Abstract. This article explores the concept of organizational resilience in higher education institutions, which can enable them to deal with unexpected events, recover from crises, and contribute to future success. Despite the growing academic interest in resilience, there is a lack of consensus on its definition and how it works, highlighting the need for additional knowledge on the capabilities and conditions that make up sustainability. The authors contribute to this field by conceptualizing resilience as a meta capacity and breaking it down into three stages: adaptation, transformation, and anticipation. They also identify core capabilities, including strategic vision, operational flexibility, and a supportive culture, that form organizational resilience.

Drawing on process research, the authors provide an overview of the relationship and interaction between the different stages of resilience, as well as the main prerequisites and driving forces. They also propose four tools based on an analysis of European normative-legal acts that can restore stability in crisis situations. This study advances understanding of the complex and built-in construct of organizational resilience and offers insights that can inform future empirical work in this area. The article underscores the significance of cultivating resilience capabilities in higher education institutions, particularly during times of turbulence and ambiguity, to guarantee their enduring.

Keywords: university resilience, crisis situation, war, intervention, public administration

I. INTRODUCTION

The sustenance of global academic sustainability and scientific advancement hinges upon the resilience of higher education and research systems amidst crisis scenarios. Resilience emerges as a linchpin in safeguarding the viability of higher education against diverse contemporary challenges such as the COVID-19 pandemic, emergencies, and acts of terrorism. While European universities have demonstrated remarkable adaptability in challenging environments, their existence during wartime conditions remains precarious. Against the backdrop of a globalized world, the exigency to cultivate resilience has surged, accentuated by the profound repercussions of the COVID-19 pandemic and ongoing geopolitical tensions, exemplified by the Russian intervention in Ukraine [1].

As of the end of 2021, Ukraine's national resilience was characterized and described as a delicate mosaic with various gaps and sociopsychological and socio-political weaknesses, strengths, and other peculiarities [2]. The launch of the invasion into Ukraine provoked the most serious military conflict in Europe since 1945 [3].

The military intervention of the Russian Federation in Ukraine became the reaction catalyst for the operational organization of various aid in European countries [4]. The Ukrainian case showed that the recover resilience is difficult process and implemented due to international and national stakeholders.
Nevertheless, the process of resilience recovery of the Ukrainian research and education area now is realizing in the military conditions. It should be note, that universities are unlikely return to the pre-war status quo, consequently the situation in Ukraine research and education area will change the common approaches of ensuring resilience in European research and education area, bring the new approach in the recover resilience matter.

Simultaneously, the unsatisfactory level of awareness of the representatives of universities, scientific institutions, and other stakeholders about the types, relevant facilities for adaptation and management in challenging environments can negatively impact on the sustainability and continuity of educational and scientific activities.

In the chapters below the authors scrutinize the landscape of organizational resilience within Ukrainian universities amidst military intervention, aiming to unveil strategies for bolstering their endurance and adaptability.

II.MATERIALS AND METHODS

In their exploration of various methods for university operations during emergencies, particularly in military operations, the authors embark on a theoretical journey, shedding light on commonly known measures.

The methodology adopted by the authors involves an extensive review of existing literature, spanning scholarly books, scientific journals, and official legal documents and publications, including those from the European Union. This approach lays a solid foundation for a theoretical inquiry and contextual framework to delve into the process of bolstering resilience amidst the challenging landscape of the Russian invasion and intervention in Ukraine.

To comprehensively navigate the dynamics of resilience-building amid the Russian intervention, the authors employ a spectrum of established scientific techniques, each meticulously chosen to facilitate a nuanced understanding within the constraints of the invasion and intervention. These techniques include:

Analytical Method: This method serves as a powerful tool for dissecting complex concepts, theories, and empirical data related to resilience. By identifying underlying patterns and insights, the authors aim to better navigate the intricacies of the Russian intervention.

