Journal of Defense Resources Management

BRASOV - ROMANIA

Journal of Defense Resources Management (JoDRM) is currently indexed in the following prestigious international databases and catalogs:

- Ulrich's Global Serials Directory
- Directory of Open Access Journals (DOAJ)
- EBSCO - International Security & Counter-Terrorism Reference Center
- ProQuest
- Central and Eastern European Online Library (C.E.E.O.L.)
- Cabell's Directory of Publishing Opportunities
- Cengage GALE
- ERIH PLUS (European Reference Index for the Humanities and Social Sciences)
- WORLDCAT
- Karlsruhe Virtual Catalog (KVK)
- Norwegian Register for Scientific Journals, Series and Publishers
- Sherpa Romeo

REGIONAL DEPARTMENT OF
DEFENSE RESOURCES MANAGEMENT STUDIES

The Regional Department of Defense Resources Management Studies issues this journal twice a year. Its goal is to disseminate the results of the theoretical and practical research investigations undertaken by reputable professionals worldwide in the holistic field of Defense Resources Management.

Journal of Defense Resources Management (JoDRM) is currently indexed in the following prestigious international databases and catalogs: *Ulrich's Global Serials Directory, Directory of Open Access Journals (DOAJ), EBSCO - International Security & Counter-Terrorism Reference Center, ProQuest, Central and Eastern European Online Library (C.E.E.O.L), Cabell's Directory of Publishing Opportunities, Cengage GALE, ERIH PLUS (European Reference Index for the Humanities and Social Sciences), WORLDCAT, Karlsruhe Virtual Catalog (KVK), Norwegian Register for Scientific Journals, Series and Publishers and Sherpa Romeo.*

INTERNATIONAL ADVISORY BOARD

EDITORIAL BOARD

CONTENTS

This page is intentionally left blank

NATION-BUILDING IN MOLDOVA: IDENTITY, LANGUAGE, AND THE POLITICS OF INTEGRATION THROUGH THE LENS OF CONSTRUCTIVISM

Marina STĂNESCU

"Carol I" National Defense University, Bucharest, Romania

This paper examines the complex process of nation-building in Moldova through a constructivist theoretical framework, focusing on the interplay between identity formation, language policies, and political integration efforts. Since gaining independence in 1991, Moldova has grappled with forging a cohesive national identity amidst competing historical narratives, linguistic tensions, and geopolitical pressures. The analysis explores how Moldovan national identity is socially constructed through ongoing negotiations between diverse ethnic, linguistic and regional groups, as well as external influences from Russia and the European Union. The process of nation-building in Moldova is further complicated by the country's historical legacy as a borderland between competing empires and ideologies. This has resulted in a multifaceted cultural landscape where Romanian, Russian, and distinctly Moldovan elements coexist and sometimes clash. The paper examines attempts to navigate these complexities. Language policy has emerged as a critical battleground in this process, with debates over the status of Romanian versus Moldovan language reflecting deeper tensions about national identity and geopolitical orientation.

Key words: *national identity, history, language, domestic policies, EU integration.*

1. INTRODUCTION

Moldova has a complex history, shaped by various empires and powers. It was part of the Roman and Byzantine Empires of ancient times. In the Middle Ages, the Principality of Moldavia emerged as an independent state. Moldova later came under Ottoman influence and was subsequently annexed by the Russian Empire in the 19th century. After World War I, it united with Romania but was later incorporated into the Soviet Union during World War II.

Moldova gained independence in 1991 following the dissolution of the Soviet Union. Moldova's rich and intricate history was shaped by a succession of empires and powers, reflecting the region's strategic importance at the crossroads of Eastern Europe. In ancient times, the territory that now comprises modern Moldova was part of both the Roman and Byzantine Empires, leaving lasting cultural and linguistic influences. As the medieval period unfolded, the Principality of Moldavia emerged as an independent state,

establishing its own unique identity and playing a significant role in regional politics (Hitchins, K. Arnold, Latham, . Ernest , Buckmaster, . Barbara and Sukhopara, . Fyodor Nikolayevich, 2024).

The geopolitical landscape shifted dramatically in the subsequent centuries. Moldova fell under the sway of the Ottoman Empire, which exerted considerable influence on the region's governance and culture. This period was followed by a major transition in the 19th century when the Russian Empire annexed Moldova, integrating it into its vast territorial holdings and introducing new administrative and social structures.

The aftermath of World War I brought about another pivotal change. Moldova united Romania, a move that reflected the shared cultural and linguistic ties between the two regions. However, this union was short-lived. During the tumultuous events of World War II, Moldova was incorporated into the Soviet Union, ushering in an era of communist rule that would last for several decades (Eurydice, 2023).

The dissolution of the Soviet Union in 1991 marked a watershed moment in Moldova's history. Seizing the opportunity presented by the collapse of the communist system, Moldova declared its independence, embarking on the challenging journey of nation-building and democratic development. This transition has been marked by efforts to forge a distinct national identity while navigating complex relationships with neighboring countries and addressing internal socio-economic challenges (Baar & Jakubek, 2017).

Throughout its history, Moldova has been a mélange of cultures, languages, and traditions, reflecting its position at the intersection of Eastern and Western influence. This diverse heritage continues to shape the country's identity and place in the modern world, as Moldova strives to balance its historical legacies with contemporary aspirations for economic development and European integration (Eagles, 2014).

The country's path on democratic consolidation has been marked by both progress and setbacks, with recurring political instability and corruption posing significant challenges to effective governance and institutional reform. Despite these obstacles, Moldova has made progress in consolidating civil society, promoting media freedom, and fostering a more pluralistic political landscape. The nation's commitment to European integration has been a driving force behind many of its reform efforts, with the signing of an Association Agreement with the European Union in 2014 representing a significant milestone in Moldova's quest for closer ties with Western Europe. Moldova submitted its application for European Union (EU) membership in March 2022. Following a swift evaluation process, the EU granted Moldova candidate status in June of the same year. This

marked a significant milestone in Moldova's journey towards European integration. Subsequently, in June 2024, the EU and Moldova held their first intergovernmental conference, signaling the formal commencement of accession negotiations. This conference represented a crucial step in Moldova's path to potential EU membership, initiating detailed discussions on the adoption and implementation of EU laws and standards. (EU, 2024)

2. FOCUS OF THE ARTICLE

The Republic of Moldova's ongoing efforts to build a cohesive national identity in the context of post-Soviet politics and its balancing act between Russia and the European Union Moldova's complex historical and geopolitical positioning continues to exert a profound influence on its ongoing process of national identity formation and foreign policy orientation. The country's multifaceted efforts to forge a distinct post-Soviet identity are significantly complicated by deep-rooted linguistic divisions, powerful regional influences, and competing visions for its future trajectory. These factors contribute to a dynamic and often contentious political landscape, where different segments of society advocate for divergent paths forward.

The linguistic divide between Romanian and Russian speakers remains a central issue in Moldova's identity discourse. This linguistic duality is not merely a matter of communication but is deeply intertwined with cultural affiliations, historical narratives, and political leanings. The prevalence of bilingualism in urban areas contrasts with more linguistically homogeneous rural regions, creating a patchwork of cultural identities across the country (Baar & Jakubek, 2017).

Regional influences, particularly from Romania and Russia, play a significant role in shaping Moldova's national consciousness. The historical and cultural ties with Romania, based on shared language and heritage, pull some Moldovans towards closer integration with the West. Conversely, the legacy of Soviet rule and ongoing economic and cultural links with Russia exert a counterbalancing force, appealing to those who favor maintaining strong ties with the East.

These competing external influences manifest in divergent visions for Moldova's future. While some advocate for closer alignment with the European Union and potential reunification with Romania, others push for maintaining neutrality or strengthening ties with Russia and the Eurasian Economic Union. This ideological divide permeates political discourse, electoral politics, and policy-making processes, often resulting in governmental gridlock and policy inconsistencies (Sánchez, 2023).

As Moldova navigates these complex identity and geopolitical challenges, it must simultaneously

address pressing socioeconomic disparities and governance issues that have hindered its progress towards full European integration. Economic inequality, rural-urban divides, and widespread corruption continue to undermine public trust in state institutions and impede effective reforms. The persistent issue of Transnistria, a breakaway region supported by Russia, further complicates Moldova's territorial integrity and its aspirations for European integration (Medinets, 2018).

Moreover, Moldova faces the challenge of modernizing its economy while balancing the interests of various sectors and demographic groups. The country's reliance on agriculture and remittances from citizens working abroad highlights the need for economic diversification and the creation of domestic employment opportunities. Addressing brain drain and encouraging the return of skilled professionals is crucial for building a sustainable and competitive economy.

In the realm of governance, Moldova must strengthen its democratic institutions, enhance the rule of law, and improve transparency in public administration. These efforts are essential not only for meeting European standards but also for building a more resilient and cohesive society capable of withstanding external pressures and internal divisions.

As Moldova continues to grapple with these multifaceted challenges, its journey towards a consolidated national identity and a clear geopolitical orientation remains ongoing. The country's ability to navigate these complex issues will significantly impact its future development, regional stability, and its place in the broader European and Eurasian contexts.

3. DEFINING NATIONAL IDENTITY

In general terms, after reviewing a series of research and scientific literature, national identity appears as a collective sense of belonging to a nation, encompassing shared cultural, historical, linguistic, and often ethnic characteristics. It is a complex construct that involves:

- Shared culture: Common traditions, customs, values, and practices.
- Historical narrative: A collective understanding of the nation's past and its significance.
- Language: Often a unifying factor, though not always singular in multilingual nations.
- Symbols: National flags, anthems, and other emblems representing the nation.
- Territorial association: Connection to a specific geographical area.
- Political institutions: Shared governance structures and civic participation.
- Collective memory: Shared experiences and interpretations of significant events.

- Ethnic composition: Can be homogeneous or diverse, influencing identity formation.

Benedict Anderson's seminal work, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, introduces the revolutionary concept of nations as imagined communities, transforming the understanding of nationalism. He suggests that nations are not inherent or everlasting entities but rather socially constructed. The term "imagined" stems from the fact that most citizens of a nation will never encounter or know each other personally. Yet, they share a sense of unity and collective identity. This shared perception of belonging unites individuals as members of the same national group. Anderson identifies several crucial historical and societal factors contributing to the formation of these communities. The emergence of mass media, particularly newspapers and books, enabled individuals across vast geographical regions to consume identical information simultaneously. This process facilitated the creation of a common narrative and history, fostering a sense of unity among individuals who might otherwise never interact. Through engagement with the same news and cultural context, individuals began to conceptualize themselves as part of a broader national community (Anderson, 1983).

The 1996 study on nationalism by Rogers Brubaker provides a comprehensive analysis of the concept and its implications. Understanding nationalism is essential for examining global political dynamics and interstate relations. Nationalism significantly influences both individual and collective identities. Moreover, it substantially impacts domestic policy decisions, affecting domains such as immigration, education, and cultural preservation. The complex interplay between nationalism and globalization remains a subject of ongoing scholarly inquiry and discourse. These factors contribute to the sustained academic interest in nationalism, underscoring the significance of Brubaker's contribution to this field of study (Brubaker, 1996).

In his exploration of the roots of nations and national identity, Anthony Smith draws a link to ethnic identity, viewing it as a pre-modern manifestation of shared cultural heritage. He defines collective cultural identity as a persistent sense of continuity among generations within a cultural group, rooted in collective memories of historical events and a shared perception of the group's destiny. Smith suggests that there is a powerful emotional tie to the distant past when a community was first established—a community that, despite evolving over time, is still perceived as fundamentally unchanged. Smith's research into the ethnic foundations of nations is central to his understanding of the formation of specific nations and the reasons

behind the varying characteristics and content of nationalisms, despite their similar structures. He underscores the importance of myths, memories, values, traditions, and symbols as crucial elements that set ethnic communities apart and strengthen their unique culture and sense of purpose (Smith, 1991).

McCrone and Bechhofer's book "Understanding National Identity" (2015) presents a nuanced, empirically grounded analysis of how individuals experience and articulate national identity in their quotidian lives. The authors challenge monolithic conceptions of national identity, emphasizing its variable nature, and examine how national belonging is influenced by political, societal, and cultural factors. Their research is particularly relevant in elucidating contemporary discourse surrounding national identity, notably in relation to movements advocating for regional autonomy and political independence, such as those observed in Scotland. (Mccrone & Bechhofer, 2015)

In Moldova's case, national identity is particularly complex due to its diverse ethnic composition and cultural influences. The country grapples with balancing its multicultural reality against efforts to forge a unified national identity, especially in the post-Soviet context. This process involves navigating linguistic policies, addressing historical narratives, and reconciling various cultural traditions within a cohesive national framework.

Moldova's national identity formation is a multifaceted process influenced by its historical legacy, ethnic diversity, and geopolitical position. The country's population comprises various ethnic groups, including Moldovans, Romanians, Ukrainians, Russians, and Gagauz, each contributing to the cultural mosaic. This diversity presents both opportunities and challenges in constructing a unified national narrative. These discussions often intersect with broader questions of cultural affiliation and historical interpretation. The post-Soviet era has further complicated Moldova's identity-building efforts. The country has had to navigate between its Soviet past, its historical ties to Romania, and its aspirations for European integration. This has led to ongoing debates about Moldova's place in the region and its relationship with neighboring countries.

As Moldova continues to develop its democratic institutions and seeks to define its role in the international community, the process of forging a cohesive national identity remains a dynamic and evolving challenge, requiring careful balancing of diverse cultural elements and historical narratives.

4. THEORETICAL FRAMEWORK: CONSTRUCTIVISM

Constructivism in international relations theory provides a compelling

framework for understanding Moldova's complex journey of nation-building and its evolving geopolitical positioning. This theoretical approach, which emphasizes the significance of ideas, norms, and social interactions in shaping state behavior and international dynamics, offers unique insights into Moldova's post-Soviet development. Through a constructivist lens, Moldova's ongoing efforts to forge a distinct national identity and align itself with European values can be interpreted as a multifaceted process of social construction, influenced by a dynamic interplay of internal debates and external relationships (Agius, 2022).

The constructivist perspective highlights how Moldova's national identity is not a fixed or predetermined entity, but rather a fluid concept that is continuously negotiated and redefined through social interactions and discourse. This process involves various actors, including political elites, civil society organizations, and ordinary citizens, who engage in debates about what it means to be Moldovan in the 21st century. These discussions often revolve around questions of language, culture, and historical narratives, as well as Moldova's place in the broader European and post-Soviet contexts.

Furthermore, constructivism sheds light on how Moldova's geopolitical orientation is shaped by shared understandings and collective meanings rather than solely by material factors. The country's gradual shift towards European integration, for instance, can be seen as a result of changing perceptions and the internalization of European norms and values among key segments of Moldovan society. This process is not linear or uncontested, as it involves ongoing negotiations between different societal groups with varying visions for Moldova's future (Checkel, 2004).

The constructivist approach also emphasizes the role of international actors in Moldova's nation-building process. The European Union, Russia, and other regional players contribute to shaping Moldova's identity and policy choices through their interactions, diplomatic efforts, and the promotion of specific norms and ideas. These external influences interact with domestic factors, creating a complex web of social constructions that inform Moldova's national self-perception and its positioning in the international arena (Barkin, 2020).

Moreover, constructivism allows for a nuanced understanding of how historical legacies and collective memories impact Moldova's contemporary politics and foreign policy (Hurd, 2008). The country's Soviet past, its experiences during the transition period, and its aspirations for European integration all contribute to a collectively constructed narrative that influences policy decisions and public attitudes.

In conclusion, the constructivist framework provides a rich and

multifaceted lens through which to analyze Moldova's ongoing process of nation-building and its navigation of complex geopolitical realities. By focusing on the power of ideas, social interactions, and the construction of shared meanings, this theoretical approach offers valuable insights into the challenges and opportunities facing Moldova as it continues to define its national identity and chart its course in the international system (Jung, 2019).

5. THEORETICAL FRAMEWORK RELEVANCE TO NATION-BUILDING AND IDENTITY FORMATION

This theoretical approach illuminates the intricate dynamics of Moldova's nation-building process, emphasizing how it is profoundly shaped by the complex interplay between historical narratives, collective experiences, and evolving social norms. The constructivist lens reveals the multifaceted nature of national identity formation, suggesting that Moldova's sense of self is not static but rather in a constant state of flux, continually shaped and reshaped through ongoing interactions with both internal and external actors. This perspective highlights the fluidity of national identity, acknowledging that it is not merely a product of fixed historical facts or immutable cultural traits, but rather a dynamic construct that emerges from shared interpretations and social processes (Ba & Hoffmann, 2003).

Furthermore, constructivism places significant emphasis on the crucial role of discourse and communication in molding perceptions and influencing policy choices. This focus underscores the power of language, symbols, and narratives in shaping the collective understanding of what it means to be Moldovan. It suggests that the way in which historical events, cultural practices, and social relationships are discussed and interpreted within society can have a profound impact on the nation's self-perception and its relationships with other countries (Hurd, 2008).

The constructivist approach also points to the potential for significant shifts in Moldova's national trajectory as new ideas and interpretations gain traction within society. This implies that the country's future direction is not predetermined by its past or current circumstances, but rather remains open to change as different narratives and worldviews compete for dominance in the public sphere. It highlights the agency of various actors – from political elites and civil society organizations to ordinary citizens – in contributing to the ongoing process of national identity construction.

Moreover, this theoretical framework shows that Moldova's self-understanding is not formed in isolation but is significantly influenced by its interactions with and perceptions of other nations, international organizations, and global

trends. This relational aspect of identity formation underscores the importance of considering both domestic and international contexts when analyzing Moldova's nation-building efforts.

By emphasizing the constructed nature of national identity, this approach also opens up possibilities for reimagining and potentially reshaping Moldova's national narrative. It suggests that through conscious efforts to promote certain values, histories, or visions of the future, various stakeholders can influence the trajectory of the nation's development. This perspective offers both challenges and opportunities for Moldovan policymakers and citizens as they navigate the complex task of forging a cohesive national identity in a diverse and rapidly changing world.

6. HISTORICAL BACKGROUND - LEGACY OF SOVIET INFLUENCE

The country's unique situation, connecting Eastern and Western influences, presents both challenges and opportunities in forging a cohesive national identity. Policymakers might consider how to balance and integrate diverse cultural influences from Romania, Russia, and other neighboring countries in crafting a distinctly Moldovan identity. This process would require careful consideration of linguistic, ethnic, and cultural factors that have shaped Moldovan society over centuries.

The Soviet era left a profound and lasting impact on Moldova, shaping its cultural, linguistic, and social landscape in ways that continue to influence the country today. Russian culture remains prevalent, with the language still widely spoken and considered important for inter-ethnic communication. Russian influences are evident in literature, media, and popular culture, with many Moldovans consuming Russian-language content and celebrating Russian holidays alongside local customs. According to studies, the imperial authorities had a clear objective: the complete Russification of people in the conquered regions. (Fuksova & University, 2024).

Upon thorough analysis, several key aspects of Soviet legacies in Moldova have been identified as having the most significant impact on the erosion of Moldovan societal identity and the persistent challenges in its restoration to the present day. One of the most important ones is the Russian culture and its prevalence. Russian remains widely spoken and is still considered an important language of inter-ethnic communication in Moldova. Many Moldovans consume Russian-language media, including television programs, movies, and music. Russian holidays and traditions continue to be celebrated alongside local customs (SCORE, 2022)

Experts from both the Russian Empire and modern Russia agree that these annexed territories were treated as colonies, with their inhabitants

forced into cultural stagnation. In Bessarabia during the period studied, the use of Romanian was entirely prohibited in schools, churches, government offices, and courts. Children aged 8-10 were only permitted to access even basic education if they could already read and write in Russian. This evidence leaves no room for doubt about the empire's intentions to suppress local cultures and languages (Eremia, 2023).

The Soviet occupation, lasting from 1940 to 1991, resulted in significant changes to Moldova's political, economic, and social structures. Education was primarily conducted in Russian, with limited opportunities for Romanian language instruction. The suppression of Romanian language education led to a generation gap in language proficiency (Dostál & Knippenberg, 1979). Debates over language policy in education continue to be politically contentious. Soviet authorities promoted the migration of Russian-speaking populations to Moldova, thereby altering the demographic composition. Additionally, numerous Moldovan surnames underwent Russification through the addition of Russian suffixes.

The Russian Orthodox Church maintains a significant presence in Moldova. The Russian Orthodox Church's influence extends beyond religion into cultural and social realms. Many Moldovans participate in Orthodox traditions and celebrations, which are integral to their cultural identity. The church's teachings and practices resonate with a significant portion of the population, reinforcing ties to Russian heritage and traditions. (Kaukvere, 2024)

Perhaps one of the most significant elements that impacted Moldovan society is the Soviet-era famine of 1946-1947. (Boriak, 2020) This episode had a profound impact on Moldova, resulting in significant mortality (Catan, 2021). This famine is considered by some scholars as an exemplar of the detrimental effects of Soviet policies on Moldova. The collectivization of agriculture implemented during the 1940s and 1950s disrupted established agricultural practices. Food scarcity and rationing were prevalent experiences throughout the Soviet period. The collective memory of these hardships continues to influence contemporary attitudes towards governmental and economic policies. (Musteață, 2015)

These Soviet legacies have contributed to ongoing debates about national identity, language policy, and cultural orientation in Moldova. The country continues to navigate the complex interplay between its Romanian/Moldovan heritage and the lasting influences of the Soviet era. This has resulted in a unique cultural landscape where Soviet-era influences coexist with efforts to reconnect with pre-Soviet traditions and European integration aspirations. The persistence of these legacies affects

various aspects of Moldovan society, from political discourse to everyday cultural practices, and continues to shape the country's development trajectory in the post-Soviet era (Marandici, 2021).

7. DOMESTIC POLICIES AIMED AT FOSTERING NATIONAL COHESION

Moldova's identity formation is intricately linked to its complex ethnic composition and cultural diversity. The nation's population comprises a diverse array of ethnic groups, with Moldovans constituting the majority, accompanied by substantial communities of Ukrainians, Russians, Gagauz, Bulgarians, and Roma. Moldovan 75.1%, Romanian 7%, Ukrainian 6.6%, Gagauz 4.6%, Russian 4.1%, Bulgarian 1.9%, other 0.8% (2014 est.) (The World Factbook, 2024)

With a small population of 2,486,891.00 and a GDP of USD 16.5 billion, the Republic of Moldova finds it difficult to form a national identity.

This heterogeneous ethnic landscape is a consequence of historical population movements, fluctuating borders, and the region's strategic geographical position at the intersection of Eastern Europe. The cultural diversity within Moldova is manifested in its linguistic landscape, traditional practices, and religious affiliations. While Romanian was instated as the official language of the country in 2023 only (Calugareanu,

2023), Russian maintains widespread usage and functions as a significant lingua franca.

The linguistic tensions in Moldova indeed extend beyond the Russian-Romanian dichotomy, involving other minority languages such as Ukrainian, Gagauz, and Bulgarian. These complexities are intertwined with regional autonomy movements, particularly in Gagauzia, complicating the national language policy landscape. The government's navigation of these linguistic challenges has drawn attention from international organizations, as language rights are crucial in evaluating Moldova's progress towards European integration and democratic consolidation.

However, the role of the Russian language remained a contentious issue in Moldova's linguistic landscape, with many Russian speakers advocating for its continued official status. This linguistic divide often mirrored political and cultural alignments, with some regions, particularly Transnistria, maintaining stronger ties to the Russian language and culture. The government's efforts to promote the Romanian language while balancing the rights of linguistic minorities presented ongoing challenges in Moldova's quest for national unity and identity.

The Moldovan government's attempts to address these linguistic challenges have been closely monitored by international bodies. Language rights are considered

essential indicators of Moldova's commitment to democratic values and its aspirations for EU membership. The European Union has emphasized the importance of respecting minority rights as part of its integration criteria Moldova's path towards EU integration is significantly influenced by its handling of linguistic rights and minority issues. The EU has historically linked progress in these areas to broader democratic reforms, making it a focal point in Moldova's political discourse (EU relations with the Republic of Moldova, 2024).

The high number of Moldovans holding Romanian passports, over one million, and consequently EU citizenship, has significant implications for Moldova's future. This situation may accelerate Moldova's integration with the EU, as a substantial portion of its population already enjoys EU rights and privileges (DIGI 24, 2024). However, it could also complicate Moldova's internal politics and national identity, potentially creating divisions between those with and without EU citizenship. Furthermore, this dual citizenship phenomenon might influence Moldova's economic policies, labor market dynamics, and diplomatic relations with both Romania and the broader EU.

The predominant faith is Orthodox Christianity, coexisting with Catholic, Protestant, and Jewish communities. This multifaceted cultural milieu has precipitated ongoing discourse regarding national identity, language policies, and the country's geopolitical orientation. The process of identity formation in Moldova continues to evolve, striving to balance the preservation of distinct ethnic identities with the cultivation of a cohesive national identity in the post-Soviet era.

Building on this foundation, Moldova could leverage its unique position at the crossroads of Eastern and Western cultures to create a distinctive national brand. This strategic branding effort could capitalize on the country's geographical and cultural positioning, emphasizing Moldova's role as a vital bridge between different regions, traditions, and ideologies. By highlighting its capacity for intercultural dialogue and cooperation, Moldova could position itself as a key player in fostering understanding and collaboration between diverse communities.

Furthermore, by embracing its multicultural heritage, Moldova could position itself as a model for peaceful coexistence and integration in a region often marked by ethnic tensions and historical conflicts. This approach would not only showcase the country's ability to harmonize various cultural influences but also demonstrate its potential as a mediator in regional disputes. Moldova's experience in navigating its complex historical and cultural landscape could serve as a valuable example for other nations grappling with similar challenges. However, the intersection of linguistic

diversity and regional autonomy movements in Moldova presents significant challenges for national policy and international relations, particularly regarding its aspirations for European integration.

Moldova has implemented a comprehensive array of initiatives aimed at strengthening national unity and identity and fostering social cohesion across its diverse communities. These multifaceted efforts encompass a wide range of strategies designed to bridge cultural, linguistic, and ethnic divides within the country. One key focus has been the promotion of bilingualism, encouraging citizens to develop proficiency in both Romanian (the official state language) and Russian (widely spoken in certain regions). This approach not only facilitates better communication between different linguistic groups but also helps preserve the cultural heritage of various communities.

Additionally, by implementing targeted economic development programs in various regions, aiming to reduce disparities and create more equitable opportunities for all citizens, central authorities are addressing economic imbalances. These efforts help mitigate potential sources of social tension and contribute to a more unified and stable society.

Moldova continues to work towards strengthening its national identity, fostering a sense of shared identity and purpose among its diverse population, and positioning itself for

successful integration into the broader European community.

8.   CONCLUSION

Challenges in creating a unified national identity are often rooted in historical divisions, ethnic diversity, linguistic differences, and regional disparities. In many cases, the process is complicated by competing political ideologies and external influences that shape the national narrative. Additionally, economic inequalities and social fragmentation can hinder efforts to build a cohesive identity, as different groups may have varying experiences of inclusion or exclusion within the state.

Cultural pluralism also poses a challenge, as efforts to create a singular national identity must balance the preservation of distinct cultural traditions while fostering a shared sense of belonging. Finally, the impact of globalization and migration introduces new complexities, as states must accommodate changing demographics and evolving notions of identity in an increasingly interconnected world.

Moldova continues to grapple with substantial hurdles in forging a cohesive national identity, despite concerted efforts to promote unity. The country's diverse ethnic composition, a legacy of its complex historical and geopolitical position, presents ongoing challenges to social integration and cultural harmony. Linguistic divisions, particularly

between Romanian and Russian speakers, remain a significant source of tension and contribute to social fragmentation.

Furthermore, the persistent issue of Transnistria poses a formidable challenge to Moldova's efforts at nation-building and territorial consolidation. This narrow strip of land along the eastern border of Moldova, with its own de facto government and institutions, has effectively functioned as a separate entity since the early 1990s. The unresolved status of Transnistria not only undermines Moldova's territorial integrity but also complicates efforts to implement cohesive policies across the entire country, especially since the region is controlled de facto by the Russian Federation.

The Transnistrian issue has far-reaching implications beyond mere territorial control. It affects economic development, as the region houses significant industrial infrastructure and energy resources. The ongoing separation also impacts social cohesion, with limited interaction between populations on both sides of the Dniester River contributing to a sense of alienation and mistrust. Moreover, the presence of Russian military forces in Transnistria adds a geopolitical dimension to the conflict, further complicating Moldova's efforts to assert full sovereignty and pursue an independent foreign policy.

In addition to these primary challenges, Moldova faces other obstacles in its quest for national unity. Economic disparities between urban and rural areas, as well as between different regions of the country, contribute to social tensions and uneven development. The ongoing issue of emigration, particularly among younger, educated Moldovans, poses a threat to the country's demographic stability and future prospects.

As Moldova continues to navigate these complex issues, the path towards a unified national identity remains fraught with difficulties. Addressing these challenges will require sustained efforts at reconciliation, inclusive policymaking, and creative solutions that can bridge the divides within Moldovan society while respecting its diverse cultural heritage.

Enhancing regional cooperation and integration, particularly with neighboring countries and the European Union, could open up new economic opportunities and strengthen Moldova's position on the international stage. This could involve streamlining trade agreements, participating in cross-border infrastructure projects, and engaging in cultural exchange programs. By leveraging its strategic location between Eastern and Western Europe, Moldova can position itself as a bridge for commerce and ideas, attracting foreign investment and fostering economic growth.

REFERENCES

[1] Anderson, B. (1983). *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. Verso.

[2] Agius, C. (2022). *6. Social Constructivism* (pp. 73–89). Oxford University. https://doi.org/10.1093/hepl/97801988621 92.003.0006

[3] Anghelescu, H. G. B. (2004). The National Library of the Republic of Moldova: Old Legacies and New Identities. *Alexandria: The Journal of National and International Library and Information Issues*, *16*(1), 3–16. https://doi.org/10.1177/095574900401600 102

[4] Ba, A., & Hoffmann, M. J. (2003). Making and Remaking the World for IR 101: A Resource for Teaching Social Constructivism in Introductory Classes. *International Studies Perspectives*, *4*(1), 15–33. https://doi.org/10.1111/1528-3577.04102

[5] Baar, V., & Jakubek, D. (2017). Divided National Identity in Moldova. *Journal of Nationalism, Memory & Language Politics*, *11*(1), 58–92. https://doi.org/10.1515/jnmlp-2017-0004

[6] Barkin, J. S. (2020). *The Social Construction of State Power*. Bristol university. https://doi.org/10.46692/9781529209846

[7] Bobić, M. (2019). *Moldova: Military Confrontation with Russian Forces* (pp. 103–136). policy. https://doi.org/10.1332/policypress/97815 29205206.003.0005

[8] Boriak, T. (2020). Famine of 1932-1933 in the Russian Federation: Conflict of Oral History, Commemorative Practices and Official Politics of Memory? *Zaporizhzhia Historical Review*, *3*(55), 79–91. https://doi.org/10.26661/zhv-2020-3-55-09

[9] Brubaker, R. (1996). *Nationalism Reframed: Nationhood and the National Question in the New Europe*. Cambridge University Press.

[10] Catan, V. (2021). Suveranitatea Republicii Moldova între război şi pace / Sovereignty of the Republic of Moldova between war and peace. *Plural. History, Culture, Society*, *9*(2), 8–27. https://doi.org/10.37710/plural.v9i2_2

[11] Checkel, J. T. (2004). Social constructivisms in global and European politics: a review essay. *Review of International Studies*, *30*(2), 229–244. https://doi.org/10.1017/s02602105040060 23

[12] Dostál, P., & Knippenberg, H. (1979). The "Russification" of Ethnic Minorities in The USSR. *Soviet Geography*, *20*(4), 197–219. https://doi.org/10.1080/00385417.1979.10 640287

[13] Eagles, J. (2011). Public Archaeology in a Nascent Nation State: Two Decades of Independence in the Republic of Moldova. *Public Archaeology*, *10*(4), 200–222. https://doi.org/10.1179/175355311x13206 765126631

[14] Eagles, J. (2014). Stephen the Great and Balkan nationalism: Moldova and Eastern European history. *Choice Reviews Online*, *51*(11), 51–6335. https://doi.org/10.5860/choice.51-6335

[15] Eremia, I. (2023). *Linguistic policy of the Russian Empire in Bessarabia in the years 1834-1871*. Moldova state university. https://doi.org/10.59295/lrr2023.02

[16] Fuksova, K., & University, C. (2024). Victory Day or Europe Day? The Politics of Memory in Moldova in the Shadow Of Russia's War in Ukraine.

Studia Politica. Romanian Political Science Review, *23*(2/2023), 327–357. https://doi.org/10.62229/sprps23-2/5

[17] Hofmeister, U. (2016). Civilization and Russification in Tsarist Central Asia, 1860–1917. *Journal of World History*, *27*(3), 411–442. https://doi.org/10.1353/jwh.2016.0115

[18] Hurd, I. (2008). *Constructivism* (pp. 298–316). https://doi.org/10.1093/oxfordhb/9780199219322.003.0017

[19] Iglesias, J. D. (2013). Constructing national history in political discourse: Coherence and contradiction (Moldova, 2001-2009). *Nationalities Papers*, *41*(5), 780–800. https://doi.org/10.1080/00905992.2013.768219

[20] Jung, H. (2019). The Evolution of Social Constructivism in Political Science: Past to Present. *SAGE Open*, *9*(1), 215824401983270. https://doi.org/10.1177/2158244019832703

[21] Marandici, I. (2021). Nostalgic Voting? Explaining the Electoral Support for the Political Left in Post-Soviet Moldova. *Eurasian Geography and Economics*, *63*(4), 514–542. https://doi.org/10.1080/15387216.2021.1918565

[22] McCrone, D., & Bechhofer, F. (2015). *Understanding National Identity*. Cambridge University Press.

[23] Medinets, M. Y. (2018). Reflection of the Past in Historical And Cultural Landscape of Transnistrian Moldovan Republic. *Vestnik of Samara University. History, Pedagogics, Philology*, *24*(2), 45–49. https://doi.org/10.18287/2542-0445-2018-24-2-45-49

[24] Napieralska, A. (2018). *Russian-Moldovan Relations after the Collapse of the Soviet Union*. https://doi.org/10.33915/etd.257

[25] Pivovar, E., Levchenkov, A., & Guschin, A. (2021). Republic of Moldova in 2016-2020: Domestic Situation and Foreign Policy Objectives. *Contemporary Europe*, *103*(3), 94–105. https://doi.org/10.15211/soveurope3202194105

[26] Prina, F. (2014). Linguistic Justice, Soviet Legacies and Post-Soviet Realpolitik: The Ethnolinguistic Cleavage in Moldova. *Ethnopolitics*, *14*(1), 52–71. https://doi.org/10.1080/17449057.2014.928097

[27] Musteață, S. (2015). Rolul anului 1991 în destinul Republicii Moldova / 1991: A Chronology of Moldova's Independence. *PLURAL. History, Culture, Society*, *3*(1), 127–140. https://doi.org/10.37710/plural.v3i1_8

[28] Smith, A. D. (1991). *National Identity*. University of Nevada Press.

[29] Tartakovsky, D. (2008). Conflicting Holocaust narratives in Moldovan nationalist historical discourse. *East European Jewish Affairs*, *38*(2), 211–229. https://doi.org/10.1080/13501670802184090.

REGIONAL COOPERATION PLATFORMS IN THE SOUTH CAUCASUS: AZERBAIJAN-GEORGIA-TÜRKİYE IN THE CONTEXT OF TRILATERAL DEFENCE COOPERATION

Eljan IMAMVERDIYEV

Military Scientific Research Institute, National Defence University, Azerbaijan

The article analyzes the history of defense cooperation of Azerbaijan-Georgia-Türkiye and the main factors rationalizing this cooperation, as well as another regional cooperation platform project proposed to be formed within the framework of new geopolitical realities in the South Caucasus as a result of the Second Karabakh War. The purpose of the research work is to reveal the importance of the trilateral defense cooperation of Azerbaijan-Georgia-Türkiye in the South Caucasus region with a fragile security environment and to analyze the possibility of the creation of another new proposed regional cooperation platform (3 (Türkiye, Russia and Iran) + 3 (Azerbaijan, Georgia and Armenia)). The research work using the comparative analysis method emphasized the need to organize the reliable protection of the energy-transport-communication projects jointly implemented by Azerbaijan-Georgia-Türkiye and to have the power to adequately respond to any threat that may arise in the region. Meanwhile, it was concluded that there is little possibility of the creation of another cooperation platform at the current stage and it was highlighted that the sides of Azerbaijan-Georgia-Türkiye should systemize the organization of coordination work at a high level between the relevant state institutions and the point that they should further strengthen their position to participate in future regional platforms.

Key words: *Azerbaijan-Georgia-Türkiye, South Caucasus, Second Karabakh War, NATO, terror.*

1. INTRODUCTION

In 1991 after the collapse of the Union of Soviet Socialist Republics (USSR), the balance of geopolitical power at the international level was disrupted and the world order changed. Therefore, many large and small countries emerged as a result of the collapse of the USSR, which was the largest country in the world, with an area of 22 million square kilometers extending from the east of Europe to the north of Asia. In this regard, The Caspian Sea, which was the Soviet-Iranian Sea, became the Eurasian Sea, and the Black Sea became the European Sea, as well as many post-Soviet countries, the countries of the South Caucasus also began to implement their independent foreign policies in the international arena.

In general, Azerbaijan, Georgia and Türkiye are of particular importance in

terms of their rich hydrocarbon resources, energy and transport-communication lines passing through their territories, and their geo-strategic location (The transit role between Asia and Europe, the location of the South Caucasus between regional military blocs such as the North Atlantic Treaty Organization (NATO) and the Collective Security Treaty Organization (CSTO), and Türkiye's access to the Middle East region, as well as the Mediterranean Sea, the Black Sea, and the Marmara Sea). Due to the intersection of the interests of the regional and world superpowers in these regions, the one-time solution of the conflicts (terrorist provocations) occurring here does not completely depend on the will of the countries of the region. It is not accidental that after Azerbaijan and Georgia declared their independence to the whole world in 1991 the entire Caucasus region became a hotbed of conflicts and sustainable stability has not been achieved yet in the region. In this context, Russia-Chechnya, Russia-Georgia (South Ossetia and Abkhazia conflicts) and Armenia-Azerbaijan conflict (as a result of the Second Karabakh War and the local anti-terrorist operation, although the Azerbaijani side has established its territorial integrity and sovereignty, a stable peace agreement between the parties has not been signed yet) is an example. As for the terrorist provocations occurring in the territory of Türkiye, it has not yet been possible to prevent these provocations completely.

Against the background of the above-mentioned, this article analyzed the main factors that rationalize the Azerbaijan-Georgia-Türkiye trilateral defense cooperation arising from the national interests of all three countries in the South Caucasus region and another proposed regional cooperation platform project using the comparative analysis method.

2. AZERBAIJAN-GEORGIA-TÜRKİYE TRILATERAL DEFENCE COOPERATION: HISTORY AND IMPORTANCE

Taking advantage of the historical conditions created by the collapse of the USSR in 1991, the peoples of Azerbaijan and Georgia regained their independence rights by expressing their national wills. After the restoration of their independence, the national development policy of both states, the foundation of future socio-political, socio-economic and cultural-spiritual development was laid. In addition, the goals and objectives, principles and characteristics, main directions and priorities of the domestic and foreign policy of the countries in question were determined.

Both states that regained their independence tried to find a way out of the difficult geopolitical situation and create a rational and pragmatic formula for their foreign policies. Azerbaijan, which has rich oil and gas deposits, is vital for Georgia in order to eliminate its energy dependence on Russia, and Georgia is also of special importance for Azerbaijan in terms of exporting oil and gas products to foreign markets and diversifying export routes in order to soften the political and economic

pressures of the region's powerful actors. This factor has led to the deepening of Azerbaijan-Georgia relations, especially to the increase of the political weight of both states in the international arena.

In 1993-1995, both countries succeeded in establishing constructive and effective relations with Türkiye. After signing the "Contract of the Century" on September 20, 1994, with transnational oil companies representing the world's leading countries (USA, Great Britain, Russia, Türkiye, Norway, Japan and Saudi Arabia) which aims to jointly develop oil and gas resources in the Azerbaijani sector of the Caspian Sea and export them to European markets, alternative routes (Azerbaijan-Georgia-Türkiye-Europe) for the transportation of hydrocarbon resources to Europe were determined (Hasanov, 2015). In this framework, the foundation of Azerbaijan-Georgia-Türkiye (AGT) trilateral cooperation - "East-West" structuring was laid in the region.

Transportation of hydrocarbon resources of AGT strategic partner countries of the Caspian Basin and Central Asia (Baku-Tbilisi-Ceyhan, Baku-Tbilisi-Erzurum, Trans Adriatic Pipeline (TAP) and the Trans Anatolian Pipeline (TANAP)) to Europe, Asia-Europe transit corridor (Baku-Tbilisi-Kars railway) playing a role and taking part in the TRACECA (Europe-Caucasus-Asia) transport relations development program called "New Silk Road" are the main factors that increase the geopolitical and geoeconomic importance of the region.

Against the background of separatist tendencies, wars and frozen conflict centers in the South Caucasus region, one of the main goals of the AGT trilateral cooperation platform is solving the region's problems. After the war between Russia and Georgia in August 2008, this cooperation platform was further strengthened. It is no coincidence that the occupied regions (by Azerbaijan: Karabakh and 7 surrounding districts, by Georgia: South Ossetia and Abkhazia) were indicated in the "Trabzon Declaration" at the first tripartite meeting between the foreign ministers of the AGT parties on June 8, 2012. It was emphasized that it is an obstacle to maintaining peace and stability in the region, as well as to the development of the region (Press Service of the Ministry of Foreign Affairs of the Republic of Türkiye, 2012).

The AGT tripartite platform, which is based on historical friendship, not only paves the way for the economic development of all three countries, but also meets the national interests of the countries. After the first meeting between the foreign ministers of the parties in 2012, economic, energy, transport-communication, defense, security, etc. holding high-level meetings in the tripartite format has become traditional. In this context, the trilateral cooperation in the field of defense, which creates a balance in front of other actors with interests in the region, as well as serves to maintain peace and stability in the region, is very important.

The first trilateral high-level meeting in the field of defense between AGT

was held at the level of defense ministers of the parties on August 19, 2014 in Nakhchivan Autonomous Republic (Azertag, 2014). In order to conduct negotiations between the parties in this format and to discuss security issues in the region, an agreement was reached to hold trilateral meetings every year (by changing the order of the countries) and high-level meetings are being held in a tripartite format to this day. Moreover, trilateral meetings were held at the level of the Chiefs of General Staff of the Armed Forces of the parties at different times, and a working group from all three countries was appointed to determine development perspectives of cooperation. Armenia, another country of the South Caucasus region, was not included in the mentioned platform due to its policy and it considers the mentioned cooperation as a threat to itself.

The trilateral defense cooperation that aims at providing Türkiye's energy demand, Azerbaijan's need to export hydrocarbon resources to foreign markets, and the security of Georgia's transit geographical position is a rational cooperation between AGT. The factors listed below once again confirm that: in case of taking into account the sensitivity of the region's security (separatist tendencies, frozen conflict centers, terrorist threats and wars), emergence of necessity of the need to protect and ensure the security of critically important projects implemented jointly by the parties; the internationally recognized regions of Georgia (South Ossetia and Abkhazia) turning into frozen hotbeds of conflict and critical projects implemented in a trilateral format passing through the area close to the contact line of Georgia with those regions; the fragility of the trilateral statement (Press Service of the President of the Russian Federation, 2020) (that was signed among President of the Republic of Azerbaijan I. H. Aliyev, Prime Minister of the Republic of Armenia N. V. Pashinyan and President of the Russian Federation V. V. Putin) of November 10, 2020, which ended the 44-day-long Armenia-Azerbaijan Nagorno-Karabakh war, and the fact that a durable peace agreement has not yet been signed between the parties; the importance of NATO member country Türkiye and Georgia, which intends to integrate into NATO, as well as Azerbaijan, which won victory in the Karabakh war with the application of modern technologies, to exchange their experience with each other in defense and defense industry; terrorist (PKK, PYD, etc.) threats directed at Türkiye; after the victory in the Second Karabakh War, the President of Azerbaijan – Supreme Commander-in-Chief of the Armed Forces I. Aliyev's statement at a press conference for media representatives that the Azerbaijani Army will switch to a smaller model of the Turkish Army, etc. (Press Service of the President of the Republic of Azerbaijan 2021).

One of the main goals of the establishment of the tripartite defense cooperation between the AGT is to restore peace and stability in the South Caucasus region. It should be especially emphasized that there are very few tripartite cooperation platforms in the world where each country has equal

rights and fully meets its national interests. Although the AGT tripartite cooperation platform fully meets the national interests of the countries included in this platform, the mentioned cooperation is also evaluated as rational in terms of geographical location, political, economic, military and security.

3. ADVANTAGES AND DISADVANTAGES OF THE REGIONAL COOPERATION PLATFORM PROJECT (3+3) FOR AZERBAIJAN-GEORGIA-TÜRKİYE TRILATERAL DEFENCE COOPERATION

Over the past years, a number of proposals regarding cooperation in the South Caucasus region have been put forward by the leaders of the countries of the region. "Caucasus Initiative for Peace" by Georgian President Eduard Shverdnadze in 1999, "Caucasus Stability Pact" by Turkish Prime Minister Süleyman Demirel in 1999, "Caucasus Stability and Cooperation Platform" by Turkish Prime Minister Recep Tayyip Erdogan in 2008, in 2010, the President of Georgia Mikheil Saakashvili initiated the creation of "Whole Caucasus" cooperation platforms (Vali, 2021). However, none of the proposed initiatives were implemented due to certain reasons.

After the end of the Second Karabakh War in December 2020, the President of Türkiye R.T. Erdogan and the President of Azerbaijan Ilham Aliyev initiated the creation of a new cooperation platform in the region (3 (Türkiye, Russia and Iran) + 3 (Azerbaijan, Georgia and Armenia)). The 3+3 cooperation platform intends the provision of sustainable peace in the region, as well as the implementation of economic, commercial, transport and infrastructure projects between the parties (Trthaber, 2021).

