technologies your company adopted as part of its crisis preparation?	Gernego, Liakhova & Dyba (2022) and Florek et al. (2023) mentioned positive impact of renewable energy adoption.
Crisis stage	What measures have you implemented during the crisis stage to manage and overcome it?	Figure 4. Corporate crisis management measures. Compiled by the author based on the Gernego, Liakhova & Dyba (2022), Somosi & Sarolta (2022), Florek et al. (2024), Anisimova et al. (2024)
	What specific cost-control measures will your company implement to reduce financial losses during the crisis?	Florek et al. (2023), mentioned cost management as a crisis strategy.
Post-crisis stage	What are the recovery measures has your company implemented or planned as part of transitioning into the post-crisis phase, and	Figure 4. Corporate crisis management measures. Compiled by the author based on the Gernego,

	what impact have they had or are expected to have?	Liakhova & Dyba (2022), Somosi & Sarolta (2022), Florek et al. (2024),
	What are the most valuable lessons your company has learned from managing the crisis in the energy company? How have these lessons changed your approach to crisis management?	Anisimova et al. (2024) Jong, Wouters & Sterkx (2010) mentioned the importance of learning from past crises.
Crisis prevention	What steps has your company taken to enhance its resilience to future crises, particularly in terms of financial stability and energy security?	Gernego, Liakhova & Dyba (2022), mentioned decentralization and innovation as a resilience to future crises.
	How important are financial indicators, such as liquidity and profitability, in your company's crisis prevention strategy?	Florek et al. (2023), mentioned the significance of financial monitoring during crises.
	Does your company collaborate with other energy firms, government or international organizations to manage or prevent the crisis?	Jong, Wouters & Sterkx (2010), mentioned the importance of cohesion in crisis management.
Regional differences in the crisis management	Is there a difference in the implementation and execution of crisis management policies/measures by company in the Eastern, Southern, Central, and Western regions of Ukraine?	Compiled by the author

Source: Compiled by the author

APPENDIX B.

Participant Information Sheet

CORPORATE CRISIS MANAGEMENT UNDER THE EXTERNAL SHOCKS: THE CASE OF UKRAINIAN ENERGY COMPANIES

My name is Sofia Popovska, I am a student at the University of Tartu in Estonia, Business Administration program. I am working on a Bachelor thesis that examines the measures that were used by Ukrainian energy companies to resolve the crisis caused by the Russian-Ukrainian war. The purpose of my research is to provide an understanding of corporate crisis management in conditions of military conflicts and to raise awareness of the situation in the energy sector of Ukraine.

I would be very grateful for the interview with you, which is valuable for this research. In the interview, I would like to get acquainted with questions about the practice of crisis management in your company. I attached a list of questions to this letter for review. By participating in the interview, you will be able to contribute to the clarification of crisis management measures in the energy sector. To confirm your participation, you will be asked to sign the consent form attached to this letter.

situation in the energy sector of Ukraine.

I guarantee the anonymity of you as an interview participant and employee of the company, the information you provide will not be distributed to third parties. All collected data will be stored confidentially and securely, names and identification information in the study will not be revealed. The results will be presented anonymously in published bachelor thesis.

If you have questions or doubts, please contact me.

Thank you for your attention!

Sincerely,

Sofia Popovska

Name and contact details:

Sofiia Popovska

Address: Estonia, Tartu, Raatuse 22

Email: sofiia.popovska@gmail.com

APPENDIX C.

Consent Form

CORPORATE CRISIS MANAGEMENT UNDER THE EXTERNAL SHOCKS: THE CASE OF UKRAINIAN ENERGY COMPANIES

Should you agree to participate in this study please read the statements below and if you agree to them, please sign the consent form.

- I understand what the Bachelor thesis is about and what the results will be used for.
- I understand that what the researcher finds out in this study may be shared with others.
- I am fully aware of what I will have to do and of the benefits of the study.
- I agree with the recording of the interview.
- I agree to answer the questions during the interview.
- I know that I am choosing to take part in the study and that I can stop taking part in the study at any stage.