Comparative Method: Drawing comparisons between different cases, contexts, or practices allows the authors to elucidate commonalities, disparities, and trends, thereby enhancing their understanding amidst the Russian intervention.

Methods of Interpreting Legal Norms: Scrutinizing legal documents and publications provides invaluable insights into the legal frameworks influencing and guiding resilience initiatives within the higher education landscape post-intervention. This is crucial for understanding the regulatory context within which universities operate during such crises.

Historical Method: By tracing the evolution of resilience-building strategies over time, the authors gain a historical perspective on how higher education institutions have adapted to challenges amidst the intervention. This historical context is essential for informing present-day strategies.

Induction and Deduction Methods: By employing both inductive and deductive reasoning, the authors can infer broader insights about resilience-building within the context of the Russian intervention based on specific instances and empirical evidence. This allows them to bridge theory with real-world observations.

By amalgamating these scientific techniques, the authors aim to establish a robust and systematic approach to comprehend the intricate process of fostering resilience amidst the challenges posed by the Russian intervention in Ukraine. This convergence of methods facilitates a comprehensive exploration of strategies, mechanisms, and adaptations of higher education institutions as they navigate the unique challenges arising from the intervention.

III.RESULTS AND DISCUSSION

Resilience Priority in EU and NATO: Strategic Compass 2022 and New NATO Strategic Concept Analysis. From the authors’ perspective, resilience emerges as a paramount priority for both the EU and NATO, as underscored in the Strategic Compass 2022 and the new NATO Strategic Concept. The Strategic Compass emphasizes the imperative to boost research, technology development, and innovation throughout the EU, reducing strategic dependencies in critical technologies and value chains for security and defense, as proposed by the European Commission [5]. This resonates with the authors’ understanding of the importance of technological advancement and innovation in bolstering resilience in the face of contemporary security challenges.

Similarly, the new NATO Strategic Concept stresses the criticality of ensuring national and collective resilience to safeguard nations, societies, and shared values. The integration of technological innovation, climate change, human security, and the Women, Peace, and Security agenda underscores the cross-cutting importance of resilience [6]. The authors view this holistic approach to resilience as essential for addressing multifaceted security threats effectively.

The EU’s comprehensive measures aimed at ensuring sustainability across various sectors, including higher education, demonstrate the relevance of resilience-building initiatives. Additionally, the alignment of resilience goals with the Sustainable Development Goals (SDGs) emphasizes the interconnectedness of sustainability and resilience efforts [7]. The authors believe that embedding resilience within broader sustainability frameworks is crucial for long-term effectiveness.


According to the provisions of Strategic Compass 2022, a more hostile security environment requires a significant step forward and increased capacity and readiness for action, strengthening resilience and ensuring solidarity and mutual assistance [5]. In this context, the strengthening of individual mutually beneficial partnerships, when there is a common commitment to an integrated approach to responding to conflicts and crises, contributes to the development of potential, resilience, and also meets the interests of the EU.

The Outcome Document of the Ukraine Recovery Conference URC2022 «Lugano Declaration» emphasise the recovery process has to contribute to accelerating, deepening, broadening and achieving Ukraine’s reform efforts and resilience in line with Ukraine’s European path [14].

In conclusion, this legislative framework underscores the pivotal role of ensuring the sustainability of universities in maintaining stable educational and research activities amidst the intervention. From the authors' standpoint, universities play a crucial role not only in disseminating knowledge but also in fostering resilience and contributing to societal stability and progress.

Resilience Restoration in Ukrainian Universities: Strategies for Recovery and Development. According to the authors, the restoration of resilience within the education and research sector entails the implementation of a range of measures aimed at progressively adapting higher education institutions to crisis situations. These measures are designed to facilitate the resumption of educational and research activities.