The new realities that emerged as a result of the Second Karabakh War, have not only changed the geopolitical situation in the region, but also have created the need to make certain changes in the foreign policies of the countries of the region, and they are as follows: the de facto existence of the entity called "Nagorno-Karabakh Republic" was terminated; Azerbaijan restored the 132 km border with Iran that was uncontrolled; Türkiye's influence in the region has become stronger (Shusha Declaration); Türkiye - Nakhchivan - Caspian Sea - Central Asia route will be established through the Zangezur corridor (Figure 1; Eldem, 2022) which was intended to open, etc.

Fig. 1 Zangezur corridor (Eldem, 2022)

Against the background of the abovementioned realities, although the initiative of a new business platform in the 3+3 format was appreciated by Russia, Iran and Armenia, it was not accepted by Georgia.

The Russian side is interested in creating mechanisms that can influence both sides in order to sign a lasting peace between Armenia and Azerbaijan within the framework of the mentioned platform by playing the role of a moderator, and in preventing Georgia, which pursues a foreign policy of integration into Euro-Atlantic structures and NATO, as well as in balancing the growing influence of Türkiye in the region.

The Iranian side, which is subject to the harsh economic sanctions of the United States and the European Union, intends to take part in all kinds of infrastructure projects in the region within the framework of the new geopolitical realities created by joining the mentioned platform, to take advantage of the land route connecting Armenia through the occupied territories of Azerbaijan on the eve of

the war, and to maintain its influence in the region.

Despite the fact that Armenia, which is in a state of blockade in the region, faces a number of obstacles intends to eliminate its dependence on Russia, diversify its foreign military-political course and develop its economy by joining the mentioned platform.

The Georgian side stated that it did not want to be on the same platform as the "occupier" citing the fact that the regions of Abkhazia and South Ossetia are occupied by Russia. For this reason the Georgian side did not participate in the meeting of the mentioned cooperation platform at the level of deputy ministers of foreign affairs held in Russia in December 2021 (Civil, 2021). Despite that The Georgian flag was also hung in the meeting hall and a message was given that "the doors are open" for Georgia.

Regarding this issue, the statement made by the former foreign minister of Georgia, David Zalkaliani, was as follows. "Our partners and neighbors, including Armenia and Azerbaijan, strategic partners, [Turkey] and U.S.,

are aware that it'll be very hard for us to participate in the format together with the occupier country [Russia]. Given the situation that we do not see any process towards de-occupation, it is very difficult to sit down in this format and discuss infrastructure projects" (Civil, 2021).

In addition, although the normalization of relations between Iran and Azerbaijan has been observed recently, the following undesirable events that occurred between the two countries had a negative impact on the further development of bilateral relations: Terrorist attack against the Embassy of the Republic of Azerbaijan in Iran (Voanews, 2023); Closing the Embassy of Azerbaijan in Tehran (Voanews, 2023); Declaring "persona-non-grata" to 4 (four) employees of the Embassy of Iran in the Republic of Azerbaijan (Aacom, 2023); Making a statement by the official bodies of Azerbaijan about the exposure of Iran's "agency network" in Azerbaijan, etc. (Press Service of the State Security Service of the Republic of Azerbaijan, 2022).

If attention is paid to the advantages of regional cooperation, the 3+3 format promises great potential not only from a political and security point of view, but also from an economic point of view. According to calculations, the total economy of the countries included in the 3+3 format is approximately 3 trillion dollars, which means the fifth largest economy in the world after the United States, China, Japan and Germany. This platform is the third largest in the world with a population of 331 million people, and the first in terms of territory.

The 3+3 format can lead to the acceleration of regional trade and thus economic growth. Strengthening and developing trade relations with Russia, Turkey and Iran, which will be a big sales market for South Caucasus countries. On the other hand, the mentioned platform will limit the South Caucasus countries' ability to maneuver within the framework of their cooperation with other countries.

3. CONCLUSION

While analyzing the above-mentioned factors, it seems impossible that regional cooperation in the 3+3 format will take place with the participation of all countries in the near future. Certainly, a lot will depend on the political will of the parties. As a result, taking into account that the region where AGT is located is not a stable and safe region, in order to prevent the sabotage of energy and transport-communication projects by countries and terrorist organizations that wish to weaken the existing tripartite cooperation between the parties, the issue of security of jointly implemented critical projects should be reviewed once again. In this framework, the AGT parties should further expand their relations in all fields within the framework of trilateral cooperation and strengthen their position to participate in future regional platforms in accordance with their national interests.

REFERENCES

[1] Aacom (2023) Burc Eruygur, *Azerbaijan declares 4 employees of Iranian Embassy in Baku 'persona non grata'*. April 06. Available at: https://www.aa.com.tr/en/world/azerbaijan-declares-4-employees-of-iranian-embassy-in-baku-persona-non-grata-/2865603 (Accessed: 06 April 2023).

[2] Azertag (2014) *Meeting of Azerbaijani, Turkish and Georgian defense ministers in Turkish spotlight*. August 20. Available at: https://azertag.az/en/xeber/Meeting_of_Azerbaijani_Turkish_and_Georgian_defense_ministers_in_Turkish_spotlight-784721. (Accessed: 20 August 2014).

[3] Civil (2021) *Tbilisi Skips 3+3 Platform Meeting in Moscow*. December 11. Available at: https://civil.ge/archives/461443 (Accessed: 11 December 2021).

[4] Civil (2021) *Foreign Minister Zalkaliani Talks 3+3 Platform*. October 08. Available at: https://civil.ge/archives/447118 (Accessed: 08 October 2021).

[5] Eldem, T. (2022) 'Russia's war on Ukraine and the rise of the middle corridor as a third vector of Eurasian connectivity', *SWP Comment*, 2022/C 64, 28 October. doi: 10.18449/2022C64.

[6] Həsənov, Ə.M. (2015). Azərbaycanın geosiyasəti, Bakı: Zərdabi LTD MMC, 1056 s. (Hasanov, A. M. (2015) Geopolitics of Azerbaijan, p. 1056).

[7] Press Service of the Ministry of Foreign Affairs of the Republic of Türkiye (2012) *Trabzon Declaration Of The Ministers Of Foreign Affairs Of The Republic Of Azerbaijan, Georgia And The Republic Of Türkiye*. Available at: https://www.mfa.gov.tr/trabzon--declaration-of-the-ministers-of-foreign-affairs-of-the-republic-of-azerbaijan_-georgia-and-the-republic-of-Türkiye_-08-june-2012_-trabzon.en.mfa. (Accessed: 08 June 2012).

[8] Press Service of the President of the Russian Federation (2020) *Statement by President of the Republic of Azerbaijan, Prime Minister of the Republic of Armenia and President of the Russian Federation*. November 10. Available at: http://en.kremlin.ru/events/president/news/64384. (Accessed: 10 november 2020).

[9] Press Service of the President of the Republic of Azerbaijan (2021) Ilham Aliyev held a press conference for local and foreign media representatives. February 28. Available at: https://president.az/en/articles/view/50738. (Accessed: 26 February 2021).

[10] Press Service of the State Security Service of the Republic of Azerbaijan (2022) Information of the Press service of the State Security Service. November 14. Available at: https://www.dtx.gov.az/en/news/1731.html (Accessed: 14 November 2022).

[11] Trthaber (2021) Güney Kafkasya'da 6'lı platformun ilk adımı atılıyor. 10 Aralık. Mevcuttur: https://www.trthaber.com/haber/gundem/guney-kafkasyada-6li-platformun-ilk-adimi-atiliyor-634507.html. (Erişim tarihi: 10 Aralık 2021) (The first step of the 6-party platform is being taken in the South Caucasus. 10 December. Available at: https://www.trthaber.com/haber/gundem/guney-kafkasyada-6li-platformun-ilk-adimi-atiliyor-634507.html. (Accessed: 10 December 2021)).

[12] Vali Kaleji. (2021) *Iran and the 3+3 Regional Cooperation Format in the South Caucasus: Strengths and Weaknesses.* June 16. Available at: https://jamestown.org/program/iran-and-the-33-regional-cooperation-format-in-the-south-caucasus-strengths-and-weaknesses/. (Accessed: 16 June 2021)

[13] Voanews (2023) *Azerbaijan Embassy in Iran Suspends Work After Deadly Attack.* January 30. Available at: https://www.voanews.com/a/azerbaijan-embassy-in-iran-suspends-work-after-deadly-attack-/6940602.html (Accessed: 30 January 2023).

BUFFER ZONE IN INDONESIAN TERRITORY TO ANTICIPATE IMPACTS OF NUCLEAR WAR ON KOREAN PENINSULA

Riko FENDIAWAN*, Joko PURNOMO*, Syafrizal IRFAN*, Sumartoni MULKU*

* Indonesia Naval Technology College, Morokrembangan, Surabaya, Indonesia 60178

The nuclear issue on the Korean Peninsula in recent decades is considered to have become one of the serious threats to security and stability in East Asia in particular and the world in general. Being an endless topic of conversation is based on the politics applied by North Korea which makes the international world always alert. Indonesia is directly or indirectly one of the countries that will be affected by the Korean peninsula nuclear war. The impact of radiation from the Korean Peninsula nuclear war affects health impacts, environmental impacts and socio-economic impacts. Buffer zones as one of the alternative steps to mitigate the impact of nuclear war. The method used in this research is a literature review that refers to the development of political issues between the North Korean and South Korean blocks, the theory of buffer zones that have been applied in warfare and studies of the impact due to nuclear radiation that has occurred. The purpose of this research is to mitigate and minimize the impact of the Korean peninsula nuclear war that will be received by the Indonesian region. From the results of the discussion, it can be concluded that the buffer zone is effective as an anticipation of the threat of nuclear war on the Korean peninsula because it can create a security and preparedness zone for the population and planning for strengthening infrastructure that supports the anticipation of the impact of nuclear war. The results of this study contribute to be used as a basic material for strategies to deal with nuclear war on the Korean peninsula.

Key Words: *Buffer Zone, Anticipate nuclear war, Literature review*

1. INTRODUCTION

The Korean Peninsula was originally part of the Japanese empire until the outbreak of World War II when it was decided that the Korean Peninsula was divided into two along the 38th parallel. It is known that although the history, national language race and geographical area of the two Korean peninsula countries are almost the same because of different ideologies the behavior of these two countries

is different in viewing the world this is a challenge to resolve the nuclear energy and missile conflict on the Korean Peninsula This region has become strategic in East Asia and continues to be involved in security issues, especially related to North Korea's nuclear and missile development (Khoiriyah, 2020). Over the past three decades, the Korean Peninsula nuclear issue has been considered one of the most serious threats to security and stability in Northeast Asia (Barannikova, 2022).

North Korea's increasing nuclear capability continues to carry out the mission of developing nuclear weapons to be able to demonstrate its existence in international diplomacy, as well as being a tool in policy-making for the benefit of the regime. The development of North Korea's nuclear weapons can exacerbate the security dilemma of regional countries in East Asia which then destabilizes regional relations which will strengthen the alliance between the United States and Japan (M manoe, 2022). Seeing these developments, Indonesia must plan prevention and preparation to minimize the impact that will be received.

The impact of nuclear war that occurs in the surrounding area has harmful effects, both short-term and long-term effects. The impact of nuclear radiation can threaten the security and defense of a country, security threats include health and food and affect the economic stability of the affected country and the stability of the population's security defense (Dzaky, 2023). The government's participation in preventing these events needs new thoughts or alternatives as an initial stage of prevention. Thus, it is hoped that Indonesia will be able to carry out mitigation and planning to face the threat of nuclear war on the Korean peninsula by preparing areas that may be affected, as well as all facilities and infrastructure needed to support readiness in facing the threat of nuclear war to minimize the losses that will be received.

Buffer zone is a zone or area that has a geographical location and strategic function that is made to detect, track to reduce the impact of potential nuclear threats to areas that are at high risk of becoming targets of nuclear attacks in this region as the first layer in the defence of a country. To ensure the security and territorial integrity of a country. Indonesia, as a major country in the Indo-Pacific region, the determination of the Indonesian Buffer Zone (IBZ) will have significant implications for regional and global security (Moreta et al., 2024). The development of a buffer zone as an anticipation of nuclear threats is a new thing that we need to

analyse to maximize the benefits obtained.

This research has several objectives. First, to find out what impacts will occur in the Indonesian region due to radiation from the Korean peninsula nuclear war. Second, which areas are likely to be affected by the Korean peninsula nuclear war? Third, how the buffer zone strategy is applied in the Indonesian region to minimize the impact received due to the Korean peninsula nuclear war?

This research provides several contributions. First, research on the anticipation of the threat of nuclear war on the Korean peninsula is beneficial to public awareness of the dangers posed by nuclear radiation, knowing procedures during emergency conditions, evacuation routes and shelter locations and community preparedness in dealing with emergencies. Third, this research can be taken into consideration to analyze planning strategies in dealing with disasters due to nuclear radiation.

2. LITERATURE REVIEW

2.1. Nuclear Threat

North Korea has again become the focus of international attention with its nuclear program. Nuclear development was first carried out during the reign of Kim Il-Sung with the construction of a nuclear complex in Yonghyeon. The nuclear complex is currently a weapons procurement base for North Korea. During the reign of Kim Jong-Il. The North Korean nuclear threat is increasing, and the phenomenon of North Korea's nuclear weapons testing is a threat to security stability (M manoe, 2022). In the context of international politics, the possession of nuclear weapons by a country does have a very high bargaining value, so nuclear can be used as an instrument of state power. The nuclear program is considered to have an impact on the emergence of major disasters such as famine, misery and death. In addition to endangering the environment, health and human life, it seems that the nuclear program also affects the economic downturn in some regional countries.

The reason North Korea uses nuclear as a diplomatic tool is the survival, economic and security regime because it thinks that as a small country with many limitations, it needs a strategy to achieve its national interests, including its nuclear development (Andi & Ahmad, 2010). North Korea's nuclear program is an integral part of the country's political economy, serving as an important tool for the Kim regime to maintain power. The program is used as a bargaining chip in international diplomacy, allowing North Korea to extract economic concessions from other countries, which is vital to its struggling economy (Habib, 2011).

2.2. Theory of Buffer Zone

The tension of the political situation on the Korean peninsula is an issue that never subsides, the conflict between North Korea and South Korea is often involved in unstable regional tensions due to various background factors. The background of the Korean conflict, the role of the Soviet Union and China in supporting North Korea, as well as US support for South Korea, and the role of Japan in the struggle for influence in Korea, which was originally only economic and regional interests, increased as the Cold War ideological competition (Rustamana et al., 2023). Coupled with the military power of North Korea, which continues to test nuclear bombs, making threats from South Korea directly and neighboring countries that may be affected, one of which is Indonesia. As a step to anticipate the nuclear impact on the territory of Indonesia, we need to study how to overcome it to minimize the effects on the territory of Indonesia.

The buffer zone strategy is not a new concept, the buffer zone concept evolved from the desire to protect the core area more than the buffer zone conservation area to minimize negative impacts to humans in particular. A buffer zone is a region or area placed around a country to provide protection and slow or inhibit the progress of a potential aggressor before it reaches the core area (Moreta et al., 2024). So the main purpose of the buffer zone for anticipating nuclear threats on the Korean peninsula is to reduce the risks that arise such as the risk of spreading nuclear radiation to other areas and cooperate with other countries to coordinate in dealing with the threat of nuclear war on the Korean peninsula.

Some purposes of buffer zones in times of war. Demmers' exploration of violent conflict theories suggests that buffer zones can help manage group dynamics by reducing direct interactions between conflicting parties, thus lowering the likelihood of violence (Demmers, 2016). The model of war zone stressors by Fontana and Rosenheck underscores the psychological toll of war, including PTSD. Buffer zones can potentially reduce exposure to direct combat stressors, thereby mitigating psychological harm to military personnel and civilians alike (Fontana & Rosenheck, 1999). The concept of buffer zones as a means of conflict mitigation and resource management in conservation can also be relevant in managing the aftermath of nuclear events, where resource allocation and community involvement are critical (Paudel et al., 2007). Critics argue that buffer zones can be ineffective or even counterproductive, as they may not address the underlying causes of conflict and can become areas of hidden competition and tension (Beehner & Meibauer, 2016).

3. METHOD

This research uses the literature review method. The literature review in this study first examines various previous research studies. Second, summarize and describe the results of previous research that are relevant to the topics discussed in this study. Third, determining research questions and answering research questions based on a summary of previous research to be applied to the topic of this research problem.

Before starting the research, the researcher will compile the research stages that we can see in Fig.1below.

Start

Determining research questions

Conducting of literature review

Screening literature that is relevant to the research

Processing research literature data

Summarizing the results

Finish
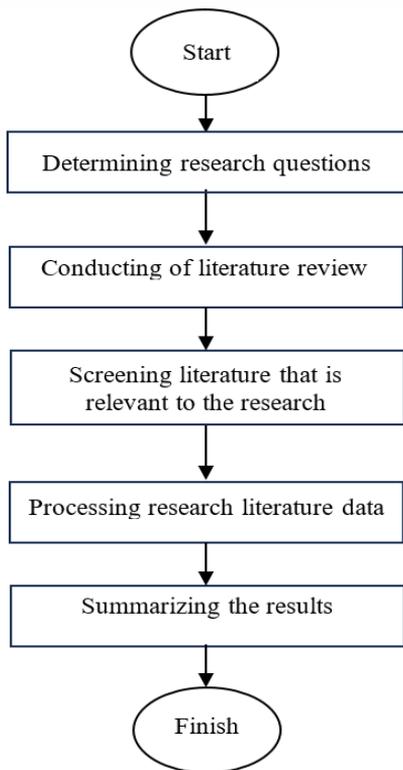
Fig.1 Research Stages

Furthermore, the research flow is discussed and described based on the literature review, will be drawn in a conceptual framework. Starting from taking the topic of buffer zones as an anticipation of the threat of nuclear war on the Korean peninsula, describing the theory of buffer zones with various objectives ranging from environmental, military and socio-economic designations. From the topic taken buffer zone theory for the military, the next step is to determine the research questions by the objectives of this research discussion. Furthermore, from the basis of the literature review, a discussion will be carried out to find answers to the research questions, which will conclude the discussion according to the topic taken.

From the conclusion of the literature review, the objectives and benefits that can be applied in the event of a nuclear war can be taken to minimize the impact of threats and losses incurred and become a planning material for overcoming and mitigating natural disasters and disasters due to war. The following conceptual framework is shown in Fig. 2.
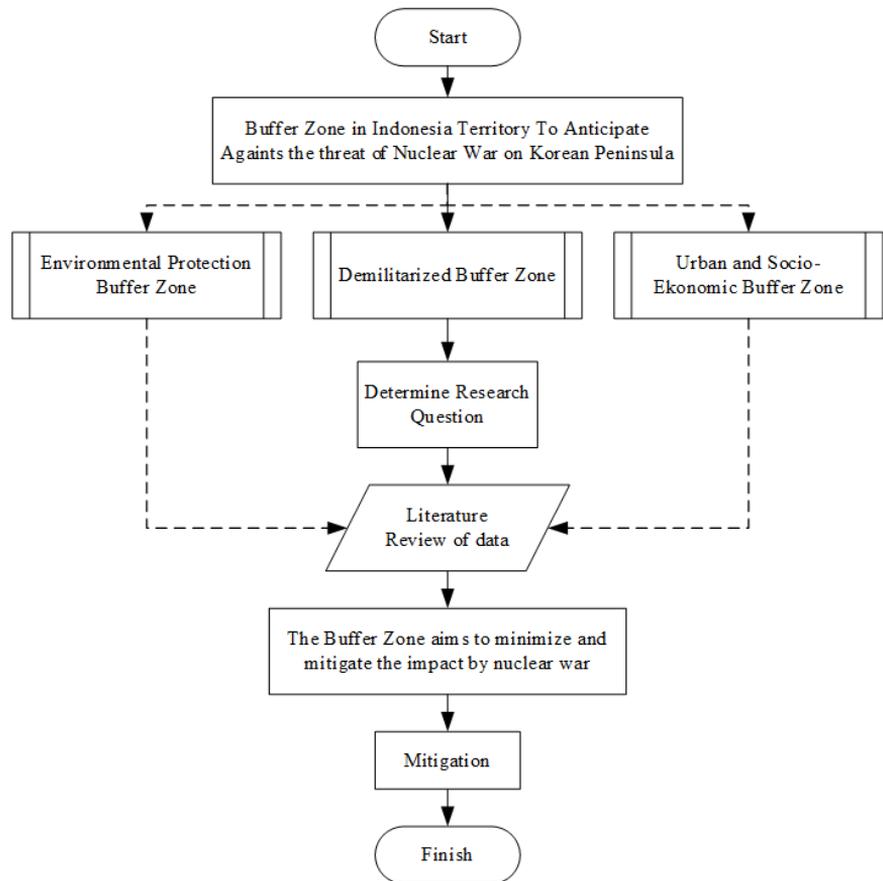
Fig. 2 Conceptual Framework

4. RESULT AND DISCUSSION

4.1. Areas Likely to be Affected by Nuclear Radiation

Looking at the boundaries of Indonesia's territory that is directly affected by the Korean peninsula nukes are the Natuna region to the North Maluku Sea area. Furthermore, we can focus on which areas are most likely to be affected by the nuclear fallout. From the areas mentioned earlier, if we draw a straight line and calculate the distance of about 5,500 Km from the Korean peninsula to the Indonesian territory, the North Sulawesi Sea and

the North Maluku Islands are the most likely areas to be affected. North Sulawesi has several islands that are quite far apart in the north which borders directly with the Philippines, namely Marore Island, Miangas Island and several large islands, namely the Talaud Islands, Sangihe Islands and Morotai Islands in the North Maluku Islands.

The factor that affects the spread of radiation due to the Korean Peninsula nuclear war in the Indonesian region is the wind that can carry radioactive particles. The most influential wind factor is the monsoon wind that carries hot air from the Siberian plateau north of the Korean peninsula. The western monsoon winds blow from October to April, assuming the possibility of radiation being able to reach Indonesia with weather support.
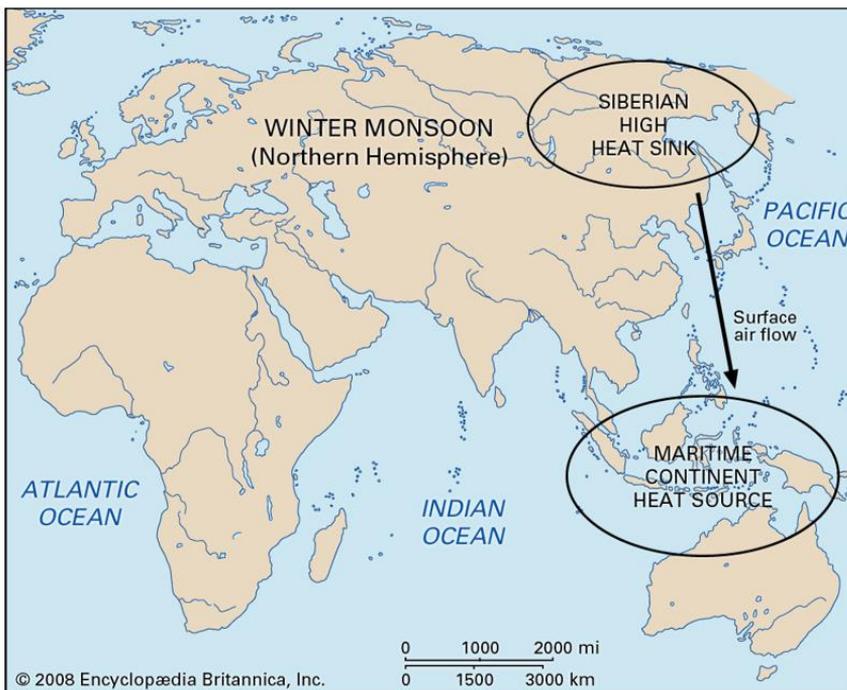
Fig. 3 Direction of monsoon winds
(Source: https://www.britannica.com/)

From the data of the Central Statistics Agency (CSA) in 2024, the population of the Sangihe Islands is 142,850 people, the Talaud Islands 98,300 people. According to Central Statistics Agency (BPS) in 2022, the population of Morotai Island is 78,270 people. In total, there are

about 319,420 people who are included in mitigation and evacuation planning when the impact of nuclear radiation on the Korean peninsula occurs. With a large number of people, an appropriate evacuation strategy and information dissemination on nuclear radiation disasters are needed.

Table 1 Total Population Data

NO	Regency/ City	Total Population (people)
1	Sangihe Islands	142.850
2	Talaud Islands	98.300
3	Morotai Island	78.270

(Source. https://www.bps.go.id/)

4.2. **Impacts Posed by Nuclear Radiation.**
4.2.1. **Impact of Nuclear Radiation for Health**

Several impacts will arise due to nuclear radiation. The health effects of radiation exposure can cause acute health problems. Long-term implications due to radiation at low radiation doses can increase the risk of cancer, especially thyroid cancer. High radiation effects can affect cells that divide rapidly, also called acute radiation syndrome (ARS) can cause severe skin injuries due to exposure to gamma and beta radiation and aggravated by radioactive aerosols. In this case, the most vulnerable victims of nuclear radiation are children and pregnant women because they are in the process of development.

Table 2 Literature review impact nuclear radiation for health.

Title, Authors	Type	Conclusions
Research Progress on the Impact of Nuclear Radiation in Food on Human Health (Han Wen, 2024)	Science and Technology	Irradiated food has an impact on human health, with high doses causing acute illnesses and low doses potentially leading to chronic diseases. Pregnant women, infants, and children are more sensitive to nuclear radiation, and irradiated food may pose health risks such as cancer, genetic mutations, and immune system effects.
Radioactive releases from the nuclear power sector and implications for	BMJ Paediatrics Open	The paper highlights the disproportionate impacts of radioactive releases on women and children, especially in frontline and Indigenous communities, due to their increased sensitivity to toxic exposures

Title, Authors	Type	Conclusions
child health (Cindy folkers, 2022)		during development.
A brief overview of radiation waste management and nuclear safety (Manyika Davy, 2023)	Physics & astronomy international journal	Some radionuclides have half-lives of more than a quarter of a million years, posing a serious threat to future generations who will have to deal with such long-lasting nuclear waste.
Health Effects of Ionizing Radiation on the Human Body (Jasmine talapko, 2024)	Medicine journal	the consequences of acute radiation syndrome (ARS) on various systems in the human body, including the respiratory system, nervous system, hematopoietic system, gastrointestinal tract, and skin, due to the effects of radiation on cells and tissue
Effect of Ionizing Radiation on Human Health (Ashish Chaturvedi, 2019)	International Journal of Plant and Environment	The paper discusses the harmful effects of ionizing radiation on human health, including radiation-induced cancer, which poses a certain risk even at low doses of radiation.
Health Effects of Radiation Exposure to Human Sensitive Organs Across Some Selected (R. Usman, 2022)	Journal of oncology research	The conclusion drawn from the findings is that the background radiation levels in Plateau State do not pose an immediate health concern for sensitive organs, but long-term exposure over approximately seventy years could potentially lead to health issues such as cancer.

4.2.2. Impacts of Nuclear radiation or environment

The impact on the environment is that it can contaminate groundwater sources, the sea in this case fishery products and agricultural products because research results show that radionuclides can persist in ecosystems for years leading to bioaccumulation in the food chain (Proshad et al., 2023). The immediate and long-term consequences can alter the ecological balance and pose significant risks to biodiversity and human populations. Thirdly, the economic impacts include some disruption of trade and tourism routes due to related health issues due to exposure to nuclear radiation.

Table 3 Literature review impact of nuclear radiation for environment.

Title, Authors	Type	Conclusions
An Overview of the Measurements of Primordial Radionuclide Concentrations in Soil and Radon Concentrations in Water Samples. (Sardar othman, 2022)	Asian Journal of Research and Reviews in Physics	Highlights the health risks associated with radioactive materials in soil and water, emphasizes the impact on human health, especially in terms of the development of cancer, and suggests areas that should be avoided due to radiological hazards.
Release of Radioactive Particles to the Environment (Brit Salbu, 2024)	Radiation research Journal	Radioactive particles released into the environment can be transported across great distances, affecting ecosystems far from their source. This was especially observed after the Chornobyl accident, where radioactive particles were detected throughout Europe.
Research on the Granger Causality Experiment of Fukushima Nuclear Wastewater Discharge on Changes in Oil Market Prices (Zhen Cui, 2024)	Highlights in Science Engineering and Technology	In linear experimental analysis, the discharge of nuclear wastewater led to an increase in the price of oil during the same period. However, the Granger causality experiment results showed no significant direct relationship between nuclear wastewater discharge and changes in oil prices.
Environmental Contamination from Nuclear Events (Johnson & Lee, 2021)	Environmental impact Journal	Examines radionuclide persistence in ecosystems and its effects on food safety.
Safe from Harm? Massive Attack Nuclear Worst-Case Scenario for Civil Protection in Germany Regarding High-Risk Zones of Exposure, Vulnerability, and Safe Havens (Fekete A, 2022)	Multidisciplinary Digital Publishing Institute	A spatial assessment of Germany and Europe was conducted using a geographic information system. Circles of buffer zones from the effects of nuclear explosions and fallout buffers show the potentially exposed areas around major cities.

4.2.3. Impacts of nuclear radiation for socio-economic

The socio-economic impacts are diverse, including health, social behaviour, economic behaviour and demographic changes. Socially, there is a decrease in social interaction, decreased happiness levels and social isolation. Economic behaviour changes, namely the displacement of middle and upper-economic communities, result in unbalanced demographics that have the potential to hamper economic recovery and infrastructure development.

Other impacts include several disruptions, namely trade routes and tourism due to health issues due to exposure to nuclear radiation. The consequences of the impact of nuclear radiation require careful planning and hard efforts to overcome this problem because it includes building and improving health facilities, social improvement and economic improvement strategies to reduce long-term socio-economic impacts. And what is no less important is the mental and psychological aspects of society facing this disaster due to nuclear radiation.

Table 4 Literature review Impact nuclear radiation for social economic.

Title, Authors	Type	Conclusions
Economic Analysis of Climatic and Agricultural Impacts of Nuclear War (Zhang et al. 2018)	Global trade analisys project	Socioeconomic impacts of nuclear events, highlighting the need for analysis on economic behaviour and biophysical drivers. The paper also discusses potential responses to changes in agricultural markets, including behavioural changes such as migration and technological advances.
Who Will Shape the New World Order? (K. Aiginger, 2022)	Inter economics journal	The potential for nuclear conflict could also alter policy priorities, potentially delaying climate policies and investments in renewable energy as countries focus on immediate security concerns.
Post-War Capital Accumulation and the Threat of Nuclear War (Joel Slemrod, 1982)	Social Science Research Network	This paper shows that the threat of nuclear war has the potential to affect not only the level of private savings but also other economic factors such as the level of investment in human capital, asset prices, interest rates, and inflation rates.
Global research on nuclear energy in	Global research on	Economic interests play a crucial role in driving research on nuclear energy from

Title, Authors	Type	Conclusions
the context of health and environmental risks, considering economic interests (D. Klingelhöfer, 2023)	nuclear energy in the context of health and environmental	health and environmental perspectives, highlighting the importance of considering socio-economic parameters in evaluating the sustainability of nuclear energy.
Comparing Economic and Crop Models: The Case of Climatic and Agricultural Impacts of Nuclear War (Gal Hochman, 2019)	Global trade analisys project	Highlighted the importance of preserving the world trading system to prevent widespread famine and suffering due to nuclear wars

4.3. Buffer zones as mitigation against the effects of nuclear war

With the establishment of areas that have been mentioned as buffer zones, these areas are areas that are prepared as nuclear disaster alert areas. Several stages have been set by the disaster management agency in Indonesia, against the threat of natural disasters, or in this topic is the threat of nuclear war on the Korean peninsula if the situation heats up. The development of the Korean Peninsula nuclear war issue must always be monitored as an early action to prepare for all forms of possibilities that occur, with consideration of all factors that will support the impact to the territory of Indonesia. This nuclear countermeasure planning is carried out to secure the population of the region from nuclear radioactive radiation so that the losses incurred can be minimized as well as possible. The following is a review of literature studies used as the basis for planning and the purpose of how the buffer zone is used to anticipate the impact of the Korean peninsula nuclear war.

Table 5 Literature review buffer zone.

Title, Authors	Type	Conclusions
Analysis of Indonesian buffer	Jurnal Studi Islam dan	Identify and determine perceptions of Indonesia's outer islands, which will be

Title, Authors	Type	Conclusions
zone location selection in anticipating an increase in conflict escalation in the Indo-Pacific region. (Y.A Moreta et al. 2024)	Humaniora	used as buffer zones using the Delphi method. Then the island areas selected as Indonesian buffer zones can be developed and utilised properly and appropriately.
The Power Rivarly between China and India: Managing the Buffer Zone between the Two States. (Horehaj, Adam, 2019)	Charles university digital repository	Managing the Buffer Zone between Two Countries examines the strategic behaviour of China and India about the buffer zone located around their common border.
Peran Nuklir Korea Utara Sebagai Instrumen Diplomasi Politik Internasional. (A. Purwono, ahmad, 2010)	Jurnal ilmu politik hubungan iternasional	North Korea considers the deterrent effect of having a nuclear strike capability will guarantee the survival of the Pyongyang regime, which is none other than the communist regime that still wants to exist in the hemisphere.
Nuclear-weapon-free zone initiatives: challenges and opportunities for regional cooperation on non-proliferation (Hamel-greenm 2009)	Global Change, Peace & Security journal	nuclear weapon states' review of the current non-proliferation benefits of nuclear-weapon-free zones; commissioning of new studies by UN Experts on nuclear-weapon-free zones; regional studies on the human, economic, and climate impacts of nuclear war; and new efforts at the regional level for nuclear-weapon-free zones to establish new zones and strengthen existing ones.
Explanation of the Structural and Functional Characteristics of Geographical Buffer spaces (MR. Hafiznia et al. 2013)	Geopolitics Quarterly journal	The study aims to understand and explain the nature and structural-functional characteristics of buffer spaces, emphasizing their role in preventing direct contact and conflict between rival powers through mutual or unilateral agreements.
Effectiveness of protected area	Journal of Environmental	Suggest that the institutional platform provided by the Buffer Zone program to

Title, Authors	Type	Conclusions
revenue-sharing program: Lessons from the key informants of Nepal's buffer zone program. (S. Dixit et al. 2024)	Management	stakeholders, rather than the shared income itself, creates greater impact on integrated conservation and development. Findings also suggest that the effectiveness of such programs can be further enhanced by providing local Buffer Zone institutions with a modicum of autonomy to meet local needs.
Zones of Dissonance and Deceit: Nuclear Emergency Planning Zones. (Overy, 2020)	GeoHumanities and Health Journal	The paper concludes that Emergency Planning Zones (EPZs) around nuclear power stations serve to create an illusion of safety through a flawed 'health and safety' narrative, masking the inherent dangers of nuclear power and radiation.

The results of this countermeasure planning are expected to minimize losses due to nuclear radiation that may occur or be affected in the region. Currently, seeing the position of the buffer zone area which is an island located quite far from the safe zone for evacuation, what can be done to overcome the impact of nuclear radiation is to evacuate the population to an area designated as a safe zone. Areas bordering the buffer zone or safe area as an evacuation site must be planned or prepared infrastructure, health facilities and infrastructure to support or save victims.

By the emergency evacuation procedures issued by the National Disaster Management Agency. Firstly, the current condition is the pre-disaster stage which includes prevention and mitigation as well as preparedness. In this stage are structural efforts to prepare facilities and infrastructure as well as counseling to the public about the impact of nuclear warfare and raising awareness of emergencies (Rocchio & Domingo-Calabuig, 2023) Second, the emergency stage, which includes the determination of emergency status, rescue and evacuation processes, basic logistical support and the main protection of vulnerable groups (children, women and the elderly).
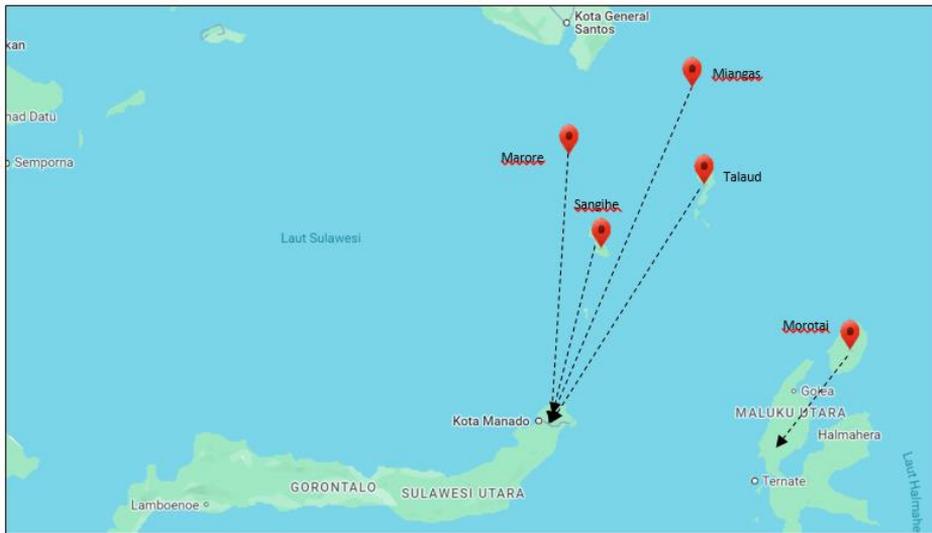
Fig. 3 Evacuation map from buffer zone
(Source: https://www.google.com/maps/)

Evacuation planning is by sea and air, of the four main islands planned only Marore Island does not have an airport, the other three islands each have their airport. A rapid evacuation process can be carried out by aircraft prioritising vulnerable groups and other evacuations are carried out by sea. Stakeholders must involve various stakeholders who have facilities and infrastructure in this evacuation process. Furthermore, logistical support and other resources to support during evacuation or evacuation shelter safe evacuation places in Manado and Ternate according to their respective provinces.

5. CONCLUSION

The issue of the Korean peninsula nuclear conflict is still a hot international discussion, especially in the East Asian region. The impact also affects the territory of Indonesia, the impact of various aspects, one of which is the most dangerous nuclear radiation. The impact on health, on the environment and the socio-economy. Buffer zone that can be applied in the territory of Indonesia in

anticipating the impact of the Korean peninsula nuclear war, in the current condition the most relevant buffer zone that can be applied in the territory of Indonesia is the evacuation of personnel. To Minimize losses due to the impact caused.

From the research, several topics can be taken that can be continued into further research. First, infrastructure planning for special health facilities for nuclear radiation victims. Here it can be determined which areas are planned as evacuation sites or safe zones. Second, the design of infrastructure for early detection of nuclear threats placed in border areas prone to nuclear radiation disasters. Third, the creation of a planned evacuation pattern in the event of a disaster due to nuclear war.

REFERENCES

[1] N. S. Paudel, P. Budhathoki, and U. R. Sharma, "Buffer zones: New frontiers for participatory conservation?," *J. For. Livelihood*, vol. 6, no. 2, pp. 44–53, 2007.

[2] L. Beehner and G. Meibauer, "The futility of buffer zones in international politics," *Orbis*, vol. 60, no. 2, pp. 248–265, 2016.

[3] R. L. Usman, J. Waida, U. Ibrahim, N. G. Goki, and S. D. Yusuf, "Health Effects of Radiation Exposure to Human Sensitive Organs Across Some Selected," *J. Oncol. Res.*, vol. 4, no. 2, pp. 27–37, 2022.

[4] B. Habib, "North Korea's nuclear weapons programme and the maintenance of the Songun system," *Pacific Rev.*, vol. 24, no. 1, pp. 43–64, 2011.

[5] A. Fontana and R. Rosenheck, "A model of war zone stressors and posttraumatic stress disorder," *J. Trauma. Stress*, vol. 12, no. 1, pp. 111–126, 1999, doi: 10.1023/A:1024750417154.

[6] M. K. Dzaky, "Analisis Perjanjian Pakta Aukus (Australia, United Kingdom, United States) Dalam Menciptakan Keamanan Internasional," no. January, pp. 0–20, 2023.

[7] and P. D. G. Arthur Ebregt, "Buffer zone and their management," *For. For. Biol. Divers. Support Gr.*, no. October, pp. 1–64, 2000, [Online].

[8] A. Barannikova, "Korean Peninsula Nuclear Issue: Challenges and Prospects," *J. Peace Nucl. Disarm.*, vol. 5, no. sup1, pp. 50–68, 2022, doi: 10.1080/25751654.2022.2053409.

[9] M. Lehtveer and F. Hedenus, "Nuclear power as a climate mitigation strategy - Technology and proliferation risk," *J. Risk Res.*, vol. 18, no. 3, pp. 273–290, 2015, doi: 10.1080/13669877.2014.889194.

[10] M. Marzouk and M. Sabbah, "AHP-TOPSIS social sustainability approach for selecting supplier in construction supply chain," *Clean. Environ. Syst.*, vol. 2, no. March, p. 100034, 2021, doi: 10.1016/j.cesys.2021.100034.

[11] M. Hamel-Green, "Nuclear-weapon-free zone initiatives: Challenges and opportunities for regional cooperation on non-proliferation," *Glob. Chang. Peace*

Secur., vol. 21, no. 3, pp. 357–376, 2009, doi: 10.1080/14781150903169042.

[12] G. Halkos and A. Zisiadou, "Energy Crisis Risk Mitigation through Nuclear Power and RES as Alternative Solutions towards Self-Sufficiency," *J. Risk Financ. Manag.*, vol. 16, no. 1, 2023, doi: 10.3390/jrfm16010045.

[13] D. Rocchio and D. Domingo-Calabuig, "The pre-design phase in the post-catastrophe intervention process," *case Chamanga*, 2023.

[14] R. Proshad *et al.*, "A global meta-analysis of radiological contamination in soils and Monte Carlo simulation-oriented hazards evaluation," *J. Environ. Chem. Eng.*, p. 111603, 2023.

[15] M. Aldikawati, "The Prospect of korean reunification (Dynamics of inter-korean relations and its impact to east Asia"s regional security stability in Post-cold war era)," pp. 1–23, 2016, [Online].

[16] M. Najeri and A. Syahrin, "Nation State: Journal of International Studies Kompleksitas Keamanan Kawasan dan Tantangan Kerja Sama Keamanan Asia Timur," vol. 1, no. 1, 2018.

[17] M. E. Rosen, C. M. E. Rosen, and U. S. Navy, "Nuclear-Weapon-Free Zones," vol. 49, no. 4, pp. 44–61, 1996.

[18] J. F. Mas, "Assessing protected area effectiveness using surrounding (buffer) areas environmentally similar to the target area," *Environ. Monit. Assess.*, vol. 105, no. 1–3, pp. 69–80, 2005, doi: 10.1007/s10661-005-3156-5.

[19] A. M. Dunn, G. Julien, W. R. Ernst, A. Cook, K. G. Doe, and P. M. Jackman, "Evaluation of buffer zone effectiveness in mitigating the risks associated with agricultural runoff in Prince Edward Island," *Sci. Total Environ.*, vol. 409, no. 5, pp. 868–882, 2011, doi: 10.1016/j.scitotenv.2010.11.011.

[20] S. Khoiriyah, "Analisis Kebijakan Luar Negeri Era Kepemimpinan Kim Jong Un dan Moon Jae In Terhadap Resolusi Konflik Semenanjung Korea," *J. Dipl. Int. Stud.*, vol. 3, no. 02, pp. 65–75, 2020.

[21] N. Overy, "Zones of Dissonance and Deceit: Nuclear Emergency Planning Zones," in *GeoHumanities and Health*, Springer, 2019, pp. 215–240.

[22] C. R. Tirtalaksana, S. Hardiwinoto, and ..., "Tanggung Jawab Dewan Keamanan Pbb dalam Menyikapi Kasus Senjata Nuklir Korea Utara dan Implikasi terhadap Masyarakat Internasional," *Diponegoro Law …*, vol. 5, pp. 1–15, 2019, [Online].

[23] P. Andi and Z. Ahmad, "Peran nuklir korea utara sebagai instrumen diplomasi politik internasional," *Ilmu Hub. Int.*, vol. 7, no. 2, pp. 1–19, 2010.

[24] A. Rustamana, W. N. Afiah, R. Rahmawati, and Suherman, "Intervensi Kekuatan Global Dari Dominasi Ekonomi Menjadi Dominasi Politik Dalam Pemisahan Korea," *Sindoro Cendekia Pendidik.*, vol. 1, no. 1, pp. 1–13, 2023, doi: 10.9644/scp.v1i1.332.

[25] J. Demmers, *Theories of Violent Conflict*. 2016. doi: 10.4324/9781315715025.

[26] A. Fekete, "Safe from Harm? Massive Attack Nuclear Worst-Case Scenario for Civil Protection in Germany Regarding High-Risk Zones of Exposure, Vulnerability, and Safe Havens," *Challenges*, vol. 13, no. 2, p. 47, 2022, doi: 10.3390/challe13020047.

[27] R. Adam, "Analisis Strategi Nuklir Korea Utara Pasca Perang Dingin: Pengaruh Proliferasi Nuklir Korea Utara Terhadap Stabilitas Keamanan Asia Timur," *Ganaya J. Ilmu Sos. dan Hum.*, vol. 6, no. 3, pp. 579–593, 2023.

[28] Y. A. Moreta, O. S. Suharyo, J. Purnomo, and A. K. Susilo, "Analysis of Indonesian buffer zone location selection in anticipating an increase in conflict escalation in the Indo-Pacific region," vol. 4, no. 2, pp. 1521–1536, 2024.

[29] M. Rivki, A. M. Bachtiar, T. Informatika, F. Teknik, and U. K. Indonesia, "The power rivalry between china and india managing the buffer zone betweeen the two states," no. 112.