I agree to the statements above and I consent to taking part in this research.

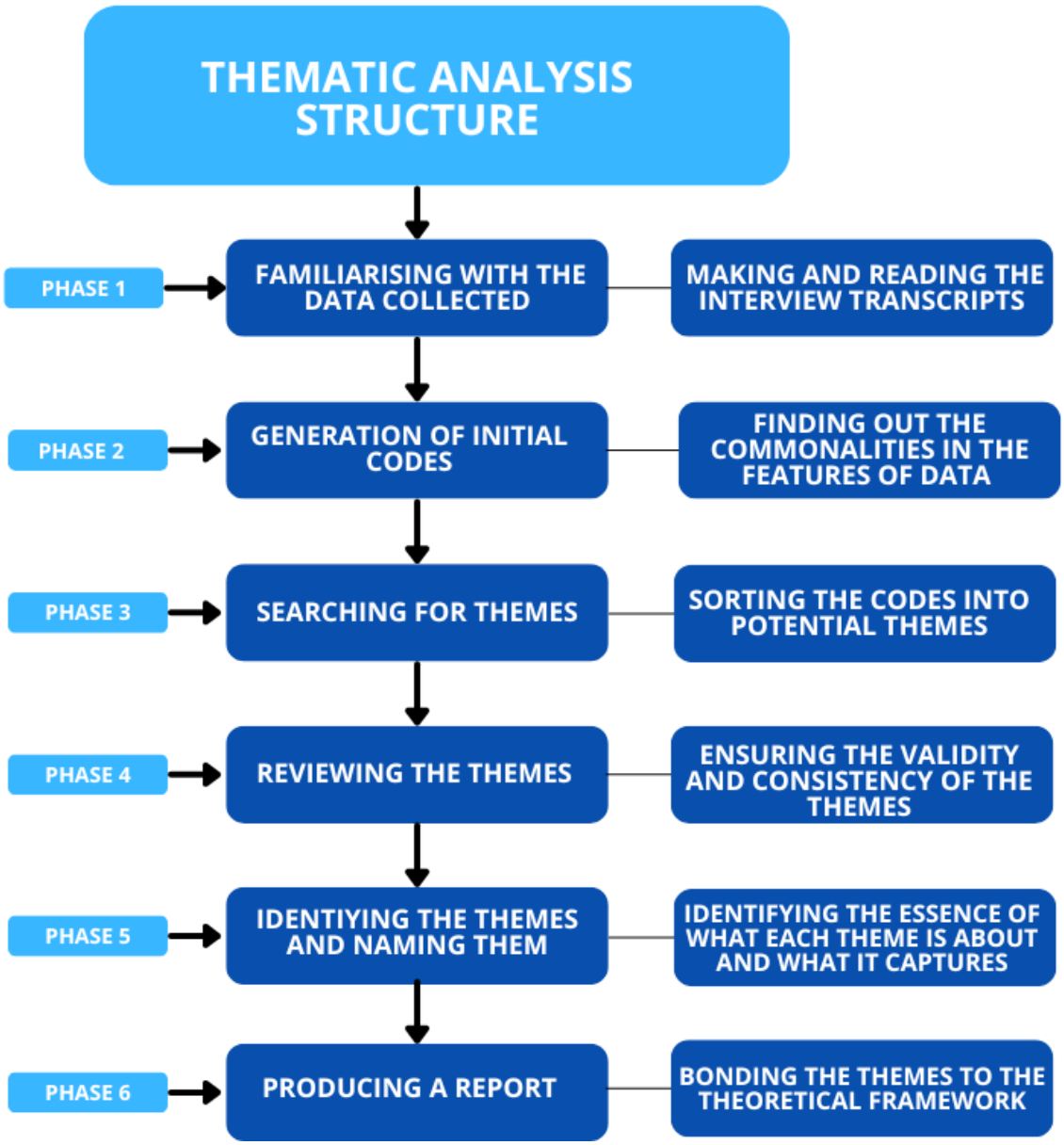
Name: (please print): _____

Signature: _____ Date: _____

Investigator's Signature _____ Date: _____

APPENDIX D.