A unique practice to support the resilience of Ukrainian universities is the development of numerous programmes at different levels. The authors call them tools or forms of resilience restoration and consider them as a set of actions of specific actors aimed at restoring the educational and research activities of higher education institutions. Moreover, these forms of support exist both at the national and international levels and involve a wide range of stakeholders: public authorities, businesses, university community, private sector, etc.

Thus, the tools for restoring the resilience of Ukrainian universities in crisis situations are quite different and can be divided into 4 large groups: 1) financial support for universities; 2) support for scientists and students who were forced to leave Ukraine; 3) digital transformation of the Ukrainian education and science system; 4) deepening cooperation through the instrument of mentoring to restore active educational and research work in the war and post-war periods [15].

Let's take a closer look at financial support. Substantial global financial efforts will be needed to rebuild Ukrainian universities after the war. The EU is currently making a significant contribution to the revival of Ukrainian universities, but in the medium and long term, not only financial but also human resources will be needed to fully restore them.

On 5 April 2023, the Government of Ukraine, members of the G7 Steering Committee and representatives of international financial institutions discussed during the second meeting of the Multi-Agency Donor Coordination Platform the best way to coordinate economic support for Ukraine's immediate financing needs and future efforts for Ukraine's economic recovery and reconstruction. The Government of Ukraine presented its budgetary needs for 2023, estimated at $39.9 billion [16].

This budget includes estimates of expenditures for the social, production, infrastructure and cross-cutting sectors that require prompt financial assistance. In the social sector, education and science are singled out as a separate sector.

The document Ukraine Rapid Damage and Needs Assessment: February 2022 - February 2023 (RDNA2), jointly prepared by a World Bank team, the Government of Ukraine, European Union agencies and the United Nations, estimates that the war has caused at least US$4.4 billion in damage to educational institutions across Ukraine. As of 24 February 2023, at least 2,772 educational facilities were partially damaged and 454 were destroyed, representing about 10 per cent of all educational facilities (at all levels of education) in Ukraine (World Bank, 2023). Educational institutions in eastern Ukraine are considered to be the most affected, with a damage rate of 64%. Thus, Ukraine's education sector has suffered at least US$0.8 billion in losses [16].

In a crisis, financial management mechanisms are an objective necessity to ensure the sustainability, quality and continuity of higher education institutions and the proper functioning of the education system as a whole. Suspension of educational and research activities is unacceptable, as it is a matter of national and European security.

An equally important task is to restore the educational process and ensure the quality of educational services in a crisis. According to the National Recovery Plan of Ukraine, synchronisation with the European Union's education and research area is a strategic step to improve the quality of education and science. At the same time, the reconstruction and provision of safe access to education and quality assurance of the educational process has been identified as a national priority in the war and post-war periods [17]. It is important that Ukraine continues pre-war reforms aimed at improving the equity, sustainability and efficiency of education.

Empowering Ukraine's Education and Science: Challenges and Pathways to Collaboration. The implementation of key measures to restore the education and science sector necessarily includes support for scientists and students who were forced to leave Ukraine. We can confidently say that it was with the assistance of the EU that the promptest measures were taken to support Ukrainian scientists. In order to provide guarantees for displaced researchers, specialists and students from Ukraine, a number of regulatory and advisory acts were adopted, namely: Guidelines on fast-track recognition of...
Ukrainian academic qualifications [18]. Communication from the Commission on Guidance for access to the labour market, vocational education and training and adult learning of people fleeing Russia’s war of aggression against Ukraine [19], EURYDICE report: Supporting refugee learners from Ukraine in higher education in Europe 2022 [20]. Lifelong guidance policy for Ukrainian refugees in the EU etc [21].

At least 2 million children have left Ukraine, in addition to a significant number of educators and researchers, and many are expected to remain abroad in other countries in Europe, contributing to brain drain and future demographic challenges for the country.

Displaced researchers and specialists from Ukraine face a number of factors while abroad: unemployment, employment procedures in another country, confirmation of qualifications, transition to remote work, language requirements, lack of funding for research, and deterioration of psycho-emotional state.