[30] M manoe, "Kebijakan nuklir korea utara pada masa pemerintahan Kim jong un dan dampaknya terhadap stabilitas internasional," *J. Econ. Perspect.*, vol. 2, no. 1, pp. 1–4, 2022, [Online].

STRATEGIC ADVANTAGE OF STATE-OWNED ENTERPRISES (SOEs) DEVELOPMENT POLICIES IN STRENGTHENING NAVAL ARMAMENTS

RN. YUSUF*, M. MOELJADI **, S. SUTRISNO **, A.K. SUSILO***

* University of Brawijaya, Malang, Indonesia;
**Lecturer Staff, University of Brawijaya, Malang, Indonesia;
***Indonesia Naval Technology College, Indonesia

In an increasingly complex and dynamic era, the capabilities of naval armaments become crucial aspects in ensuring a country's maritime sovereignty. State-owned Enterprises (SOEs) have significant potential to act as drivers in strengthening the capabilities of naval armaments. This paper aims to delve deeper into the role and contribution of SOEs in the development of the defense industry, particularly in the context of strengthening the capabilities of naval armaments. This approach includes conceptual analysis and case studies that allow researchers to explore various aspects of policies and practices related to SOE development in the defense industry. The experts were interviewed with a total of 12 expert panels. Several important findings resulting from this analysis reinforce awareness of the crucial role of SOEs in supporting maritime defense while highlighting the potential of specific strategies in achieving the goals of strengthening naval armaments, such as Variation of Strategies Adopted by SOEs in Developing the Defense Industry, consists of Product Diversification and Technological Innovation; Collaboration with Strategic Partners; Operational Efficiency Improvement. Besides that, the success of SOE development policies in the defense industry encompasses coordinated inter-agency cooperation, investment in research and development (R&D), and supportive regulations. Further improvement and development steps in the maritime defense industry include enhancing synergy with the government through the establishment of special teams and discussion forums, boosting R&D investment through fiscal incentive programs and the establishment of innovation centers, as well as improving responsive regulations through the formation of regulatory committees and independent audits.

Key Words: *Naval Armaments, SOEs, Defense Industry, Development Policies, Strategic Advantage.*

1. INTRODUCTION

In the current global dynamics, maritime sovereignty has become a primary focus for many countries with extensive maritime territories or high economic dependency on the maritime sector (Strating and Wallis, 2022). The era of globalization brings new challenges, including the

increasing complexity of security in the oceans (Mendenhall, 2020). Amidst these challenges, the capabilities of naval armaments stand as one of the main pillars in safeguarding a nation's maritime sovereignty (Atlan, 2023). Reliable and high-quality naval armaments are key to ensuring the security and sustainability of maritime activities (Pudjiastuti, Putra and Susilo, 2021).

With the development of technology and rapidly evolving threats, the need for effective and adaptive naval armaments is increasingly pressing. In this context, the role of State-Owned Enterprises (SOEs) in the development of the defense industry becomes highly relevant (Garcia Herrero, 2019). SOEs have significant potential to act as drivers in strengthening the capabilities of naval armaments. By having greater control over the production process and technology development in the defense industry, SOEs can be more flexible in adapting to the defense needs of the country. Additionally, SOEs can also serve as catalysts for technology transfer and enhancing self-reliance in the production of naval armaments (Castelnovo, 2022).

With this background, this paper aims to delve deeper into the role and contribution of SOEs in the development of the defense industry, particularly in the context of strengthening the capabilities of naval armaments. Through in-depth analysis, this article seeks to provide a more comprehensive insight into the importance of SOEs in maintaining a nation's maritime sovereignty in an era of globalization filled with challenges.

This study has several contributions, theoretically this study enriches the literature on innovation and technology in industrial conservation, especially in the maritime sector (Farras *et al.*, 2024). This study also provides a framework for understanding the relationship between collaboration strategies, technology transfer, and defense capability enhancement. This study contributes to the literature on the internationalization of state-owned enterprises (SOEs) by showing how home-country policy strategies can impact the enhancement of local military strategic power. This study is expected to provide in-depth insights into the strategy of the role of state-owned enterprises in the national defense industry and offer solutions to improve the quality and effectiveness of naval weapons through innovation and technology. In addition, through this thematic process analysis, this study is expected to provide in-depth insights into how state-owned enterprises contribute to the development of naval weapons through innovation

and technology, as well as the factors that influence their success in this sector. This study also contributes to economic conservation by highlighting the economic factors that influence innovation in industrial conservation. This study can inform theories about how economic conditions, government policies, and market dynamics affect the ability of SOEs to innovate and contribute to national security.

2. MATERIAL AND METHODOLOGY

2.1. State-Own Enterprise (SOE)

The historical role of state-owned enterprises in today's advanced market economies has often revolved around exploiting their monopoly power, whether natural or created by state licensing, to raise state revenues. However, an equally important role has been the promotion of industrial development. In the context of developing economies, where capital markets are not always fully developed, and the ability or willingness of private entrepreneurs to take risks is considered adequate for national needs, state-owned enterprises may have a further key role in galvanizing domestic manufacturing activity, providing infrastructure services, or winning and channeling foreign economic aid

that donors would rather not see enriching private owners (Lawson, 1994). State-owned enterprises are companies that have a significant presence in a country because many operate in core economic sectors and provide basic goods and services (Baum et al., 2020). Given the important role of SOEs and their subsidiaries in the Indonesian economy, SOE resilience is very important. Resilience is a long-term strategic effort that significantly affects how an organization operates (Lisdiono et al., 2022).

The nature of state-owned enterprises is exceptional. There is no context regarding the economic rationality of SOEs. Of course, public authorities can and do support the creation of knowledge through universities and public research centers; however, to the diffusion and valorization of commercial technologies, companies emerge to handle the coordination and coordination related to the use of market mechanisms and the allocation of resources (Dragomir, Dumitru and Feleagă, 2021). The relationship between SOEs and the government is undergoing a process of corporatization. Initially, they are servants of the state, adopting the same organizational goals. Later, they gradually develop their internal competencies and ensure their financial desires, loosening their ties with the government. With the

decline of government control, SOEs acquire entrepreneurial autonomy. The renewed tendency to achieve market goals is particularly relevant in the middle management of SOEs (Landoni, 2020).

2.2. Method

This research adopts a structured and holistic approach to understand (Awuzie et al., 2021) the impact of SOE development policies on strengthening naval armaments. This approach includes conceptual analysis and case studies that allow researchers to explore various aspects of policies and practices related to SOE development in the defense industry.

First, conceptual analysis is used to identify relevant conceptual frameworks for understanding the role of SOEs in strengthening naval armaments. This approach involves a careful review of literature on key concepts such as maritime sovereignty, defense industry, and the role of SOEs in national economic development. Next, case studies are selected to provide a deeper insight into the implementation of SOE development policies in practice. These case studies involve the analysis of several SOEs in the defense industry that have implemented relevant development policies for strengthening naval armaments. Data and information

required for these case studies are obtained from various sources, including official documentation, company annual reports, and information from relevant stakeholders.

Furthermore, interviews with related experts were conducted to gain deeper insights and perspectives on issues related to BUMN development policies in the defense industry. The experts interviewed may include government officials, academics, industry practitioners, and other stakeholders who have relevant knowledge and experience with a total of 12 expert panels.

Table 1 Demographic information of the experts.

Expert	Field	Position
E1; E2; E3	PhD in Maritime Industries	Academic and Professional
E4; E5; E6; E7	Master in Naval	Academic and Professional
E8; E9; E10	PhD Student in Maritime Management	Academic
E11; E12	Master in Defense industries	Professional

By combining conceptual analysis, case studies, and interviews with experts, this research aims to provide a comprehensive understanding of the impact of SOE

development policies on strengthening naval armaments. The findings of this research are expected to contribute valuable insights into formulating more effective and strategic policies in optimizing the role of SOEs in supporting the naval defense of the country.

3. RESULTS AND DISCUSSION

The analysis of SOE development strategies in the defense industry is the main focus of this research due to its crucial influence on shaping a country's defense capabilities, particularly in strengthening naval armaments. Through a deep understanding of the strategies adopted by SOEs, this research aims to identify the extent to which these development policies can positively impact the enhancement of naval armament capabilities. Several important findings resulting from this analysis reinforce awareness of the crucial role of SOEs in supporting maritime defense while highlighting the potential of specific strategies in achieving the goals of strengthening naval armaments. Thus, a profound understanding of SOE development strategies becomes the foundation for stakeholders in formulating more effective and purposeful policies to support national maritime defense.

3.1. State-owned enterprise development policy strategy in increasing naval weapons capabilities

3.1.1. Variation of Strategies Adopted by SOEs in Developing the Defense Industry

SOEs in the defense industry have adopted a product diversification approach with a focus on developing various types and functions of warships and producing advanced naval weapon systems, such as anti-ship missiles and naval guns, while continuously innovating in sensing and communication technology. They also strengthen strategic partnerships with domestic defense industries to develop local technology and engage in international cooperation in joint warship construction projects, while enhancing operational efficiency through the application of Industry 4.0, IoT, and lean and Six Sigma management (Gutierrez-Gutierrez and Antony, 2020) methods.

3.1.1.1. Product Diversification

Development of policy strategies in the defense industry includes easing various social obligations and restructuring ownership, which allows for ownership diversification (Ervits, 2023). The law governing state-owned enterprises states several industrial policy objectives, including infrastructure

modernization, economic diversification and the creation of large integrated vertical structures to gain competitive advantage in international competition (Kowalski et al., 2013). Instead, rely on self-financing through various means such as increasing integration, diversification, through reinvestment of profits and tariff income to cover asset depreciation costs (Le, Park and Castillejos-petalcorin, 2023).

Development of warships with various types and functions, such as aircraft carriers, destroyers, submarines, and patrol vessels: In the product diversification strategy, SOEs in the defense industry focus on developing a diverse range of warships in types and functions. They develop aircraft carriers with long-range power projection capabilities, robust destroyers to face enemy threats in open waters, submarines capable of operating undetected below the sea surface, and patrol vessels ensuring security in national waters, providing a comprehensive overview of Indonesia's naval strength.

Production of naval weapon systems including anti-ship missiles, naval guns, and shipborne air defense systems: Additionally, SOEs also focus on producing advanced naval weapon systems to be installed on these warships. They produce anti-ship missiles capable of launching long-range attacks against enemy vessels, naval guns providing medium-range fire support, and shipborne air defense systems effective in countering air threats, providing solid defense capabilities for Indonesian warships.

Innovation in sensing, communication, and navigation technology to enhance naval armament performance: Furthermore, in support of naval armament performance, SOEs innovate in sensing, communication, and navigation technology. They continue to develop more sophisticated sensors and sensing equipment to detect and track enemy targets with high accuracy, reliable communication systems to ensure efficient coordination between ships and other defense units, and state-of-the-art navigation technology to ensure the mobility and operational precision of these warships in various maritime environments.

3.1.1.2. Collaboration with Strategic Partners

Collaboration with domestic defense industries to develop local technology that can be integrated into naval armaments: Collaboration with domestic defense industries is a significant milestone in SOE strategies. Collaboration among different partners offers greater knowledge about new technology development (Landoni, 2020). Through this collaboration, SOEs

can leverage local expertise and resources to develop technology that meets naval armament needs. The exchange of knowledge between SOEs and domestic defense industries opens opportunities for greater innovation, which in turn can enhance Indonesia's defense industry competitiveness overall. Among other considerations, this collaboration allowed the partners to share the financial risk of investing in countries that had only recently become market economies (Cheung, Aalto and Nevalainen, 2020).

Partnerships with international companies to transfer advanced technology and expand global market reach: Partnerships with international companies are a strategic step for SOEs to access advanced technology and expand global market reach. By establishing these partnerships, SOEs can transfer the latest technology into the Indonesian defense industry, enhancing production capabilities and innovation. Additionally, access to global markets through these partnerships opens opportunities for business expansion and increased exposure of Indonesian defense products internationally.

Signing cooperation agreements with navies of partner countries for joint warship construction projects: Signing cooperation agreements with navies of partner countries is a concrete step for SOEs in strengthening bilateral relations and building joint projects in warship construction. Through this cooperation, SOEs can share knowledge, technology, and resources with international partners, which not only strengthens the national defense industry but also enhances defense cooperation between countries. Thus, signing these cooperation agreements has positive economic, political, and strategic implications for Indonesia.

3.1.1.3. Operational Efficiency Improvement

Implementation of Industry 4.0-based manufacturing systems to enhance automation and production efficiency: In the operational efficiency improvement strategy, SOEs in the defense industry take concrete steps to improve their production processes (Castelnovo, 2022). Firstly, they adopt Industry 4.0-based manufacturing systems, implementing advanced automation and data integration to enhance overall production efficiency. With this system, SOEs can reduce production time, improve responsiveness to market changes, and optimize resource utilization.

Utilization of IoT (Internet of Things) technology to monitor and optimize the performance of machinery and systems on warships: SOEs leverage Internet of Things (IoT) technology to monitor and

optimize the performance of machinery and systems on warships. Through the use of sensors and connected devices, they can monitor operational conditions in real-time, enabling them to perform preventive maintenance and reduce machine downtime. This helps improve the performance and durability of warships, as well as save long-term maintenance costs.

Application of lean and Six Sigma management methods to identify and reduce waste in production processes: SOEs implement lean and Six Sigma management methods to identify and reduce waste in production processes. With a focus on efficiency and quality, they eliminate non-value-added activities, reduce production cycle times, and minimize product defects. This approach helps SOEs improve overall productivity, create a more efficient and effective work environment. Thus, through these steps, SOEs in the defense industry can to achieve high levels of operational efficiency, ensuring that they remain competitive in the global market and better meet national defense demands.

3.1.2. Key Factors Influencing the Success of SOE Development Policies

The success of SOE development policies in the defense industry encompasses coordinated inter-agency cooperation, investment in research and development (R&D), and supportive regulations, such as the formulation of clear regulations related to technology transfer and investment incentives.

3.1.2.1. Inter-Agency Cooperation

Establishment of coordination forums between the Ministry of Defense, SOEs, the Navy, and defense industries to synchronize agendas and needs: The formation of coordination forums between the Ministry of Defense, SOEs, the Navy, and defense industries is an important initial step. This forum aims to unite stakeholders and synchronize agendas and common needs in the development of the defense industry.

Setting up routine communication mechanisms and coordination meetings to ensure smooth information flow: Establishing routine communication mechanisms and coordination meetings lays the groundwork for maintaining smooth information flow among all involved parties. Thus, discussions and inter-agency coordination can be conducted regularly and efficiently.

Formation of joint teams to handle collaborative projects between agencies: Establishing joint teams to handle collaborative projects between agencies is an

important subsequent step. These teams are responsible for planning, implementing, and monitoring collaborative projects, ensuring that inter-agency cooperation runs smoothly and yields results in line with set targets.

3.1.2.2.   Investment in Research and Development (R&D)

Establishment of research and development centers focusing on maritime technology innovation (Zhang, Zhou and Tian, 2022), such as anti-submarine sensors and precision navigation systems: Establishing research and development centers focusing on maritime technology innovation is a top priority. These centers focus on developing technologies such as anti-submarine sensors and precision navigation systems, which are crucial components of effective maritime defense. Through these centers, SOEs can generate innovative solutions relevant to Indonesia's maritime defense needs.

Allocation of funds for long-term research programs to create leading-edge technology in maritime defense: Allocating funds for long-term research programs is a strategic step in creating leading-edge technology in maritime defense. This funding enables SOEs to conduct in-depth and sustainable research in developing advanced technologies that can provide competitive advantages for Indonesia on a global scale.

Collaboration with universities and research institutions to optimize research resources and enhance innovation capabilities (Agus and Sri, 2023): Collaboration with universities and research institutions is key to optimizing research resources and enhancing innovation capabilities. Through this collaboration, SOEs can access the latest knowledge and expertise from experts in various fields, as well as expand their research networks to achieve better and faster results. Thus, this collaboration strengthens SOEs' position in developing cutting-edge maritime defense technology.

3.1.2.3.   Supportive Regulations

Revision of investment policies to provide incentives and protection for investors in the defense industry: Revision of investment policies aims to provide incentives and protection for investors in the defense industry (Jin et al., 2022). By reviewing existing investment policies, the government can create a conducive environment for investment in this sector, including providing tax incentives and legal protection for investors.

Formulation of clear regulations related to technology transfer and information security in international

cooperation: Formulating clear regulations related to technology transfer and information security is a crucial step in international cooperation. Clear and firm regulations will provide clarity and legal certainty for all parties involved in the exchange of technology and information, ensuring that national security is maintained.

Enhancement of transparency and accountability (Ruiz-Lozano et al., 2022) in the licensing process and defense industry regulations: Enhancing transparency and accountability in the licensing process and defense industry regulations is a priority. By strengthening transparency in the licensing process, the government can reduce excessive bureaucracy and expedite the implementation of defense industry projects. Additionally, increasing accountability will ensure that regulations are properly implemented and provide fairness to all parties involved. Thus, these steps will help create a conducive environment for the growth and development of the Indonesian defense industry.

3.1.3. Further Improvement and Development Steps

Further improvement and development steps in the maritime defense industry include enhancing synergy with the government through the establishment of special teams and discussion forums, boosting R&D investment through fiscal incentive programs and the establishment of innovation centers, as well as improving responsive regulations through the formation of regulatory committees and independent audits. These steps aim to strengthen collaboration between SOEs and the government, drive technological innovation, and ensure regulatory compliance to foster the growth and advancement of the Indonesian maritime defense industry.

3.1.3.1. Enhancing Synergy with the Government

Establishment of special teams between SOEs and the government to develop a roadmap for maritime defense industry development: The formation of special teams between SOEs and the government is the first step taken. These teams are tasked with developing a roadmap for maritime defense industry development, ensuring alignment of vision and objectives between the public and private sectors in the development of the defense industry. Their combination allows SOEs to enjoy managerial efficiency in terms of allocation of resources together with a long-term vision, patient capital, and synergy with government policies (Landoni, 2020).

Organizing regular discussion forums to share information and unify strategic visions between the government and industry: Additionally, SOEs organize regular discussion forums between the government and industry. These forums aim to share information and unify strategic visions between both parties, strengthening coordination and collaboration at all levels (Huang et al., 2020; Castelnovo, 2022).

Development of training and capability development programs for government personnel involved in overseeing the defense industry: Furthermore, SOEs also develop specialized training and capability development programs for government personnel involved in overseeing the defense industry. These programs are designed to enhance their understanding and skills in effectively managing and supervising this sector, ensuring effective government oversight of the maritime defense industry.

With these steps, synergy between SOEs and the government is strengthened, creating a solid foundation for the growth and advancement of the Indonesian maritime defense industry.

3.1.3.2. Encouraging R&D Investment

Launching fiscal incentive programs to encourage SOEs and private investors to increase funding allocation for R&D (Zhang, Zhou and Tian, 2022): Launching fiscal

incentive programs is one of the key steps. This program aims to encourage SOEs and private investors to be more active in increasing funding allocation for R&D (Chen, Xie and Van Essen, 2021). With the fiscal incentives provided, it is expected that there will be an increase in investment in innovation and technology development in the maritime defense sector.

Establishment of innovation centers and technology incubators supported by the government to facilitate collaboration between SOEs, startups, and research institutions: The establishment of innovation centers and technology incubators supported by the government is another important step. These centers will facilitate collaboration between SOEs, startups, and research institutions to generate innovative solutions in the field of maritime defense. Through this collaboration, it is hoped that an environment conducive to the growth and development of new technologies will be created.

Development of scholarship and internship programs for young researchers in the field of maritime defense technology to enhance national R&D capacity (Yan et al., 2023): Additionally, SOEs also develop scholarship and internship programs for young researchers in the field of maritime defense

technology. These programs aim to enhance national R&D capacity by providing opportunities for young talents to engage in research and technology development. Thus, it is expected to create a generation of high-quality and competent researchers to support the advancement of the Indonesian maritime defense industry.

3.1.3.3. Improving Responsive Regulations

Formation of regulatory committees comprising representatives from industry, government, and academia to oversee and periodically revise regulations (Cong Phuong, Dinh Khoi Nguyen and Phuoc Vu, 2020): The formation of regulatory committees involving representatives from industry, government, and academia is a priority. This committee is tasked with overseeing and periodically revising regulations, ensuring that existing regulations remain relevant and aligned with the latest developments in the defense industry.

Increasing regional cooperation in harmonizing defense industry regulations to promote market integration and shared growth: To promote market integration and shared growth, SOEs enhance regional cooperation in harmonizing defense industry regulations. This

step aims to create a conducive environment for trade and investment at the regional level, as well as strengthen Indonesia's defense industry position in the global market.

Implementation of regular independent audits on SOEs' compliance with applicable regulations and industry standards: SOEs also conduct regular independent audits on their compliance with applicable regulations and industry standards (Zahid, Saleem and Sahil, 2023). Through these audits, SOEs can evaluate their performance in complying with established regulations and standards, as well as identify areas requiring improvement or further enhancement.

With these steps, it is expected that responsive regulations tailored to the needs of the defense industry will continue to be strengthened, creating a stable and conducive environment for the growth and advancement of this sector.

3.2. Implication

This study offers a theoretical framework that can be applied to other industries where state ownership is relevant, indicating broader applicability of the arguments beyond the defense sector. The insights gained from the

experience with SOE reform can provide a theoretical basis for understanding similar transitions in other countries, particularly those with significant state involvement in the defense industry. This can lead to a broader discussion about the role of SOEs in global economic dynamics. This paper proposes an adaptation of the dimensional policy strategy framework to the context of defense SOEs, which may influence future research on policy strategy and its impact on organizational strength.

The implications of the research extend to practical applications, as understanding the dynamics of mixed ownership can guide policymakers in designing reforms that enhance the innovative capabilities of SOEs, thereby contributing to sustainable economic development. This study also paves the way for examining the influence of institutional environment on innovation strategy, which suggests that future research could explore how external factors interact with ownership structure to shape innovation outcomes in defense SOEs in strengthening the state's defense structure. The comparative institutional approach provides a framework for understanding state-owned enterprises (SOEs) in the defense sector, which can lead to a better understanding of their roles and functions in defense diplomacy.

4. CONCLUSION

With the development of technology and rapidly evolving threats, the need for effective and adaptive naval armaments is increasingly pressing. SOEs have significant potential to act as drivers in strengthening the capabilities of naval armaments. Additionally, SOEs can also serve as catalysts for technology transfer and enhancing self-reliance in the production of naval armaments. This paper aims to delve deeper into the role and contribution of SOEs in the development of the defense industry, particularly in the context of strengthening the capabilities of naval armaments.

The analysis of SOE development strategies in the defense industry is the main focus of this research due to its crucial influence on shaping a country's defense capabilities, particularly in strengthening naval armaments. Several important findings resulting from this analysis reinforce awareness of the crucial role of SOEs in supporting maritime defense while highlighting the potential of specific strategies in achieving the goals of strengthening naval armaments, such as:

Variation of Strategies Adopted by SOEs in Developing the Defense Industry, consists of Product Diversification, and Technological Innovation; Collaboration with

Strategic Partners; Operational Efficiency Improvement. Besides that, the success of SOE development policies in the defense industry encompasses coordinated inter-agency cooperation, investment in research and development (R&D), and supportive regulations, such as the formulation of clear regulations related to technology transfer and investment incentives. Further improvement and development steps in the maritime defense industry include enhancing synergy with the government through the establishment of special teams and discussion forums, boosting R&D investment through fiscal incentive programs and the establishment of innovation centers, as well as improving responsive regulations through the formation of regulatory committees and independent audits.

5. LIMITATION AND FUTURE RESEARCH

This study has several limitations and provides suggestions for future research. First, encourage future research to explore the role of home country conditions in shaping perceptions of SOEs across institutional contexts, thereby contributing to a more systematic theory of international business practices. This understanding can inform theoretical frameworks on the dynamics of state versus private ownership in the defense sector. Second, it is necessary to propose that future research explore the concept of systems in the infrastructure networks of state-owned enterprises, which can enhance theoretical discussions on the interdependence of subsystems in an economy and their collective resilience or vulnerability. Third, this study emphasizes the need for further exploration of how political connections influence decision-making processes within firms, particularly in the context of agency theory, which may lead to a deeper understanding of conflicts of interest and governance structures in the integration of SOEs and private companies in supporting the country's defense forces.

ACKNOWLEDGEMENT

REFERENCES

[1] R. Strating and J. Wallis, "Maritime sovereignty and territorialisation: Comparing the Pacific Islands and South China Sea," *Marine Policy*, vol. 141, no. May, p. 105110, 2022, doi: 10.1016/j.marpol.2022.105110.

[2] E. Mendenhall, "Nuclear-Weapon-Free Zones and Contemporary Arms Control," *Strategic Studies Quarterly*, vol. 14, no. 4, pp. 122–151, 2020, [Online]. Available:

http://dx.doi.org/10.1038/s41421-020-0164-0%0Ahttps://doi.org/10.1016/j.solener.2019.02.027%0Ahttps://www.golder.com/insights/block-caving-a-viable-alternative/%0A???%0Ahttp://dx.doi.org/10.1038/s41467-020-15507-2%0Ahttp://dx.doi.org/10.1038/s41587-020-05.

[3]   N. Atlan, "The modalities of China's combinatory unrestrictive warfare strategy," *Comparative Strategy*, vol. 42, no. 6, pp. 845–864, 2023, doi: 10.1080/01495933.2023.2263341.

[4]   E. T. Pudjiastuti, I. N. Putra, and A. K. Susilo, "Vision of The World Maritime Axis of Indonesia as a Maritime Country in Alfred Thayer Mahan's Perspective," *Journal of Defense Resources Management*, vol. 12, no. 2, pp. 211–218, 2021.

[5]   A. Garcia Herrero, "Europe in the midst of China–US strategic economic competition: what are the European Union's options?," *Journal of Chinese Economic and Business Studies*, vol. 17, no. 4, pp. 403–423, 2019, doi: 10.1080/14765284.2019.1706292.

[6]   P. Castelnovo, "Innovation in private and state-owned enterprises: A cross-industry analysis of patenting activity," *Structural Change and Economic Dynamics*, vol. 62, pp. 98–113, 2022, doi: 10.1016/j.strueco.2022.05.007.

[7]   A. N. Farras *et al.*, *Diplomasi Pertahanan Indonesia Dan Inggris Dalam Kerjasama Pengembangan Industri Pertahanan*. CV WIDINA MEDIA UTAMA, 2024.

[8]   C. Lawson, "The Theory of State-Owned Enterprises in Market Economies," *Journal of Economic Surveys*, vol. 8, no. 3, 1994.

[9]   A. Baum, P. Medas, A. Soler, and M. Sy, "Managing Fiscal Risks from State-Owned Enterprises," 2020.

[10]   P. Lisdiono, J. Said, H. Yusoff, and A. A. Hermawan, "Examining Leadership Capabilities , Risk Management Practices , and Organizational Resilience : The Case of State-Owned Enterprises in Indonesia," *Sustainability*, vol. 14, 2022.

[11]   V. D. Dragomir, M. Dumitru, and L. Feleagă, "Political interventions in state-owned enterprises: The corporate governance failures of a European airline," *Journal of Accounting and Public Policy*, vol. 40, no. 5, 2021, doi: 10.1016/j.jaccpubpol.2021.106855.

[12]   M. Landoni, "Knowledge creation in state-owned enterprises," *Structural Change and Economic Dynamics*, vol. 53, pp. 77–85, 2020, doi: 10.1016/j.strueco.2020.01.001.

[13]   B. Awuzie, A. B. Ngowi, T. Omotayo, L. Obi, and J. Akotia, "Facilitating successful smart campus transitions: A systems thinking-SWOT analysis approach," *Applied Sciences (Switzerland)*, vol. 11, no. 5, pp. 1–21, 2021, doi: 10.3390/app11052044.

[14]   L. Gutierrez-Gutierrez and J. Antony, "Continuous improvement initiatives for dynamic capabilities development: A systematic literature review," *International Journal of Lean Six Sigma*, vol. 11, no. 1, pp. 125–149, 2020, doi: 10.1108/IJLSS-07-2018-0071.

[15]   I. Ervits, "CSR reporting in China's private and state - owned enterprises : A mixed methods comparative analysis," *Asian Business & Management*, vol. 22, no. 1, pp. 55–83, 2023, doi: 10.1057/s41291-021-00147-1.

[16]   P. Kowalski, M. Büge, M. Sztajerowska, and M. Egeland, "State-Owned Enterprises: Trade Effects and Policy Implications," Paris, 2013.

[17]   T. Le, D. Park, and C.

Castillejos-petalcorin, "Performance comparison of state-owned enterprises versus private firms in selected emerging Asian countries," *Journal of Asian Business and Economic Studies*, vol. 30, no. 1, pp. 26–48, 2023, doi: 10.1108/JABES-08-2021-0116.

[18] Z. Cheung, E. Aalto, and P. Nevalainen, "Institutional Logics and the Internationalization of a State-Owned Enterprise: Evaluation of International Venture Opportunities by Telecom Finland 1987–1998," *Journal of World Business*, vol. 55, no. 6, p. 101140, 2020, doi: 10.1016/j.jwb.2020.101140.

[19] C. Zhang, B. Zhou, and X. Tian, "Political connections and green innovation: The role of a corporate entrepreneurship strategy in state-owned enterprises," *Journal of Business Research*, vol. 146, no. November 2021, pp. 375–384, 2022, doi: 10.1016/j.jbusres.2022.03.084.

[20] R. Agus and T. Y. Sri, "Conditions, Challenges and Prospects of State-owned Enterprises in Indonesia : The Governance Perspective Based on Economic Constitution," *Applied Research in Quality of Life (2023)*, vol. 18, pp. 2459–2484, 2023.

[21] X. Jin, L. Xu, Y. Xin, and A. Adhikari, "Political governance in China's state-owned enterprises," *China Journal of Accounting Research*, vol. 15, no. 2, p. 100236, 2022, doi: 10.1016/j.cjar.2022.100236.

[22] M. Ruiz-Lozano, M. De Vicente-Lama, P. Tirado-Valencia, and M. Cordobés-Madueño, "The disclosure of the materiality process in sustainability reporting by Spanish state-owned enterprises," *Accounting, Auditing and Accountability Journal*, vol. 35, no. 2, pp. 385–412, 2022, doi: 10.1108/AAAJ-08-2018-3629.

[23] L. Huang, S. Liu, Y. Han, and K. Peng, "The nature of state-owned enterprises and collection of pollutant discharge fees: A study based on Chinese industrial enterprises," *Journal of Cleaner Production*, vol. 271, p. 122420, 2020, doi: 10.1016/j.jclepro.2020.122420.

[24] X. Chen, E. Xie, and M. Van Essen, "Performance feedback and firms' R&D frequency: a comparison between state-owned and private-owned enterprises in China," *Asian Business and Management*, vol. 20, no. 2, pp. 221–258, 2021, doi: 10.1057/s41291-019-00092-0.

[25] L. Yan, X. Ling, Z. Wang, and Y. Xu, "Can mixed-ownership reform boost the digital transformation of state-owned enterprises?," *Economic Analysis and Policy*, vol. 79, pp. 647–663, 2023, doi: 10.1016/j.eap.2023.05.012.

[26] N. Cong Phuong, T. Dinh Khoi Nguyen, and H. Phuoc Vu, "Politics and institution of corporate governance in Vietnamese state-owned enterprises," *Managerial Auditing Journal*, vol. 35, no. 5, pp. 667–684, 2020, doi: 10.1108/MAJ-02-2018-1810.

[27] R. M. A. Zahid, A. Saleem, and U. Sahil, "ESG performance , capital financing decisions , and audit quality : empirical evidence from Chinese state - owned enterprises," *Environmental Science and Pollution Research*, pp. 44086–44099, 2023, doi: 10.1007/s11356-023-25345-6.

DEFENSE FINANCIAL MECHANISMS IN NATO COUNTRIES – MANAGERIAL APPROACHES

Adrian IURA

"Lucian Blaga" University of Sibiu, Romania

This paper provides a comparative case study on two NATO countries Sweden and Romania, analyzing military budget expenditures and funding since 2014. It examines the managerial concepts used by those two countriesto finance their defense sectors, focusing on the efficient allocation of resources for national security. The study presents the research objectives and research questions using a mixed-method approach that includes comprehensive primary data and secondary government reports. Both qualitative and quantitative analysis are used. The findings of the analysis will propose models for standardizing budget planning across NATO countries, with recommendations for improving current defense budgeting mechanisms.

1. INTRODUCTION

Ensuring the security and sovereignty of a nation is a paramount concern for governments worldwide, with national defense being a critical component of this responsibility. The allocation of financial resources to defense is vital, not only for maintaining military readiness but also for supporting a country's geopolitical objectives. Given the complexity of modern security challenges, the mechanisms through which nations fund their defense capabilities have become increasingly significant. Understanding and optimizing these funding mechanisms are crucial for ensuring that defense spending is both effective and sustainable.

Despite the importance of defense funding, existing literature on the subject often focuses on narrow aspects, such as the efficiency of specific budgetary practices or the impact of defense spending on economic growth. However, there is a notable knowledge gap in comprehensive, comparative analyses that examine funding mechanisms at national defense level across different countries. Most studies fail to address the broader implications of these mechanisms on national security strategy, economic stability, and long-term defense planning. This study aims to fill this gap by providing a comparative analysis of defense

funding mechanisms across various nations, focusing on how these strategies are influenced by political, economic, and other factors.

To achieve this, the study employs a mixed-methods approach, combining qualitative analysis of policy documents and defense budgets with quantitative analysis of defense expenditure data across different countries. Case studies of selected nations are used to illustrate the diversity of funding approaches, highlighting both their successes and challenges. By integrating these methods, the study offers a holistic view of how different funding mechanisms operate at the tactical level and their impact on national defense capabilities.

This study contributes to existing body of knowledge by providing a detailed comparison of defense funding mechanism, offering insights into best practices and potential pitfalls. It also highlights the importance of aligning defense funding strategies worth broader national security objectives and economic realities. Additionally, the findings of this study can serve as a valuable resource for policymakers, defense planners, and scholars interested in the intersection of finance and national security.

This article underscores the critical need for well-informed approaches to defense funding. As nations face evolving security threats and economic uncertainties, understanding the comparative advantages of different funding mechanisms is more important than ever. This study aims to shed light on these funding mechanisms, offering a comprehensive analysis that will contribute to more effective and sustainable national defense strategies.

2. LITERATURE REVIEW

The effective financing of national defense is a critical component of a country's ability to maintain security, sovereignty and geopolitical stability. Understanding the various funding mechanisms available to governments is essential for ensuring that defense systems are adequately resourced and capable of responding to emerging threats. This chapter reviews the existing literature on defense financing, exploring both traditional and innovative funding mechanisms. The review will draw comparisons across different countries, focusing on how different models impact defense performance and sustainability.

2.1. Theoretical Frameworks on Defense Financing

The financing of national defense has long been explored through various economic and public frameworks. Classical economic theories on public goods, such as Samuelson's theory of public expenditure, lay the foundation for understanding national defense as a non-excludable and non-rivalrous good, requiring collective financing through taxation(Samuelson, 1958).

Resource dependency theory is also highly relevant in the defense context, as it highlights how organizations (including military institutions) rely on external resources, such as government funding, to sustain operations(Singh et al., 2011). This theory is useful in explaining how funding levels and sources shape military strategies and capabilities.

Another important theoretical lens is the "guns" versus "butter" model, which explores the trade-off between defense spending and social welfare. This model informs policy debates on the allocation of limited resources and the balance between defense needs and other public services (Huang and Mintz, 1992). Additionally, Keynesian and neoliberal approaches to fiscal policy provide insights into the broader economic strategies used by governments to manage defense budgets, particularly during periods of economic recession or boom.

2.2. Public Funding Mechanisms for National Defense

Public financing mechanisms for defense are typically characterized by government taxation, borrowing and allocation of funds through national budgets. Taxation remains the primary source of defense financing in most countries, with defense budgets often representing a significant portion of public expenditure.

Borrowing, both domestically and internationally, is another traditional mechanism for defense funding, particularly in times of war or conflict

when immediate capital is required. Governments often issue bonds or engage in deficit spending to meet urgent defense needs. Research by Nordhaus underscores the long-term fiscal challenges posed by excessive borrowing for defense purposes, particularly in countries with already high debt-to-GDP ratios.

Moreover, fiscal policies, including austerity measures and stimulus spending, have a direct influence on how defense budgets are structured and allocated. Countries facing budgetary constraints often struggle to maintain adequate defense spending, leading to debates on the need for reforms in public financing of defense systems.

2.3. Alternative and Innovative Defense Financing Models

In recent years, there has been increasing interest in alternative defense financing models that move beyond traditional taxation and borrowing. Public – Private Partnerships (PPPs) have emerged as a key strategy for funding military infrastructure and procurement. Therefore, from this point of view, the customer is seen as the public institution and the firm is as the service- provider organization, which leads to the following situations: "*the company will support customers' objectives regarding: the opportunity and easy access to products and services offered; a contract and adequate communication with trained personnel; privileged, special position*

for known customers; recognition of their relation with the company; efficient and timely solving of their problems; anticipation of their needs; professional and friendly mutual dialogue"(Minculete and Chisega-Negrilă, 2014). For instance, countries such as the United Kingdom and the United States have implemented models to develop military bases, technology, and equipment, sharing the financial burden with private entities.

Defense bonds, a more recent innovation, have been introduced as a way for governments to raise funds directly from the public. These bonds offer citizens a direct stake in national defense efforts and provide an alternative to traditional borrowing methods. However, literature on defense bonds remains sparse, with limited empirical evidence on their effectiveness in comparison to conventional financing approaches.

Defense industrial cooperation, particularly within alliances such as NATO and the European Union, is another innovative approach. This model allows countries to pool resources and share costs of defense procurement and research. As explored by Bitzinger, such cooperation is seen as a way to overcome budget constraints while ensuring access to advanced military technologies (Raska and Bitzinger, n.d.).

2.4. Comparative Studies on National Defense Funding

Comparative research on defense funding mechanisms has revealed significant variations across countries, shaped by economic, political, and security contexts. For example, high-income countries with advanced economies tend to allocate a larger percentage of GDP to defense, often supplemented by robust taxation systems and efficient budgetary processes. The United States, with the largest defense budget in the world, relies on a complex mix of public taxation, borrowing and defense bonds to fund its extensive military apparatus. In contrast, many developing nations face challenges in sustaining adequate defense budgets due to limited fiscal capacity and competing development needs. Studies comparing countries like India, Brazil and South Africa reveal the complexities of balancing defense spending with economic growth and social development priorities.

Another area of comparative interest is how geopolitical considerations influence defense funding. In research is demonstrated the fact that countries in volatile regions or those facing immediate security threats tend to allocate a higher proportion of their budget to defense. In contrast, nations in more stable regions may adopt a more conservative approach to defense financing, replying on alliances for security guarantees.

2.5. Financial Sustainability in Defense Spending

Financial sustainability has emerged as a critical concern in defense financing literature. Long-term sustainability refers to the ability of a nation to maintain adequate defense spending without compromising its overall fiscal health. Studies by Brzeski have shown that countries with high defense expenditure relative to GDP often face sustainability also depends on efficient resource allocation, ensuring that defense budgets are used effectively without waste or corruption (Brzoska, 2019).

Sustainability is also linked to the concept of autonomy, which refers to a nation's ability to independently finance and manage its defense needs without reliance on external actors. This is particularly important for countries facing long-term geopolitical threats, where sustainable defense funding is critical for maintaining national security over time.

2.6. Impact of Funding Mechanisms on Defense Performance

The relationship between funding mechanisms and defense performance is a key area of interest in the literature. Studies have shown that while increased defense spending can enhance military capabilities, the effectiveness of spending is often more important than the overall budget size. For instance, it is demonstrated that countries with well-developed defense procurement processes and efficient resource management systems tend to achieve better defense outcomes, regardless of absolute spending levels(Dunne et al., 2005).

In plus, performance is often linked to innovation in defense funding. Countries that have adopted alternative financing models, such as PPPs and defense bonds, have been seen improvements in military readiness and technology development, suggesting that diversification of funding mechanisms can positively impact performance.

2.7. Challenges, Criticisms and Research Gap of Current Funding Models

While various defense funding models have been explored, they are not without challenges. Traditional models, particularly reliance on taxation and borrowing, have been criticized for lack of transparency and accountability. Studies by Willett (2014) point out of the difficulties in tracking defense expenditures due to the classified nature of military operations, which often leads to inefficiencies and potential misuse of funds.

Innovative funding mechanisms, such as PPPs, have also faced criticism. Concerns about private sector involvement in national defense include the potential loss of governmental control, conflicts of interest and the prioritization of profit

over security outcomes. Furthermore, the introduction of defense bonds has raised concerns about public debt accumulation and long-term financial implications for governments.

Despite the extensive literature on defense financing, several gaps remain. First, there is limited research on the long – term impact of alternative funding mechanisms, such as PPPs and defense bonds, on defense sustainability. Moreover, while comparative studies exist, more detailed analyses of specific factors driving differences in defense funding models across countries are needed. Additionally, empirical studies that link specific funding mechanisms to defense performance outcomes are scarce, leaving for further exploration in this area.

3. OVERVIEW OF NATIONAL DEFENSE FUNDING

3.1. Background and Importance

National defense is a cornerstone of a country stability, which requires a substantial financial investment. Funding mechanisms for national defense have evolved significantly over time, by being influenced by historical events, technological advancements and geopolitical shifts. These mechanisms are critical not only for ensuring military readiness and capability but also for maintaining economic stability and public trust. Effective defense funding ensures that a nation can protect its interests,

support international commitments and to respond to emerging threats.

The military is like any other government consumer for research: *"Research is solicited to meet specific needs, and many of these needs that concern social sciences are similar to those of any modern organizations: the need to improve training, to retain personnel, to reorganize tasks that require fewer people, or need to improve training, to retain personnel, to reorganize tasks that require fewer people, or need to deal with problems of information overload and improve the quality and speed of decision making"(Goolsby, 2005).* This kind of bulk for funding opportunities from the military in the last few years have been used in most of the topics such as: human perceptions and cognitions; making decisions under pressure; improving leadership; organizing military forces.

Nowadays, military funding organizations are interested in research of supply chain management and are trying to incorporate into tools and decision aids and fielded. This transition to something that should work in the field has increased the pressure for defense funding agencies and organizations.

3.2. Objectives and Scope

This article is designed to explore and evaluate in a systematic way the different funding mechanisms used by different nations to finance their defense sectors. The primary objective is to understand how these

mechanisms work, their effectiveness in meeting defense needs and broader economic. By examining a range of historical and contemporary examples, the research seeks to identify the patterns and trends that contribute to success of defense financing. It also aims to uncover the inherent challenges and limitations of different funding approaches and concepts, which provide a nuanced understanding of what works and why.

The scope of this research is broad, encompassing a comparative analysis that could be carried out in the sphere of several countries with diverse economic and geopolitical contexts. The case study will include both developed and developing nations, each with unique defense requirements and fiscal constraints. The study covers financing mechanisms such as:

- Traditional government budget allocations.

- Innovative financing solutions such as:

- Defense bonds.

- Public-Private partnerships.

- International assistance.

In addition to identify effective financing mechanisms, the study aims to distil best practices that can be applied in different contexts. This involves not only analyzing the financial aspects of defense funding, but also considering the political,

economic and social factors that influence funding decisions. The research will culminate in practical recommendations for policy makers, offering suggestions for strategies to improve the sustainability and effectiveness of military financing. These insights are intended to guide national defense planners and contribute to the broader field of defense economics and policy, ensuring that nations can maintain robust defense capabilities in a financially prudent manner.

3.3. Research Questions

To effectively guide the "injury" into national defense funding mechanisms, this article is structured around several key research questions. These questions are intended to aid the analysis towards uncovering the different strategies that address funding and the implications for defense capabilities.

The first research question asks: "What are the funding mechanisms used for national defense?", which is concerned with tracing the different methods used by nations to fund their sectors, ranging from direct government budget allocations to more innovative approaches such as defense bonds and public-private partnerships. In the end, understanding these funding mechanisms is the key to identify the range of options available to policy makers.

The second research question focuses on the effectiveness of these

funding mechanisms: "How effective are these mechanisms in achieving the proposed objectives?". This question seeks to assess the performance of funding strategies in terms of their ability to ensure military readiness, support technological advances and maintain overall capabilities. Effectiveness is measured not only in financial terms, but also in terms of how these mechanisms support national objectives. It involves assessing the stability and sustainability of funding sources, their adaptability to changing security needs and their impact on security outcomes.

The third research question addresses the practical challenges and limitations associated with national security funding: "What challenges and limitations are associated with these funding mechanisms?". By exploring this question, in the article it seeks to identify common obstacles that nations face in ensuring adequate and reliable on national security financing. These challenges can include political constraints, economic volatility, bureaucratic inefficiencies and competing budgetary priorities. Understanding these limitations, it will be the key to developing the strategies to mitigate their impact.

Finally, this study will draw lessons from the experiences of different countries to answer the question: "What lessons can be learned from the experiences of different countries?". The answer will involve synthesizing the findings from the case studies to identify best practices and practical recommendations for increasing the efficiency and effectiveness of financing defense system, globally.

4. METHODOLOGY: MATERIALS AND METHODS

The methodology outlined in this chapter provides a rigorous framework for investigating national defense funding mechanisms. By combining qualitative and quantitative research methods, the study ensures a comprehensive analysis that integrates financial data with practical insights. After a careful selection of case studies and through analysis of data enable a deep understanding of the effectiveness and challenges of various funding strategies.

The requirement to expose a high scientific content in this study prompted me to employ a various of appropriate research methods which gather into essential information, as well as their *"logical, eloquent and beneficial relationship to get the anticipated research outcomes"*(Minculete et al., 2022).

4.1. Research Design and data collection methods

The research applied for this study is a mixed-method approach, combining qualitative and quantitative methods to provide a comprehensive analysis of national defense funding mechanisms. This kind of approach allow a detailed exploration of both

the financial aspects and broader policy implications in the security funding. Both the qualitative and quantitative components include the analysis data and budget reports from multiple countries to identify trends and patterns in defense spending.