Thematic analysis structure



Source: Compiled by the author based on Brain and Clarke (2006)

APPENDIX E.

Coding table

Theme	Category	Codes
Pre-crisis stage	Detection and monitoring measures	Geopolitical risk monitoring
		Real-time grid and market monitoring
		Scenario planning and forecasting
		Internal board-level review of external events
		Daily electricity market flucuations tracking
		Cooperation with the international financial institutions
		Collaboration with the external experts and consultants
Preparation stage	Preparedness and planning measures	Prepared protocol for emergency crisis situations
		Cooperation with the Army Forces of Ukraine
		Disconnection from the Russian and Belarussian energy systems
		Investment into solar, wind, hydro and other renewable sourses
	Financial stability measures	Integration into the EU energy market
		Creation of financial reserves
		Investment into the decentralised systems
		Optimisation of the renewable energy portfolio
	Collaboration measures	Cooperation with the Ukrainian government
		Cooperation with the global institutions and partners
		Membership in Unified Energy system of Ukraine
		International financial partnership
		Cooperation with the ENTSO-E
		Cooperation with the EBRD
		Cooperation with the USAID

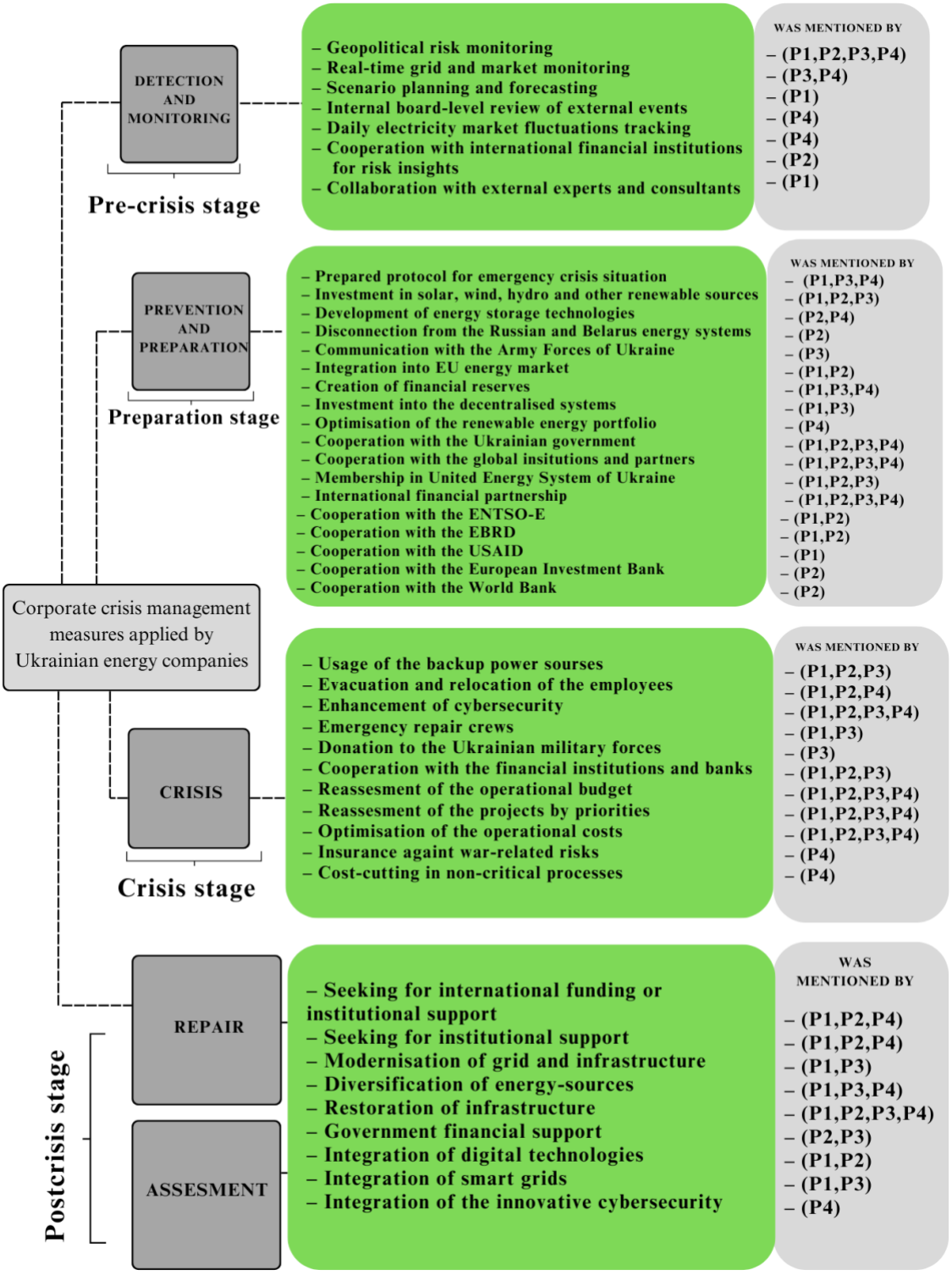
		Cooperation with the European Investment Bank
		Cooperation with the World Bank
Crisis stage	Measures for protection of infrastructure	Emergency repair crews
		Usage of backup power sourses
		Donation to the Ukrainian military forces
	Measures for protection of personnel	Evacuation of the employees
		Relocation of the employees
		Implementation of the remote work
	Measures for protection of cybersecurity	Enhancement of cybersecurity
		External cooperation with international experts to conduct cyber audits
		Resolution of the cybersecurity procedures
	Cost-control measures	Reassesment of the operational budget
		Reassesment of the projects by priorities
		Optimisation of the operational costs
		Insurance against war related risks
		Cost-cutting in non-critical processes
Post-crisis stage	Recovery measures	Modernisation of grid and infrastructure
		Seeking for international funding
		Seeking for institutional support
		Diversification of energy-sources
		Restoration of the infrastructure
		Government financial support
		Integration of the digital technologies
		Integration of the smart grids
		Integration of the innovative cybersecurity