The bright side is that we can note the existence of special platforms for researchers from Ukraine that offer participation in ongoing and innovative projects funded by the European Union. At the same time, special scholarship programmes for researchers from Ukraine have been launched.

The largest project is the launch of the European Commission's ERA4Ukraine portal "European Research Area for Ukraine" [22], a place to provide information and support services for Ukrainian researchers temporarily displaced from Ukraine. MSCA4Ukraine is a new special scholarship scheme to support displaced researchers from Ukraine. This support will allow displaced researchers to continue their work in academic and non-academic organisations in EU Member States and Horizon Europe Associated Countries, while maintaining links with the research and innovation communities in Ukraine [23].

Preserving Ukraine's scientific potential to stimulate growth and limit the brain drain is the main goal of such projects. In the long run, this will have a positive impact on internationalisation and accelerate the process of joining the European education and research sectors. In addition, this forced outflow of researchers will contribute to the development of university research bases, research centres with foreign universities, and academic mobility programmes.

The digital transformation of universities is a factor that also affects the sustainability of universities. Timely investment in the creation of an effective digital system of educational institutions will ensure readiness to respond to any crisis situations - emergency, military, hybrid, epidemiological, climate, etc. Innovations in the development of digital transformation of universities may include the introduction of data-driven decision-making, the use of technology to improve access to education, and the development of support programmes for students at risk.

When universities were forced to close their campuses and switch to remote learning due to the Russian invasion, those that had already embraced digital transformation were better equipped to adapt and continue their operations. In this context, the concept of force majeure, which refers to unforeseeable circumstances beyond human control, has become increasingly relevant to universities. In order to adapt to force majeure situations, universities need to have a robust digital infrastructure in place. This includes everything from online learning platforms to communication tools and data analytics systems.

Here are some ways that universities can use digital transformation to adapt to force majeure:

Online learning: Universities can use digital tools to deliver online courses and lectures, allowing students to continue their studies remotely. This includes the use of video conferencing, online collaboration tools, and other e-learning platforms.

Virtual campus tours: Universities can create virtual campus tours using 360-degree cameras and other digital tools, allowing prospective students to explore the campus from afar.

Remote research: Universities can provide remote access to research materials and data, allowing researchers to continue their work from home.

Digital communication: Universities can use digital tools such as email, chat platforms, and social media to communicate with students, faculty, and staff, keeping them informed about important updates and changes.

Data analytics: Universities can use data analytics to track student performance, monitor enrolment trends, and predict future outcomes. This can help universities make informed decisions during times of crisis.

Overall, digital transformation is essential for universities that want to adapt to force majeure situations. By embracing digital tools and practices, universities can continue to deliver high-quality education and research, even in the face of unforeseeable circumstances.

The war has demonstrated the urgent need to use digital technologies in the education system, which allows access to education to remain uninterrupted. The need for a high level of digital capacity and professional training of academic and research staff has become a challenge for Ukraine. Therefore, the education and science system needs fundamental digital changes to keep pace with global trends and help each person successfully realise their potential.

Very illustrative in terms of restoring the sustainability of universities are measures to deepen cooperation through the instrument of mentoring with the help of the Twinning Project, developed specifically for the Ukrainian case. The UK-Ukraine Twinning Initiative project is an institution-to-institution collaboration model coordinated by Cormack Consultancy Group and the President’s Fund of Ukraine for Education, Science, and Sports with the support of Universities UK International. The initiative allows universities around the world to support their Ukrainian counterparts in real, concrete ways. The main drive behind Twinning is to keep the integrity of the Ukrainian higher education system, prevent brain drain, and help universities in Ukraine to come out of the crisis with added resources, skills, and robust international experience. Twinning entails a long-
term commitment (a minimum of 5 years) between participating institutions to foster sustainable and mutually beneficial partnerships [24]. A total of 71 higher education institutions took part in the Twinning project.