By using the other methods, observation, analysis and comparison, identifies a few concrete aspects and theoretical issues and relationships regarding to change nature of spending funds to ensure a nation's security in the current context.

Data collection is a critical component of this research, will employ data which is obtained from a comprehensive review of academic literature, government reports, financial documents and case studies. This kind of data will provide an historical and contextual backdrop against the case study.

4.2. Case Study Selection

The selection of case studies is pivotal to research, ensuring that the analysis encompasses a diverse range of national contexts and funding mechanisms. The criteria for selecting case studies will include the economic size of the country, geopolitical significance, diversity of funding mechanisms and availability of data. The chosen countries represent a mix of developed and developing nations, each with unique defense funding challenges and strategies.

This methodological approach sets the stage for the comparative analysis that follow, providing valuable insights into the best practices for funding national defense.

5. CONCEPTS RELATED TO SPENDING ON SECURITY AND NATIONAL DEFENSE SYSTEMS AT THE EURO-ATLANTIC ALLIANCE LEVEL

The Euro-Atlantic Alliance, accounts for a significant share of global defense spending, thus underlining its essential role in maintaining regional and global security. Understanding the concepts related to security and national defense spendings within this alliance is essential to understand how resources are allocated, managed and used to support collective security principles. This chapter aims to elucidate the various factors that influence military spending in the Euro-Atlantic context, providing a comprehensive analysis of economic and political dimensions that shape these decisions [1].

At the heart of Euro-Atlantic security spending is a commitment to collective security, which requires substantial and sustained investment in military capabilities, infrastructure and technological advances. Members states financial contributions are guided by NATO's guidelines on security spending, which recommend allocating at least 2% of GDP to the military force. However, actual spending patterns are influenced by a multitude of factors, including threat

perceptions, economic constraints, technological advances and political will. By exploring these concepts, this chapter seeks to provide a deeper understanding of how the Euro-Atlantic Alliance navigates through the complex security budget landscape to maintain its advantage and fulfil its security mandates.
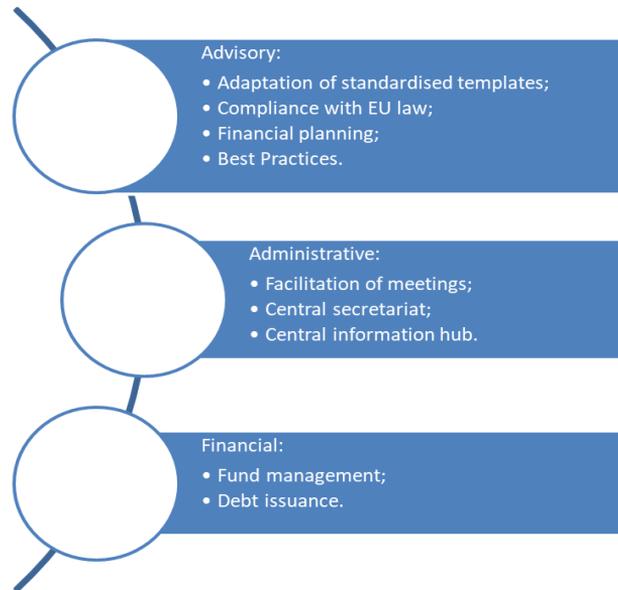
Fig. 1 Implementing Financial Toolbox in the Euro-Atlantic Alliance
Source: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017DC0295

These influencing factors are represented by the following concepts of the financing mechanisms of military budgets at the level of individual nations:

- Conceptual of Framework of Defense and Security Expenditure.

- Political.

- Economic Constraints and Opportunities.

- Technological Advancements.

- External Threats and Alliance Commitments.

Conceptual of Framework of Defense and Security Expenditure, it refers to expenditure encompasses the maintenance and enhancement of a nation's military capabilities and security infrastructure. This includes funding for personnel, equipment, operations, maintenance, research, research and development. The overarching goal is to ensure national security and maintain peace and stability both domestically and

internationally. This expenditure is more often influenced by a series of factors, starting with the following:

- Objectives.

- Economic Conditions.

- Political Considerations.

- External threats.

Political factors are usually playing a pivotal role in shaping defense and security expenditure. Governments allocate resources based on their national security strategy, which is influenced by perceived threats, geopolitical interests and alliance commitments. For example, countries which are in volatile regions would prioritize defense and security spendings to counter regional threats meanwhile nations in more stable environments might focus on modernization and technological advancements. Political considerations, including government ideology and public opinion, also significantly impact defense budgets. In the democratic nations, there is often a witness budgetary debates where security spending must be justified to the electorate, while authoritarian regimes might allocate resources with less public scrutiny, but also potentially face internal power dynamics. Another example of political choices is considered to be *"inconsistent with the regional and national security challenges facing the state are those of political class in the Republic of Moldova, which through its defense funding decisions,* *described as "chronic underfunding", has contributed to degradation of defense sector"*(Florişteanu, 2023).

Economic Constraints and Opportunities usually can work together. Both economic and fiscal conditions are a fundamental determinant of defense and security expenditure. Nations with robust economics can allocate more substantial resources into security without compromising other essential services. In contrast, countries facing economic constraints may struggle to balance into military forces spending with other critical needs, such as healthcare, education, and infrastructure. Economic growth can create opportunities for increased defense budgets, while economic downturns often lead to budget cuts or relocation of funds. This military budget allocation can also act as an economic stimulus, driving technological innovation and providing employment, thereby creating a cyclical relationship between economic health and security expenditure.

Technological advancements can significantly influence security expenditure, with development and integration of cutting – edge technologies such as artificial intelligence, cyber security and advanced weaponry require a substantial investment. This funding can drive for technological superiority not only impacts budget allocations but also necessitates continuous upgrading and modernization of

military assets. The rapid pace of technological can change the meaning of military expenditure for research must be very flexible and adaptable to incorporate new innovations and address emerging threats effectively.
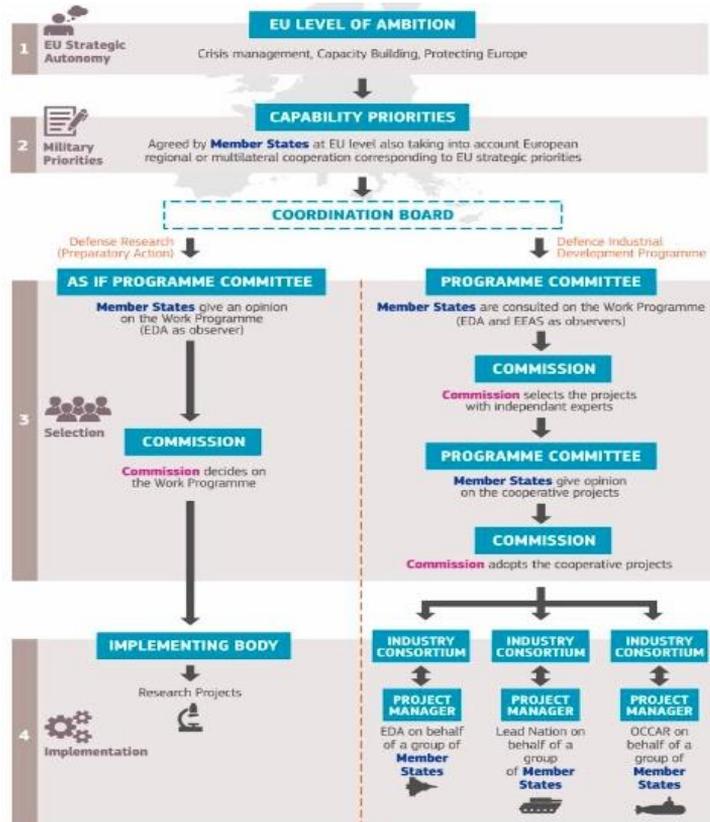
Fig. 2 Course of action strategy for military equipment procurement
Source:https://eurolex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:52017DC0295

External Threats and alliance commitments are critical factors that would shape into security expenditure. The presence of external threats, such hostile neighboring countries or nonstate actors, compels nations to allocate significant resources towards security. Additionally, commitments to international alliances and security agreements, such as NATO, require member states to meet certain spending targets and contribute to collective security efforts. Such commitments often drive nations to maintain or increase their budgets to fulfil their obligations and strengthen international partnerships. The global security environment and dynamics of international relations thus play a

crucial role in determining the scale and direction of defense spending.

6. COMPARATIVE ANALYSIS OF FINANCIAL MECHANISMS FOR MILITARY BUDGETS

Understanding the diverse approaches to national defense funding is essential for identifying best practices and improve the efficacy of financial strategies in the security sector. This chapter represent a comparative analysis of two countries, each employing distinct funding mechanisms which are tailored to their unique economic, political and tactical contexts.

The rise in global military spending in 2023 can *"be attributed primarily to the ongoing war in Ukraine and escalating geopolitical tensions in Asia and Oceania and the Middle East"*("Trends in World Military Expenditure, 2023," n.d.). Military expenditure went up in every part of geographical regions, as a major spending increases recorded in Europe, Asia and Oceania and in the Middle East.

These selected countries represent a spectrum of security funding approaches: a Nordic country utilizing innovative public-private partnerships, a major global power relying on traditional government budgeting and a developing nation leveraging international assistance and regional cooperation. These cases provide a comprehensive overview of how various countries address the challenges of financing their defense needs amidst differing economic conditions and environments. By exploring these diverse strategies, this chapter aims to uncover common patterns, unique solutions and potential pitfalls associated with each funding mechanism.

However, through a comparative analysis of the two countries, this chapter seeks to identify best practices that can inform defense policy makers planners. By highlighting the effectiveness of different funding approaches and the challenges encountered, the analysis offers valuable lessons for improving the efficiency and sustainability of security financing. Finally, this chapter brings to the forefront a broader understanding of defense economics and policy, offering practical recommendations for optimizing security financing mechanisms in different national contexts.

Therefore, the two countries were chosen for studying the mechanisms and then for comparative analysis are Sweden and Romania, because of their different methods for financing their military budgets, different fiscal policies, but in the end, they share a common current threat.

The comparative analysis of defense financing methods between Sweden and Romania provides a compelling exploration of how different geopolitical, economic and historical contexts shape national security strategies. Sweden, a Nordic

country known for its neutrality and advanced technological capabilities, employs a funding mechanism that emphasizes robust government allocations complemented by public-private partnerships. In contrast, Romania, a country in south-eastern Europe and a member of NATO, relies more on traditional public budgets, along with significant contributions from international alliances and security cooperation agreements. This comparison highlights the different approaches these countries take to ensure their national security and the efficiency of their defense spending.

6.1. Sweden: Innovative defense funding in the Nordic Region

Sweden, as a Nordic nation, employs a unique blend of traditional government budget allocations and innovative public – private partnerships to fund its security sector. This approach will leverage the strengths of both public oversight and private sector efficacy.

In response to the major change of security environment after the illegal invasion in 2014, militarily non-aligned Sweden and Finland were developing their common defense cooperation with NATO and with USA and started to strengthen a bilateral defense relationship.

6.1.1 Funding military spending

The Scandinavian country, which during the Cold War dedicated up to four percent of its GDP to the dense budget, had drastically slashed its spending during the '90s till early 2000s to about one percent, but after 2021, Sweden's defense budget went to 6.6 billion $, which it will rise to 9.3 billion $ by 2025.

In the 2020, its budget already amounted to 1,2 percent of GDP and it will increase to 1,5 in a few years with announced investments.

Following the Ukraine crisis, Sweden has gradually increased the amount spent on military, and according with SIPRI, their security budget has been growing from 2013 till 2018 with 7,1 billion $, which represents an increase with 17%, in five years, as it's represented in the figure below.
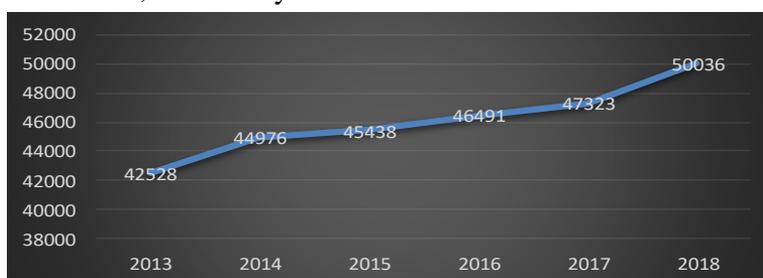
Fig. 3 Swedish security spending in billions of SEK(Kennedy and Schmitt, n.d.)

In its report for the next Defense Resolution period, the Swedish Defense Commission announced a proposal for the direction of total defense economy which include additional funds for military budget, as is shown in the forecast below.
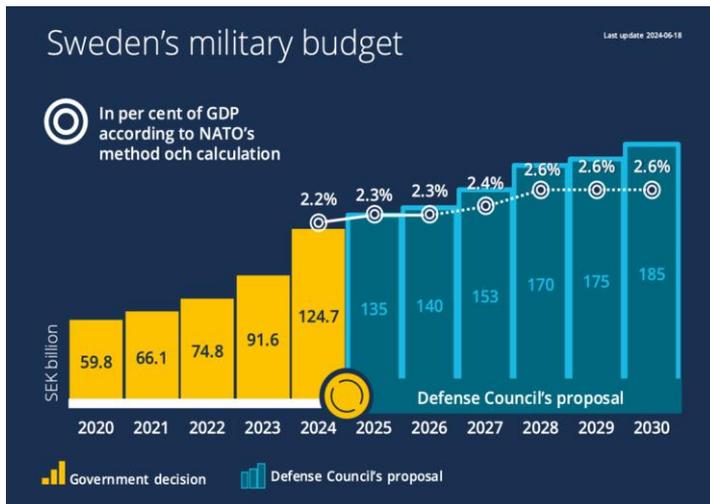
Fig. 4 Sweden's military budget till 2024 and a forecast till 2030
Source: https://www.government.se/government-policy/military-budget/

The figure above illustrates the projected evolution of Sweden's military budget from 2020 to 2030, showing both actual government decisions and future proposals by Defense Council.

From 2020 to 2023, Sweden's defense budget gradually increased from 5,82 billion dollars to 8,92 billion dollars, reflecting a steady rise in military expenditure. This corresponds to an increase in spending as a percentage of GDP, from 1,5% in 2020 to 2.2% by 2024.

A significant jump is projected for 2024, with the budget reaching 12,14 billion dollars, marking a sharp increase in Sweden's military investment. This aligns with the NATO recommendation for its members to allocate at least 2% of GDP to defense spending, as Sweden prepares for increased defense capabilities.

Starting in 2025, the Defense Council's proposal suggests continued increases, with the budget projected to rise to 18,01 billion dollars by 2030. The defense expenditure as a share of GDP is expected to stabilize at around 2.6% from 2026 onward. This increase underscores Sweden's

commitment to strengthening its military posture in response to evolving global security challenges and its potential integration into NATO. The evolution of Sweden's military budget, particularly the significant spike in 2024, signals a shift towards prioritizing national defense, with long – term plans to sustain higher levels of military spending over the next decade.

Funds will be allocated into 13 categories and these funds will be used for overall expenditure for military budget, from the central government funds.

Table 1 Military defense in the central government budget
Source: https://www.government.se/government-policy/military-defence/military-defence-in-the-central-government-budget/

1:1	Unit activities and preparedness
1:2	Swedish Armed Forces contributions to international missions
1:3	Acquisition of equipment and facilities
1:4	Research and technical development
1:5	Swedish Foreign Intelligence Inspectorate
1:6	Swedish Defense Conscription and Assessment Agency
1:7	Officer training
1:8	National Defense Radio Establishment
1:9	Swedish Defense Research Agency
1:10	Boards
1:11	Swedish Defense Materiel Administration
1:12	Foreign Intelligence Court
1:13	Swedish Agency for Defense Analysis

The primary source of security funding in Swedish country is through government budget

Allocations, which are determined annually based on security reviews and the implemented a series of public-private partnerships to finance specific defense projects. These partnerships allow the private sector to invest in defense infrastructure, such as military bases and communication systems, under long-term contracts.

6.1.2. Challenges and Opportunities

Sweden faces several challenges in maintaining a sustainable military budget while ensuring its defense

capabilities meet both national and regional security needs. One of the primary challenges is balancing economic constraints with the growing pressure to increase defense spending. As Sweden transitions toward a 2.6% of GDP defense budget, there are concerns about long – term economic sustainability of such expenditures, especially in a country with a strong social welfare system. Budgeting for defense competes with social services and infrastructures needs, making defense spending a politically sensitive topic.

However, Sweden also enjoys a range of opportunities. Its robust economy provides a strong tax base that allows for flexible funding of its military. Furthermore, Sweden's sophisticated defense industry offers advantage, as the country can invest in domestic defense technologies and partnerships with other nations. International cooperation, especially in the context of its potential NATO membership and collaboration with European Union, also opens new avenues for shared defense funding and procurement efficiencies. In the context, Sweden's financial mechanisms for defense spending are likely to be more stable, especially with a focus on innovation and technology-led defense.

6.2. Romania: International Assistance and Defense Cooperation in Developing Nation

Romania, as a developing nation, supplements its limited defense budget with international assistance and defense cooperation agreements. This approach allows the country to fortify its guarding capabilities despite economic and fiscal constraints.

6.2.1. Funding military spending

Given Romania's membership in NATO, the financing of military budget and infrastructure development is not limited to traditional methods of funding, but also receives significant funds through international military aid programs and bilateral security cooperation agreements. These funds are used for various purposes, including military training, equipment procurement and infrastructure development. In addition, the country must participate in regional security initiatives, which provide access to shared resources and expertise.

The Black Sea region is an interest in Romania and must be secure and predictable area – essential for national, European and transatlantic security. Romania must respect its commitment to ensure funding of at least 2% of GDP for defense, in which case, nowadays it brought benefits for the country's security.

Continuation of these efforts on capability development through the implementation of the provisions of the Romania Army 2040 and Multi-Year Plan for Romanian Army, the main lines of immediate interest being [2].

• Elaboration and implementation of the subsequent action plans and identification

solutions which should be focused on co-opting the Romanian industry in the implementation of multi-year plan for its equipping and modernizations, to ensure a pragmatic industrial military resilience.

• Initiating armament programs worth over 100 million euros.

• Allocating the financial resources necessary for the participation of Ministry of Defense, together with economic operators from the national defense industry in NATO and EU projects in cyber, UAV fields, in line with priorities set out in the White Defense Charter.

• Depending on budgetary allocations, implementation of the programs on the budgetary allocations and implementation of the programs

already initiated, steps which will be taking to initiate or implement other procurement programs to provide new capabilities to the Romanian Army's force structure.

In recent years, Romania has managed to attract both NATO funds, also known as NSIP and certain critical infrastructure development projects, which have led to a strengthening of national defense system.

The amounts allocated for the major development equipping and modernization programs of Romanian Army from its own budget are shown in the table below.

Table 2 Funds earmarked for major equipment programs between 2021 and 2024(thousand dollar)
Source: https://sgg.gov.ro/1/wp-content/uploads/2021/03/CARTA-ALBA-A-APARARII-.pdf

	Indicator Name	2021	2022	2023	2024
1	Total Ministry of Defense	5.064.862,68	5.324.678,26	5.706.541,73	6.129.065,91
2	Major equipment purchases	1.194.586,25	1.387.822,04	1.632.621,69	1.950.672,58

6.2.2 Challenges and Opportunities

Romania's defense budget faces significant pressure due to its

geopolitical location and the need to modernize its military to meet NATO standards. The reliance on external borrowing and foreign military aid can

be both a strength and a weakness. On the one hand, foreign support, particularly from NATO and the EU, helps Romania maintain a level of defense capacity that would be difficult to sustain solely through domestic financial mechanisms. On the other hand, this reliance also makes Romania vulnerable to external economic or political shifts, such as changes in NATO funding priorities.

Opportunities for Romania include its importance within NATO, which provides leverage for additional external military funding and cooperation in defense initiatives. Additionally, the growing importance of the Eastern European front in NATO's planning puts Romania in a favorable position to receive further financial and technological support. However, Romania must continue to improve its internal financial mechanisms, such as better tax collection and allocation of resources, to ensure sustainable long-term military funding.
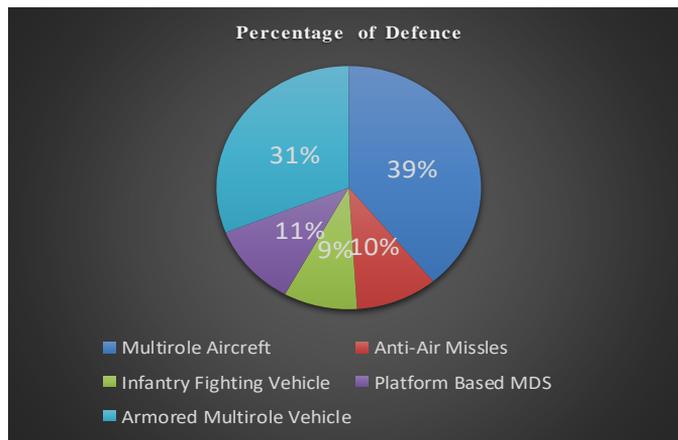
Fig. 5 Top Defense in Romania Segments by Value by the end of 2028

6.3. Comparative analysis of national security funding between the two countries

The study is examining the distinct financing mechanisms of Sweden and Romania, this study seeks to uncover the strengths and weakness inherent in each approach. The Swedish model, with its emphasis on innovation and private sector involvement, provides insight into the benefits and challenges of integrating private investment in national security. At the same time, Romania's dependence on NATO support and international assistance emphasizes the importance of alliances and external funding in

maintaining guard capabilities. Through this comparative analysis, the study aims to draw lessons that can inform defense financing strategies, particularly for countries navigating complex terrain and geopolitical changes.

Common models. Both countries recognize the importance of providing reliable and sustainable funding for national security. Whether through traditional budgeting, public – private partnerships or international assistance, each nation has developed mechanisms to ensure that its military capabilities are adequately funded. Another common thread is an emphasis on aligning defense funding with priorities, ensuring that resources are directed to areas of greatest need.

Unique strategies. Sweden's innovative use of public – private partnerships stand out as a strategy that could combine public oversight with private sector efficiency, attracting significant investment in security infrastructure. Romania is currently somewhat dependent on international assistance, demonstrating how developing countries can leverage global partnerships to enhance their guarding capabilities despite limited domestic resources.

Challenges and Best practices. Each approach has its own challenge. For instance, in Sweden, there must be a balance between public control and private sector involvement, ensuring transparency and accountability in PPPs contracts, while in Romania it must deal with vulnerabilities associated with dependence on international aid and potential influence on national defense policies.

Both countries can benefit from diversifying their funding sources by combining traditional government budgets with innovative financing mechanisms. Ensuring transparency and accountability in security funding processes is essential, as is maintaining flexibility to respond to emerging threats. In the end, international cooperation and assistance can play a key role in strengthening defense capabilities, in particularly, for developing countries.

These recommendations are intended to guide national defense planners in developing sound, sustainable and adaptable financing strategies that respond to evolving security needs of their countries.
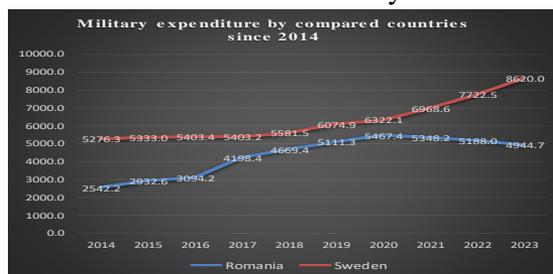
Fig. 6 Comparison military expenditure between Romania and Sweden (US million $)

6.4. Key Comparative Findings

The comparative analysis between Sweden and Romania reveals distinct differences in their financial mechanisms for military budgets, driven by their unique geopolitical circumstances and economic capacities. Sweden, with its strong economy and advanced defense industry, can allocate a higher proportion of its GDP towards defense spending, with a projected increase to 2.6% by 2026. This financial flexibility allows Sweden to invest in long – term modernization programs, focusing on advanced technology, defense infrastructure and personnel development. In contrast, Romania, while meeting NATO's 2% of GDP target, faces challenges in sustaining this level of investment due to its smaller economy and reliance on external support.

One significant finding is that Sweden's defense financing is largely self – sustained, relying on domestic taxation and budgetary allocation, with supplementary support from its defense industry and partnerships within the European Union. Sweden's ability to innovate and invest in its own defense technologies, combined with its potential NATO membership, strengthens its position within the broader European defense framework. Romania, on the other hand, relies heavily on external funding, particularly from NATO and the EU, as well as foreign military aid. While this allows Romania to access critical defense resources, it also exposes the country to vulnerabilities if external funding decreases or shifts in focus.

Another key finding is the efficiency of financial mechanisms in both countries. Sweden's streamlined budgeting processes, transparency and emphasis on defense modernization provide a more efficient use of resources, ensuring that its defense spending translates into tangible military capabilities. Romania, while committed to modernization, faces challenges in optimizing its defense budget, with significant portion going toward personnel costs and procurement from foreign sources. The comparative analysis shows that while both countries are increasing their defense spending, Sweden's approach is more self – reliant and technologically focused, whereas Romania's strategy is dependent on external support and international partnerships to meet its defense needs.

6.5. Lessons for Other Nations

The comparative analysis of Sweden and Romania's defense financial mechanisms provides valuable lessons for other nations seeking to optimize their military budgets. Countries with stronger economies and robust industrial bases, like Sweden, should focus on long – term investments in defense technologies and partnerships. Nations with more constrained budgets, like Romania, can benefit from external alliances, but must also seek ways to make their defense spending more efficient and less reliant on external sources.

Other countries can also learn from the importance of aligning defense spending with geopolitical realities. Sweden's growing investment in

defense is a response to shifting security concerns in the Baltic region, while Romania's spending is driven by its position on NATO'S eastern flank. Both cases highlight the need for nations to tailor their defense spending to their specific security environments and economic capacities.

6.6. Conclusions of Comparative Analysis between Sweden and Romania

The analysis of financial mechanisms for military budgets in Sweden and Romania demonstrates how different geopolitical, economic and factors which shape each country's approach to defense funding. Sweden, with a more stable economy and a highly developed defense industry, can allocate more resources towards advanced military capabilities and long – term sustainability. Romania, constrained by a smaller economy, relies more heavily on external funding sources, particularly from NATO and the EU, to meet its defense needs.

Despite these differences, both countries face the challenge of maintaining military readiness and sustainability in the face of growing regional and global security threats. Sweden's increasing military spending as a share of GDP, alongside Romania's commitment to NATO's 2% target, reflects a broader trend of rising defense budgets across Europe as countries respond to new security challenges.

Looking ahead, both Sweden and Romania are likely to continue increasing their defense budgets in response to growing global instability and rising security threats in their respective regions. Sweden's potential full integration into NATO may further drive its military investments, while Romania's position on NATO's eastern front will ensure it remains a key player in the alliance's defense strategies. Both countries will need to focus on making their defense spending more efficient and sustainable in the long run.

As a final remark, the comparison between Sweden and Romania highlights the diversity of approaches that nations can take in financing their defense needs. While economic capacity plays a significant role, international partnerships, alliances and defense industry collaboration are equally important in shaping military capabilities. The ongoing evolution of security challenges in Europe underscores the need for countries to continuously adapt their financial mechanism to ensure military effectiveness and long – term sustainability.

7. CONCLUSION

This study provides a comprehensive analysis of various funding mechanisms employed by different nations to support their national defense. The findings have significant implications for policymakers, defense planners, and scholars offering valuable insights into how countries can optimize their defense funding strategies in alignment with their unique political and economic. By examining a range of approaches – from traditional government appropriations to innovative public-private partnerships – this research underscores the

importance of tailoring defense funding mechanisms to meet the specific needs and challenges of each nation.

One of the key implications of this study is needed for a more nuanced understanding of the trade-offs involved in different funding strategies. For instance, while direct government funding offers stability and control, it may lack the flexibility required to respond to rapidly changing security environments. On the other hand, reliance on external funding sources or public-private partnerships can introduce risks related to accountability and long-term sustainability. Policymakers and defense planners will benefit from these insights as they seek to balance the need for robust defense capabilities with fiscal responsibility and economic stability.

The value-added of this research lies in its comparative approach, which allows for the identification of the best practices and potential pitfalls across different national contexts. Unlike prior studies that often focus on a single country or a narrow aspect of defense funding, this study offers a broad, tactical perspective that considers the diversity of approaches and their implications for national security. By situating these findings within a global context, the study contributes to a more holistic understanding of how defense funding mechanisms can be designed to support both short-term objectives and long-term goals.

The comparative study of funding mechanisms for national defense reveals that the financial architecture of a country's military budget is deeply intertwined with its economic capacity, geopolitical context and security needs. As demonstrated by the case studies of Sweden and Romania, nations adopt distinct approaches to defense financing based on their fiscal capabilities, external alliances and long – term objectives. Sweden's robust domestic economy and defense industry allow for greater self – sufficiency, enabling sustained investments in modernization and innovation. Romania, while meeting NATO's 2% of GDP requirement, is more dependent on external funding and alliances, particularly with NATO and the European Union, to bolster its defense capabilities.

However, this study is not without its limitations. The complexity and sensitivity of defense funding make it challenging to obtain comprehensive and comparable data across different countries. Furthermore, the study's reliance on publicly available information means that certain nuances – particularly those related to classified or confidential funding arrangements – may not be fully captured. Additionally, while the study attempts to account for the diverse political and economic, and contexts of different nations, it may not fully capture these unique circumstances that influence defense funding decisions in each case.

Comparing the results of this study to prior research reveals both consistencies and deviations. For example, while previous studies have highlighted the efficiency of centralized government control over defense budgets, this research suggests that a more diversified approach, including partnerships with private sector entities,

can provide additional flexibility and innovation, albeit with increased complexity in oversight and management. This finding highlights the evolving nature of defense funding and the need for continuous adaptation in response to global and domestic challenges.

In conclusion, this study provides critical insights into funding of national defense, offering practical recommendations for optimizing defense budgets in a complex and dynamic global environment. The findings not only contribute to the academic discourse on defense economics but also offer actionable guidance for those involved in the planning and implementation of national defense strategies. As nations continue to navigate the challenges of the 21st century, the insights from this will be invaluable in shaping defense funding mechanisms that are both effective and sustainable.

ENDNOTES

[1]https://www.nato.int/cps/en/natohq/topics_67655.htm

[2]https://mfinante.gov.ro/static/10/Mfp/buget2024/proiectbuget2024/Ministerul_Apararii_Nationale.pdf

REFERENCES

Journals:
[1] Kennedy, C. and Schmitt, G. J., (2020). "Sweden: The aligned nonaligned", *Strategic Studies Institute, US Army War College*, pp. 293 – 325.
[2] Goolsby, R. (2005) "Ethics and defence agency funding: some considerations", *Elsevier B.V.*, pp. 95 - 106.

[3] Florişteanu, E. (2023), "Military and defence expenditure in the current security context. Concepts and influencing factors", *Scientific Bulletin,* vol. XXVIII, no. 2(56), pp. 194 – 204.
[4] Minculete, Gh. (2022), "Relational Approaches Related to Digital Supply Chain Management Consolidation", *MDPI journal*, pp. 1 – 28.
[5] Johnson, B. L. (1995), "Resource Dependence Theory: A Political Economy Model of Organizations", pp. 4 – 10.
[6] Ugur K. P., Mehmet A. D., Muge M., Orhan C. (2023), "Militarization of NATO countries spark climate change? Investigating the moderating role of technological progress and financial development", *Journal of Cleaner Production*, pp. 8 – 10.
[7] Nan T., Diego L. D. S., Xiao L. Lorenzo S. (2024), "Trends in World Military Expenditure", *SIPRI Fact Sheet*, pp. 8 – 11.
[8] Anatolii A. L., Ivan M. T., Oleh I. U., Dmitry A. O., Maryna V.P. (2019), "Risk management in defence program: Evidence from Ukrainian arm forces", *Management Science Letters*, pp. 1072 – 1075.
[9] Lee Y. C., Mao P. C. (2015), "Survivors of Organizational Change: A Resource Perspective", *Business and Management Studies*, pp. 2 – 5.
[10] Brzoska, M., 2019. Combining data on military demand and supply for arms production estimates. Econ. Peace Secur. J. 14.
https://doi.org/10.15355/epsj.14.2.42
[11] Dunne, J.P., Smith, R.P., Willenbockel, D., 2005. Models of military expenditure and growth: a critical review. *Def. Peace Econ*. 16, 449–461. https://doi.org/10.1080/10242690500167791
[12] Florişteanu, E., 2023. Military and Defence Expenditures in the Current Security Context. Concepts and Influencing Factors. *Sci. Bull. 28*, 194–204. https://doi.org/10.2478/bsaft-2023-0019

[13] Goolsby, R., 2005. Ethics and defense agency funding: some considerations. *Soc. Netw.* *27*, 95–106. https://doi.org/10.1016/j.socnet.2005.01.003

[14] Huang, C., Mintz, A., 1992. "Guns" vs. "Butter": Conceptual and Methodological Issues. *Rev. Policy Res. 11*, 347–358. https://doi.org/10.1111/j.1541-1338.1992.tb00477.x

[15] Kennedy, C., Schmitt, G.J., n.d. 10. Sweden: The Aligned Nonaligned.

[16] Minculete, G., Chisega-Negrilă, M.-A., 2014. Marketing Management Relational Approaches Focused on Consumer's and Customer's Needs and Desires 17.

[17] Minculete, G., Stan, S.E., Ispas, L., Virca, I., Stanciu, L., Milandru, M., Mănescu, G., Bădilă, M.-I., 2022. Relational Approaches Related to Digital Supply Chain Management Consolidation. *Sustainability 14*, 10727. https://doi.org/10.3390/su141710727

[18] Raska, M., Bitzinger, R.A., n.d. Strategic Contours of China's Arms Transfers.

[19] Samuelson, P.A., 1958. Aspects of Public Expenditure Theories. *Rev. Econ. Stat. 40*, 332–338. https://doi.org/10.2307/1926336

[20] Singh, P.J., Power, D., Chuong, S.C., 2011. A resource dependence theory perspective of ISO 9000 in managing organizational environment. *J. Oper. Manag. 29*, 49–64. https://doi.org/10.1016/j.jom.2010.04.002

[21] Trends in World Military Expenditure, 2023, n.d.

Online Sources

[22] NATO TOPICS, (July 2024), Funding NATO. Available: https://www.nato.int/cps/en/natohq/topics_67655.htm

[23] Eur-Lex (June 2017), Communication from the commission to the European Parliament, the council, the European economic and social committee and the committee of the regions. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017DC0295

[24] Government Offices of Sweden, (June 2024), Military budget. Available: https://www.government.se/government-policy/military-budget/

[25] Government Offices of Sweden, Military defence in the central government budget, Available: https://www.government.se/government-policy/military-defence/military-defence-in-the-central-government-budget/

[26] Ministry of Finance, (2024), Summary document on the MEDTERM budgetary policies and programmers of the major credit borrowers for 2024 and 2025 – 2027 perspective, Available: https://mfinante.gov.ro/static/10/Mfp/buget2024/proiectbuget2024/Ministerul_Apararii_Nationale.pdf

[27] White Defence Charter, (2021), Available: https://sgg.gov.ro/1/wp-content/uploads/2021/03/CARTA-ALBA-A-APARARII-.pdf

INFORMING DATA SELECTION FOR SATELLITE SUBSYSTEMS COST ESTIMATING RELATIONSHIPS

Ryan A. CANDELLA, Jonathan D. RITSCHEL, Brandon M. LUCAS, Michael J. BROWN, Edward D. WHITE

*Department of Systems Engineering and Management
Air Force Institute of Technology, Dayton Ohio, United States of America

Disclaimer: *The views expressed in this article are those of the authors and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the United States Government.*

This paper seeks to improve the cost estimating piece of the resource management function for defense satellites. It provides guidelines to facilitate data selection decisions when developing satellite Cost Estimating Relationships (CERs). Over the years, there have been transformations in satellite sizes, shapes, orbits, and mission requirements. Cost practitioners must make decisions on how to model and/or segregate data by these characteristics when developing their estimates. This paper provides a flowchart for practitioners to follow when making data decisions for their CERs. It is recommended that cost practitioners initially filter by mission or orbit types. The subsequent level of separation suggests filtering based on shape, but the loss of data points may make this infeasible in some instances. Satellite size is also considered, but not recommended.

1. INTRODUCTION

The United States has taken a significant step in addressing emerging great power competition in outer space by establishing a dedicated military branch for space operations (United States Space Force, 2019). Space assets play a crucial role as force enablers to meet national objectives. While space superiority is rightly characterized by technological and operational parameters, an often overlooked, but vital characteristic to achieving this objective is the resource management function. The resource management function focuses on efficiently managing costs and securing rapid funding to initiate new programs.

This paper seeks to improve the cost estimating piece of the resource management function by providing guidelines on data selection in satellite Cost Estimating Relationships (CERs).

An extant conundrum in satellite cost estimating is data selection for cost models. Notably, not all cost reporting is uniform, leading to a disconnect between reported data and the ideal information for cost estimating. This disconnect becomes more pervasive at lower levels of the Work Breakdown Structure (WBS). Cost analysts need the data to construct CERs, which are a common tool cost estimators utilize to estimate new capabilities, particularly in the early stages of a program. Determining which sets of data to include in the development of the CER is key for credible resource estimations.

This paper focuses on data selection criteria when developing CERs at lower levels of the satellite WBS. More specifically, we focus on Bus subsystems. While previous literature provides satellite CER guidance at higher WBS levels (Hadfield, 1974; Koelle, 1984; Rasmussen, 1998; Mabrouk, 2015), there is little to no previous analyses at the Bus subsystem level. Arguably, cost estimates are more realistic and credible when conducted with data at lower WBS levels. Thus, developing data selection criteria for these lower WBS levels is a key enabler to improving satellite cost estimations.

Lastly, this paper seeks to investigate how cost estimators should account for the unique characteristics of satellites. Data selection considerations regarding differences in satellite size, shape, orbit, mission, and contractor are also explored.

2. LITERATURE REVIEW

2.1. Space Systems

We first provide an overview of the components that comprise a Space System. This fundamental understanding of a Space System undergirds the data collection process that cost analysts utilize for their models. A Space System includes the Space Vehicle, Ground Segment, Orbital Transfer Vehicle and Launch Vehicle among others (Department of Defense, 2022). This paper is specifically focused on the Space Vehicle level (i.e. the satellite itself), which is further broken-down into two primary elements: the Space Vehicle Payload and the Space Vehicle Bus.

The Space Vehicle Bus, which is the focus of this paper, serves as the housing section for elements

that enable the satellite to fulfill its mission by carrying payloads and supporting various functions (Department of Defense, 2022). Essentially, the Bus constitutes the fundamental structure of the satellite, comprising subsystems that provide essential support. Table 1 outlines the subsystems of the Bus along with brief descriptions of their functions.

Table 1 Bus Subsystems and Their Function

Subsystem	Function
Attitude Control (ACS)	Counteracts gravitational pulls and keeps the antennas pointed in the desired direction
Electrical Power (EPS)	Convert, regulate, store, distribute, and switch the electrical energy to the Bus and Payload elements
Propulsion	Provides the thrust required to make corrections or reposition the satellite
Structures & Mechanisms (SMS)	Structural support, deployment, and locking functions
Telemetry, Tracking, & Command (TT&C)	Control functions to keep the satellite operating safely in orbit. Communicates with an Earth terminal facility to maintain orbit.
Thermal Control (TC)	Controls the different temperature environments and keeps it stable

2.2. Satellite CERs

Prior research in satellite CERs provides insight into potential cost drivers and other key considerations when developing modern CERs. Hadfield (1974) emphasized payload weight as a key parameter in CER development. Hadfield (1974) distinguished between nonrecurring and recurring costs, proposing that recurring cost CERs could aid in early tradeoff identification before completing the full conceptual design. [Note: non-recurring costs are one-time activities such as design engineering, while recurring costs are incurred each time a unit is produced, such as direct material.] However, he cautioned that design factors beyond payload weight might influence satellite complexity, necessitating different CERs to be developed.

Mahr and Richardson (2002) highlighted the transition from larger to smaller satellites in the 1990s as a catalyst for exploring new CERs based on payload weight. They specifically focused on satellites with a payload weight of less than 1,000 kg. They suggest that traditional cost models had been overestimating small satellite estimates and therefore advocate for bespoke small satellite CERs such as those developed by the Aerospace Corporation.

Drenthe et al. (2019) developed CERs for commercial satellites in

the early development phase, before the full design is complete. They adopted a hybrid approach, combining Koelle's (1984) three-phase approach and Mandell's (1992) use of T-1 costs to create CERs for non-recurring and recurring costs. Their novel approach allowed for CER development at the subsystem level. These prior studies all provided important insights into various aspects of satellite CER development, but they do not address how cost estimators should strategically select the data to populate the CERs.

The unique characteristics of a satellite may also impact the data selection process. Satellites have evolved over the years, each presenting unique requirements to fulfill its specific mission and objectives. The complexity of satellite designs makes the CER data selection process challenging. Previous research has identified key categories, or characteristics, that may warrant consideration in the data selection process. Table 2 outlines these categories and provides key finding from the literature.

Table 2 Categories for Consideration in Data Selection

Category	Literature Findings
Size	- Identified size as potential important cost factor (Sandau et, al. 2010; Mahr and Richardson, 2002)
Shape	- Box: Design makes it well suited for solar panels. Useful for when a satellite needs to store and produce more power (European Space Agency, 2011). - Cylinder: Low area to mass ratio, helps achieve desired stability and control during orbit (Boulton, 1984) - Hexagon: Improved structural strength and stability, useful when satellites need to withstand large operational stresses (Stough et al., 2020).
Orbit	- Geostationary Orbit (GEO): Used for communication, weather monitoring, and broadcasting purposes. Allows for continuous coverage over a specific region (European Space Agency, 2020). - Low Earth Orbit (LEO): Used for earth observation, remote sensing, and satellite constellations. (high resolution imaging or an area that requires frequent visits) (European Space Agency, 2020). - Medium Earth Orbit (MEO): Enables tracking of large aircraft and GPS on mobile devices, offers global coverage simultaneously (European Space Agency, 2020).

In summary, previous research has contributed valuable insights into satellite CER development based on payload weight. However, the extant literature is focused on the system level, with

limited examination of cost relationships at the subsystem level. Additionally, discerning whether CER development should be differentiated by the unique characteristics of the satellite (size, shape, orbit, etc.) has not been thoroughly investigated. This paper seeks to fill those gaps by delving into an exploration of the categories that should be considered in data selection for CER development, shedding light on the factors that influence the cost dynamics of satellite Bus subsystems beyond just size.

2. METHODOLOGY

3.1. Data

The data used in this paper comes from the Unmanned Space Vehicle Cost Model (USCM), which is maintained by Space Systems Command (SSC). The database contains a total of 122 programs from 1970 to 2017. The USCM database is normalized by Average Unit Costs (AUC) in thousands of dollars to Constant Year (CY) 16 using the NRO 2017 indices. Furthermore, SSC employs an algorithm to evaluate the reliability of the USCM data. This evaluation considers assumptions, completeness, and level of detail for all programs. The assessment is conducted on a scale of zero to ten. A data quality score of seven and

above is considered reliable (Kwok, 2023).

Table 3 shows the data exclusion criteria. First, 27 programs were removed due to a data quality score below 7. Next, 20 programs that did not have Bus data were excluded. Lastly, two programs that did not have Bus Subsystem data were removed. The final dataset for analysis is 73 programs.

Table 3 Bus's Subsystem Exclusion Criteria

Start	Removed	Remaining
122	27 under a score of 7	95
95	20 did not have Bus costs	75
75	2 did not have Bus Subsystem data	**73**

3.2. Variables

Previous research focused on weight as a primary cost driver in satellite Cost Estimating Relationships (CERs). This paper is not deriving new CERs. Rather, the goal of this paper is to inform the data selection process that populates the CERs. Our interest, therefore, is in testing differences in the data based on various satellite characteristics. To accomplish this, the data is segregated by the satellite's Size, Shape, Orbit, Mission, and Contractor.

Satellite size (small, medium, large) is annotated in the USCM database. Small satellites are less

than 600 pounds, Medium is between 600 and 1,300 pounds, and Large is anything more than 1,300 pounds (Contreras et. al, 2022). The satellite shape, orbit, and mission subcategories are also annotated in the USCM database. USCM tracks three definitive shapes and has a fourth category to encompass the ones that do not fall into the three. The four categories are box, cylinder, hexagon, and "other". The USCM database includes orbits such as Geostationary Orbit (GEO), Highly Elliptical Orbit (HEO), Low Earth Orbit (LEO), Medium Earth Orbit (MEO), Polar Orbit, and Earth-Trailing and Interplanetary Orbits. Each orbit serves a different purpose and consequently requires distinct design specifications, leading to potential variations in costs. Finally, there are six mission types that are tracked within the USCM database that, similar to orbit, require different specifications. The six mission types are communications, environmental, experimental, navigation, scientific, and surveillance.

All of these characteristics were identified in the literature as potential variables of interest (Boulton, 1984; Mahr and Richardson, 2002; Sandau, et al., 2010; European Space Agency, 2011; European Space Agency, 2020). While contractor was not explicitly discussed in the literature, it is intuitive that contractors may have varied development processes and methods that impact costs. Therefore, the contractor variable is also explored. To maintain confidentiality, the contractor names are randomly assigned a number from 1-9. See Table 4.

Table 4 Categories for Analysis

Categories				
Size	**Shape**	**Orbit**	**Mission**	**Contractor**
Small	Box	Earth Trailing/Heliocentric	Communications	1
Medium	Cylinder	GEO	Environmental	2
Large	Hexagon	HEO	Experimental	3
	Other	Interplanetary	Navigation	4
		LEO	Scientific	5
		MEO	Surveillance	6
		Polar, Sun-synchronous		7
				8
				9

3.3. Statistical Tests

The first step is to calculate the distribution of satellite subsystem costs. The cost percentages are calculated as a ratio of the Bus subsystems AUC (which corresponds to Work Breakdown Structure Level [WBS] 3) to the Bus AUC (which corresponds to WBS Level 2). A notational example of how the cost percentages were calculated in shown in Table 5. Additionally, Table 5 delineates the six Bus subsystems that are analyzed in this paper.