	Lessons learned	Flexibility and adaptation skills Importance of effective corporate governance system Importance of having a team Importance of international support
Regional differences	Southern and Eastern regions	Rapid implementation of emergency repairs Quick adoption of the supply logistics Creation of the repair funds to immediately restore the functionality of the energy system
	Central and Western regions	Swift repair of the distribution networks Quick repair of the electricity supply network

Source: Compiled by the author

APPENDIX F.

Results of the interviews



Source: Compiled by the author based on the the Mitroff, Shrivastava, and Udwadia (1987), Jaques (2007), Hough & Spillan (2005), answers of Participant 1, Participant 2, Participant 3 and Participant 4.

Resüme

Täiemahuline Vene-Ukraina sõda tõi selgelt esile kriisijuhtimise olulisuse, mis muutus vältimatuks vajaduseks paljude tööstusharude ettevõtetele, eriti energeetikasektoris. 2022. aasta 24. veebruaril seisid Ukraina energeetikafirmad silmitsi ebakindluse ja hävitavate tingimustega, mis sundisid neid kiiresti rakendama kriisijuhtimise meetmeid, et reageerida sõjalise tegevusega kaasnevatele välistele šokkidele. Seetõttu aitas käesolev uuring uurida Ukraina energeetikafirmade poolt kasutusele võetud meetmeid kriisieelses, ettevalmistus-, kriisi- ja kriisijärgses etapis.