As an example, we can cite the cooperation between the National Aerospace University "Kharkiv Aviation Institute" and the University of Bristol (UK). With the support of the Twinning Office, meetings were held with the leadership of the University of Bristol, a Memorandum of Cooperation was signed, English language courses were launched for KhAI employees, project activities were launched, and joint educational and scientific events were held.

I. CONCLUSIONS

In general, resilience measures in education include many support tools that influence the ability of the education system to adapt to changing circumstances, equipping teachers and students with the necessary skills to adapt and overcome challenges, building the capacity of education professionals, and implementing evidence-based programmes and policies that promote resilience.

An academic institution with high foresight has a metaphorical toolkit at its disposal that can be used in the face of disruptive events that threaten academic continuity.

In order to minimize the impact of force majeure events on research, universities need to have robust contingency plans in place that include strategies for research continuity and support. In this article, we have explored some key strategies that universities can use to support research continuity in times of crisis.

Based on the results of the study, the authors identify the following main areas of sustainability:

Communication and collaboration tools: Communication and collaboration are critical to the success of research projects, but in times of crisis, it can be challenging to maintain regular contact with research teams. Universities can use digital communication tools such as video conferencing, chat platforms, and project management software to facilitate collaboration and ensure that research teams stay connected.

Funding support: During times of crisis, funding for research projects can be impacted due to budget cuts or delays. Universities can provide additional funding support for ongoing research projects, redirect funds to critical areas, and support grant applications that focus on addressing the challenges presented by the crisis.

Alternative research approaches: When access to physical resources is limited, researchers may need to explore alternative approaches to their research. Universities can support this by providing training and resources to help researchers adapt to new methods, technologies, and approaches.

Mental health and wellness support: Research can be a stressful and demanding activity, and the added pressure of a force majeure event can exacerbate these challenges. Universities can provide mental health and wellness support to researchers to help them manage stress and maintain their wellbeing during challenging times.

In conclusion, force majeure events can disrupt research activities, but with careful planning and preparation, universities can mitigate the impact and support research continuity. By leveraging digital technologies, providing funding and support, and prioritizing mental health and wellness, universities can ensure that research continues to thrive in the face of unexpected challenges.

According to the authors, higher education institutions in Ukraine are facing various challenges that call for the creation of a Center for Restoring the Resilience of Universities. The Center would serve as a platform for developing and implementing policies and strategies to enhance the resilience of universities. To achieve this, the authors provide several recommendations.

Firstly, the Center should be established with a multidisciplinary team of experts in fields such as education, psychology, management, and public policy. This will ensure that the Center has the necessary expertise to develop effective resilience strategies for universities.

Secondly, the Center should develop a framework for resilience that outlines the key components necessary for universities to build resilience. This includes the development of adaptive strategies, the identification of risk factors, and the promotion of a culture of resilience.

Thirdly, the Center should foster collaboration among universities, government agencies, and other stakeholders to promote a collective approach to building resilience. Collaboration will enable universities to share best practices and resources and to learn from each other's experiences.

Fourthly, the Center should provide training and resources to universities to help them develop and implement resilience strategies. This will ensure that universities have the necessary skills and knowledge to build their resilience and respond effectively to challenges.

Fifthly, the Center should conduct research to identify emerging threats and opportunities and to evaluate the effectiveness of resilience strategies. This will enable universities to stay up-to-date with the latest trends and best practices in building resilience.

Finally, the Center should advocate for policy change at the national level to promote the resilience of universities and to address structural challenges that impede their resilience. This will require engagement with policymakers and other stakeholders to promote the importance of building resilience in the higher education sector.

The authors believe that by implementing these recommendations, the Center for Restoring the Resilience of Universities in Ukraine can play a vital role in enhancing the resilience of universities and contributing to the overall development of the higher education sector in Ukraine.
II. REFERENCES