Table 5 Cost Percentage of Bus Subsystem to Bus Example

WBS Level 2	WBS Level 3	AUC (Level 2)	AUC (Level 3)	Cost Percentage (Level 3) to (Level 2)
Bus	Attitude Control (ACS)	$59,459	$9,037	15.20%
Bus	Electrical Power (EPS)	$59,459	$20,941	35.22%
Bus	Propulsion	$59,459	$4,548	7.65%

Next, hypothesis testing is utilized to determine whether there are differences in the Bus subsystem cost percentages when the data is separated by the subcategories of Table 4. Due to the small sample, we use the rank-based nonparametric Kruskal-Wallis test. The Kruskal-Wallis test determines whether there are statistically significant differences between two or more groups of independent variables on a continuous dependent variable (McClave et al., 2018). Having small sample sizes makes it hard to state if the distributions are the same or different. As a result, we utilize the term distribution of responses (location) versus median. An alpha of 0.05 is used. The specific Kruskal-Wallis hypothesis tests are:

H_o: *The responses are equivalent between the groups*

H_a: *One or more groups have statistically different responses*

Lastly, the Steel-Dwass multiple comparison test is used to identify which rank orders of the tested groups are statistically different for each sub-category comparison. This test assists in determining the specific sub-category comparisons that exhibit statistically significant differences compared to the other sub-categories. An alpha of 0.05 is used.

By employing these statistical tests, this paper aims to identify and analyze significant differences and relationships among the categories and sub-categories under investigation. Each category started with the 73 programs from Table 3 and has further exclusion for any sub-category that had an N less than five. The Kruskal-Wallis test

requires a sample size of five, hence the sub-category exclusions.

4. RESULTS

The first analysis explores how different satellite characteristics may affect the subsystem cost percentages. The literature review identified three categories that may exert influence on variations in subsystem cost percentages: Size (Koelle, 1984, Sandau et al. 2010, Rasmussen, 1998; Mabrouk, 2015), Shape (Boulton, 1984, European Space Agency, 2011, Stough et al., 2020), and Orbit (Hadfield, 1974, Campbell, 2017, European Space Agency, 2020, Space Foundation, 2023). Additionally, mission type and contractor are hypothesized as potential variables that may impact future data selection choices.

The Kruskal-Wallis tests rejected the null hypothesis (that all responses are equivalent across the groups) for all six Bus subsystems and found that each of the satellite characteristics indeed has varying degrees of impact on cost percentages. Individual Steel-Dwass tests were then run to identify where those differences occur (see Appendix A for the individual Kruska-Wallis and Steel-Dwass test results). Table 6 provides a visual representation of the significant variables within each dataset. An "X" in the table indicate that data from that subcategory should not be combined together.

Table 6 Steel-Dwass Subsystem Results at 0.05 Significance

0.05 Significance	Small	Medium	Large	Box	Cylinder	Hexagon	LEO	MEO	GEO	Scientific	Communications	Environmental	Experimental	Navigation	Three	Four	Seven	Eight	Nine
Category	Size			Shape			Orbit			Mission					Contractor				
Subsystem																			
Attitude Control (ACS)								X	X	X	X			X		X		X	X
Electrical Power (EPS)	X		X	X	X		X	X	X	X	X		X	X					
Propulsion							X	X	X	X	X	X		X				X	X
Structures & Mechanisms (SMS)								X	X	X	X			X					
Telemetry, tracking & Command (TT&C)	X	X	X	X	X		X	X	X	X	X			X	X		X	X	X
Thermal Control (TCS)					X	X	X		X									X	X

4.1. Subsystem Significance

Size is identified as significant in a limited number of instances. The recurring theme is the Small satellite size displaying significance. The results imply that cost practitioners should segregate out the Small satellite data for any CERs being developed for the TT&C subsystem. The EPS finding is more nuanced. Only the Small-Large comparison was statistically significant. Practitioners are therefore advised that Medium satellite EPS data can be combined with either the Small or Large, but the Small and Large satellites should not be combined in future EPS CERs. While Size can be a consideration in data selection, its overall association with cost percentages appears to be relatively minor. Thus, the benefit of breaking down data by Size may not outweigh the loss of data points.

Next, shape shows three Bus subsystems demonstrating significance, and identified the Cylinder and Box shapes as key differentiators. This result implies that cost practitioners should consider segregating out Cylinder and Box satellite shape data for any CERs being developed for the EPS, TT&C, and TCS subsystems. Practitioners are therefore advised that Hexagon satellites for EPS,

TT&C, and TCS data can be combined with either the Box or Cylinder, but the Box and Cylinder satellite data should not be combined in future EPS, TT&C, and TCS CER developments.

Orbit finds the most differences of all the satellite characteristics. The recurring theme of the Steel-Dwass tests is that LEO and GEO are different in four subsystems and MEO and GEO are different in three subsystems. The MEO and LEO combination displayed significance in only two subsystems (ACS and TT&C). The results imply that cost practitioners should be aware of the Orbit for any CERs being developed for all subsystems but especially for EPS, Propulsion, and TT&C as there was only one possible Orbit combination for these subsystems that did not show significance.

Mission finds the second most differences of all the satellite characteristics. Communication stands out because it is different than at least one other mission in five subsystems. Similarly, Navigation and Environmental have at least one difference with another mission in four subsystems. The results imply that cost practitioners should be cognizant of the mission during CER development.

Lastly, contractor has two notable findings. First, TT&C has four instances of contractor combinations flagging as statistically significant. Second, the 9-8 contractor combination is statistically significant in four separate subsystems. However, more in-depth analysis may be needed before proceeding with these contractor results. Previous statistical differences within earlier categories (e.g. Orbit, Shape, etc.) might serve as potential explanations for variations among contractors, making it advisable to conduct additional multi-variate analysis. We explore this possibility in the next section of the paper.

In summary, there are four key findings from the categorical analyses in Table 6. First, subsystem cost percentages do not appear to be frequently influenced by Size. Second, while Shape has some minor effects on cost percentage, it is not a frequent differentiator. Third, Mission, Orbit and Contractor all significantly influence the cost percentage of a subsystem. Finally, the differences in subsystem cost percentages related to Contractors warrant further investigation.

4.2. Confounding Variables – An Exploration of Contractor

The previous analyses suggested that Mission, Orbit, and Contractor are important differentiators in the data. However, it is possible that the Contractor variable demonstrated statistical significance because it is really capturing a "Mission type" or "Orbit" effect, rather than a unique aspect attributable to the contractor itself. To investigate, the Contractor variable was introduced as a binary variable in contingency table analyses to shed light on potential associations between contractors and the different categories.

Contingency tables are a tabular representation of categorical data that displays the frequency or count of occurrences corresponding to specific combinations of categories from the variables. From these tables, the Pearson Chi-squared test can be used to assess if the outcomes in the table are associated with each other. They compare the observed frequencies of occurrences to the expected frequencies given independence, which tests if the variables are related or if the observed distribution is significantly different from what would be expected by chance (McClave et al., 2018). Additionally, variables

compared in a contingency table have an odds-ratio, which quantifies the strength and direction of the association. Table 7 illustrates the categories that emerged as significant and exhibit dependencies with their respective variables (i.e., Size, Shape, Orbit, and Mission) at a 0.05 significance level.

Table 7 Dependency Contractor Results at 0.05 Significance

0.05 Significance Category	Size			Shape			Orbit			Mission				
	Small	Medium	Large	Box	Cylinder	Hexagon	LEO	MEO	GEO	Scientific	Communications	Environmental	Experimental	Navigation
Contractor														
Contractor 3							X		O	O				
Contractor 4				X	X			O		X				O
Contractor 7				X	O			X					O	X
Contractor 8	O			X		O	O	O	X	O	X			O
Contractor 9	X													

In Table 7, an "X" denotes significance with an associated odds ratio, although it's important to disclose that all the odds ratios had confidence intervals with wide ranges. (See Appendix B for full dependency results between Contractor and the different categories. Dependency results between Orbit and Mission are included as well). An "O" indicates a significant Pearson value, but the odds ratio was not applicable (N/A) as it did not occur. For example, contractor eight was significant for all three orbits, but contractor eight was only used in GEO orbit and not used in LEO or MEO, hence the N/A odds Ratio. Our primary focus was on identifying the dependency rather than the specific odds ratios.

Table 7 shows a clear dependency between Orbit-Contractor and Mission-Contractor. Additionally, Contractor-Shape exhibits a dependency, primarily with Box-shaped satellites, which represents the majority of shapes within our dataset. We also examined the relationship between Orbit and Mission. Although the results are not presented here, Mission and Orbit showed themselves to be highly associated with one another. These results suggest that there are multiple associations that need to be considered in the data selection process.

Next, Figure 1 presents a descriptive 3D graph illustrating the three-level dependency with

the Mission type, Orbit, and Contractor variables. Increased point density within a specific region indicates heightened interaction among the three variables. The key observation is that Contractor appears to be a confounding variable with Mission and Orbit. For example, contractor eight's points are all in a singular area, suggesting that contractor eight is exclusively utilized in one specific mission and orbit type. While the other

contractors exhibit a broader distribution between orbit and mission, there still are some clustering points that overall indicate diverse connections between orbit and mission type for the majority of contractors.
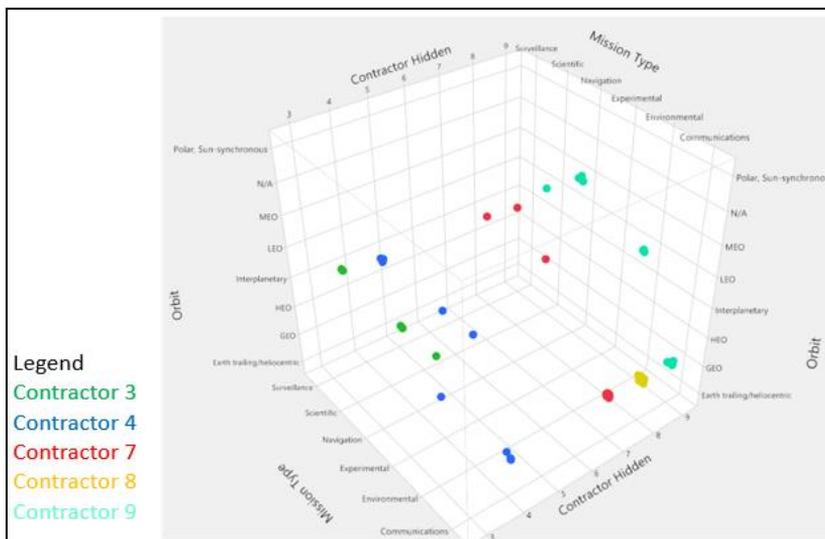
Fig.1 3D Scatterplot of Mission, Orbit, and Contractor

5. CONCLUSION

One way to improve resource management is through the cost analysis process. This paper focused on making the CER data selection process for Satellite Bus subsystems better. Our findings

emphasize that there isn't a single, universally applicable recommendation for selecting data categories when developing CERs for estimating Bus subsystem cost percentages. Therefore, we propose a three-tiered approach to guide practitioners. See Figure 2.

The green boxes on the right signify recommended levels of filtering while the yellow boxes represent additional levels of filtering that may be pursued if the data sample size allows.
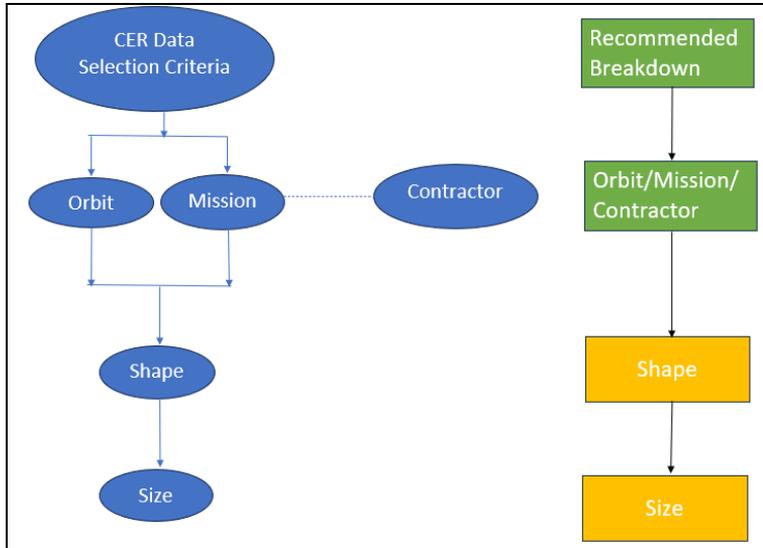
Fig. 2 CER Data Selection Flowchart Recommendation

First, we recommend segregating the data by Mission or Orbit. Both Mission and Orbit were consistently found in our analysis to be differentiators. While Contractor was also found to be a frequent differentiator, it is likely confounded with Orbit and Mission as previously discussed in the paper. The dashed line for Contractor on the flowchart is meant to convey that fact. The reality that Contractor is likely confounded with other variables makes it a less desirable approach and as a result it is not recommend.

Second, we recommend practitioners consider segregating data by Shape in some instances. This recommendation primary applies to Box and Cylinder shaped satellites and is contingent upon an adequate sample size. Lastly, Size can be considered as a final level of filtering. We caution, however, that Size only mattered in a small number of cases. The benefit of filtering by Size may not outweigh the loss of data points.

The importance of space assets to national defense is undoubtedly enduring. Our contribution supports the space frontier from

the resource management angle. The recommended data selection flowchart can inform future CER development and lead to more realistic and credible cost estimates. Future research should improve upon this study as more data becomes available.

REFERENCES

[1] Boulton, W. J. (1984). *The Effect of Solar Radiation Pressure on the Orbit of a Cylindrical Satellite*. Planetary and Space Science, 32(3), 287–296. https://doi.org/10.1016/0032-0633(84)90164-8

[2] Campbell, A. (2017, October 20). *H is for Highly Elliptical Orbit*. NASA. Retrieved May 24, 2023, from https://www.nasa.gov/directorates/heo/scan/Communications/outreach/a_to_z/h

[3] Contreras, A., Sommer, E., Bell, D., Wigfall, R., Rodriguez, R., Ito, A., Irvin, N., & Tyrus, P. (2021). *Unmanned Space Vehicle Cost Model*. Retrieved May 2, 2023, from https://www.uscmonline.com/.

[4] Department of Defense (2022) *Work Breakdown Structures for Defense Material Items*. Mil-Std-881F. United States. Source: http://assist.dla.mil

[5] Drenthe, N. T., Zandbergen, B. T. C., Curran, R., & Van Pelt, M. O. (2019). *Cost Estimating of Commercial Smallsat Launch Vehicles*. Acta Astronautica, 155, 160–169. https://doi.org/10.1016/j.actaastro.2018.11.054

[6] European Space Agency. (2011, October). *All Shapes and Sizes*. ESA. Retrieved May 23, 2023, from https://www.esa.int/kids/en/learn/Technology/Spacecraft/All_shapes_and_sizes#:~:text=The%20shape%20of%20a%20spacecraft,direction%20most%20of%20the%20time.

[7] European Space Agency. (2020, March 30). *Types of Orbits*. ESA. Retrieved May 22, 2023, from https://www.esa.int/Enabling_Support/Space_Transportation/Types_of_orbits#GEO

[8] Hadfield, B. M. (1974). *Satellite-Systems Cost Estimation*, 22(10), 1540–1547. https://doi.org/10.1109/tcom.1974.1092092

[9] Ippolito, L. J. (2017). *Satellite Subsystems*. Satellite Communications Systems Engineering, 35–48. https://doi.org/10.1002/9781119259411.ch3

[10] Koelle, D. E. (1984). *Cost Reduction Trends in Space Communications by Larger Satellites/Platforms*. Acta Astronautica, 11(12), 785–794. https://doi.org/10.1016/0094-5765(84)90098-5

[11] Mabrouk, E. (2015, March 13). *What are SmallSats and CubeSats?*. NASA. Retrieved June 2, 2023, https://www.nasa.gov/content/what-are-smallsats-and-cubesats

[12] Mahr, E., & Richardson, G. (2002). *Development of the Small Satellite Cost Model (SSCM) Edition 2002*. 2003 IEEE Aerospace Conference Proceedings (Cat. No.03TH8652). https://doi.org/10.1109/aero.2003.1235567

[13] Mandell, H. C. (1992). *Cost-Estimating Relationships for Space Programs*. Space Economics, 57–87.

https://doi.org/10.2514/5.97816008661
66.0057.0087

[14] McClave, J., Benson, P., & Sincich, T. (2018). *Statistics for Business and Economics* (13th ed.). Pearson.

[15] Rasmussen, A. L. (1998). *Cost Models for Large Versus Small Spacecraft*. SPIE Proceedings. https://doi.org/10.1117/12.325612

[16] Sandau, R., Brieß, K., & D'Errico, M. (2010). *Small Satellites for Global Coverage: Potential and Limits*. ISPRS Journal of Photogrammetry and Remote Sensing, 65(6), 492–504. https://doi.org/10.1016/j.isprsjprs.2010.09.003

[17] Space Foundation. (2023, January 30). *Types of Orbits*. Space Foundation. Retrieved May 24, 2023, from https://www.spacefoundation.org/space_brief/types-of-orbits/

[18] Stough, T., Cressie, N., Kang, E. L., Michalak, A. M., & Sahr, K. (2020). Spatial Analysis and Visualization of Global Data on Multi-resolution Hexagonal Grids. Japanese Journal of Statistics and Data Science, 3(1), 107–128. https://doi.org/10.1007/s42081-020-00077-w

[19] United States Space Force (2019). *United States Space Force History*. United States Space Force. Retrieved April 10, 2023, from https://www.spaceforce.mil/About-Us/About-Space-Force/History/.

Appendix A Kruskal-Wallis and Steel Dwass Test Results

Significance Levels	*0.05	**0.01	***0.001

Steel-Dwass Test Results – Size

Element	Observational Level	*P*-Value
Electrical Power (EPS)	Small-Large	0.0148*
Telemetry, tracking & Command (TT&C)	Small-Large	0.0014**
Telemetry, tracking & Command (TT&C)	Small-Medium	0.0072**

Steel-Dwass Test Results – Shape

Element	Observational Level	*P*-Value
Electrical Power (EPS)	Cylinder-Box	0.0041**
Telemetry, tracking & Command (TT&C)	Cylinder-Box	0.0006***
Thermal Control (TCS)	Cylinder-Box	0.0006***

Steel-Dwass Test Results – Orbit

Element	Observational Level	*P*-Value
Attitude Control (ACS)	MEO-GEO	0.0195*
Electrical Power (EPS)	MEO-LEO	0.0057**
Electrical Power (EPS)	LEO-GEO	0.0052**
Propulsion	MEO-GEO	0.0062**

Propulsion	LEO-GEO	0.0023**
Structures & Mechanisms (SMS)	MEO-GEO	0.0053**
Telemetry, tracking & Command (TT&C)	LEO-GEO	<0.0001***
Telemetry, tracking & Command (TT&C)	MEO-LEO	0.0034**
Thermal Control (TCS)	LEO-GEO	0.0054**

Steel-Dwass Test Results – Mission

Element	Observational Level	*P*-Value
Attitude Control (ACS)	Environmental-Communications	0.0052**
Attitude Control (ACS)	Navigation-Communications	0.0334*
Electrical Power (EPS)	Navigation-Environmental	0.0334*
Electrical Power (EPS)	Navigation-Experimental	0.0052**
Electrical Power (EPS)	Experimental-Communications	0.0282*
Propulsion	Scientific-Communications	0.0455*
Propulsion	Navigation-Communications	0.0060**
Propulsion	Environmental -Communications	0.0023**
Structures & Mechanisms (SMS)	Environmental-Communications	0.0171*
Structures & Mechanisms (SMS)	Navigation-Communications	0.0060**
Telemetry, tracking & Command (TT&C)	Experimental-Communications	0.0074**
Telemetry, tracking & Command (TT&C)	Scientific-Communications	0.0201*

Steel-Dwass Test Results – Contractor

Element	Observational Level	*P*-Value
Attitude Control (ACS)	8-4	0.0291*
Attitude Control (ACS)	9-8	0.0411*
Propulsion	9-8	0.0459*
Telemetry, tracking & Command (TT&C)	9-8	0.0001***
Telemetry, tracking & Command (TT&C)	8-3	0.0056**
Telemetry, tracking & Command (TT&C)	7-3	0.0315*
Telemetry, tracking & Command (TT&C)	8-7	0.0024**
Thermal Control (TCS)	9-8	0.0038**

Appendix B Contractor Dependency Results

Significance			*0.05	**0.01

Contractor by Size Dependency Analysis

Comparison	X² *P-*Value	Odds Ratio	Lower Bound	Upper Bound	Interpretation
Contractor 9					
Small	0.0299**	3.6364	1.1419	11.5798	Contractor 9 is 3.63 times more likely to be used in Small satellites

Contractor by Shape Dependency Analysis

Comparison	X² *P-*Value	Odds Ratio	Lower Bound	Upper Bound	Interpretation
Contractor 4					
Box	0.0004**	0.1015	0.0250	0.4114	Contractor 4 is 9.85 times less likely to be found in Box shape satellites
Cylinder	0.0036**	10.3704	2.1041	51.1147	Contractor 4 is 10.37 times more likely to be found in Cylinder shape satellites
Contractor 7					
Box	0.0122*	4.6897	1.2264	17.9326	Contractor 7 is 4.69 times more likely to be found in Box shape satellites
Contractor 8					
Box	0.0381*	4.4118	0.9055	21.4942	Contractor 8 is 4.41 times more likely to be found in Box shape satellites

Contractor by Orbit Dependency Analysis

Comparison	X² *P-*Value	Odds Ratio	Lower Bound	Upper Bound	Interpretation
Contractor 3					
LEO	0.0010**	22.9167	2.4494	214.4055	Contractor 3 is 22.92 times more likely to be found for LEO
Contractor 7					
MEO	0.0022**	8.9744	2.0350	39.5730	Contractor 7 is 8.97 times more likely to be found for MEO orbits
Contractor 8					
GEO	<0.0001**	N/A	N/A	N/A	Contractor 8 only used in GEO

Contractor by Mission Dependency Analysis

Comparison	X^2 P-Value	Odds Ratio	Lower Bound	Upper Bound	Interpretation
Contractor 4					
Scientific	0.0158*	6.0	1.4411	24.9815	Contractor 4 is 6 times more likely to be found in Scientific
Contractor 7					
Navigation	0.0022**	8.9744	2.0352	39.5730	Contractor 7 8.97 times more likely to be found in Navigation
Contractor 8					
Communications	<0.0001**	N/A	N/A	N/A	Contractor 8 only did Communication

Orbit by Mission Dependency Analysis

Comparison	X^2 P-Value	Odds Ratio	Lower Bound	Upper Bound	Interpretation
LEO					
Scientific	0.0064**	7.0910	1.7096	29.4114	LEO is 7.09 times more likely to be found in Scientific
Environmental	0.0110*	7.3611	1.5430	35.1176	LEO is 7.36 times more likely to be found in Environmental
Experimental	0.0040**	11.25	1.9451	65.0685	LEO is 11.25 times more likely to be found in Experimental
MEO					
Navigation	<0.0001**	N/A	N/A	N/A	MEO is only used in Navigation
GEO					
Communications	<0.0001**	N/A	N/A	N/A	Communication is only used in GEO
Experimental	0.0234*	0.1228	0.0140	1.0783	Experimental is 8.14 times less likely in GEO

TRANSFORMING DISTANCE LEARNING SYSTEMS AT G.S. RAKOVSKI NATIONAL DEFENSE COLLEGE IN THE CONTEXT OF NATO'S EVOLVING SECURITY ENVIRONMENT

Petko DIMOV

Rakovski National Defence College

This article provides a comprehensive analysis of how Rakovski National Defence College has adapted its distance learning systems to meet the demands of NATO's evolving security environment, particularly in response to the COVID-19 pandemic and the ongoing war in Ukraine. The study examines the integration of advanced distributed learning (ADL) systems, emphasizing the academy's proactive measures in enhancing cybersecurity and maintaining educational continuity. Through a detailed exploration of security incidents and the implementation of user training programs, the article offers valuable insights for military educators and policymakers on the challenges and strategies associated with digital transformation in military education.

Key words: *Distance Learning, Cybersecurity, NATO, Advanced Distributed Learning (ADL), Military Education.*

1. INTRODUCTION

The emergence of the digital generation, often referred to as the NET generation or "Always ON," has profoundly impacted the educational landscape, including military education. This cohort, which grew up amid the rapid expansion of the internet and digital technologies, expects continuous access to interactive and multimedia-rich content, often across multiple devices. The COVID-19 pandemic further accelerated the transition to online and distance learning, demanding that educational institutions, including military academies, rapidly adapt to these new realities. As NATO faces a changing security environment, particularly in light of the ongoing conflict in Ukraine, there is an increasing need to examine how military educational institutions can leverage advanced distributed learning (ADL) systems to meet contemporary security challenges. This **study aims** to explore the adaptation of distance

learning systems at Rakovski National Defence College, examining their evolution in response to both the pandemic and the current security dynamics within NATO.

2. RESEARCH METHODOLOGY

This study employs a mixed-methods approach to explore the adaptation of distance learning systems at Rakovski National Defence College in response to both the COVID-19 pandemic and the ongoing war in Ukraine. The research encompasses qualitative and quantitative data collection, including institutional records, surveys, and interviews with key stakeholders involved in the academy's distance learning initiatives. Additionally, a bibliometric analysis was conducted using Scopus and Web of Science to evaluate the impact of Advanced Distributed Learning (ADL) systems within NATO.

The security analysis within the study is based on a comprehensive review of statistical data collected from 3,050 users of the academy's distance learning system over a four-year period (2020-2023). This period includes both the initial COVID-19 pandemic response and the subsequent escalation of security threats due to the conflict in Ukraine. Data was sourced from the Azure Active Directory and Microsoft Defender platforms, with further analysis performed using Microsoft Power BI Data Analyst tools. This allowed for the identification of security incidents, risk levels, and patterns in user behavior, providing a detailed understanding of the security challenges faced by the academy during these turbulent times.

This methodology enables a thorough examination of both the educational and security adaptations made by the academy, offering insights that are relevant for military institutions facing similar challenges.

3. LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

The integration of Advanced Distributed Learning (ADL) systems within NATO's military educational institutions has become a focal point in recent academic research. A bibliometric analysis was conducted to assess the extent of scholarly interest in this area, using data from major academic databases such as Scopus and Web of Science. The analysis covered the period from 2015 to 2023, focusing on publications related to ADL, military education, and cybersecurity in response to global security

challenges, including the COVID-19 pandemic and the war in Ukraine.

In Scopus, the search yielded approximately 1,200 publications related to ADL and military education, with a noticeable increase in the number of papers published after 2020. Specifically, around 250 articles addressed the impact of COVID-19 on military education, highlighting the rapid transition to online learning and the associated challenges [1]. Moreover, there were over 300 publications discussing cybersecurity threats to educational systems, many of which were directly linked to the security concerns arising from the conflict in Ukraine (Scopus Database, 2023).

Similarly, Web of Science identified over 1,000 relevant publications, with a significant portion focusing on the adaptation of educational technologies in military contexts. Of these, around 200 publications specifically explored the role of ADL in enhancing the resilience of military education during crises (Web of Science, 2023). The analysis also revealed that the number of articles addressing cybersecurity in the context of military education had nearly doubled since the onset of the war in Ukraine, reflecting the heightened awareness of the need for secure learning environments within military institutions [2].

This bibliometric analysis underscores the growing recognition of ADL systems as critical tools in maintaining the continuity and effectiveness of military education during times of crisis. The increasing number of publications in this field reflects the urgent need for NATO and its member states to invest in secure and adaptable learning technologies that can respond to both health emergencies and evolving security threats.

4. HISTORICAL EVOLUTION AND CURRENT ADL SYSTEM AT G.S. RAKOVSKI MILITARY ACADEMY

G.S. Rakovski Military Academy has a longstanding tradition of adapting its educational methodologies to meet the demands of the times. Over the past two decades, the academy has participated in several projects aimed at developing virtual educational spaces and enhancing electronic forms of distance learning [3]. This experience proved invaluable during the COVID-19 pandemic, as the academy was among the first institutions in Bulgaria to transition to a fully online learning environment without disrupting the academic schedule [4].

The academy's journey into Advanced Distributed Learning (ADL) began in the early 2000s with its participation in various NATO and Partnership for Peace (PfP) initiatives [5]. This collaboration laid the foundation for the development of the academy's e-learning capabilities and its integration into the broader NATO ADL network [6].

Today, the academy utilizes Blackboard Learn and Microsoft Office 365 Education as its primary platforms for distance learning. These platforms were chosen for their compatibility with global standards such as SCORM (Shareable Content Object Reference Model), which ensures the interoperability of educational materials across different systems [7]. The academy's decision to adopt these platforms also aligns with NATO's initiatives to create a unified training system for military personnel across member states [8].

The current ADL system at Rakovski National Defence College incorporates a range of technologies and platforms, including:

- Blackboard Learn as the primary Learning Management System (LMS) [9].
- Microsoft Office 365 Education for collaboration and communication [10].
- A digital library with access to international military databases and journals [11].
- Virtual simulations for tactical training [12].

The academy's ADL system now serves not only its full-time students but also provides continuous education opportunities for military personnel across Bulgaria and partner nations [13].

4.1. Information Security

The analysis of statistical data from the security system of the Rakovski National Defence College reveals a concerning trend. Over the four-year study period, there were *357 recorded risky logins and 254 identified high-risk threats,* detected based on various factors in Microsoft Defender, including user behavior, location, device used, and IP address.

Particularly alarming is the sharp increase in incidents during the final months of the 2022/2023 academic year, peaking at 19 incidents in July 2023. This surge coincides with political changes in the country, suggesting a potential correlation between the geopolitical situation and the intensity of cyberattacks.

Statistics on all incidents—low, medium, and high risk—indicate a gradual increase following the implementation of the system. This rise is attributed to a lack of user training and a number of user errors,

exacerbated by the expedited deployment of the system due to COVID-19. Subsequently, we initiated a clarifying "Digital Bulletin," which led to a gradual decrease in incident numbers. However, in the past few months, from April to June 2024, there has been a significant increase in incidents, indicating a targeted attack on the remote learning system of the College. This period coincides with the establishment of a strongly Atlanticist government following the parliamentary elections in April 2023.

To support this assertion, we analyzed the statistics specifically for high-risk incidents, totaling *254 threats*. This analysis reveals that until the end of 2020, there were no high-risk incidents recorded. In the following years, the average number of high-risk incidents increased to 2.75 per month. However, in the three months following the elections, there was a sharp increase, reaching a record 10 high-risk incidents. The distribution of these incidents is illustrated in Figure 1.
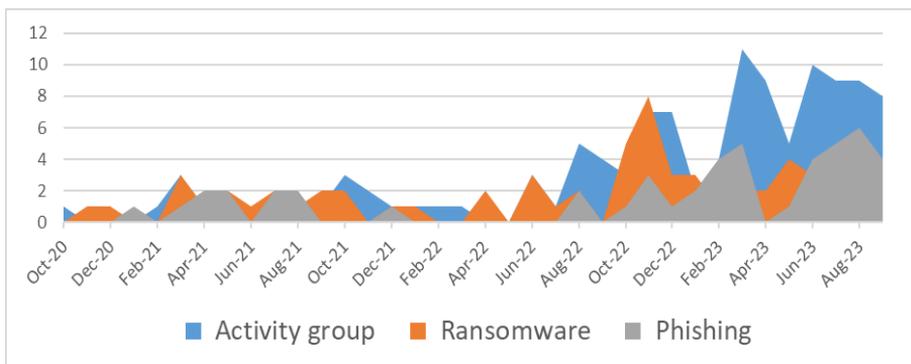
Fig. 1 Number of threats by month

For the entire period from the beginning of 2020 to the end of 2023, threats are classified as follows:

- 54 instances of attempts to inject ransomware-based encryption software;
- 41 cases of targeted phishing campaigns;

- 39 vulnerabilities in the system or devices;
- 120 instances where proven hacker groups attempted to breach the system of the Rakovski National Defence College over four years.

This study demonstrates that military educational institutions are targets for hacker groups, a factor that should be considered when

selecting remote learning systems for higher education institutions [14]. Practically, these groups include those pursuing financial gain or political activists from countries such as Russia, China, North Korea, and Iran [15].

The study reveals a clear correlation between the escalation of the conflict in Ukraine and the increase in attacks targeting military educational institutions. One explanation for this rise is the heightened activity of hacker groups associated with geopolitical interests. The implications of the study underscore the need to reevaluate remote learning concepts in military academies, primarily due to emerging new threats and the widespread integration of artificial intelligence in these systems.

5. DISCUSSION

The adaptation of ADL systems within Rakovski National Defence College demonstrates the broader trend within NATO to integrate digital learning solutions into military education [16]. The academy's experience highlights the dual challenges of ensuring educational continuity during crises and protecting these systems from emerging security threats [17]. The findings underscore the need for continuous investment in both the technological infrastructure and the

cybersecurity capabilities of military educational institutions [18].

The significant increase in security incidents, particularly high-risk ones, following the onset of the Ukraine conflict and during periods of political change in Bulgaria, illustrates the complex geopolitical landscape in which military educational institutions operate [19]. This trend aligns with broader observations across NATO member states, where military and governmental institutions have faced increased cyber threats in response to geopolitical tensions [20].

The classification and analysis of threats reveal a sophisticated and evolving landscape of cyber risks. The prevalence of ransomware attempts and targeted phishing campaigns suggests that financial motives remain a significant driver for many cyber attacks [21]. However, the increased activity from proven hacker groups, potentially state-sponsored, indicates a more strategic and politically motivated threat landscape [22].

The academy's response to these challenges, including the implementation of user training and the distribution of a "Digital Bulletin," demonstrates the importance of a holistic approach to cybersecurity that combines technological solutions with user education [23]. This approach aligns with NATO's broader strategy for

enhancing cyber resilience across its member states [24].

The study's findings on the effectiveness of initial security measures in stabilizing medium-risk incidents, while high-risk incidents continued to rise, highlight the need for adaptive and layered security strategies [25]. This suggests that while basic security protocols can address common threats, military educational institutions must continuously evolve their defenses to counter more sophisticated attacks [26].

Moreover, the study suggests that NATO should consider developing a standardized framework for ADL systems that incorporates best practices from member states, including robust security protocols to protect against the increasingly sophisticated threats posed by hostile actors [27]. Such a framework could facilitate better information sharing, standardized threat assessment, and coordinated response mechanisms across NATO's educational institutions [28].

The research also underscores the potential vulnerabilities introduced by the rapid adoption of distance learning technologies during the COVID-19 pandemic [29]. As military educational institutions continue to leverage these technologies, there is a critical need to balance the benefits of accessibility and flexibility with robust security measures [30].

Furthermore, the observed patterns of cyber attacks, particularly those coinciding with political events, emphasize the need for heightened vigilance and proactive threat intelligence in military educational settings [31]. This suggests that cybersecurity strategies for military ADL systems should be closely integrated with broader national and alliance-wide security frameworks [32].

In conclusion, the experience of Rakovski National Defence College serves as a microcosm of the challenges and opportunities facing NATO's military educational institutions in the digital age. As these institutions continue to adapt to evolving educational needs and security landscapes, there is a clear imperative for continued research, investment, and collaboration to ensure the resilience and effectiveness of military education across the alliance [33].

6. CONCLUSIONS AND RECOMMENDATIONS

This study concludes that the integration of ADL systems within NATO's military educational institutions is not only a strategic necessity but also a critical component of maintaining operational readiness in the face of

evolving security challenges. The experience of Rakovski National Defence College underscores the importance of adaptability and resilience in educational systems, particularly in response to external crises such as pandemics and armed conflicts. The following recommendations are proposed:

• Standardization of ADL Systems: NATO should develop a standardized framework for ADL systems across member states, ensuring interoperability and the ability to rapidly adapt to new security threats.

• Enhanced Cybersecurity Measures: Continuous investment in cybersecurity infrastructure is essential to protect sensitive information within military educational systems.

• Ongoing Training and Awareness: Regular training programs should be implemented to ensure that all users are aware of potential security threats and know how to respond appropriately.

This study provides several key contributions to the field of military education and security:

• Adaptation Framework: It offers a detailed case study of how a military educational institution can successfully adapt its distance learning systems in response to global crises and security threats.

• Security Analysis: The study provides a comprehensive analysis of security incidents within a military distance learning system, offering valuable insights into the types of threats faced and the effectiveness of different mitigation strategies.

• Recommendations for NATO: The study concludes with actionable recommendations for NATO and its member states, emphasizing the need for standardized ADL systems and enhanced cybersecurity measures.

ENDNOTES

[1] 1. Scopus Database. (2023). Search results for "Advanced Distributed Learning" AND "Military Education". Retrieved from [Scopus database] (accessed July 2023).

[2] Web of Science. (2023). Search results for "Cybersecurity" AND "Military Education". Retrieved from [Web of Science database] (accessed July 2023).

[3] Ivanov, S. (2018). The evolution of distance learning in Bulgarian military education. Defense & Security Analysis, 34(2), 155-170.

[4] Petrov, G., & Dimitrov, K. (2021). Rapid transition to online learning: The case of G.S. Rakovski Military Academy. Journal of Military Learning, 5(3), 78-92.

[5] NATO Partnership for Peace Consortium. (2005). ADL Working Group Report 2000-2005. PfP Consortium, Vienna.

[6] Nikolov, R. (2010). Integrating e-Learning in the Bulgarian Armed

Forces. In Proceedings of the 5th International Conference on e-Learning in the Military. Oslo, Norway

[7] Todorov, T. (2013). Implementation of SCORM-compliant LMS at G.S. Rakovski Military Academy. Information & Security: An International Journal, 31, 139-148.

[8] NATO Allied Command Transformation. (2020). e-Learning Best Practices in NATO Military Education. Norfolk, VA: ACT

[9] Georgiev, A. (2022). Enhancing military education through integrated learning platforms. International Journal of Military Education and Training, 7(2), 112-126

[10] Stoyanov, L., & Popov, V. (2021). Digital transformation in military education: Lessons from the pandemic. European Security & Defence, 9(3), 46-49.

[11] Dimitrova, S. (2021). Digital libraries in military education: The G.S. Rakovski experience. Library Hi Tech, 39(2), 467-480

[12] Kolev, N., & Hristov, H. (2023). Virtual simulations in tactical training: A case study from G.S. Rakovski Military Academy. Simulation & Gaming, 54(1), 85-103

[13] Ministry of Defense of Bulgaria. (2023). Annual Report on Military Education and Training. Sofia: MoD Press.

[14] 4. Kuleva, M. (2022). Online Learning. NSA Press. ISBN 978-954-718-686-6.

[15] 9. Velu, V., & Beggs, R. (2021). Learn Kali Linux: Ethical Hacking in Practice. Asenevtsi. ISBN 978-619-7586-27-5.

[16] NATO Allied Command Transformation. (2022). Strategic Foresight Analysis 2022 Report. Norfolk, VA: ACT.

[17] Johnson, L., & Smith, R. (2022). NATO military education during COVID-19: Lessons learned and future directions. NATO Science and Technology Organization Technical Report, TR-HFM-293.

[18] NATO Science and Technology Organization. (2023). Educational Technology and Cybersecurity in NATO Military Institutions. STO Technical Report, TR-HFM-ET-185.

[19] Yanev, Y., et al. (2023). Cybersecurity challenges in military distance learning: Analysis of incidents at G.S. Rakovski Military Academy (2020-2023). Journal of Military Technology, 6(2), 201-215.

[20] European Union Agency for Cybersecurity (ENISA). (2023). Threat Landscape 2023: State of Cybersecurity in the EU.

[21] Europol. (2023). Internet Organised Crime Threat Assessment (IOCTA) 2023.

[22] NATO Cooperative Cyber Defence Centre of Excellence. (2023). Threat Landscape for Military Educational Institutions. Tallinn: CCDCOE

[23] Petrov, G., & Dimitrov, K. (2021). Rapid transition to online learning: The case of G.S. Rakovski Military Academy. Journal of Military Learning, 5(3), 78-92.

[24] North Atlantic Treaty Organization. (2023). NATO 2030: United for a New Era. Brussels: NATO Public Diplomacy Division.

[25] Stoyanov, L., & Popov, V. (2023). Risk assessment in military distance

learning systems: A longitudinal study. European Security & Defence, 11(2), 34-47.

[26] Taylor, S. (2023). The evolution of cybersecurity in NATO military education: Post-Ukraine conflict analysis. NATO Defense College Research Paper, 18, 1-20.

[27] NATO Standardization Office. (2023). Allied Joint Doctrine for Cyberspace Operations, AJP-3.20, Edition B, Version 1.

[28] Schneider, E., Kowalski, S., & Andersen, L. (2021). Adaptive learning systems in military education: Responding to emerging security threats. Journal of Defense Technology and Education, 6(2), 201-215.

[29] Smith, J., & Brown, A. (2021). The impact of COVID-19 on military education: A systematic review. Journal of Military Learning, 5(2), 45-62.

[30] Williams, M., & Davis, K. (2021). Enhancing resilience in military education through Advanced Distributed Learning. Military Review, 101(4), 78-92

[31] Petkov, M. (2023). Implementing proactive cybersecurity measures in military ADL systems. In Proceedings of the 8th International Conference on Cyber Conflict (CyCon). Tallinn, Estonia.

[32] NATO Cooperative Cyber Defence Centre of Excellence. (2022). National Cyber Security Strategy Guidelines. Tallinn: CCDCOE.

[33] NATO Allied Command Transformation. (2023). The future of military education: Integrating advanced distributed learning across the alliance. NATO ACT Strategic Foresight Analysis 2023, 45-58.

REFERENCES

[1] Dimitrova, S. (2021). Digital libraries in military education: The G.S. Rakovski experience. Library Hi Tech, 39(2), 467-480.

[2] European Union Agency for Cybersecurity (ENISA). (2023). Threat Landscape 2023: State of Cybersecurity in the EU.

[3] Europol. (2023). Internet Organised Crime Threat Assessment (IOCTA) 2023.

[4] Georgiev, A. (2022). Enhancing military education through integrated learning platforms. International Journal of Military Education and Training, 7(2), 112-126.

[5] Ivanov, S. (2018). The evolution of distance learning in Bulgarian military education. Defense & Security Analysis, 34(2), 155-170.

[6] Johnson, L., & Smith, R. (2022). NATO military education during COVID-19: Lessons learned and future directions. NATO Science and Technology Organization Technical Report, TR-HFM-293.

[7] Kolev, N., & Hristov, H. (2023). Virtual simulations in tactical training: A case study from G.S. Rakovski Military Academy. Simulation & Gaming, 54(1), 85-103.

[8] Kuleva, M. (2022). Online Learning. NSA Press.

[9] Ministry of Defense of Bulgaria. (2023). Annual Report on Military Education and Training. MoD Press.

[10] NATO Allied Command Transformation. (2020). e-Learning Best Practices in NATO Military Education. ACT.

[11] NATO Allied Command Transformation. (2022). Strategic Foresight Analysis 2022 Report. ACT.

[12] NATO Allied Command Transformation. (2023). The future of military education: Integrating advanced distributed learning across the alliance. NATO ACT Strategic Foresight Analysis 2023, 45-58.

[13] NATO Cooperative Cyber Defence Centre of Excellence. (2022). National Cyber Security Strategy Guidelines. CCDCOE.

[14] NATO Cooperative Cyber Defence Centre of Excellence. (2023). Threat Landscape for Military Educational Institutions. CCDCOE.

[15] NATO Partnership for Peace Consortium. (2005). ADL Working Group Report 2000-2005. PfP Consortium.

[16] NATO Science and Technology Organization. (2023). Educational Technology and Cybersecurity in NATO Military Institutions. STO Technical Report, TR-HFM-ET-185.

[17] NATO Standardization Office. (2023). Allied Joint Doctrine for Cyberspace Operations, AJP-3.20, Edition B, Version 1.

[18] Nikolov, R. (2010). Integrating e-Learning in the Bulgarian Armed Forces. In Proceedings of the 5th International Conference on e-Learning in the Military. Oslo, Norway.

[19] North Atlantic Treaty Organization. (2023). NATO 2030: United for a New Era. NATO Public Diplomacy Division.

[20] Petkov, M. (2023). Implementing proactive cybersecurity measures in military ADL systems. In Proceedings of the 8th International Conference on Cyber Conflict (CyCon). Tallinn, Estonia.

[21] Petrov, G., & Dimitrov, K. (2021). Rapid transition to online learning: The case of G.S. Rakovski Military Academy. Journal of Military Learning, 5(3), 78-92.

[22] Schneider, E., Kowalski, S., & Andersen, L. (2021). Adaptive learning systems in military education: Responding to emerging security threats. Journal of Defense Technology and Education, 6(2), 201-215.

[23] Scopus Database. (2023). Search results for "Advanced Distributed Learning" AND "Military Education". Scopus. Retrieved July 2023.

[24] Smith, J., & Brown, A. (2021). The impact of COVID-19 on military education: A systematic review. Journal of Military Learning, 5(2), 45-62.

[25] Stoyanov, L., & Popov, V. (2021). Digital transformation in military education: Lessons from the pandemic. European Security & Defence, 9(3), 46-49.

[26] Stoyanov, L., & Popov, V. (2023). Risk assessment in military distance learning systems: A longitudinal study. European Security & Defence, 11(2), 34-47.

[27] Taylor, S. (2023). The evolution of cybersecurity in NATO military education: Post-Ukraine conflict analysis. NATO Defense College Research Paper, 18, 1-20.

[28] Todorov, T. (2013). Implementation of SCORM-compliant LMS at G.S. Rakovski Military Academy. Information & Security: An International Journal, 31, 139-148.