Uuringu teoreetilises osas vaatas autor läbi erinevaid korporatiivse kriisijuhtimise mu deleid, iga kriisi faase ja kriiside põhjuste klassifikatsiooni. Samuti arendas autor teoreetilise osa tulemusena välja sünteesitud kriisijuhtimise mudeli, ühendades erinevate autorite pakutud mudeleid, et leida kriisijuhtimise peamised etapid teoreetilise raamistikuna ning näidata proa ktiivse ja reaktiivse lähenemise erinevust. Uuringu empiirilises osas viis autor läbi intervjuud Ukraina energeetikafirmade kriisijuhtidega, kes tegutsevad energia tootmise ja jaotamise vald konnas, näiteks DTEK, Ukrhydroenergo, Ukrenergo ja Elementum Energy. Intervjuude eesm ärk oli välja selgitada, milliseid kriisijuhtimise meetmeid rakendasid Ukraina energeetikafirm ad kriisieelses, ettevalmistus, kriisi- ja kriisijärgses etapis, et kriisi ennustada, sellest üle saad a ja taastuda. Empiirilise osa tulemusena sobitas autor intervjuude tulemused teooriaga ning l õi skeemi, mis kirjeldab eri etappides rakendatud meetmeid. Samuti pakkus autorile huvi mõi sta kriisifaasis saadud õppetunde ja erinevusi rakendatud meetmetes Ukraina erinevates piirk ondades.

Selgus, et Ukraina energeetikafirmad demonstreerisid oma valmisolekut, rakendades proaktiivset kriisijuhtimise lähenemist. Enamik neist valmistus ette juba varakult, tehes geopo liitilist seiret ja stsenaariumide planeerimist, kuigi mitte kõik ei suutnud ette näha Venemaa si ssetungi ulatust. Seetõttu ei olnud kõik hädaolukordadeks koostatud protokollid sõjaolukorras rakendatavad. Siiski suutsid Ukraina energeetikafirmad kiiresti kohaneda väliste šokkidega, kolides ümber töötajaid, tehes koostööd valitsusega, kaitstes infrastruktuuri ning kasutades ra halisi ja energiaalaseid reserve. Autorit avaldas muljet, et kriisi ja sõjaolukorras jagasid energ eetikafirmade esindajad meetmeid ja põhimõtteid, mida juba kasutatakse üleminekuks kriisijä rgsesse etappi, rõhutades personali olulisust, rahvusvahelist koostööd partneritega, digitalisee rimist ja vastupidavuse ülesehitamist ka kriisiolukorras.

Samuti soovib autor märkida, et hoolimata põhjalikust uurimistööst kriisijuhtimise tee mal, ei olnud võimalik käsitleda kõiki aspekte, kuna Ukraina sõjaseisukord kehtestab piirang uid. See piirab Ukraina energeetikafirmade võimalust jagada üksikasjalikku teavet ettevõtte si

seste protsesside kohta ning mõjutas ka intervjuudeks kättesaadavate ettevõtete valimit. Ukrai na energeetikafirmade esindajatele pakuti allkirjastamiseks nõusolekuvormi, kuid nad keeldu sid selle allkirjastamisest sõjaseisukorra ja konfidentsiaalsuse kaalutlustel, mistõttu viidi inter vjuud läbi kirjalikus vormis. Tulevastes uuringutes soovib autor uurida Eesti energeetikasekto rit, keskendudes kriisijärgsetele meetmetele, mis rakendati seoses Venemaa energiasüsteemid est lahkumisega. Samuti peab autor huvitavaks võrrelda nende riikide energeetikasektoreid, k es samuti Venemaa energiasüsteemidest lahti ühendasid, ning analüüsida kriisijuhtimise strat eegiaid, mida nad selleks kasutasid.

Uuringu kokkuvõttes soovib autor märkida, et hoolimata Vene-
Ukraina sõja keerulisest kontekstist ja Ukraina energeetikafirmade ees seisvatest väljakutsete st, osutusid ettevalmistus, kohanemisvõime ja koostöö kõige tugevamateks võimeteks kriisile reageerimisel. Tulevikku vaadates liiguvad energeetikafirmad innovaatiliste lahenduste ja usa ldusväärse partnerluse poole Euroopa Liiduga ning lõimumise suunas ELi energiasüsteemiga. Seega on kriisijuhtide kogemused ja väärtuslikud tähelepanekud suurepärane praktiline näide sellest, milliseid meetmeid tuleks rakendada vastupidava energiasüsteemi loomiseks mitte ai nult Ukrainas, vaid kogu Euroopas.

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Lecturer Mariia Chebotareva

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Sofiia Popovska

06/05/2025