[29] Velu, V., & Beggs, R. (2021). Learn Kali Linux: Ethical Hacking in Practice. Asenevtsi.

[30] Web of Science. (2023). Search results for "Cybersecurity" AND "Military Education". Web of Science. Retrieved July 2023.

[31] Williams, M., & Davis, K. (2021). Enhancing resilience in military education through Advanced Distributed Learning. Military Review, 101(4), 78-92.

[32] Yanev, Y., et al. (2023). Cybersecurity challenges in military distance learning: Analysis of incidents at G.S. Rakovski Military Academy (2020-2023). Journal of Military Technology, 6(2), 201-215.

EXAMINING THE RELATIONSHIP BETWEEN SUSTAINABLE DEVELOPMENT AND DIGITAL LEADERSHIP USING BIBLIOMETRIC ANALYSIS METHOD

Salih AYGÜN*, Bülent DEMİR**, Murat SAĞBAŞ***

*Beykent University, İstanbul, Türkiye, ******Kent University, İstanbul, Türkiye, ***National Defense University, İstanbul, Türkiye

The convergence of sustainable development and digital leadership has become a vital research area, driven by the global need for economic growth, social inclusion, and environmental sustainability. This study uses bibliometric analysis to examine 79 academic articles published between 2011 and 2024, highlighting key trends, themes, and structures in the literature. The findings reveal increasing interest in the potential of digital technologies to enhance sustainability by improving resource efficiency, fostering economic growth, and promoting social inclusivity. However, challenges like environmental concerns and the digital divide persist. Key themes in the literature include innovation, impact, management, and transformational leadership, with journals like Sustainability publishing high-impact research. This study offers valuable insights into the complex relationship between sustainable development and digital leadership, guiding future research and practice in this evolving field.

Key words: *Sustainable Development, Digital Leadership, Bibliometric Analysis, Innovation Transformational Leadership*.

1. INTRODUCTION

In recent years, the intersection of sustainable development and digital leadership has emerged as a crucial area of research and practice. Sustainable development, characterized by the pursuit of economic prosperity, social inclusion, and environmental sustainability, has become a global imperative (United Nations 2015). Concurrently, digital leadership, defined by the ability to leverage digital technologies to drive organizational change and innovation, has gained prominence in the digital age (George et al. 2016).

The relationship between sustainable development and digital leadership is complex and multifaceted. Digital technologies

have the potential to enable sustainable development by improving resource efficiency, enhancing decision-making processes, and fostering collaboration. Conversely, sustainable development goals can provide a framework for guiding digital leadership efforts towards socially and environmentally responsible outcomes.

Despite the growing interest in this topic, there remains a need for a comprehensive understanding of the relationship between sustainable development and digital leadership. This study aims to address this gap by conducting a bibliometric analysis of the existing literature. Bibliometric analysis offers a systematic and quantitative approach to mapping the intellectual structure of a research field, identifying key trends, and uncovering hidden patterns in the literature.

This study aims to uncover the main topics, movements, and structures in the research on sustainable development and digital leadership by examining an extensive collection of academic articles. The results of this analysis will offer valuable insights for policymakers, business leaders, and stakeholders who are focused on promoting sustainable development through digital leadership, in addition to enhancing academic understanding of this relationship.

In general, the goal of this research is to explore the changing connection between sustainable development and digital leadership, emphasizing the possibilities and hurdles linked to this convergence. This study aims to lay the groundwork for future research and practice in this vital and ever-changing field through a thorough bibliometric analysis.

2. LITERATURE REVIEW

The concept of sustainable development is considered crucial for finding a harmonious balance among economic growth, societal fairness, and environmental protection according to the United Nations in 2015. The concept emphasizes the significance of advancements that meet present demands and guarantee future generations are able to do so as well. Digital leadership has become more important as a key skill in using digital technologies for innovating and transforming organizations (Mwita and Joanthan 2020). It requires more than just utilizing technology effectively; it also involves inspiring change, promoting collaboration, and achieving sustainable results.

Digital technologies have a lot of potential to improve sustainable development in different sectors. For example, IoT devices have the

capability to oversee and control the usage of energy, resulting in improved resource utilization and lower environmental effects (Hossein Motlagh et al. 2020). Similarly, blockchain technology could enhance transparency and monitoring in supply chains, promoting sustainable sourcing methods (Saberi et al. 2019). Recent technological advancements emphasize the importance of digital leadership in encouraging sustainable practices in organizations (Wang et al. 2018).

Furthermore, digital leadership can help promote social inclusivity and economic growth, both essential elements of sustainable development. Through the utilization of digital platforms, organizations are able to increase the availability of services and opportunities for marginalized communities, thus empowering them (Heeks 2008). Digital leaders are essential for driving these projects, guaranteeing that digital changes focus on the well-being and fairness of society (George et al. 2016).

Still, there are challenges when it comes to the connection between digital leadership and sustainable development. Worries exist regarding the environmental effects of digital technologies, including how much energy they use and the creation of electronic waste (Van Dijk 2006). Furthermore, the digital divide and disparities in technology access can impede the inclusivity and equity objectives of sustainable development (Warschauer 2003). Therefore, effective digital leadership must guide through these challenges to ensure that digital transformation has a positive impact on sustainable results.

In spite of these obstacles, digital leadership has great potential to further sustainable development agendas. Embracing digital innovations can improve organizations' environmental stewardship, social impact, and economic resilience (Yoo et al. 2012). Competent digital leadership can facilitate this change, encouraging a mutually beneficial connection between digitalization and sustainable development objectives.

In summary, the connection between sustainable development and digital leadership is complex, as digital technologies present both advantages and obstacles. By comprehending and utilizing this connection, companies can promote beneficial transformations towards a more environmentally friendly and diverse future.

3. METHOD
3.1. Research model

This research employs bibliometric analysis to examine the relationship between sustainable

development and digital leadership. The study is centered on identifying and analyzing academic publications regarding this subject in order to understand trends, patterns, and main themes in the literature. Through a systematic review and synthesis of previous studies, this research seeks to offer a thorough summary of the present understanding of the topic. The results could help improve understanding of the relationship between sustainable development and digital leadership. The information was obtained on 29th May 2024 from the Web of Science (WoS) database through a search for the keywords "digital leadership" and "sustainable development" followed by a filtering procedure. The screening procedure included only articles written in English that were listed in SSCI and SCI-Exp. A total of 79 academic papers were included in the research after meeting the criteria.

3.2. Research area

The research includes articles from the period 2011-2024. From 2020 to 2024, a total of 60 articles were approved for publication and incorporated into the study during the early access phase. The papers were made public for early access, ensuring the authors' work is quickly accessible, as it can take around 2-3 years to assign them to a specific

issue in indexed journals post publication acceptance. 65 journals have published all the research articles. There is a total of 4.855 mentions of published works in the documents. Below the 1st table shows fundamental data on the essays contained in the study sample.

Table 1 Main Information About Data

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2011:2024
Sources (Journals, Books, etc)	65
Documents	79
Annual Growth Rate %	14.78
Document Average Age	45.294
Average citations per doc	21.459
References	4.855
DOCUMENT CONTENTS	
Keywords Plus (ID)	226
Author's Keywords (DE)	363
AUTHORS	
Authors	250
Authors of single-authored docs	15
AUTHORS COLLABORATION	
Single-authored docs	15
Co-Authors per Doc	44.621
International co-authorships %	30.38
DOCUMENT TYPES	
article	52
article; book chapter	2
article; early access	5
editorial material	1
proceedings paper	13
review	6

3.3. Data analysis

Due to the fact that scholarly studies rely heavily on information,

the ease of access and user-friendliness of this information are crucial aspects of the academic writing procedure. Transitioning from raw to useful data requires a significant undertaking. Similar to other disciplines, bibliometric studies involve numerous distinct stages. Each stage involves the use of various software applications (Aygün, Sağbaş, and Erdoğan 2023).

4. FINDINGS AND OUTCOMES

In their efforts to comprehend and organize previous research, scholars have employed a variety of techniques in their literature reviews. Bibliometric analysis, a technique based on measuring data related to academics, scholars, or academic events, is known for its ability to conduct a clearly defined and reproducible review process (Aygün et al. 2023). This examination guarantees impartial and trustworthy metrics, in contrast to alternative approaches. The abundance of recent data and advancements in cognition result in a beneficial context for the usefulness of bibliometrics. It enables the structured analysis of extensive datasets, enabling the recognition of emerging trends, the identification of changes in disciplinary borders, the identification of successful academics and organizations, and the provision of detailed scrutiny (Aria and Cuccurullo 2017).

Within this framework, a detailed analysis was carried out using the annual ratios of paper publication, top journals and writers focusing on essays, number of quotes, keyword utilization, and release location, organized by state.

Table 2 illustrates the number of articles that were published annually.

Table 1 Breakdown of articles per year

Year	Articles	Year	Articles
2011	1	2018	5
2012	0	2019	4
2013	0	2020	6
2014	1	2021	7
2015	2	2022	23
2016	3	2023	18
2017	3	2024	6

The first study on relationship between sustainable development and digital leadership was published in 2011. Although a number of studies have been conducted in the following years, the most notable increase has been in 2022 and the following years. Between 2018 and 2024, 69 studies were published. Although the research covers publications over a period of 13 years in total, more than half of the publications included in the research in this 6-year period were published in these years. It is evaluated that the digital transformation and new leadership style has a great impact on the increase in publications in these years.

The 79 scientific research is used in this study and these articles were published in 65 journals. The journals with the highest number of publications are listed in Table 3.

Table 2 Journals with the Most Publications

Sources	Articles
Sustainability	10
International Journal of Environmental Research and Public Health	3
European Journal of Innovation Management	2
Leadership in Health Services	2
PLOS ONE	2
12th Int. Conf. of Education, Research, and Innovation (ICERI 2019)	1
Administrative Sciences	1
Agenda-Empowering Women for Gender Equity	1
AIs	1
Business Strategy and the Environment	1

Sustainability Journal has the most publications (10). Among all published articles, 24 were published in the top ten journals. This number corresponds to 30% of the total number of articles. Bradford's Law of Distribution was used to classify the data. Bradford's law is one of several statistical expressions that try to explain the workings of science by mathematical means. Although each "law" applies to a different phenomenon, they all tend to indicate one thing: they explain a small number (journals, scientists, etc.) of things for larger number of (articles, citations, etc.). In practical terms, this means that trying to do anything exhaustively has diminishing returns (Garfield 1980). This law describes how literature on a particular topic is dispersed or distributed in journals.

The papers were gathered from three separate locations according to Bradford's law of distribution. These top ten journals, considered as core sources, accounted for 20% of the accumulated publications.

Table 4 displays the index that was created based on Bradford's scatter law.

Table 4 Spread Table. According to Bradford Scattering Law

Rank	Journal	Rank	Freq	cumFreq	Zone
1	Sustainability	1	10	10	Zone 1
2	International Journal of Environmental Research and Public Health	2	3	13	Zone 1
3	European Journal of Innovation	3	2	15	Zone 1

Rank	Journal	Rank	Freq	cumFreq	Zone
	Management				
4	Leadership in Health Services	4	2	17	Zone 1
5	PLOS ONE	5	2	19	Zone 1
6	12th International Conference of Education, Research, and Innovation (ICERI 2019)	6	1	20	Zone 1
7	Administrative Sciences	7	1	21	Zone 1
8	Agenda-Empowering Women for Gender Equity	8	1	22	Zone 1
9	AI	9	1	23	Zone 1
10	Business Strategy and the Environment	10	1	24	Zone 1

It is calculated according to the number of publications and citations of the authors and reveals the productivity of the researcher productivity (Hirsch 2005). It is calculated based on a list of publications in descending order of the number of citations. The value of h is equal to the number of articles with N or more citations (N) in the list. It is a very useful calculation system as it reduces the disproportionate weight of highly cited or not yet cited articles (Engqvist and Frommen 2008).

The g-index is a development of the h-index. Since the h-index is not sensitive to the impact of highly cited publications, the g-index identifies g publications with a total of g^2 or more citations. The author recommends using the g-index together with the h-index. A high g/h ratio is a value that indicates the success of the researcher (Egghe 2006).

One method to compare academics with varying career lengths is to divide their h-index by the number of years they've been active, which is calculated from the year of their first publication. Hirsch (2005) introduced this metric, calling it the m-index. It's important to note, however, that the m-index tends to stabilize later in an academic's career, and for early-career researchers with a low h-index, small changes in the h-index can significantly impact the m-index. Additionally, as Hirsch points out, using the date of the first paper as the starting point may not always be suitable, especially if that initial publication was a minor contribution made well before the researcher began producing work consistently.

Table 5 presents data on the indices of the journals.

Table 5 h/g/m Indexes of the Journals

Journal	h	g	m	TC	NP	PY
Sustainability	6	10	1,20	161	10	2020
Plos One	2	2	0,33	16	2	2019
Administrative Sciences	1	1	0,33	5	1	2022
Agenda-Empowering Women for Gender Equity	1	1	0,17	1	1	2019
AI	1	1	0,33	1	1	2022
Business Strategy and the Environment	1	1	0,33	62	1	2022
International Conference on Enterprise Information Systems	1	1	0,13	3	1	2017
Cities	1	1	0,33	20	1	2022
Communication and Information Technologies Annual: Digital Distinctions and Inequalities	1	1	0,10	2	1	2015
Corporate Communications	1	1	0,50	20	1	2023

Sustainability is a leading scientific journal, known for its high-impact research publications across diverse scientific disciplines. It publishes highest number of publications, contributing significantly to advancements in the field. Sustainability's extensive publication volume and rigorous peer-review process make it a central platform for groundbreaking scientific discoveries and innovations. Table 6 presents the details of author productivity. Additional information on author output is provided in Table 6.

Table 6 Author Output Dispersion

Authors	Articles	Articles Fractionalized
Karakose T.	2	0,42
Papadakis S.	2	0,42
Penmetsa MK.	2	1
Yirci R.	2	0,42
Aerts A.	1	0,14
Agheorghiesei DT.	1	0,33
Aksu B.	1	1
Alario-Hoyos O.	1	0,1
Allan J.	1	0,13
Almansour M.	1	1

The darker the blue in the figure, the more effective the country is. The map shows there is no publication on gray areas. Figure 1 illustrates the spread of corresponding authors across different countries.

When evaluating an author's productivity, the primary factors considered are the number of co-authors and publications. It's worth noting that single-author works tend to contribute more per article. The institutions with the highest publication counts, based on their authors' affiliations, are detailed in Table 7.
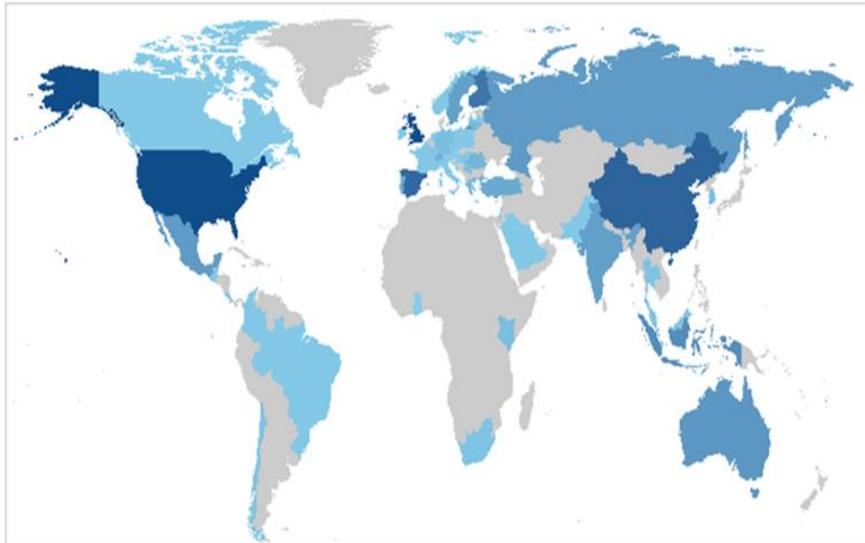
Fig. 1 Top Broadcasting Countries

Table 7 Institutions that Publish the Most Articles

Affiliation	Articles
Univ Cadiz	6
St Xaviers Coll	5
Univ Oulu	5
Cetys Univ	4
Ipb Univ Bogor	4
Kth Royal Inst Technol	4
Lucerne Univ Appl Sci and Arts	4
Univ Crete	4
Univ Novi Sad	4
Hacettepe Univ	3

A Turkish university is listed among the most productive publishing institutions. Turkish scholars often struggle to gain recognition in the academic community due to their publications having many co-authors and low citation rates. Table 8 visually represents the number of publications by country.

Table 8 Distribution of Articles by Countries of Corresponding Authors

Country	Articles	SCP	MCP	Freq	MCP_Ratio
Usa	9	7	2	0,11	0,22
United Kingdom	8	4	4	0,10	0,50
China	6	4	2	0,08	0,33
Spain	5	3	2	0,06	0,40
Australia	3	2	1	0,04	0,33
Finland	3	2	1	0,04	0,33
Mexico	3	1	2	0,04	0,67
Romania	3	3	0	0,04	-
Russia	3	2	1	0,04	0,33
Germany	2	1	1	0,03	0,50

A review of the articles reveals that the United States produced the highest number of publications, with 9 out of 79. Among these, 7 were authored solely by Americans (SCP), while 2 involved international collaborations. Publications exclusively by American authors constitute 11% of the entire collection.

The significance of a country's contribution to global literature is determined not only by the number of articles but also by their citation rates. Table 9 details the citations each country has received. Citations are key to evaluating the quantity and quality of an article, with more citations indicating higher prestige in the scientific community. The United Kingdom, with 8 published papers, has received the most citations, highlighting its leading position in this category.

Table 9 Total Number of Citations by Countries

Country	TC	Average Article Citations
United Kingdom	269	33,6
USA	182	20,2
Portugal	77	77
Mexico	64	21,3
China	46	7,7
Spain	42	8,4
Australia	28	9,3
Malaysia	20	20
India	16	8
Finland	15	5

Keyword analysis serves as a crucial tool for identifying key research themes. This method helps pinpoint gaps in the literature and uncover relationships between variables. Table 10 lists the most frequently used keywords for reference.

Table 10 Most Repeated Keywords

Words	*Occurrences*
innovation	11
impact	7
management	7
leadership	6
model	6
environment	5
knowledge	5
performance	5
sustainability	5
transformational leadership	5

Out of 330 terms, 11 were classified as "innovation," 7 as "impact," and 7 as "management." A word cloud is often created to capture technical vocabulary and engage readers. The word cloud is considered beneficial for its visual impact and ability to enhance reader comprehension. Figure 2 displays the resulting word cloud. Figure 3 illustrates how the expressions in the word cloud have evolved over the years.

Fig. 2 Word Cloud for Keywords
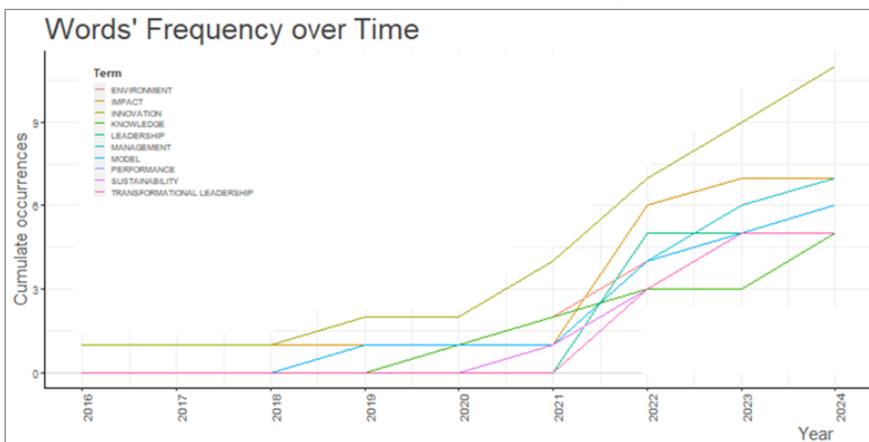
Fig. 3 Cumulative Evolution of Keywords Over the Years

As seen from the chart, the need for innovation and impact in articles has increased rapidly in recent years.

5. CONCLUSION

The intersection of sustainable development and digital leadership has become a significant area of interest in recent years, reflecting the global imperative to pursue economic prosperity, social inclusion, and environmental sustainability. Digital leadership, which involves leveraging digital technologies for organizational change and innovation, has emerged as a crucial skill in the digital age. This study conducted a comprehensive bibliometric analysis to explore the relationship between sustainable development and digital leadership, aiming to provide valuable insights into this complex connection.

The findings reveal a growing body of research on this topic, particularly in the last few years, indicating an increasing recognition of the importance of digital transformation and new leadership styles in promoting sustainable development agendas. Digital technologies offer vast potential to enhance sustainability across various sectors by improving resource efficiency, promoting social inclusivity, and fostering economic growth. However, challenges such as environmental concerns, digital divide, and disparities in technology access need to be addressed to ensure that digital transformation contributes positively to sustainable outcomes.

The bibliometric analysis identified key themes, trends, and structures in the literature, shedding light on emerging research areas and highlighting the most influential journals, authors, and countries contributing to this field. Notably, the Sustainability journal emerged as a leading platform for high-impact research on sustainable development and digital leadership.

The analysis also underscores the importance of innovation, impact, management, and transformational leadership as key themes in the literature, indicating a growing emphasis on driving positive change and achieving sustainable results through digital leadership.

In conclusion, the relationship between sustainable development and digital leadership is multifaceted, with digital technologies offering both opportunities and challenges. By understanding and leveraging this connection effectively, organizations and policymakers can promote sustainable practices, enhance social inclusivity, and drive positive change towards a more

environmentally friendly and equitable future.

This study provides a foundation for future research and practice in this evolving field, offering insights that can inform decision-making and contribute to the advancement of sustainable development goals in the digital era.

REFERENCES

[1]   Aria, Massimo, and Corrado Cuccurullo. 2017. "Bibliometrix : An R-Tool for Comprehensive Science Mapping Analysis." *Journal of Informetrics* 11(4):959–75. doi: 10.1016/j.joi.2017.08.007.

[2]   Aygün, Salih, Murat Sağbaş, and Fahri Alp Erdoğan. 2023. "Bibliometric Analysis of Sustainability in Civil Aviation." *Journal of Aviation* 7(3):448–56. doi: 10.30518/jav.1358871.

[3]   Egghe, Leo. 2006. "Theory and Practise of the G-Index." *Scientometrics* 69(1):131–52. doi: 10.1007/s11192-006-0144-7.

[4]   Engqvist, Leif, and Joachim G. Frommen. 2008. "The H-Index and Self-Citations." *Trends in Ecology & Evolution* 23(5):250–52. doi: 10.1016/j.tree.2008.01.009.

[5]   Garfield, E. 1980. "Bradford's Law and Related Statistical Patterns." *Essays of an Information Scientist*, 476–83.

[6]   George, Gerard, Jennifer Howard-Grenville, Aparna Joshi, and Laszlo Tihanyi. 2016. "Understanding and Tackling Societal Grand Challenges through Management Research." *Academy of Management Journal* 59(6):1880–95. doi: 10.5465/amj.2016.4007.

[7]   Heeks, Richard. 2008. "Researching ICT-Based Enterprise in Developing Countries: Analytical Tools and Models." *SSRN Electronic Journal*. doi: 10.2139/ssrn.3477388.

[8]   Hirsch, J. E. 2005. "An Index to Quantify an Individual's Scientific Research Output." *Proceedings of the National Academy of Sciences* 102(46):16569–72. doi: 10.1073/pnas.0507655102.

[9]   Hossein Motlagh, Naser, Mahsa Mohammadrezaei, Julian Hunt, and Behnam Zakeri. 2020. "Internet of Things (IoT) and the Energy Sector." *Energies* 13(2):494. doi: 10.3390/en13020494.

[10]   Mwita, Mawazo Magesa, and Joan Joanthan. 2020. "Digital Leadership for Digital Transformation." Tanzania: Centre for Information and Communication Technology.

[11]   Saberi, Sara, Mahtab Kouhizadeh, Joseph Sarkis, and Lejia Shen. 2019. "Blockchain Technology and Its Relationships to Sustainable Supply Chain Management." *International Journal of Production Research* 57(7):2117–35. doi: 10.1080/00207543.2018.1533261.

[12]   United Nations. 2015. *GLOBAL SUSTAINABLE DEVELOPMENT REPORT*. UNITED NATION.

[13]   Van Dijk, Jan A. G. M. 2006. "Digital Divide Research, Achievements and Shortcomings." *Poetics* 34(4–5):221–35. doi: 10.1016/j.poetic.2006.05.004.

[14]   Wang, Wenbo, Haidong Yang, Yingfeng Zhang, and Jianxue Xu. 2018.

"IoT-Enabled Real-Time Energy Efficiency Optimisation Method for Energy-Intensive Manufacturing Enterprises." *International Journal of Computer Integrated Manufacturing* 31(4–5):362–79. doi: 10.1080/0951192X.2017.1337929.

[15] Warschauer, Mark. 2003. *Technology and Social Inclusion: Rethinking the Digital Divide*. The MIT Press.

[16] Yoo, Youngjin, Richard J. Boland, Kalle Lyytinen, and Ann Majchrzak. 2012. "Organizing for Innovation in the Digitized World." *Organization Science* 23(5):1398–1408. doi: 10.1287/orsc.1120.0771.

THE IMPACT OF THE DIGITAL REVOLUTION
ON FUTURE FIGHTER PILOT TRAINING

Ilie Claudiu MICLAUS MORARESCU

Romanian Air Force, 57th Air Base, Mihail Kogalniceanu, Romania

The Digital Revolution shall profoundly transform the landscape of future fighter pilot training, integrating advanced technologies to enhance efficiency, realism, and adaptability. Key innovations include virtual and augmented reality, big data analytics, an understanding of cortex development from a young age, the application of the athlete model, and a marked shift from legacy approaches to tech training methodologies. Legacy training approaches primarily relied on traditional classroom instruction, manual flight simulations, and live flight exercises. While effective, these methods are resource-intensive, costly, and limited in their ability to replicate the complexities of modern aerial combat. Pilots trained under these conventional systems often face constraints in terms of exposure to diverse combat scenarios and adaptive learning opportunities. In contrast, tech training approach leverages virtual and augmented reality to create immersive, realistic simulation environments that can replicate a vast array of combat situations with high fidelity, fostering a more challenging and realistic training experience. This approach can offer personalized training programs by identifying individual strengths and weaknesses through continuous performance monitoring. Understanding cortex development, particularly in young individuals, plays a critical role in shaping effective training methodologies. The cortex, responsible for critical functions such as decision-making, and attention, undergoes significant development during childhood and adolescence. Early engagement in activities that stimulate cognitive functions can enhance the cortex's growth and plasticity, preparing individuals for advanced training later in life. The athlete model further revolutionizes pilot training by treating pilots as elite athletes. This model emphasizes comprehensive physical conditioning, mental resilience, and optimized nutrition to enhance overall performance. Incorporating principles from sports science, it ensures that pilots maintain peak physical and cognitive conditions, enabling them to endure the high demands of aerial combat. Big data analytics further contribute by aggregating vast amounts of flight data to refine training syllabi and predict potential skill gaps. These technologies not only reduce the costs and logistical constraints associated with conventional training but also ensure a higher standard of preparedness for pilots facing modern combat environments. Next generation training should continually evolve and optimize fighter pilot training, ensuring that future fighters

are better equipped with the skills and knowledge necessary to meet the demands of contemporary and future aerial warfare.

Key words: *virtual and augmented reality, big data analytics, cortex development, aerial warfare, professional athlete.*

1. INTRODUCTION

The military relies on manpower as the essential resource. Only with high-quality and motivated individuals can budgets and weapon systems be transformed into the effective military capabilities that are required to provide for a nation's security. Managing it, and managing it well— getting the right people into the right jobs at the right time and motivating them to work hard and intelligently—is therefore the essence of military success. But, as with any situation that involves human motivation, especially in the peculiar circumstances of military life, this is a management challenge of considerable complexity [1].

The challenge to the modern defence institution at present is to provide a new balance between the task of the armed forces and the means available in order to create affordable armed forces with sufficient room for operations and capital investments [2].

This paper should address one of the main Human Resources Management objectives, „Improving employee performance" by applying the system's perspective in approaching change management in defense education institutions and analysing the best practices in fighter pilot training and identifying defence organization's drivers and enablers for managing personnel motivation and performance.

2. EDUCATION TECHNOLOGY EVOLUTION

Digital revolution is considered the third industrial revolution in the human kind and, easy to be consider, the most complex and innovative, defined as the rise of electronics. Digital revolution changed the analog mechanical and electronic technology to digital technology, marking the beginning of what we refer to as the „Information Age".

Etymology. The word "digital" comes from Latin - digitus, finger - and refers to one of the oldest tools for counting. When information is stored, transmitted or forwarded in digital format, it is converted into numbers - at the most basic machine-level as "zeroes and ones" [3].

Starting with fourth computer generation, Microprocessor based, in the 80's, high developed countries as

USA started to implement the new technologies in the education system being sure that the technology will play a key role in the reform and will improve the performance. Computers and network-based technology has been used to tailor learning experience to learner needs and provide students with easier access to resources outside the school, enriching their opportunities and learning experience.

As technology became more user-friendly, people became more digitally literate and started using technology in new ways and in increasingly diverse areas of their lives. The functioning of our everyday lives has been largely reshaped by technology. The effectiveness of shared resources can be maximized and individual users can receive reliable solutions through these new systems. Despite being designed to facilitate multiple aspects of our lives, users themselves have begun to play an active role in creating technology.

Instructors can tailor learning experiences to each student's learning style, preferences, and pace using digital technologies. This has made learning more engaging and effective, as students can learn at their own pace and in their preferred way.

For our study, I will take in consideration two aspects: Medical Cortex Development and the most important Technology Evolution Events from the third millennium having in mind that by 2020, more than half of the world's population were active internet users.

The next paragraphs give a brief overview of the key points and crucial moments in the evolution of education technology.

A big shift in education system started in the early 2000 when the Broadband was introduced in many countries providing much faster internet access. The digital revolution became truly global during that time, with digital technologies spreading to the developing world. In the same period, more than 94% of US schools had internet access in their classrooms, as an example. In 2007, when the iPhone was released, it was considered a game-changer in technology and has had a profound impact on society and culture. The first iPhone transformed the way people learn, communicate, work, and entertain themselves becoming an indispensable part of modern life. In 2004, Facebook was born and a new age of social media began. Instant connectivity has evolved from being a tool for personal communication to a platform for educational instruction and outreach. In 2005 YouTube launches with a video which has garnered almost 40 million views. In 2010, the first iPad computers were released, which

provided a more convenient and easy way to access desired information on a bigger screen. Google introduced a new education platform called Google Classroom in 2014. The new platform had many benefits. It made it easy to create classes, distribute assignments, stay organized, and last but not least, saved time and paper. Oculus Rift, the virtual reality headset, was made available to the public in 2016. Starting from 2018, Kitaboo AR has transformed paper books into interactive eBooks, symbolizing a new era in digital education. The creation of forecasts for the future is made possible by predictive learning analytics in 2019, software that analyses past trends in learning experiences. During the Covid pandemic in 2020, many EdTech apps were released and lots of virtual meeting apps gained increased popularity. While 2024 AI appears to be a significant advancement in technology, I decided to ignore it for this paper.

Students who were born in early 2000 will or will commence their pilot training in 2024. The trainees' needs should be taken into account when changing the approach to their training programs, as quick as possible, to keep up the system needs with the speed of out changing security environment.

3. PROFESSIONAL ATHLETE VS. FORMAL MILITARY TRAINING

3.1. The lost decade

The early years of a child's life play a crucial role in their future health and development. The rapid growth of the brain, starting before birth and continuing into early childhood, is one of the main reasons. Although the brain continues to develop and change throughout adulthood, the first 5 years can lay the foundation for future learning, health, and life success. The brain's development is heavily influenced by the child's experiences with others and the world, as well as technology.

In the last 20 years, unprecedented progress has been made in understanding how the brain develops. By age 3, children's brains will be approximately 80% of their adult size The brain has twice as many synapses as it will have in adulthood at age 2 or 3. After the age of 5, these brain connections progressively decreased through a process called pruning. The process of building synapses continues until 11 or 12 years old, which is then followed by another pruning process after 17 or 18 years old. This aids in the efficiency of young children's brain circuits. The average baby's brain size at birth is approximately equal to one-fourth the size of an

average adult brain. It is amazing how the brain it doubles in size in the first year then keeps growing at around 80% of adult size by the age of 3 and 90% by age 5.

During these early years, the connections required for significant, higher-level abilities like motivation, self-regulation, problem-solving, and communication are formed or absent altogether. The formation of crucial brain connections later in life is much more challenging. It is well known that when you are young the brain is most flexible and adaptable to learning. The brain's ability to reorganize and adapt to new or unexpected challenges decreases as it matures.

The human brain's maturation is remarkably prolonged and characterized by ongoing dynamic changes throughout the lifespan [4].

Recent technological advances resulted in the differentiation of cortical volume into two underlying components, cortical thickness and cortical surface area. Cortical thickness in the majority of brain regions demonstrates linear monotonic decline occurring mostly similarly for boys and girls between the ages of 4.9 and 22 years, with the peak of cortical thickness manifesting no later than age 8 years [5]. Your capacity to understand the link between your actions and potential short- or long-term consequences is considered complete once your prefrontal cortex has matured, which typically occurs at the age of 25.

The human brain is undoubtedly the most complex biological system, with various functionally distinct regions, structures, neural circuits, and cell types. It has a lifespan that is highly dynamic, resulting in continuity and changes at both structural and functional levels. Comparing the brain to the rest of the body, its developmental trajectory is unique.

Research has shown that people become interested in flying at an early age, usually around age 12, but there is typically no formal military training until the age of 22. According to specialists, students today begin their military flight training with 1,000-1,500 hours of under instruction, just like professional athletes. By starting training early, individuals are able to develop fundamental skills, techniques, and physical attributes during critical periods of growth and development. The extended training window afforded by starting at a young age can facilitates gradual progress through various stages of skill acquisition, allowing individuals to tailor their learning pace and potentially achieve important skills before entering a formal military training. Furthermore, early starters may have the chance to acquire invaluable

experience and exposure to high-level aviation practices.

Moreover, beginning training later in life may lead to time constraints, as people may have to balance their training obligations with other obligations like family or education. In order to catch up with colleagues who started training earlier, it may take intense dedication, focused effort, and possibly longer training hours to bridge the gap in skill level and experience.

3.2. Professional athlete

Professional athlete: starts as early as 3 years old. Mission: score a three-point field goal.

Optimizing physical performance, mental resilience, and overall well-being is the aim of professional athlete training, which is a rigorous and multifaceted process. A holistic approach is required for professional athlete training that addresses the physical, mental, and emotional aspects of performance. The use of this approach aids athletes in achieving their full potential and success in their respective sports. It is common for this training to start at the age of two or three years old.

Coby Bryant started playing basketball when he was three, and the Lakers were his favourite team when he was growing up. When he was six, his father retired from the NBA and moved his family to Rieti in Italy to continue playing professional basketball. Coby began to play basketball seriously while living in Reggio Emilia. His grandfather mailed him videos of NBA games for him to study. From 1987 to 1989, his father played for Olimpia Basket Pistoia. Kobe worked at the games as a ball and mop boy and practiced shooting at halftime. "At every one of our games at halftime, it was the Kobe show. He'd get out there and get his shot up. We'd come out of the locker room at halftime and have to chase him off the court" [6].

„If you want to be a better player, you have to prepare, prepare, and prepare some more" [7].

3.3. Formal military training

Pilot Training starts at 22 years old. Mission: defense of the country. Fly a multi-million Dollar aircraft.

Formal military training is a comprehensive and structured process in three phases, designed to equip aspiring pilots with the knowledge, skills, and knowledge necessary to operate military aircraft safely and effectively. An accredited management curriculum, an intense leadership environment, a comprehensive peer-driven character development program, and rigorous physical training are all part of the process of pushing and challenging students' knowledge and intellect.

They are experiencing the freedom and discipline of flight for the first time in their career. The initial phase of pilot training concentrates on developing fundamental flying skills and aviation knowledge. Classroom instruction that covers topics like aerodynamics, aircraft systems, navigation, and flight regulations is typically the starting point for students. To develop basic piloting skills including aircraft control, takeoffs, landings, and basic maneuvers without the use of flight simulators, they then move onto introductory flight lessons in small propeller-driven aircraft.

Upon graduation from the Air Force Academy, graduates are awarded a Bachelor of Management degree and a commission as a second lieutenant. They proceed with their education and training as a pilot during the second phase of their training. Moving to more advanced training aircraft, like turboprop-powered aircraft or jet trainers. Flight lessons, simulator sessions, and academic coursework are used to continue developing their flying skills. The focus is on learning how to handle an airplane, fly instrument, navigate safely, handle emergency procedures, and perform basic aerobatics. The start of this phase is usually delayed by at least a year after graduation.

Last but not least, depending on their career path and aircraft assignment, the advanced flight training phase focuses on preparing trainees for the specific demands of military aviation with an unique training curriculum and requirements tailored to the specific mission and aircraft type. High-performance jet aircraft training can involve receiving instruction for advanced aerobatics, formation flying, tactical maneuvers, air combat techniques, and mission-specific procedures. Pilot preparation for operational missions may involve training exercises that simulate real-world combat scenarios and mission profiles.

4.   LEGACY TRAINING APPROACH VS. TECH TRAINING APPROACH

Technology has always been at the forefront of human education. Nowadays most students are equipped with several portable technological devices at any given time and technology continues to push educational capabilities to new levels being evident now more than ever the importance technology in training [8].

Military theorists and scholars throughout history have noted the occurrence of profound, discontinuous changes in the conduct, sometimes even the nature, of warfare. Recently, significant intellectual effort has focused on

such an emerging technical revolution in military, brought about by the innovative application of new technologies which, combined with dramatic changes in military doctrine and operational and organizational concepts, fundamentally alters the character and conduct of military operations. Given this fact, consideration of the future focus and conduct of professional military education can be counted among the most vital tasks [9].

Nowadays with the help of digital technologies instructors use simulations, gamification, and virtual reality to make learning more interactive and engaging. To connect with students and create collaborative learning environments, they can use social media and other online platforms.

4.1. Legacy approach

Lectures, textbooks, and standardized assessments are commonly used in legacy training, which is characterized by traditional methods of instruction that have been used for years. Although these methods have been effective in some instances, they may not fully capitalize on the opportunities offered by technological advancements. Passive learning is promoted by the legacy training approach, where students are expected to receive information and not actively engage in it. Students' opportunities to improve situational awareness, problem-solving, and decision-making may be impeded by this passive approach to learning. Moreover, it can hinder student engagement and motivation.

In flight training the main focus was to build specific skillset to pass check ride then focus on next skill/check ride where previous skillset begins to deteriorate because of lack of repetition to build habits. The lack of situational variability in this approach prevents building mastery, and also prevents skill development together.

By using this method, all trainees/students can attain a basic level of flight proficiency within the same time /events.

4.2. Tech Training App

Technology is used in tech training to enhance learning experiences by integrating digital resources, interactive tools, and online platforms to deliver instruction and support skill development. The use of adaptive learning technologies and personalized learning pathways enables tech training to tailor instruction to each learner's needs, preferences, and learning styles. Furthermore, it embraces hybrid learning modalities, which consist of online learning, face-to-face instruction, virtual classrooms, and

self-paced modules to offer flexible and accessible learning experiences. The focus of tech training is on applying learning to real-world situations, solving real-world combat scenarios, real-life inflight situations, and developing practical skills relevant for operational missions through a competency-based approach.

The main aim of flight training is to acquire the necessary skills to become qualified to fly multiple mission-based events. Using the competency-based approach results in a slower improvement in individual skill proficiency, but cultivates habits through more repetitions. Build mastery via situational variety. The skillsets are combined or integrated into a larger objective to enhance situational awareness and decision-making.

The goal of this approach is to achieve the mission proficiency level for all graduates, but it requires a variety of events/times.

4.3. Directions for tech training approaches
4.3.1. Remote Simulator instruction is an imperative

Implementing a competency-based approach can be made easier with remote simulator instruction. Trainees can practice their skills and demonstrate their understanding in a controlled environment using simulators to engage in hands-on

learning experiences. Meaningful skill development can be achieved through a simulator that closely simulates real-life scenarios. Providing guided practice sessions and offering feedback and guidance as they navigate through different scenarios, may emphasize on the understanding and mastery of concepts rather than completing tasks within a set timeframe.

A learning environment that supports trainees' learning and skill development can be created by prioritizing competency-based progress and effectively leveraging remote simulator instruction.

4.3.2. Learning management system

Competency-based instruction can be greatly facilitated by using a Learning Management System (LMS), particularly in a remote or online learning environment. The task of flight instructors is to create competency frameworks that outline the specific skills or knowledge areas that trainees must master. Utilize the versatility of an LMS to create personalized learning paths for every student based on their current level of comprehension and progress. By doing this, trainees can concentrate on areas that require improvement and move forward at their own pace. The use of the tracking and reporting features of the LMS to monitor trainees' progress

towards mastering competencies and the generated reports that provide insights into individual performance, allows the instructors to intervene as needed to support their training progress and process.

By leveraging the features and capabilities of a Learning Management System, you can create a dynamic and personalized learning experience that supports competency-based instruction and helps trainees develop the skills and knowledge they need to succeed.

4.3.3. AI Instruction – early gains impressive

AI-driven instruction can lead to impressive early gains when incorporated into the flight training process. Analyzing individual strengths, weaknesses, and learning styles allows AI to customize instruction accordingly. Trainers can focus on areas where they need the most support through this personalization, which leads to faster progress and deeper understanding. Content and difficulty levels can be adjusted in real-time based on performance by AI-powered systems. The use of this adaptive approach ensures that trainees are challenged and engaged in a way that maximizes their learning outcomes. Moreover, AI can provide immediate feedback, facilitating the correction of misconceptions and reinforcing learning objectives. The

learning process is accelerated and errors are less likely to be repeated due to this immediate feedback loop. Additionally, AI is capable of analysing a large amount of data on trainees' performance to identify patterns, trends, and areas for improvement. Instructors can make informed decisions about instructional strategies and interventions through this data-driven approach.

The role of instructors can be enhanced by AI through automation of routine tasks and basic explanations, which is probably one of the most important aspects. This frees up valuable time and reduce instructor burden in the training process, allowing instructors to focus on more than one trainee at a time or at a more difficult task.

4.3.4. Mixed reality

The integration of physical and digital worlds through mixed reality (MR) presents exciting opportunities to revolutionize flight training. Immersive learning experiences that take students to virtual environments or simulated scenarios can be achieved through mixed reality. Through experiential learning, this immersive approach enables a deeper understanding. Collaborative learning experiences can be facilitated by mixed reality platforms, where individuals can work together in virtual spaces

regardless of their physical location. Through this, teamwork, communication, situational awareness, problem-solving, and decision-making are encouraged.

By simulating authentic scenarios and challenges, mixed reality technology allows trainees to apply their learning to real-world contexts.

4.3.5. Augmented Reality

Augmented Reality (AR) offers tremendous potential to enhance education by overlaying digital information and virtual objects onto the real world. AR enables us to witness the natural world unfold in front of us, all while being augmented with digital elements. The content and interactions can be adjusted by this technology to meet the individual needs and preferences of each trainee. AR's training engagement and self-directed learning can be enhanced by offering personalized feedback, guidance, and scaffolding. Additionally, it facilitates learning experiences that involve collaboration, allowing trainees to work together to solve specific tasks, complete missions, and explore virtual worlds. AR equips trainees with the necessary skills to succeed in real-life work environments by emphasizing teamwork, communication, and collaboration. Experiential learning can be achieved through the use of Augmented Reality, where trainees are immersed in simulated scenarios and realistic simulations. Military fighter pilots see an projection of their altitude, speed, and other data on their helmet visor, which means they do not need to waste focus by glancing down to see them [10]. To conclude,

AR offers opportunities for engaging and impactful hands-on learning.

5. NEXT GENERATION TRAINING

The Air Force needs to develop more capable and self-sufficient aviators who can handle a dynamic and fluid environment with more efficiency than ever before.

5.1. Competency based, not time based – progress with student understanding

To foster genuine student understanding and long-term success, it is crucial to prioritize competency over time in education. Competency-based education emphasizes the importance of students understanding and applying the material before moving forward. This approach encourages mastery of concepts, rather than merely completing assignments within a set timeframe. Students are given the chance to deeply immerse themselves in the content until they have a complete understanding of it. Competency-based education caters

to diverse learning paces and methods by providing a tailored experience for each student. Using individualized progress, rather than forcing everyone to progress together, students move forward once they have demonstrated proficiency, regardless of the pace.

In the Air Force, the emphasis is not just on completing tasks swiftly but on doing them accurately. Competency-based training focuses on acquiring practical skills and knowledge that can be applied in real life situations. Students learn to focus on quality rather than speed, better preparing them for future missions. Allowing students to progress at their own pace while recognizing their achievements fosters a sense of accomplishment and intrinsic motivation, ultimately better preparing them for future missions through attention to quality. Engaging instruction can lead to improved learning outcomes.

5.2. On-demand, On-command Availability – learning available any time and place

On-demand, on-command learning has revolutionized education, making it possible for students to access educational materials and resources anytime and anywhere. This method frequently uses technology to deliver custom learning experiences suited for individual students. Adaptive algorithms provide students with personalized recommendations, feedback, and learning paths according to their unique strengths, weaknesses, and learning styles. This personalized approach boosts engagement and encourages deeper comprehension.

Bearing in mind that the foundation of all flying is built on mental ability, cognitive performance specialists should aid the students in nearly every part of the training. Those specialists should also help students and instructor pilots understand the way they think and how it correlates with how they perform. They help cross the communication barrier between students and instructors by teaching briefing, debriefing and adult learning strategies to the instructors [11].

5.3. Self-directed learning should be encouraged - learners learn best when they are in charge of their own journey

Empowering and recognizing self-directed learners is crucial for nurturing students' potential and encouraging a proactive approach to learning. This self- directed learning fosters autonomy and independence, allowing students to take ownership of their education. More than that, students can pursue their interests, acquire new skills, and stay up-to-date with the latest developments in

their field, even after completing traditional training. This ongoing learning contributes to professional growth, career advancement, and personal fulfillment.

5.4. Self-directed learners should rise to the top – system should identify and reward "aggressive learners"

Encouraging self-directed learners to excel is essential for cultivating a culture of initiative and lifelong learning. The personalized education system enables self-directed learners to flourish by catering to their unique requirements. In addition, encouraging self-directed learners to assume leadership roles can further incentivize their proactive approach to training. The system acknowledges their abilities and value by assigning them responsibilities.

By implementing these strategies, "aggressive learners" are identified and rewarded, enabling them to rise to the top and contribute significantly to their growth and the system's success.

5.5. Training data should be a decision aid in career development and operations

Adopting this approach holds various advantages. Trends and patterns in training can be identified through data analysis. Instructors can make informed decisions regarding their students' training needs based on this information. Furthermore, instructors can determine which skills are most valuable for students by analyzing the skills gap in various stages and focusing their training accordingly. Moreover, using completion rates, quiz scores, and time spent on training modules as metrics, the Air Force can evaluate their training programs' effectiveness, target improvement areas, and enhance student, instructor, and systemic performance. Additionally, resource allocation and planning decisions can be influenced by training data. Air Force HQ can allocate training budgets more effectively, prioritize initiatives, and tailor programs based on training needs analysis and performance trends. By continuously collecting and analyzing training data, the system can identify areas for improvement and refine their training strategies over time. This iterative approach ensures that training programs remain relevant and effective in meeting the evolving needs of the modern battlefield and warfare.

Overall, leveraging training data as a decision aid in career development and operations can lead to more informed decision-making, personalized training, improved skill development, enhanced performance evaluation, more effective resource

allocation, and continuous improvement in the training programs.

6. CONCLUSION

It's undoubtedly true that technology has unexpected effects on how we live, work, and educate our children. Twenty years ago, the Internet was the stuff of science fiction, but education and government leaders had the foresight to develop a solid foundation on which the future of technology planning would rest [12].

"The old way was to keep going up in the air and practice a maneuver over and over until you figured it out. It wasn't very efficient. Now, if they can recite knowledge while they are doing a strenuous task, they probably know that information well, and they'll be able to access it in the jet." [13]

Through the creative use of technology, the next generation of training should aim to transform student pilots into professional athletes. This approach has the potential to offer more personalized and flexible professional development, while also offering sustained and substantial professional development that facilitates student-centric, self-directed, On-demand, On-command Availability, and immersive learning.

Digital technologies will make their way soon because of improved performance and cost reduction, which should lead to widespread acceptance and adoption.

Furthermore, it is crucial that these technologies are present in their training from day one or, if possible, prior to formal military training, in military high schools.

We spend millions of dollars per student pilot, so why not maximize this investment and ensure they have the proper training to serve in a future battle space that will be highly contested and more lethal than what we have experienced.

The stage is now set to create a plan that will help us chart the course for education technology for the next twenty years [14].

ENDNOTES

[1] For wide-ranging discussions of current issues in the management of military manpower see: Curtis Gilroy and Cindy Williams, eds., Service to Country: Personnel Policy and the Transformation of Western Militaries (Cambridge, Mass.: MIT Press, 2006), and Cindy Williams, ed., Filling the Ranks: Transforming the U.S. Military Personnel System (Cambridge, Mass.: MIT Press, 2004). A more technical survey of recent research in the economics of military manpower management is given in Beth J. Asch, James R. Hosek, and John T. Warner, "New Economics of Manpower in the Post-Cold War Era," in Handbook of

Defense Economics, Volume 2, ed. Todd Sandler and Keith Hartley (Amsterdam: Elsevier, 2007), 1076-1138. For an earlier survey along the same lines see John T. Warner and Beth J. Asch, "The Economics of Military Manpower" in Handbook of Defense Economics, Volume 1, eds. Keith Hartley and Todd Sandler (Amsterdam: Elsevier, 1996), 347-398.

[2] Defence Management: An Introduction, Hari Bucur-Marcu, Philipp Fluri, Todor Tagarev, eds. Pg 16.

[3] https://www.linkedin.com/pulse/what-digital-revolution-history-significance-muhammad-ismail

[4] Giedd J N, Rapoport J L. 2010. "Structural MRI of Pediatric Brain Development: What Have We Learned and Where Are We Going?" Neuron 67 (5): 728–34.

[5] Ducharme S, Albaugh M D, Nguyen T V, Hudziak J J, Mateos-Pérez J M., and others. 2016. "Trajectories of Cortical Thickness Maturation in Normal Brain Development—The Importance of Quality Control Procedures." NeuroImage 125 267–79.

[6] Lazenby, Roland (October 25, 2016). *Showboat: The Life of Kobe Bryant*. Little, Brown. ISBN 9780316387149.

[7] The Mamba Mentality. Kobe Bryant Farrar Straus Giroux 2020.

[8] https://www.linkedin.com/pulse/what-digital-revolution-history-significance-muhammad-ismail

[9] Professional Military Education and the Emerging Revolution in Military Affairs* Kenney, Steven H. AIR UNIV MAXWELL AFB AL AIRPOWER JOURNAL Journal article, page 15.

[10] https://fi.edu/en/what-is-augmented-reality

[11] www.vance.af.mil/News/Article-Display/Article/3120519/team-vance-on-leading-edge-of-innovation-for-future-of-pilot-training-airmanship/

[12] U.S. Department of Education, Office of Educational Technology, October 2003. *A Retrospective on Twenty Years of Education Technology Policy*, Katie McMillan Culp, Margaret Honey, & Ellen Mandinach, Education Development Center, Center for Children and Technology, page 24.

[13] www.vance.af.mil/News/Article-Display/Article/3014206/training-pilots-like-athletes-leads-to-more-success-in-the-cockpit/.

[14] U.S. Department of Education, Office of Educational Technology, October 2003. *A Retrospective on Twenty Years of Education Technology Policy*, Katie McMillan Culp, Margaret Honey, & Ellen Mandinach, Education Development Center, Center for Children and Technology, page 24.

REFERENCES

[1] Hari Bucur-Marcu, Philipp Fluri, Todor Tagarev, *Defence Management: An Introduction*, Procon Ltd, 2009, 16.

[2] Giedd J N, Rapoport J L. *Structural MRI of Pediatric Brain Development: What Have We Learned and Where Are We Going?,* Neuron 67, September 9, 2010, Elsevier Inc. 728–34.

[3] Ducharme S, Albaugh M D, Nguyen T V, Hudziak J J, Mateos-Pérez J M., and others, *Trajectories of Cortical*

Thickness Maturation in Normal Brain Development—The Importance of Quality Control Procedures. NeuroImage Volume 125, 2016, Pages 267-279.

[4] Lazenby, Roland. *Showboat: The Life of Kobe Bryant*. Little Brown, 2016, 640.

[5] Bryant Kobe, *The Mamba Mentality*, Farrar Straus Giroux, 2020, 208.

[6] Kenney, Steven H., *Professional Military Education and the Emerging Revolution in Military Affairs**, Air and Space Power Journal, 1996, 14.

[7] Katie McMillan Culp, Margaret Honey, & Ellen Mandinach, *A Retrospective on Twenty Years of Education Technology Policy*, U.S. Department of Education, Office of Educational Technology, 2003, 28.

[8]Thomas K. Glennan, Arthur Melmed, *Fostering the use of educational technology,* RAND's Critical Technologies Institute, 1996, 156.

[9] https://fi.edu/en

[10] https://www.vance.af.mil, last retrieved June 2024.

[11] https://www.linkedin.com, last retrieved June 2024.

APPLYING DIDACTIC TEACHING PRINCIPLES TO PROFESSIONAL ENGINEERING EDUCATION IN MILITARY HIGHER EDUCATION INSTITUTIONS

Amil DADASHOV

PhD student in the Doctor of Philosophy program, Educational Institute of the Republic of Azerbaijan, Heydar Aliyev Military Institute of the National Defense University, Baku, Azerbaijan

The article deals with the application of the didactic principles of engineering training in military higher education to the professional education process. The purpose of the study is to investigate the effective application of the didactic principles of the didactic design of the engineering training program in the higher military educational institutions of Azerbaijan to the process of professional education and to emphasize the possibility of new pedagogical opportunities in this direction. The article emphasizes that the didactic basis of teaching exercises in military higher education is an effective approach for improving the professional education process. This method is based on the principles of active learning and emphasizes the importance of learner-centered approaches. This approach involves using a variety of teaching strategies to engage learners and encourage their acquisition and application of new knowledge and skills. It includes interactive lectures, case studies, group discussions and hands-on activities. The article also discusses the theoretical foundations of the didactic approach in the process of military higher education and its practical application to the process of professional education. As a result of the conducted research, the didactic approach in professional military education as the main method in the training of modern military engineer personnel and in the process of engineer training education has a number of advantages, such as the development of practical skills and the increase of military knowledge. critical thinking, improving teamwork, improving information retention and promoting lifelong learning and new opportunities are identified. Emphasizing the advantages and difficulties of this method, the article provides theoretical and practical recommendations for the design, application and practice of effective didactic training approaches in their teaching, scientific-methodical activities, and teachers studying in military institutions.

Key words: *military engineer training, didactic principles, professional education, didactic approaches.*

1. INTRODUCTION

Military higher education, its efficient organization and management, the application of didactic principles of teaching to the professional education process is a priority as one of the strategic areas of improvement and development of the military power of individual countries

[1]. The method of didactic approach is based on the principles of active learning and stipulates the importance of student-centered approaches. This method involves the use of various teaching strategies to engage students and encourage their acquisition and application of new knowledge and skills. These include interactive exercises, case studies, group discussions and hands-on activities. The didactic method provides students with the theoretical knowledge required for teaching the subject. It encourages the establishment of basic professional knowledge and the formation of worldviews, in addition to creating meaningful and substantial opportunities for educators and learners both in scientific-pedagogical activity and in their future careers [2]. Emphasizing the importance of effective selection and application of educational content, the discussion of the difference between didactic and pedagogical principles, it is noted that their respective focus is on practical application and strategic planning in education [3]. As one of the teaching methods still widely used in higher education classrooms, lectures are the main teaching method that offers a framework of concepts and theories. However, since students' attention during lectures is short-lived and distracted due to low, passive participation, analysis shows that for effectiveness in training, the didactic approach should be supplemented with interactive, interactive and didactic learning strategies aimed at students on a regular basis [4]. Among the didactic principles that will be applied in the didactic process in military higher education institutions in order to increase the level of mastery of knowledge and skills on subjects and exercises, the teachers' use of real world examples and extensive use of practical activities should be included. The application of the mentioned basic didactic principles can help learners connect new information with their existing knowledge and experiences, and form knowledge, skills and habits, which makes the learning process more meaningful, engaging and effective for learners. In addition to the previous points, the didactic approach is also based on the theoretical framework of constructivism. According to this theory, learning is the process of building new knowledge and understanding based on existing knowledge and experiences. Thus, student groups and audiences involved in the educational process during the exchange of information, instead of being passive receivers of information, actively participate in the process of building this knowledge by becoming interactive and mutually active [5]. In addition, the didactic approach stipulates the importance of socialization and interaction in the learning process. According to social constructivism, learning is a collaborative process that occurs through social interaction and dialogue. In the didactic approach,

teachers encourage students to work together in groups, to quickly absorb knowledge and concepts, to develop a critical approach to establish theoretical and practical connections in specific areas, and to engage in discussions and debates.

It is clear from the theory that the didactic approach emphasizes the importance of feedback in the learning process. As one of the main objectives, teachers provide feedback from the findings of the process to learners to identify areas for improvement and strengthen areas where they are good. This feedback can take many forms, including written comments, verbal comments, and grades.

Finally, the didactic approach stipulates the importance of motivation in the learning process. Thus, teachers use a variety of strategies to motivate students, including activities such as creating a positive classroom environment, challenging and challenging assignments, and promoting student achievement. By motivating students, teachers can help them become more engaged in the learning process and achieve better results.

Summarizing the above, the didactic approach is based on a rich theoretical framework that emphasizes the active construction of knowledge, social interaction, feedback, and motivation in the learning process. Using this approach, teachers can get students more involved in the learning process and achieve better results.

2. THEORETICAL BASICS OF THE DIDACTIC APPROACH IN MILITARY HIGHER EDUCATION

2.1. Principles of didactic approach

Another key aspect of the didactic approach method is its focus on principles that guide teaching and learning.

The first of these principles is the importance of providing simple, open and clear explanations of concepts and activities. According to the study, "teachers should be simple, open and clear in their speech and explanations, so that students understand what is required of them, what to learn, where, when, and how to do it, and accordingly, they can develop the necessary skills and knowledge" [6]. It also involves breaking down particularly complex scientific ideas into smaller, more explainable parts, making it easier to master, and using a variety of examples and analogies to help students understand.

The second principle of the didactic approach is the use of scaffolding-source materials. The materials in these resources refer to the process of supporting learners as they learn new concepts and skills and gradually removing this support as they become more experienced [7]. This can include providing prompts, modeling and feedback, and breaking tasks down into smaller, more manageable, solvable steps.

The third principle of the didactic approach is the importance of engaging students in active learning. This involves providing learners with opportunities to participate in practical activities, group work, and problem-solving tasks rather than simply listening to lectures [8]. As expected from the application of this principle, it has been found that active learning results in "increased engagement, motivation and retention" of learners.

The fourth principle of the didactic approach is to use formal (written) assessment. Formal assessment involves providing continuous feedback on learners' progress in order to improve their learning outcomes [9]. This can include a variety of strategies, such as quizzes, quizzes, tests, and peer assessments tailored to the group's area of expertise.

Finally, the fifth principle of the Didactic approach emphasizes the importance of differentiation. It involves adapting instruction to meet the needs of individual learners, taking into account their prior knowledge, learning styles, and interests [10]. By differentiating training, teachers can enhance the professional skills of all learners and ensure that they can independently access, work with, and engage with the specialty course and curriculum.

The didactic approach is based on several basic principles that guide teaching and learning. These principles and their disclosures include:

➢ Active training - Learners are encouraged to actively participate in the learning process through hands-on activities, discussions and problem-solving tasks.

➢ Compatibility - Learning experiences are tailored to learners' majors, lives and interests, helping them connect new knowledge with their existing understanding.

➢ Differentiation - Teachers differentiate the form of instruction to meet the different needs and abilities of learners, creating subject support models and example (problem) exercises when needed.

➢ Evaluation - Assessment is an ongoing process used to monitor student progress, provide feedback, and obtain information on the extent to which learning has been mastered.

➢ Cooperation - Students are encouraged to work together in groups to build knowledge and understanding through social interaction and dialogue.

➢ Motivation - Teachers use a variety of strategies to motivate students, including outcomes such as creating a positive classroom environment, challenging assignments, and recognizing student achievement.

➢ Reflection - Learners are encouraged to reflect on their own learning and identify areas for improvement, helping them to become more self-directed learners.

Studies have shown that a didactic approach can be effective in improving student learning outcomes.

For example, a study by Borko, Jacobs, Koellner, and Swackhamer (2011) found that teachers who used a didactic approach in mathematics classrooms saw significant improvements in student achievement [11]. Another study by Kunter, Klusmann, Baumert, and Richter (2013) found that a didactic approach was particularly effective in promoting learner engagement and motivation [12]. The study found that learners who were taught using a didactic approach reported greater interest and enjoyment in their learning and more persistence in completing challenging tasks.

Overall, the didactic approach is a powerful teaching framework that can help teachers create engaging and effective learning experiences for students. Using this approach, teachers can help students become more active, motivated, and successful learners by deviating from traditional teaching methods.

3. APPLICATION OF THE DIDACTIC APPROACH IN PROFESSIONAL EDUCATION

The didactic approach is widely used in professional education, including in fields as diverse as economics, law, and engineering. Professional education focuses on preparing students for the complex and demanding tasks they will face in their future careers. A didactic approach can be particularly effective in this context, as it focuses on the development of theoretical-practical skills in a specific field of specialization and the integration of theory and practice.

One of the main aspects of the application of the didactic approach in professional education is the use of case-based learning. It involves presenting learners with real-world scenarios and problems and applying their knowledge and skills to find solutions. Case-based learning can be particularly effective in professional education because it allows learners to develop problem-solving skills in a realistic context relevant to tasks and responsibilities they may encounter in their future careers.

Another important aspect of the application of the didactic approach in professional education is the use of experiential learning. This involves providing learners with opportunities to engage in hands-on activities such as simulations, role-plays and experiments to develop practical skills [13]. Experiential learning can be particularly effective in professional education as it allows learners to apply their theoretical knowledge in practical settings and also receive feedback from experts in the field.

The use of questionnaires is another key aspect of applying a didactic approach to professional education. Thus, it is important to use questionnaires to help learners identify areas for improvement and strengthen areas where they perform well [14].

Application of feedback in professional education is appropriate. This can be applied in many forms, including written comments, verbal feedback and performance appraisals.

A didactic approach encourages learners to be active learners, to take ownership and responsibility for their own learning [15].

In summary, the Didactic approach can be effective in professional education because it emphasizes the importance of lifelong learning in a specific field of specialization. At the same time, fields of professional education are constantly evolving, and there is a need for professionals to continue to develop their knowledge and skills throughout their careers.

3.1. Possibilities of applying the didactic approach in the context of professional military higher education

The didactic approach can also be effectively applied in military higher education. The main focus here is to prepare learners for the complex and demanding tasks they will face in future professional officer positions and service areas. The table below provides some examples of how the principles of the didactic approach can be applied in military higher education.

Table 1. Possibilities of applying principles of the didactic approach in military education

Principles of didactic approach	Possibilities of application in military education
A clear and clear explanations	Military operations, tactics and strategies, as well as the use of military equipment and technology in subject modules and subject exercises.
Auxiliary (Scaffolding) - materials	Break down complex military tasks in the subject into smaller, more manageable steps and support learners as they develop their skills. This may include training exercises, simulations and hands-on exercises.
Active learning	Engaging learners in practical activities such as field exercises and team building activities to develop practical skills and teamwork skills.
Formal assessment	Providing learners with continuous feedback on participation skills, including assessments, activities and performance reviews to identify areas for improvement and reinforce areas where they are working well.

Differentiation	It is the design of training and development programs to meet the needs of individual learners, taking into account their prior knowledge, learning styles and strengths. This may include personal development, practical training, development and training programs.

By using a didactic approach in military higher education, students can develop the practical skills and knowledge necessary to successfully perform their duties, while also developing teamwork and effective communication in military institutions.

In addition, the didactic approach in military higher education emphasizes the importance of developing learners' decision-making skills. Learners are trained to make decisions under pressure and in rapidly changing situations, and a professional didactic approach can help them develop this skill by providing opportunities to practice decision making in real scenarios [16].

Research suggests that the use of modern technology in professional training is the most important aspect of the didactic approach in military higher education in the era of widespread informatization. The capabilities of computer technology and software, simulations and virtual reality training, as well as access to online resources and learning materials, are essential to enhance student learning experiences. This allows learners to develop and practice individual skills in a safe and controlled environment before applying them in real-life situations [17]. The didactic approach can be applied not only in military educational institutions, but also in the future fields of service of graduates, as well as in the army, promoting a culture of lifelong learning and self-training. Military personnel are often required to adapt rapidly to new technologies, new armaments, military operations and tactics. The didactic approach encourages learners to become active learners who take responsibility for their own development and seek new scientific, technological and military knowledge and skills.

In summary, a didactic approach can be effectively implemented in military education by emphasizing open and clear explanations, support with supporting materials, active learning, formal assessment, differentiation, decision-making skills, use of technology, and lifelong learning. By using this didactic approach, learners can develop the skills and knowledge needed to perform their duties effectively and adapt to new challenges throughout their careers.

Some research data on the effectiveness of the didactic approach in military education highlight the

following in relation with the effectiveness of didactic approach in military education:

- a didactic approach in professional education can be effective in promoting learner learning and development [18].
- the use of experiential learning, a key aspect of a professional didactic approach, is effective in improving learners' teamwork skills [6].
- the use of case-based learning, another key aspect of the didactic approach, is effective in developing learners' critical thinking skills [8].
- the use of technology, another important aspect of the didactic approach, is effective in enhancing learners' learning experiences [9].
- the use of formal assessment and feedback, which are also key principles of the didactic. approach, can be effective in improving learners' performance and skills [19].

Overall, a didactic approach can be a model for an effective approach to higher military education that helps learners develop practical skills and knowledge, and promotes teamwork, critical thinking, and lifelong learning.

4. ADVANTAGES OF THE DIDACTIC APPROACH IN PROFESSIONAL EDUCATION

The application of the didactic approach in professional military higher education offers a number of advantages:

➢ *Development of practical skills;* The didactic approach emphasizes the development of practical skills through hands-on activities, simulations and role plays. This approach allows learners to apply their knowledge to real-world situations and develop practical skills essential to success in their military careers.

➢ *Promotion of critical thinking skills;* The didactic approach encourages learners to think critically and solve problems by presenting real-world scenarios and problems. Learners learn to analyze situations, make decisions, and evaluate the effectiveness of their actions, which are essential to success in the military.

➢ *Strengthens teamwork;* The didactic approach encourages teamwork by allowing learners to work in groups and participate in collaborative activities. Learners learn to communicate effectively, support each other, and work toward a common goal that is essential to success in joint military operations in the Army.

➢ *Improves memorization of information;* The didactic approach uses a variety of teaching methods, such as active learning and formal assessment, which have been shown to improve retention. Learners are more likely to remember and apply what they have learned when they are actively involved in the learning

process and receive feedback on their progress.

➢ *Promotes lifelong learning;* The didactic approach promotes a culture of lifelong learning by encouraging learners to take responsibility for their own development and seek new knowledge and skills. This approach helps learners quickly integrate new technologies, adapt to techniques, tactics and challenges throughout their careers.

In summary, a didactic approach to professional military education offers several advantages, such as the development of practical skills, the promotion of critical thinking, the improvement of teamwork, the improvement of information retention, and the promotion of lifelong learning. Using this approach, military personnel can acquire and develop the knowledge and skills necessary to successfully perform their duties and adapt to new challenges throughout their careers.

5. DIFFICULTIES OF THE DIDACTIC APPROACH IN PROFESSIONAL EDUCATION

Although the didactic approach offers a number of advantages in professional military higher education, there are some problems and difficulties that need to be solved, which can be listed as follows:

➢ *Limited time:* Military training programs are often constrained by time constraints, which can make it difficult to fully implement a didactic approach. The focus on practical skills and experiential learning requires more time than traditional lecture-based approaches, which may not be possible in all cases.

➢ *Limited resources:* Implementation of a didactic approach requires resources such as highly trained academic staff, special training tools and equipment. The cost and various challenges of providing these resources can be difficult for some military educational institutions and organizations.

➢ *Adapting to different learning styles:* The didactic approach emphasizes the importance of tailoring instruction and training programs to meet the needs of individual learners. However, learners in military settings come from diverse backgrounds and may have different learning styles, which can make it difficult to tailor instruction to meet everyone's needs.

➢ *Maintaining consistency:* A didactic approach requires a consistent approach to teaching and assessment, but ensuring this across different faculty, instructors, and the same training programs can sometimes lead to variation and difficulty.

➢ *Adaptation and resistance to change:* The introduction of a new approach to military education may be met with resistance by some faculty accustomed to traditional approaches, especially academic and administrative staff who have worked in the field for a long time.

Overcoming this resistance and getting buy-in from all stakeholders can be difficult.

In summary, although the didactic approach offers a number of advantages in professional military education, there are also some challenges that need to be addressed.

These include limited time and resources, accommodating different learning styles, maintaining consistency, and overcoming resistance to change. By addressing these challenges, military organizations can maximize the benefits of a didactic approach and ensure that learners are well prepared to perform their duties.

In conclusion, the article proposes a theoretical framework and guiding principles for the didactic approach that can be effectively applied in professional education, including military education. This approach emphasizes the development of practical skills, critical thinking, teamwork and lifelong learning through the use of teaching methods such as hands-on activities, case-based learning and formative assessment. However, the didactic approach also presents some challenges, including limited time and resources, accommodating different learning styles, maintaining consistency, and overcoming resistance to change. Addressing these challenges is essential to ensure that the benefits of a didactic approach to professional education are maximized.

6. CONCLUSION AND ANALYSIS

A didactic approach is a valuable approach to professional education that can help learners develop the skills and knowledge they need to succeed in their future careers. Applying this approach to military higher education can better prepare students for the complex and demanding tasks they will face in their future careers and develop the knowledge and skills needed to succeed throughout the service. It is important to note that a didactic approach is not a one-size-fits-all solution and must be adapted to meet the unique needs of different pedagogical contexts and learners. In practice, the didactic approach in military higher education may be required to be proportionately adapted to the specific requirements of different units, fields and specialties. Along with these, the didactic approach should be complemented with other approaches such as problem-based learning, flipped classroom, and blended learning to create a comprehensive and effective educational experience. Integrating different approaches can help overcome some of the challenges of the didactic approach, such as limited time and resources, and promote a more flexible and responsive approach to professional education.

By using the didactic approach in conjunction with other methodological approaches, teachers can create a flexible and effective educational

experience that meets the diverse needs of learners and prepares them for success in their future careers. The didactic approach is a valuable approach to professional education that emphasizes the development of practical skills, critical thinking, teamwork, and lifelong learning. Although this can present some challenges, it is possible to ensure that the benefits of the approach are maximized by addressing these challenges.

REFERENCES

[1] Military science and education system of Azerbaijan Army. https :// mod . gov . en / en / military - science - and - education - system - of - the - army of Azerbaijan -326/

[2] Thomas N. Garavan (1996). Cases in Irish Business Strategy and Policy. *Cengage Learning EMEA*. pp. 3–. ISBN 1-86076-014-7.

[3] Wife Marius-Costel (2010). The didactic principles and their applications in the didactic activity. *Sino-US English Teaching*, USA. 7/9(81), 24-34. ISSN 1539-8072. https://files.eric.ed.gov/fulltext/ED514739.pdf

[4] Fry, H., Ketteridge, S. & Marshall, S. (2003) (Eds). *A Handbook for Teaching & Learning in Higher Education. Enhancing Academic Practice*. 2nd Edition, London: Kogan Page. pp. 9-26.

[5] National university. *Learning Theories: Theories of Learning in Education.* https://www.nu.edu/blog/theories-of-learning/

[6] Hattie, J., & Yates, G. C. R. (2013). *Visible Learning and the Science of How We Learn*. Routledge. https://www.researchgate.net/publication/287245254_Visible_Learning_and_the_Science_of_How_We_Learn

[7] Wood, D., Bruner, JS, & Ross, G. (1976). The role of tutoring in problem-solving . *Journal of Child Psychology and Psychiatry*, 17(2), 89-100. https://www.researchgate.net/profile/Gail-Ross-2/publication/228039919_The_Role_of_Tutoring_in_Problem_Solving/links/5a1c61020f7e9b2a531690ae/The-Role-of-Tutoring-in-Problem-Solving.pdf?origin=publication_detail

[8] Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education,* 93(3), 223-231. https://www.engr.ncsu.edu/wp-content/uploads/drive/1smSpn4AiHSh8z7a0MHDBwhb_JhcoLQmI/2004-Prince_AL.pdf

[9] Black, P., & Williams, D. (1998). Inside the Black Box: Raising Standards Through Classroom Assessment. *Phi Delta Kappan,* 80(2), 139-148. http://edci770.pbworks.com/w/file/fetch/48124468/BlackWiliam_1998.pdf

[10] Tomlinson, CA (2014). *The Differentiated Classroom: Responding to the Needs of All Learners*. ASCD. https://files.ascd.org/staticfiles/ascd/pdf/siteASCD/publications/books/differentiated-classroom2nd-sample-chapters.pdf

[11] Borko, H., Jacobs, J., Koellner, K., & Swackhamer, L. (2011). Mathematics professional development: Improving teaching using the problem-solving cycle and leadership preparation models. *Journal of Mathematics Teacher Education*, 13(6), 491-514. https://files.eric.ed.gov/fulltext/EJ960952.pdf

[12] Kunter, M., Klusmann, U., Baumert, J., & Richter, D. (2013). Professional

competence of teachers: Effects on instructional quality and student development. *Journal of Educational Psychology*, 105(3), 805-820. https://www.researchgate.net/profile/Mareike-Kunter-2/publication/257326797_Professional_Competence_of_Teachers_Effects_on_Instructional_Quality_and_Student_Development/links/552e63580cf2acd38cb9327f/Professional-Competence-of-Teachers-Effects-on-Instructional-Quality-and-Student-Development.pdf? origin=publication_detail

[13] Kolb, DA (1984). *Experiential learning: Experience as the source of learning and development.* Prentice-Hall. http://www.fullerton.edu/cice/_resources/pdfs/sl_documents/Experiential%20Learning%20-%20Experience%20As%20The%20Source%20Of%20Learning%20and%20Development.pdf

[14] Hattie, J., & Timperley, H. (2009). The power of feedback. *Review of Educational Research*, 77(1), 81-112. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=a341536770fc149df10408865bfb58f76246cfdc

[15] Savery, JR, & Duffy, TM (2001). Problem-based learning: An instructional model and its constructivist framework. *Educational Technology,* 35(5), 31-38. http://www.nikiteam.com/pdf/32.pdf

[16] Kahneman, D., & Klein, G. (2009). Conditions for intuitive expertise: A failure to disagree. *American Psychologist*, 64(6), 515-526. https ://www . researchgate . net / profile / Gary - Klein -3/ publication /26798603_ Conditions _ for _ Intuitive _ Expertise _ A _ Failure _ to _ Disagree / links /5655132008 ae 4988 a 7 b 09464/ Conditions - for - Intuitive - Expertise - A - Failure - to - Disagree . pdf ? origin = publication_detail

[17] Dadashov, A., (2023) The role of information technologies in the didactic process of engineering training in military institutions // problems of informatization-proceedings of *11-th International scientific and technical conference.* Volume 1: sections 1, 2, 5, 7. Baku–Kharkiv–Bielsko–Biala–2023. p. 8-9. https://nure.ua/wp-content/uploads/2023/pi_11_vol_1.pdf

[18] Lave, J., & Wenger, E. (1991) . *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press. http://wendynorris.com/wp-content/uploads/2018/08/Lave-Wenger-1991-Legitimate-Peripheral-Participation.pdf

[19] Sadler, DR (1989). Formative assessment and the design of instructional systems. *Instructional Science,* 18(2), 119-144. http://michiganassessmentconsortium.org/wp-content/uploads/Formative-Assessment-and-Design-of-Instructional-Systems.pdf

ENHANCING PUBLIC POLICY COMMUNICATION: UTILIZING SHARIA STATE SECURITIES (SBSN) AS DEFENSE FINANCIAL RESOURCES

T.W. ADITAMA*, A. FAISOL**, A. SUDIANTOMO**, A.K. SUSILO***

*Command and Staff College, Indonesia Navy, Indonesia
**Lecturer Staff, Command and Staff College, Indonesia Navy, Indonesia
***Indonesia Naval Technology College, Indonesia

The allocation of Sharia Government Securities (SBSN) as a financial resource for the Ministry of Defense and the Indonesian National Armed Forces (TNI) is a new policy. However, the implementation communication process reveals a significant gap in understanding among institutions regarding SBSN policies. This research investigates this phenomenon using structuration analysis to identify causes and proposes inter-agency policy structuration to enhance control over SBSN financial resources for defense. Employing qualitative methods supported by expert panels, the research focuses on the structuration and communication of public policy among the Ministry of Defense, Ministry of Finance, Bappenas, and the Indonesian Navy to empower SBSN financial resources. Findings highlight a lack of understanding and delayed program awareness, originating from its belated inclusion in the 2021 Macroeconomic Framework and Fiscal Policy Principles document. SBSN financing is seen as crucial for realizing the TNI AL (Navy) program under the Ministry of Defense's authority, with policy negotiations predominantly influenced by Bappenas.

Key Words: *Sharia Government Securities (SBSN), Financial resources, Public policy communication, Qualitative methods, Defense stakeholders*

1. INTRODUCTION

For over a decade, Indonesia's defense budget has been less than 1 percent of its GDP (Surahman *et al.*, 2024). According to the SIPRI research institute in Stockholm, Sweden, Indonesia's defense budget in 2017 was 0.7 percent of GDP, compared to Malaysia's 1.13 percent and Myanmar's 2.88 percent. World Bank data corroborates that in 2017, Indonesia's defense budget was among the smallest in Asia (Soraya, Sirait and Nulhakim, 2023), placing it in the same category as Afghanistan,

Kazakhstan, Mongolia, and Timor Leste.

In 2019, a new strategy emerged to address the limited TNI budget through coordinated efforts between three key state institutions (Mufti, 2021) involved in the preparation and determination of the state budget (APBN): the Ministry of Defense, Bappenas, and the Ministry of Finance. This strategy included the use of state sukuk to supplement the Ministry of Defense's APBN budget alongside Pure Rupiah (RM), Domestic Loans (PDN), Foreign Loans (PLN), and Non-Tax State Revenue (PNBP). State Sharia Securities (SBSN) were identified as a potential alternative to enhance funding in specific sectors (Witro and Setiawan, 2021), thereby accelerating organizational development and improving the welfare of TNI soldiers.

Since the issuance of the Government Regulation on SBSN in December 2011, the Ministry of Defense gained the ability to propose projects funded by SBSN only in early 2020 (Zaini and Bin Shuib, 2021), aligning these proposals with the FY 2021 RKAKL. Despite the ratification of the SBSN regulation in 2011, access to and information about SBSN financing remained limited within the Ministry of Defense

(Richardson, 2020), particularly in the Navy, until 2023.

The use of SBSN as an alternative defense funding source is a relatively new policy (Muchtar, 2021). However, the implementation process has faced challenges due to a lack of comprehensive understanding and communication among key institutions, namely Bappenas, the Ministry of Finance, the Ministry of Defense (Nur Rohmah, Fauzi and Lu'lu Firdaus, 2023), and the Indonesian Navy.

There are evident issues in communication and dissemination of information between state institutions within the government (Sugiono, 2021). The information gap over several years highlights the government's limitations in communicating SBSN policies to various ministries and institutions (Witro and Setiawan, 2021). If the Ministry of Defense had been given access to SBSN funding from the start, since 2013, it could have leveraged alternative budget sources to accelerate organizational development (Keberlanjutan *et al.*, 2022; Saharani, Ardiani and Nurcahya, 2024). The limited access to and information about SBSN policies is a significant phenomenon worth researching to identify its causes through structuration analysis. Therefore, inter-institutional policy

structuration is necessary for managing financial resources related to SBSN for defense.

This research is important for several reasons. First, by analyzing how policies are formulated, implemented, and adapted within organizations, researchers can identify potential bottlenecks or inefficiencies that could hinder optimal allocation of financial resources for defense purposes. Second, policy structuring analysis can provide insight into how financial resources are allocated and prioritized within the defense sector. Third, researching policy structuring analysis offers a comprehensive understanding of the complex interactions between internal dynamics and external influences in managing financial resources for defense.

The research aims to analyze policy structuration between institutions—Bappenas, the Ministry of Finance, the Ministry of Defense, and the Indonesian Navy—in managing financial resources for defense. Supported by structuring theory, resource theory, and policy communication theory, this qualitative research involves eight expert panels. The focus is on the structuration and communication process of public policy among the Ministry of Defense, Ministry of Finance, Bappenas, and the Indonesian Navy in managing SBSN financial resources.

Additionally, this research contributes in several ways. First, it enhances the field of public policy and finance by providing a comprehensive understanding of how policy structures influence the allocation and utilization of financial resources for defense. It identifies how these institutions contribute to the formation and implementation of defense policy, ultimately impacting financial resource allocation. Second, it informs broader public finance and policy debates. By researching the interactions between Bappenas, the Ministry of Finance, the Ministry of Defense, and the Indonesian Navy, best practices for inter-agency collaboration in various policy areas can be identified. Third, analyzing how policies are structured and implemented within these institutions can help policymakers streamline the budgeting process and ensure effective use of financial resources to enhance Indonesia's defense capabilities. Fourth, understanding these institutions' interactions and decision-making processes allows researchers to recommend strategies for improving communication and cooperation, leading to more efficient resource mobilization and allocation for defense projects.

2. LITERATURE REVIEW

2.1. Structuration Theory

Structuration theory, developed by British sociologist Anthony Giddens, is a theory regarding social action (Busco, 2009). According to Giddens, "structure" refers to the "rules and resources" used in the production and reproduction of social systems, while "agency" refers to individuals (Phipps, 2001). Giddens argues that structure and agency should not be seen as separate entities; instead, they form a duality, influencing each other in a continuous dialectical process (den Hond *et al.*, 2012).

In Giddens' view, structure influences agency in two ways: enabling and constraining (Busco, 2009). This paradox arises because Giddens sees structure as both an outcome and a medium of social practice (Phipps, 2001). Unlike structuralism, which views structure as a hidden code, or functionalism, which sees it as a framework for interrelated parts of a totality, Giddens believes that agency can operate independently of structure (Englund and Gerdin, 2014). This concept is known as the dialectic of control, where individuals can find opportunities to circumvent existing rules and regulations. As Giddens notes, *"The more tightly-knit and inflexible the formal relations of authority within an organization, the more possible openings for circumventing them."* Thus, structuration theory focuses not on structure or agency alone, but on "social practices."
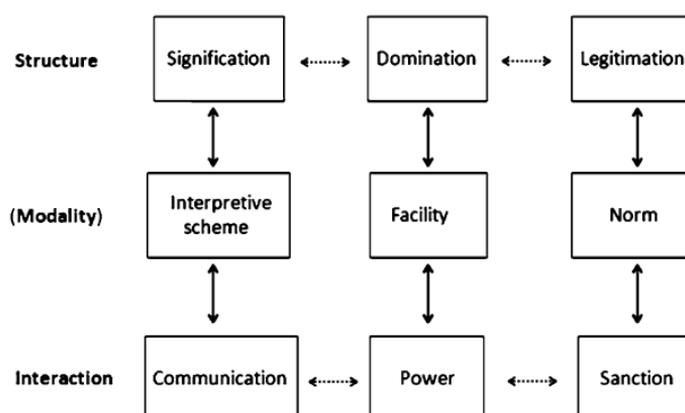

Fig. 1. The dimensions of the duality of structure (Busco, 2009; Englund, Gerdin and Burns, 2020)

Giddens asserts that social structures determine human actions, while human actions simultaneously shape social structures (Englund, Gerdin and Burns, 2011). Structuration theory can be defined (den Hond *et al.*, 2012; Englund and Gerdin, 2014; Samoilenko, 2021) as "the production and reproduction of social systems through members' use of rules and resources in interaction." It also involves the interplay of expected and unexpected consequences, where agents' actions can result in outcomes that consolidate structures in ways the agents might not have intended (Busco, 2009). This idea illustrates that structure is a resource that both empowers and limits society (Samoilenko, 2021).

2.2. Theory on Resources

Resources encompass everything necessary for effective functioning and operation. They include anything perceived to have economic value and utility for human needs. The productivity of individuals who produce, exchange, and manage technology and resources is crucial for a company's or organization's competitiveness (Momaya, 2019). Resources span individual, social,

and organizational phenomena. While resources alone do not enable a company to create value for customers, they can be combined to form capabilities (Hitt;, Ireland; and Hoskisson, 2016).

Company resources are typically classified into tangible and intangible resources (Zona, Gomez-Mejia and Withers, 2018; Hunt and Madhavaram, 2020). Tangible resources are assets that can be observed and measured, such as production equipment, manufacturing facilities, distribution centers, and formal reporting structures. Intangible resources, on the other hand, are assets rooted in a company's history, accumulated over time, and are relatively difficult for competitors to analyze and imitate. Because intangible resources are less visible and harder for competitors to understand, purchase, imitate, or replace, companies often prefer to rely on intangible resources as the basis of their capabilities. In fact, the more unobservable (intangible) a resource is, the more valuable it becomes for creating capabilities (Baia, Ferreira and Rodrigues, 2020).

Table 1. Tangible Resources

Category	Definition
Financial	Financial resources encompass assets or funds owned by individuals, organizations, or governments to fulfill financial obligations, pursue opportunities, and achieve financial objectives.
Organizational	Organizational resources are tangible assets and materials owned and utilized by a company or organization to conduct operations and attain its objectives.
Physical	Physical resources are tangible assets and materials employed in the production or operations of a business or organization.
Technological	Technological resources include physical objects and materials utilized in the development, production, and application of technology.

Source: (Barney, 1991; R Hall, 1993; Hitt;, Ireland; and Hoskisson, 2016; David and Forest R. David, 2017; Sukoco, 2022).

2.3. Policy Communication Theory

Policy communication as explained by Cook and Hunsaker (2007) aims to improve coordination, share information, and satisfy social needs (Hared and Abdullah, 2013). Effective and efficient communication within an organization supports the achievement of its goals. In the context of policy implementation, Edward III's model, as cited in (Basabih and Widhakuswara (2024), identifies four influencing variables: (1) communication, (2) resources, (3) disposition, and (4) bureaucratic structure. These variables are interconnected and collectively impact the success of policy implementation (Damanik *et al.*, 2023).

Policy communication is fundamentally the communication that occurs within the government, translating to the conveyance of government messages, programs, and ideas to the public to achieve state goals (Monge, Edwards and Kirste, 1978; Ayuningtyas and Rahman, 2018). It encompasses several dimensions, including transmission, clarity, and consistency. Policy communication involves key dimensions: transmission, clarity, and consistency (Damanik *et al.*, 2023) , such as:

1) Transmission: Policies must be effectively conveyed to both

implementers and target groups, directly or indirectly.

2) Clarity: Policies should be communicated clearly to implementers and target groups, ensuring they understand the aims, objectives, targets, and substance of the policy. This clarity enables effective and efficient preparation and implementation.

3) Consistency: Policies need consistency to prevent confusion among implementers, target groups, and other stakeholders.

3. METHOD

This research employed a qualitative approach (Creswell, John W. & Poth, 2016). Bogdan and Taylor dalam Firmansyah, Hidayat and Madjid (2022) defined qualitative methodology as a research procedure that produces descriptive data in the form of written or spoken words from people and observable behavior. The research used the case research method, which Creswell & Poth (2016) described as an exploration of a bounded system—a case or various cases—over time through in-depth data collection, involving various sources of "rich" information in a specific context. This bounded system was defined by time and place, while the case itself could be studied from a program, event, activity, or individual (Adebimpe, Proverbs and Oladokun, 2021).

The research was supported by several expert panels as informants who provided the necessary information during the research process (Kopyto *et al.*, 2020; Shi *et al.*, 2020). The informants included: 1) Staff of the Director General of Defense at the Ministry of Defense; 2) Staff of the Director General of Defense and Security at Bappenas; 3) Staff of the Director General of Financing and Risk at the Ministry of Finance; 4) Public Policy Communication Experts; 5) Staff from the Indonesian Navy's Planning and Program Staff; and 6) Staff from the Indonesian Navy Personnel Staff. In carrying out this research, the researchers used in-depth interview methods with parties or stakeholders involved in the implementation of the SBSN policy for the Indonesian Navy program. This also served as a form of source triangulation in the research. Additionally, the researchers collected data and comparisons from online media sources and official documents from these institutions.

The procedures used in this research included interviews and documentation (Marlina *et al.*, 2021). Interview and documentation techniques were employed to complement and enhance the accuracy and

correctness of data or information collected from documentation materials in the field, and they served as material for checking the validity of the data. To obtain valid data, the data analysis process involved a data review process (Elis Dwiana Ratnamurni, Eka Ludiya and Amanda Luthfiartie, 2022; Kusumah, 2022). The review process in this research was conducted by triangulating data sources to achieve objective validity of the data

4. RESULT

Structuration in government public policy communication is inseparable from the roles, activities, and skills of government organization leaders as agents (Englund, Gerdin and Burns, 2020). This phenomenon can be observed and explained through Giddens' structuration perspective, which addresses issues of structure and agency (Busco, 2009). Understanding structuration involves examining the power relationships (den Hond *et al.*, 2012) that shape and direct public communication politics within the government (Basabih and Widhakuswara, 2024).

The research findings indicate that, in the context of structuration, there are problems related to human resources and rules. This is evident in the lack of understanding or awareness of the SBSN program within the Ministry of Defense, particularly the Indonesian Navy, despite its legalization in 2011 through the 2008 SBSN Law (Surahman *et al.*, 2024). The Ministry of Bappenas, as a structuring authority, appears to have limited the dissemination of information, delaying the Navy's comprehension of the SBSN program's scope and policy priorities as per the RPJMN. Consequently, although the program was officially implemented for the defense sector in 2019, the Indonesian Navy only received a budget allocation for soldier housing in 2021. Furthermore, technical implementation guidelines were unavailable during the planning period and were only provided in 2022.

Communication issues at the implementation level affect disposition, human resources, and the bureaucratic structure (Damanik *et al.*, 2023). The Indonesian Navy, as technical implementers, reported not receiving adequate information, officially receiving it only in 2021 when the SBSN program for soldier housing was approved by the Ministries of Bappenas and Finance. The SBSN policy is articulated in Law Number 19 of

2008 concerning SBSN, followed by Government Regulation Number 56 of 2011 concerning Project Financing through SBSN and Minister of National Development Planning Regulation Number 8 of 2020 concerning Procedures for Managing Projects Financed through SBSN. However, these regulations were not fully known or understood by relevant stakeholders, particularly the Ministry of Defense and the Indonesian Navy, leading to a communication gap between 2008 and 2022.

Several shortcomings were identified due to various factors. First, there is a lack of understanding of SBSN itself. The most critical aspect in structuration is human resources, emphasizing their knowledge of the policy program (Basabih and Widhakuswara, 2024). Bappenas, knowledgeable about the product, initially had limitations in defining and understanding the scope of SBSN, interpreting its use more in civil than military terms. Second, there were delays in information dissemination, partly due to Bappenas' restricted communication as they continued to explore the SBSN program (Richardson, 2020). Eventually, it was determined that SBSN could be used for military projects, specifically soldier housing. When

Law No. 18 of 2008 concerning SBSN was issued, Bappenas initially deemed it unsuitable for the Ministry of Defense, particularly the TNI

.

5. DISCUSSION

Communication of government public policy is inseparable from the roles, activities, and skills of leaders of government organizations as agents (Sackstein, Matthee and Weilbach, 2023). This phenomenon can be observed and explained through the structuration perspective expressed by Giddens, which pays attention to structural problems and agents (den Hond *et al.*, 2012; Englund, Gerdin and Burns, 2020; Samoilenko, 2021). Understanding structuration can be seen as understanding the power relationships that shape and provide direction in the government's public communication politics (Englund and Gerdin, 2014).

The communication case regarding the SBSN policy rollout illustrates how policy communication is conducted by the government. This policy involves not only the relationship between various levels of government institutions but also the relationship between the state and its citizens.

According to Giddens in Sriyono, Asri and Sardi (2021), policy communication can be understood within a structuration framework that connects institutions or agencies (structure) with staff or officials (agents) in dialectical interactions. This interaction is derived from three types of structures: (1) signification structures, which involve discourse, mentions, or symbols represented by the Ministry of Bappenas, the Ministry of Finance, the Ministry of Defense, and the Indonesian Navy; (2) authoritative domination structures, related to control over people in superior-subordinate relations, applicable to the Ministry of Bappenas; and (3) allocative dominance structures, concerning control of financial and knowledge resources, represented by the Ministry of Finance. Additionally, (4) legitimacy structures pertain to normative or legal regulations, including sanctions and employee ethics within government institutions, namely the Ministry of Bappenas, the Ministry of Finance, and the Ministry of Defense.

In planning the SBSN funding policy program for the Indonesian Navy, Bappenas, the Ministry of Finance, and the Ministry of Defense incorporate the interpretive framework, administrative facilities, legal rules, and norms of relations between superiors and subordinates within the bureaucratic environment. According to Giddens, the structure in utilizing these facilities allows the process of domination over other agents to occur, forming inter-agent relationships in planning the program (Englund, Gerdin and Burns, 2011).

Table 2. Typology of Actors (Agents) in SBSN Policy

Category	Characteristics	Institution
Initiator	- State institutions/decision making officials in creating soldier housing programs - Provide ideas and direction regarding funding sources through SBSN	BAPPENAS
Executor	- State institutions/officials as actors in implementing policy programs	Ministry of Finance Ministry of Defense Indonesian Navy

Giddens' structuration theory emphasizes two crucial aspects: agents (human resources) and structure (rules) (Busco, 2009).

The research findings revealed a significant gap among agents, primarily stemming from their inadequate understanding of the SBSN program. Moreover, there was a delay in their awareness and familiarity with the program, which ideally should have been introduced since 2011. This policy was officially included only in the 2021 Macroeconomic Framework and Fiscal Policy Principles document titled "Accelerating Economic Recovery and Strengthening Reform." In this document, Minister of Defense Lieutenant General TNI (Ret.) Prabowo Subianto proposed a budget allocation of IDR 129.3 trillion for the 2021 fiscal year to achieve development targets in the defense sector, with IDR 900 billion sourced from SBSN.
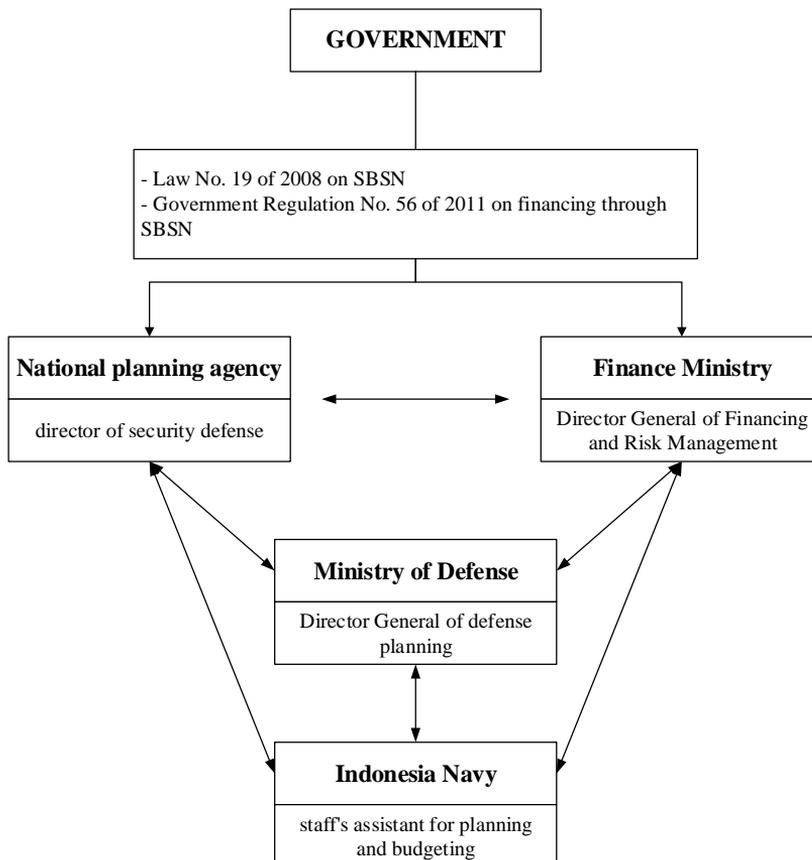

Fig. 2. Policy Communication Structure of the SBSN program as an alternative financial resource.

The negotiation process involved three key institutions: the Ministry of Bappenas, the Ministry of Finance, and the Ministry of Defense. In 2021, the Ministry of Defense was designated to receive an allocation from the SBSN, with the Ministry of Finance allocating Rp. 964 billion for 61 housing development projects within the Ministry of Defense, slightly exceeding the proposed IDR 900 billion. This decision was well-received by the Ministry of Defense. According to information from the Deputy for Facilities and Infrastructure at Bappenas, the allocation of SBSN funds is prioritized based on project evaluations from previous years and the implementing agency's capacity. Future allocations will favor ministries or institutions that demonstrate proficiency in project selection and execution. For the Ministry of Defense, the 2021 SBSN funding marks its initial effort in developing official housing for soldiers, aiming to enhance their welfare.

The introduction of SBSN financing for official housing is viewed as an appropriate solution in realizing welfare programs for Indonesian Navy personnel. From a political negotiation standpoint, this process can be characterized as a dominance quadrant, where final authority rests with the Ministry of Defense under Bappenas' oversight. Should negotiations stall, they would escalate to higher levels. Simultaneously, this negotiation can be seen as falling under the collaborative quadrant, known as integrative negotiation, where parties collaborate to maximize mutual benefits and align interests to reach a consensus.

The goal of inter-institutional negotiations was achieved through the establishment of cooperation among the three ministries in implementing the SBSN financing program for soldier housing. This aligns with David Oliver's perspective, as cited in Tiberius, Rietz and Bouncken (2020), emphasizing balanced and cooperative negotiations over coercive tactics. Analyzing communication performance describe performance as the symbolic process of understanding human behavior within organizations (Basabih and Widhakuswara, 2024). Effective communication roles are crucial for all stakeholders involved in the SBSN program to optimize policy implementation. The narrative of "Soldiers' Welfare" underpins these efforts, emphasizing clear intentions and policies that foster mutual understanding. The successful implementation of the SBSN housing project is

anticipated to significantly enhance soldier welfare.

In terms of performance, each stakeholder within the three ministries—Dithankam-Bappenas, DJPPR-Ministry of Finance, Indhan Banyek and Loans-Dirrenprogar-Renhan Kemhan, Anjakdya Renprogar Sector Dukops Indhan Banyekjam-Dirrenprogar-Renhan Kemhan, Prabandya BelNonOps BAN IV Progar Srenaal, Kaur TU Ban I Jakrenstra Srenaal, and Ur data Ur Tu Ban IV progar Srenaal—plays a critical role in implementing the 2021 SBSN program. Communication primarily follows a top-down bureaucratic approach between institutions, focusing on the procedural duties and organizational responsibilities of implementing the SBSN program. However, the process of budget submission for the SBSN program incorporates bottom-up elements, where the aspirations of soldiers are accommodated by the Ministry of Defense. This dual approach intersects with both social and political performance, as evidenced by Bappenas prioritizing the Ministry of Defense's submissions and the Ministry of Finance allocating more funds than initially proposed (from IDR 900 billion to Rp. 980 billion), indicating mutual support for the program.

Nevertheless, poor communication performance was observed during the implementation stages in 2019-2020, attributed to limited information dissemination by Bappenas due to prioritizing SBSN budget allocations for other ministries/institutions. Despite these challenges, the 2021 budget priorities reflect good political performance among institutions, with Bappenas expanding the SBSN financing scheme to include soldier housing. This demonstrates a process of acculturation, fostering a shared understanding regarding the SBSN financing scheme for soldier housing, which evolved over stages, notably with the issuance of Bappenas Ministerial Decree No. 8 of 2020 concerning Procedures for Managing Projects financed through the Issuance of SBSN.

Theoretical implications. Theoretical implications arise from this analysis of policy structuration between Bappenas, the Ministry of Finance, the Ministry of Defense, and the Indonesian Navy in leveraging financial resources for defense. First, it highlights the role of political factors in shaping defense funding policies. By examining how agencies navigate political pressures and interests in defense funding, researchers can uncover the underlying motivations

influencing resource allocation decisions. Second, it underscores the importance of accountability mechanisms in defense funding. Research into these dynamics can assess the effectiveness of existing accountability frameworks, ensuring transparency, efficiency, and integrity in managing defense budgets. These insights contribute to a deeper understanding of governance and resource management within the defense sector.

Practical Implications. This research carries several practical implications that can guide policymakers and stakeholders in optimizing financial resources for defense. Firstly, by analyzing power distribution and dynamics among different actors, researchers can uncover both challenges and opportunities in enhancing defense funding. This understanding helps policymakers navigate complex decision-making processes and negotiate resource allocation more effectively.

Secondly, emphasizing collaboration and coordination among key institutions is crucial. Policy structuration analysis reveals pivotal areas where institutional cooperation is essential for optimizing defense finances. Facilitating communication between Bappenas, the Ministry of Finance, the Ministry of Defense, and the Indonesian Navy can streamline processes, reduce redundancy, and amplify the impact of defense expenditures.

Thirdly, policy structuration analysis identifies inefficiencies or barriers within the current financial management framework for defense. By pinpointing underutilized or misallocated resources, researchers can propose targeted improvements to enhance efficiency and effectiveness in resource allocation

6. CONCLUSION

In 2019, a new alternative policy was made to resolve issues related to the constrained budget of the Indonesian National Armed Forces (TNI) through coordinated efforts among three key state institutions involved in the national budgeting process: the Ministry of Defense, Bappenas, and the Ministry of Finance. This initiative involved utilizing State Sharia Securities (SBSN) as a source of funding to augment the Ministry of Defense's budget within the State Budget (APBN). While introducing SBSN as a financial resource for defense marked a new governmental policy, the implementation process highlighted a critical communication gap. The primary

stakeholders, particularly the Ministry of Defense and the TNI, did not possess a comprehensive understanding of the SBSN policy. This research aims to analyze the policy structuration among Bappenas, the Ministry of Finance, the Ministry of Defense, and the Indonesian Navy in bolstering financial resources for defense.

The research findings indicate significant structural challenges, particularly in terms of Human Resources (HR) and regulatory frameworks. The lack of full comprehension of the SBSN program, dating back to its legalization in 2011 under the 2008 SBSN Law, underscores issues related to information dissemination. This gap appears rooted in authoritative dominance within Bappenas, delaying the dissemination of information necessary for understanding the scope of SBSN applications within the defense sector and aligning policy priorities with national development plans (RPJMN). Despite the official implementation of the program for defense in 2019, budget allocations for the Indonesian Navy in 2021 were restricted solely to soldier housing. Moreover, deficiencies in technical implementation guidelines during the planning phase further complicated the process, with these

guidelines only becoming available in 2022.

Several deficiencies stemmed from various factors. Firstly, there was a critical need for enhanced understanding of SBSN among HR. Bappenas initially perceived SBSN primarily in civil rather than military contexts, thus limiting its initial application. Secondly, delays in policy-related information dissemination were observed, partly due to information restrictions within Bappenas. This delay stemmed from their evolving understanding of the SBSN program, culminating in the formulation that SBSN could indeed support military projects, notably in soldier housing, contrary to earlier reservations following the enactment of Law No. 18 of 2008 on SBSN.

Future Work

There are several limitations of this research. Firstly, this research does not undertake a comparative analysis of policy structuring processes among these institutions to identify similarities and differences in how financial resources are allocated for defense purposes. Such an analysis could offer insights into the factors influencing decision-making and resource allocation across different government agencies. Future

research could employ a qualitative descriptive statistical method to conduct these comparisons.

Secondly, there is a need to explore the extent of collaboration and coordination among Bappenas, the Ministry of Finance, the Ministry of Defense, and the Indonesian Navy in managing financial resources for defense. Investigating how these agencies collaborate to align their goals and priorities could yield valuable insights for enhancing interagency cooperation and improving resource allocation effectiveness. Future research could delve into collaborative governance between financial and defense institutions using a qualitative method approach supported by multicriteria decision-making (MCDM).

Thirdly, this research does not assess the impact of the SBSN program as an alternative financial resource for defense. Conducting impact assessments to evaluate the outcomes of defense funding policies implemented by these agencies could provide crucial insights into their effectiveness in achieving national security objectives. Future studies could measure the impact of financial resource allocation on defense capabilities and preparedness, evaluating the efficiency and effectiveness of current policy frameworks.

ACKNOWLEDGEMENT

REFERENCES

[1]   S. Surahman, I Nengah Putra, K. Khaerudin, and Muhamad Asvial, "Independence of the Indonesian Defense Industry and Challenges in Defense Budget Allocation," *International Journal Of Humanities Education and Social Sciences (IJHESS)*, vol. 3, no. 4, pp. 1752–1764, 2024, doi: 10.55227/ijhess.v3i4.738.

[2]   N. A. Soraya, J. E. Sirait, and F. Nulhakim, "ASEAN Defense Industry Collaboration (ADIC): An Assessment of Potential Strategic Benefits for Indonesia Defense Industry," *International Journal of Social Science Research and Review*, vol. 6, no. 2, pp. 90–95, 2023, doi: 10.47814/ijssrr.v6i2.884.

[3]   M. A. Mufti, "Indonesian intelligence reform: Recent challenges and opportunities for encouraging

democratic and professional intelligence," *Connections*, vol. 20, no. 1, pp. 75–90, 2021, doi: 10.11610/Connections.20.1.05.

[4] D. Witro and I. Setiawan, "Sukuk and Bonds in Indonesia: An Overview," *Jurnal Ilmu Akuntansi dan Bisnis Syariah*, vol. III, no. 2, pp. 101–118, 2021.

[5] F. Zaini and M. S. Bin Shuib, "Fatwa on Sharia Products and Its Role in The Development of Islamic Finance Industry," *Islamadina : Jurnal Pemikiran Islam*, vol. 22, no. 2, p. 189, 2021, doi: 10.30595/islamadina.v22i2.11859.

[6] E. Richardson, "Standardising Responsible Islamic Finance A Review of Green , Social and Sustainability Sukuk Sustainability and responsibility have become prominent themes in the contemporary finance industry . The rapid spread of Covid-19 infections in 2020 has further," in *KILAW Annual Conference*, 2020, pp. 1–22.

[7] M. Muchtar, "Opportunities and Challenges of Retail Sovereign Sukuk Issuance: Lessons from Twelve Years' Experience," *Signifikan: Jurnal Ilmu Ekonomi*, vol. 10, no. 2, pp. 259–274, 2021, doi: 10.15408/sjie.v10i2.20093.

[8] F. Nur Rohmah, M. Fauzi, and M. A. Lu'lu Firdaus, "Opportunities and Challenges of Sukuk Development in the Digital Era: Millennial Generation Perspectives In Indonesia," *WARAQAT : Jurnal Ilmu-Ilmu Keislaman*, vol. 8, no. 2, pp. 211–227, 2023, doi: 10.51590/waraqat.v8i2.580.

[9] S. Sugiono, "Peran E-Government Dalam Membangun Society 5 . 0 : A Conceptual Review Of Economics, Social, And Environmental Sustainability Aspect," *Jurnal Inovasi Kebijakan*, vol. 5, no. 2, p. 116, 2021.

[10] K. D. Saharani, D. Ardiani, and W. F. Nurcahya, "Strategi Pembiayaan APBN Dalam Menghadapi Ketidakpastian Perekonomian Global," *Journal of Law, Administration, and Social Science*, vol. 4, no. 5, pp. 821–834, 2024, doi: 10.54957/JOLAS.V4I5.893.

[11] A. Keberlanjutan *et al.*, "Analisis Keberlanjutan serta Pengaruh Surat Berharga Negara dan Faktor Lainnya terhadap Pertumbuhan Ekonomi di Indonesia," *Indonesian Treasury Review Jurnal Perbendaharaan Keuangan Negara dan Kebijakan Publik*, vol. 7, no. 3, pp. 239–254, 2022, doi: 10.33105/itrev.v7i3.529.

[12] C. Busco, "Giddens' structuration theory and its implications for management accounting research," *Journal of Management and Governance*, vol. 13, no. 3, pp. 249–260, 2009, doi: 10.1007/s10997-008-9081-6.

[13] A. G. Phipps, "Empirical applications of structuration theory," *Geografiska Annaler, Series B: Human Geography*, vol. 83, no. 4, pp. 189–204, 2001, doi: 10.1111/j.0435-3684.2001.00106.x.

[14] F. den Hond, F. K. Boersma, L. Heres, E. H. J. Kroes, and E. van Oirschot, "Giddens à la Carte? Appraising empirical applications of Structuration Theory in management

and organization studies," *Journal of Political Power*, vol. 5, no. 2, pp. 239–264, 2012, doi: 10.1080/2158379X.2012.698901.

[15]   H. Englund and J. Gerdin, "Structuration theory in accounting research: Applications and applicability," *Critical Perspectives on Accounting*, vol. 25, no. 2, pp. 162–180, 2014, doi: 10.1016/j.cpa.2012.10.001.

[16]   H. Englund, J. Gerdin, and J. Burns, "A structuration theory perspective on the interplay between strategy and accounting: Unpacking social continuity and transformation," *Critical Perspectives on Accounting*, vol. 73, p. 101988, 2020, doi: 10.1016/j.cpa.2017.03.007.

[17]   H. Englund, J. Gerdin, and J. Burns, "25 Years of Giddens in accounting research: Achievements, limitations and the future," *Accounting, Organizations and Society*, vol. 36, no. 8, pp. 494–513, 2011, doi: 10.1016/j.aos.2011.10.001.

[18]   S. A. Samoilenko, "Character Assassination: The Sociocultural Perspective," *Journal of Applied Social Theory*, vol. 1, no. 3, pp. 186–205, 2021.

[19]   K. S. Momaya, "The Past and the Future of Competitiveness Research: A Review in an Emerging Context of Innovation and EMNEs," *International Journal of Global Business and Competitiveness*, vol. 14, no. 1, pp. 1–10, 2019, doi: 10.1007/s42943-019-00002-3.

[20]   M. A. Hitt;, R. D. Ireland;, and R. E. Hoskisson, *Strategic Management: Competitiveness & Globalization: Concepts and Cases*,

12 th. Cengage Learning, 2016.

[21]   F. Zona, L. R. Gomez-Mejia, and M. C. Withers, "Board Interlocks and Firm Performance: Toward a Combined Agency–Resource Dependence Perspective," *Journal of Management*, vol. 44, no. 2, pp. 589–618, 2018, doi: 10.1177/0149206315579512.

[22]   S. D. Hunt and S. Madhavaram, "Adaptive marketing capabilities, dynamic capabilities, and renewal competences: The 'outside vs. inside' and 'static vs. dynamic' controversies in strategy," *Industrial Marketing Management*, vol. 89, no. July 2019, pp. 129–139, 2020, doi: 10.1016/j.indmarman.2019.07.004.

[23]   E. Baia, J. J. Ferreira, and R. Rodrigues, "Value and rareness of resources and capabilities as sources of competitive advantage and superior performance," *Knowledge Management Research and Practice*, vol. 18, no. 3, pp. 249–262, 2020, doi: 10.1080/14778238.2019.1599308.

[24]   J. Barney, "Firm Resources and Sustained Competitive Advantage," vol. 17, no. 1, pp. 99–120, 1991.

[25]   R Hall, "A framework linking intangible resources and capabiliites to sustainable competitive advantage," *Strategic management journal* , vol. 14, no. 8, pp. 607–618, 1993.

[26]   F. R. David and Forest R. David, *Strategic Management: A Competitive Advantage Approach Concept and Cases*. Pearson Education, 2017.

[27]   B. M. Sukoco, *Manajemen Strategi Konsep dan Aplikasi*, no. Jilid 1. Surabaya: Erlangga, 2022.

[28]   B. A. Hared and Z. Abdullah, "Management Control Systems : A review of literature and a theoretical framework for future researches," *European Journal of Business and Management*, vol. 5, no. 26, pp. 1–14, 2013.

[29]   M. Basabih and I. Widhakuswara, "Opportunities and Challenges in Implementing Regional Public Service Agency Policy in Regional Hospitals: Systematic Review," *Jurnal Ilmu Kesehatan Masyarakat*, vol. 15, no. 1, pp. 1–20, 2024, doi: 10.26553/jikm.2024.15.1.1-20.

[30]   D. B. P. Damanik, T. Tiaisyah, F. Ferizaldi, and A. Aiyub, "Opportunities and Challenges in Implementing the Covid-19 Response Village Programme," *International Journal of Public Administration Studies*, vol. 3, no. 1, p. 30, 2023, doi: 10.29103/ijpas.v3i1.12337.

[31]   R. H. Ayuningtyas and A. Z. Rahman, "Komunikasi Kebijakan Publik Dalam Implementasi Kampung Tematik di Kelurahan Rejomulyo," *Angewandte Chemie International Edition, 6(11), 951–952.*, pp. 10–27, 2018.

[32]   P. R. Monge, J. A. Edwards, and K. K. Kirste, "The Determinants of Communication and Communication Structure in Large Organizations: A Review of Research," *Annals of the International Communication Association*, vol. 2, no. 1, pp. 311–331, 1978, doi: 10.1080/23808985.1978.11923732.

[33]   C. N. Creswell, John W. & Poth, "Qualitative Inquiry & Research Design: Choosing Among 5 Approaches," *Sage Publication*, p. 778, 2016.

[34]   F. Firmansyah, E. R. Hidayat, and M. A. Madjid, "Analisis Pembentukan Komponen Cadangan Sebagai Upaya Optimalisasi Peran Angkatan Darat Terhadap Pertahanan Negara," *Jurnal Damai dan Resolusi Konflik*, vol. 8, no. 1, pp. 36–47, 2022.

[35]   O. A. Adebimpe, D. G. Proverbs, and V. O. Oladokun, "A fuzzy-analytic hierarchy process approach for measuring flood resilience at the individual property level," *International Journal of Building Pathology and Adaptation*, vol. 39, no. 2, pp. 197–217, 2021, doi: 10.1108/IJBPA-10-2019-0094.

[36]   M. Kopyto, S. Lechler, H. A. von der Gracht, and E. Hartmann, "Potentials of blockchain technology in supply chain management: Long-term judgments of an international expert panel," *Technological Forecasting and Social Change*, vol. 161, no. March 2019, p. 120330, 2020, doi: 10.1016/j.techfore.2020.120330.

[37]   C. Shi, Y. Zhang, C. Li, P. Li, and H. Zhu, "Using the delphi method to identify risk factors contributing to adverse events in residential aged care facilities," *Risk Management and Healthcare Policy*, vol. 13, pp. 523–537, 2020, doi: 10.2147/RMHP.S243929.

[38]   Marlina, Sumarmi, I. K. Astina, and S. Susilo, "Social-economic adaptation strategies of Bajo Mola fishers in Wakatobi National Park," *Geojournal of Tourism and Geosites*, vol. 34, no. 1, pp. 14–19, 2021, doi: 10.30892/GTG.34102-613.

[39] Elis Dwiana Ratnamurni, Eka Ludiya, and Amanda Luthfiartie, "Quality Risk Management in Infusation Product Distribution Using Failure Mode and Effect Analysis (FMEA) and Analytical Hierarchy Process (AHP) Methods," *International Journal of Science, Technology & Management*, vol. 3, no. 1, pp. 229–244, 2022, doi: 10.46729/ijstm.v3i1.429.

[40] M. I. Kusumah, "Information System Interoperability Strategy to Support Command and Control of Border Security Operations in the North Natuna Sea," *International Journal of Social Science and Human Research*, vol. 05, no. 01, pp. 295–304, 2022, doi: 10.47191/ijsshr/v5-i1-40.

[41] S. Sackstein, M. Matthee, and L. Weilbach, "Theories and Models Employed to Understand the Use of Technology in Education: A Hermeneutic Literature Review," *Education and Information Technologies*, vol. 28, no. 5, pp. 5041–5081, 2023, doi: 10.1007/s10639-022-11345-5.

[42] E. Sriyono, D. P. B. Asri, and S. Sardi, "Toward a social construction of water resources management: The case of Kalimantan," *Cogent Engineering*, vol. 8, no. 1, 2021, doi: 10.1080/23311916.2021.1999061.

[43] V. Tiberius, M. Rietz, and R. B. Bouncken, "Performance analysis and science mapping of institutional entrepreneurship research," *Administrative Sciences*, vol. 10, no. 3, 2020, doi: 10.3390/admsci10030069.

NAVIGATING COMMUNICATION THROUGH THE CHALLENGES OF THE ACTUAL GEOPOLITICAL CONTEXT

Brînduşa Maria POPA

Regional Department of Defense Resources Management Studies,
Brasov, Romania

Today's complex geopolitical landscape, characterized by shifting power dynamics, cultural differences, information warfare and the rise of digital communication should consider mastering effective communication more critical than ever. Navigating these challenges demands special knowledge, skills, and a willingness to engage. Effective communication is essential for countries, organizations and individuals to successfully engage, negotiate, and collaborate in an increasingly interconnected yet, tension-filled world. Under such circumstances, communication should be viewed as an essential resource for governments, organizations and defense agencies and should be employed not just to provide orientation, coordinate activities and build trust. Still, governments and official communicators should remember that one of the major problems today is the public's growing distrust in official sources. This distrust makes conveying accurate information more difficult and undermines efforts to counter global and national security threats.

Key words: *communication, geopolitics, information, disinformation threats and challenges*

1. INTRODUCTION

In the current period of intense globalization and technological progress, communication has strengthened its position of a fundamental element of geopolitical relations. It requires specialized knowledge, skill and willingness to understand the complicated modern geopolitical landscape of shifting power dynamics, cultural diversity, information warfare and the rise of digital communication. So, in order to navigate these issues, effective communication is essential because it allows government, organizations and individuals to interact, negotiate, and work together in a tense and increasingly interconnected world.

In such times, the new defense system is designed to address a

broad spectrum of emerging threats ranging from conventional military engagements to unconventional tactics like cyber warfare, disinformation campaigns and economic pressure. The modern defense landscape requires a comprehensive approach that integrates advanced technologies, strategic alliances and effective communication strategies. Therefore, in today's fast-paced and interconnected world, communication plays a crucial role in every aspect of society, from personal interactions to international diplomacy. However, the landscape of modern communication is abounding in challenges that require careful navigation. These challenges are shaped by technological advancements, geopolitical shifts, and the complexity of the threats. Understanding and addressing these communication complications is essential for individuals, organizations as well as governments.

In addition, one of the more significant developments in modern geopolitical communication is the rapidity with which information spreads. Communication in real time has become the standard, forcing officials and leaders to respond to events as they occur. This immediacy can be both an advantage and a disadvantage. On the one hand, it allows for rapid response to crises, potentially de-escalating tensions before they escalate. On the other hand, the pressure to react quickly can lead to hasty decisions, misunderstandings, and the amplification of conflicts.

This article will make an analysis of the communication challenges and will present some possible strategies to address them and to regain confidence in official sources.

2. COMMUNICATION CHALLENGES

2.1. Information overload

The digitalization was presented and considered as one of the greatest aspects of the impact of modern technology upon human activity. However, the digital age has brought not only the benefits of technology, but it has also unleashed an unprecedented volume of information upon its beneficiaries. Unfortunately, such information deluge can overwhelm individuals and organizations, making it difficult to separate important and accurate data from irrelevant or false information. In addition, we also encounter the acute issue of reduced attention spans, as people are bombarded with constant streams of content. In such an environment, maintaining audience engagement and ensuring critical messages are heard is increasingly difficult (Fan M., Huang Y., Qalati S. A., Syed

Mir Muhammad Shah S.M.M., Ostič D., Pu Z.: 2021).

2.2. Misinformation and disinformation

The rapid spread of information comes along with its counterpart misinformation and disinformation. The almost complete dependency of individuals on online media poses a significant threat to effective communication. Social media platforms and other digital channels can quickly amplify false or misleading information causing widespread confusion.

This constant flow of incorrect information erodes trust in institutions, media, and public figures, complicating the efforts needed to convey accurate and reliable information to the public (Broda E., Strömbäck J.: 2024).

2.3. Complexity and speed

The rapid pace of information dissemination and the complexity of modern threats require timely and accurate communication. Defense agencies must balance the need for quick action with the necessity of verifying information to avoid spreading misinformation (Broda E., Strömbäck J.: 2024).

2.4. Cybersecurity threats

Cybersecurity in modern communication environments represents another reason for concern. Data breaches and cyber-attacks targeting communication systems can disrupt channels and compromise sensitive information. Sophisticated phishing attacks and social engineering tactics exploit human psychology to gain unauthorized access to systems and data. Ensuring the security of communication infrastructures is thus, paramount to protecting the integrity of information.

2.5. Technological inequality

Despite the proliferation of communication technologies, there still remains a significant digital divide. Unequal access to these technologies creates disparities in information access and dissemination, particularly in economically deprived or rural areas. Additionally, varying levels of technological proficiency can hinder effective communication, especially in diverse or global organizations. Bridging this digital divide is essential for inclusive and equitable communication.

2.6. Cultural and language barriers

The worldwide spread of information has led to a worldwide response to the same stimulus. However, the response is always influenced by the context from where it arises, may it be geographical, cultural, religious,

political etc. Therefore, effective communication across cultures requires knowledge sensitivity to different customs, norms, and communication styles. Cultural differences can significantly impact how messages are received and interpreted (Ye Z.: 2024).

Furthermore, language barriers require precise identification, accurate translation and localization to ensure that messages are understood as intended. Overcoming these cultural and linguistic challenges is vital for effective global communication.

2.7. Real-time communication expectations

The public's expectation of real-time communication has increased due in part to the growth of instant messaging and social media. This demand for immediate responses can strain resources and lead to hasty, potentially inaccurate communications. During crises, the pressure for timely updates and transparent communication is even higher, underscoring the need for robust crisis communication strategies.

2.8. Privacy concerns

Maintaining a balance between the need for communications while protecting sensitive and private information is a critical challenge. Data privacy is a major concern, and

navigating the numerous and different data protection regulations across different jurisdictions complicates international communication efforts. Ensuring compliance with these regulations while maintaining open channels of communication is essential for building trust.

2.9. Media fragmentation

The proliferation of media channels has led to a fragmented media landscape. Traditional media, social media, and independent channels have their own type of audiences and reach. Ensuring that the information is shared with the appropriate communication strategies, becomes vital to reach different segments of the audience appropriately.

Additionally, fragmented media consumption can create echo chambers where individuals are only exposed to information that reinforces their existing beliefs, further complicating efforts to reach a broad audience (Riles J. M., Pilny A., Tewksbury D.: 2017).

2.10. Ethical Considerations

Ethical communication is paramount for maintaining credibility and trust. Ethical considerations include transparency, responsibility and the avoidance of manipulative tactics. The use of propaganda and other unethical

communication methods undermines trust and can have serious societal impacts. Adhering to ethical standards in all communication efforts is crucial for maintaining public confidence.

2.11. Globalization

Globalization has created new opportunities for communication and collaboration, but it has also introduced challenges in managing geopolitical relations. As countries become more interconnected, the actions of one nation can have far-reaching implications for others. This interdependence requires effective communication to navigate the complexities of global trade, climate change, migration, and security.

Globalization has also led to the rise of non-state actors, such as multinational corporations, non-governmental organizations (NGOs) and international institutions, which play a significant role in shaping geopolitical communication. These actors often have their own agendas and communication strategies, which can influence or complicate diplomatic efforts. Navigating this complex web of interests requires a coordinated approach, with governments engaging in dialogue not only with other states, but also with a diverse range of stakeholders (Jensen L. A., Arnett, J. J., & McKenzie J.: 2011).

2.12. Coordination among multiple stakeholders

Communication can be also understood as the process of organizing and implementing the common strategy with the help of the government, NGOs, businesses and the public. Regarding the latter, it is imperative to establish clear strategies and cooperation between the departments for the sake of avoiding the situation when different divisions disseminate contradictory and incoherent information to the public. Clear strategies and collaboration are necessary to ensure consistent and coherent messaging. Unified communication efforts are particularly important in addressing complex global challenges that require a coordinated response.

3. ADDRESSING THE CHALLENGES

There is no easy and quick solution to such a multitude of issues still, several strategies can be employed to navigate these communication challenges:

- Investing in technology: utilizing advanced communication tools and cybersecurity measures can protect and streamline communication channels.

- Enhancing media literacy: promoting media literacy helps individuals critically evaluate

information and recognize misinformation.

- Fostering inclusivity: developing communication strategies that are inclusive and accessible, taking into account cultural and linguistic diversity, is essential.

- Implementing crisis communication plans: robust crisis communication plans ensure timely and accurate information dissemination during emergencies.

- Maintaining ethical standards: adhering to ethical principles in communication builds and maintains trust.

- Encouraging collaboration: facilitating collaboration and coordination among multiple stakeholders ensures unified and effective communication.

By understanding and addressing these modern communication challenges, individuals, organizations, and governments can navigate the complex landscape of today's world more effectively, fostering a more informed, connected and resilient society.

4. NAVIGATING COMMUNICATION CHALLENGES IN THE NEW DEFENSE CONTEXT

In the evolving global defense landscape, effective communication is crucial for maintaining national security, international cooperation, and public trust. The new defense context, characterized by geopolitical shifts, the rise of non-state actors and hybrid warfare tactics, presents unique communication challenges. Addressing these challenges is essential for navigating the complexities of modern defense strategies and ensuring coordinated and effective responses to emerging threats.

4.1. Global Security Dynamics, Geopolitical Shifts, Multipolar World

The rise of China as a global superpower, the resurgence of Russia and the increasing assertiveness of regional powers like Iran and North Korea are reshaping global power structures. Communicating strategic intentions and responses in this multipolar world requires careful calibration to avoid misunderstandings and escalations. (Nye J. S.:2004).

4.2. Alliances and Partnerships

Changes in NATO, EU defense policies and the formation of new military alliances like AUKUS (Australia, United Kingdom, and United States) and the Quad (Australia, India, Japan and the United States) necessitate enhanced communication and coordination among member states.

Ensuring consistent messaging and unified responses is critical for maintaining the integrity and effectiveness of these alliances.

4.3. Non-State Actors, Terrorist Organizations

Groups like ISIS and Al-Qaeda continue to evolve, utilizing advanced communication technologies and social media for recruitment and propaganda.

Countering these narratives and disrupting their communication networks is a significant challenge for defense agencies.

4.4. Cyber Threats

Non-state actors, including hacking groups and state-sponsored cyber units, pose significant threats to critical infrastructure and national security. Communicating cyber threat information quickly and accurately to both domestic and international partners is vital for coordinated defense efforts (Fan M., Huang Y., Qalati S. A., Syed Mir Muhammad Shah S.M.M., Ostic D. ,Pu Z.:2021).

4.5. Hybrid warfare

Modern conflicts increasingly involve a blend of traditional military operations with unconventional tactics such as disinformation, economic pressure, and cyber-attacks. Communicating the nature of these hybrid threats and the responses required involves complex coordination across multiple domains and agencies.

4.6. Misinformation and disinformation

The proliferation of false information, often amplified by social media, can undermine defense efforts and public trust. Developing robust strategies to counter misinformation and disinformation is essential for maintaining credibility and ensuring that accurate information reaches the public and international partners. (Broda E., Strömbäck J.: 2024).

4.7. Coordination among allies

Effective communication and coordination among allied nations and organizations are crucial for unified responses to shared threats. Establishing clear communication channels and protocols can help ensure that all parties are informed and aligned in their actions.

4.8. Public perception

Managing public perception and maintaining trust in government and defense institutions require transparent and consistent communication strategies. Engaging with the public through various media channels and providing clear, accurate information can help build and sustain trust (Springer N.: 2024), (Taylor P.2006).

Public distrust in official/governmental institutions is an attitude frequently encountered in present day society. Distrust can have various causes like: Misinformation and disinformation: the spread of false information has led to skepticism about the accuracy of official communications; lack of transparency: perceived or real lack of transparency from authorities can erode public trust; past failures: previous instances where official sources have failed to provide accurate information can lead to long-lasting distrust; bias perception: the belief that official sources are biased or have hidden agendas can fuel distrust.

Among the strategies to rebuild trust we can mention:
- Enhancing transparency;
- Open communication: regularly provide clear, accurate and complete information to the public.
- Accountability: acknowledge and address past mistakes openly to build credibility.
- Improving media literacy
- Public education: educate the public on how to critically evaluate information and recognize credible sources.
- Training programs: implementing media literacy programs to help individuals identify and counter misinformation.
- Engaging with the community.
- Two-way communication: fostering open dialogue with the public, allowing for questions and feedback.
- Community involvement: engaging community leaders and influencers to disseminate accurate information and build trust.
- Leveraging technology.
- Advanced communication tools: using state-of-the-art tools to enhance the efficiency and security of information dissemination.
- Social media engagement: actively engaging on social media platforms to counter misinformation and connect with the public.
- Ensuring cultural sensitivity.
- Inclusive communication: developing communication strategies that are inclusive and account for cultural and linguistic diversity.
- Localized messaging: tailoring messages to specific cultural contexts to ensure they are understood and respected.
- Coordination: establishing clear protocols for coordination among various stakeholders to ensure a unified response during crises.
- Ethical communication practices.
- Honesty and integrity: upholding ethical standards in all

communication efforts to build and maintain trust.
- Consistent messaging: ensuring that all communications are consistent and aligned with the organization's values and objectives.

5. CONCLUSION

Adapting communication to the new world challenges requires a multifaceted approach that integrates advanced technologies, ethical practices, and robust coordination mechanisms. By addressing these challenges proactively, defense agencies, governments, and organizations can enhance their ability to respond to emerging threats, maintain public trust, and foster international cooperation. Effective communication is not only a strategic asset but a critical component of modern defense and security efforts.

Navigating communication in the modern geopolitical world requires a nuanced understanding of the challenges and opportunities presented by globalization, cultural differences, information warfare, and technological advancements. Effective communication is not only about conveying messages but also about understanding the perspectives of others, building trust, and fostering collaboration.

As the geopolitical landscape continues to evolve, the ability to communicate effectively will be a key determinant of success in international relations. Diplomats and leaders must be adaptable, culturally literate, and technologically savvy to navigate the complexities of the modern world. By prioritizing clear, respectful, and informed communication, nations can work together to address global challenges and build a more peaceful and prosperous future.

Moreover, the reliance on technology has raised concerns about privacy and security. Cybersecurity has become a critical aspect of geopolitical communication, as cyberattacks can disrupt communication channels, steal sensitive information, and undermine trust between nations. Ensuring the security of communication infrastructure is essential for maintaining stability in the international

The communication challenges and growing distrust of official sources present significant obstacles, also. Addressing these issues requires a comprehensive approach that integrates transparency, media literacy, community engagement, advanced technology, cultural sensitivity, and ethical practices. By adopting these strategies, governments, organizations and

defense agencies can rebuild public trust, enhance the effectiveness of their communication efforts, and better navigate the complexities of today's information landscape. Effective communication is not only a strategic asset but a critical component of maintaining national security, public trust and international cooperation.

REFERENCES

[1] Broda E., Strömbäck J., *Misinformation, disinformation, and fake news: lessons from an interdisciplinary, systematic literature review*, The Annals of the International communication Association, Vol. 48, Issue 2, 2024.

[2] Castells M., *Communication Power*, Oxford University Press, 2009.

[3] Fan M., Huang Y., Qalati S. A., Syed Mir Muhammad Shah S.M.M., Ostic D. ,Pu Z., *Effects of Information Overload, Communication Overload, and Inequality on Digital Distrust: A Cyber-Violence Behavior Mechanism*, Psychology, Vol. 12, 2021

[3] Janković A., Janković S., Durović S., Rašović I., Globalization and its impact on culture and media, AGORA International Journal of Juridical Sciences, No. 1 (2023), pp. 117-129, https://univagora.ro/jour/index.php/aijjs/article/view/5752/1949

[4] Jensen L. A., Arnett, J. J., & McKenzie J.*, Globalization and Cultural Identity*, Handbook of Identity Theory and Research, 2011, pp.285-301

[5] Nye J. S., Soft Power: The Means to Success in World Politics, PublicAffairs, 2004

[6] Riles J. M., Pilny A., Tewksbury D., Media fragmentation in the context of bounded social networks: How far can it go?, New Media & Society 20(7):146144481769624, 2017

[7] Shah A., *War, Propaganda and the Media*, 2005 https://www.globalissues.org/article/157

[8] Springer N., *The challenges of communicating crises in digitalised and diverse societies*, 2024 https://cbss.org/2024/04/16/the-challenges-of-communicating-crises-in-digitalised-and-diverse-societies/

[9] Taylor P., *Strategic Communications and the Relationship between Governmental "Information" Activities in the Post 9/11 World*, Journal of Information Warfare 5 no 3, 2006, pp. 1–25.

[10] Ye Z., *Language Barriers in Intercultural Communication and Their Translation Strategies*, International Conference on Finance and Economics, Humanistic Sociology and Educational Development (EHSED 2024), Vol. 6, No. 1, 2024

[11] *Modern Communication Challenges for Society*, The First Annual Global PR Industry Policy Position Paper by ICCO, 2022, https://iccopr.com/wp-content/uploads/2022/03/Global-Communication-Challenges-2022-290322-compressed-1.pdf https://www.researchgate.net/publication/315063280_Media_fragmentation_in_the_context_of_bounded_social_networks_How_far_can_it_go

[12] MC 0628: NATO Military Policy on Strategic Communications, 2017

MILITARY CULTURE AND DEFENSE MANAGEMENT IN AZERBAIJAN: CONTEMPORARY TRANSFORMATIONS

Naiba SHAMSHIYEVA

Military Institute named after Heydar Aliyev, Baku, Azerbaijan

The article is dedicated to studying military culture, which is of special relevance in military administration in modern times and acts as an important means of socialization between the army and society. In the article, based on various scientific sources, the author tried to reveal military culture's characteristic features and content and exhibited a specific scientific approach to its structural elements and forms. The analysis of new concepts and categories included in the value standards of military culture in the process of building an army in connection with the emergence of a new political way of thinking in Azerbaijani society formed a special subject of research in the article. The article also put forward specific considerations regarding the possibilities of applying military culture in the training of qualified officer personnel in the Azerbaijani army, as well as development prospects. As a result, in the article, taking advantage of the historical experience, the involvement of the achievements of all fields of culture in the field of military activity as a whole was evaluated as one of the important requirements facing the army, and the synthesis of all the achievements of the military culture with the reforms carried out in the military field was expressed as a guarantee of the success, success and reliable future of the army. To strengthen the value standards of military culture in the future in the process of building an army, their continuous promotion among personnel is reflected in the article as the main proposal.

Key words: *military culture, military, culture, semiotic-symbolic culture, army construction, formal military culture, informal military culture*

1. INTRODUCTION

Military history that has passed the time filter of centuries and millennia proves that the strength of the army of any state directly depends on the cultural level of its personnel. The army, which is one of the important social institutions of society, cannot fully function without rooting itself in high culture. In other words, the army, which is formed as an integral part of public life and incorporates all the elements of the general culture in unity, forms only a unique, specific field of culture - military culture.

1.1. The purpose of the article

The main goal of the article is to investigate the specific features and application mechanisms of military culture, which acts as an important means of consolidation between society and the army in modern times, as well as the basis of effective activity in military administration. The research tasks arising from this goal are the following:

1. Determining the degree of development of the topic concerning the available scientific literature;

2. Opening and analyzing the specific features of the concept of military culture;

3. Opening the content of military culture and defining its structural elements;

4. Researching the current approaches to military culture in Azerbaijan and the conditions for its realization;

5. Putting forward a proposal for the wider application of the value standards of military culture in military administration.

1.2. Scientific methods used in the research work: historical analogy, theoretical analysis, interpretation, and comparative analysis methods were used in the research work for deeper processing of the article.

As an independent concept, military culture has been included in scientific circulation in recent times. It is believed that its creation coincides with the end of the 19th century and the beginning of the 20th century. Even before the emergence of the term military culture, in the early periods of human history, there were a number of norms and values of coexistence that arose directly from the instincts of self-preservation and defense of people. These values were formed based on the general culture. Later, those values became criteria of self-affirmation between clans, tribes, as well as individual individuals, and began to act as stable normative bases. With the emergence of combat-capable armies, these norms became established as unbreakable rules that were strictly protected and expected by the bearers of the military and martial arts. Of course, those rules were not directly mentioned as a secret, but they acted as elements of military culture. However, these covered only the practical aspects of military culture, its scientific and theoretical development began much later. (Sorokin: 2004, p. 27).

Unfortunately, in the modern scientific literature that we have studied so far, no attempt has been made to give a sociological definition or description of the military culture as a whole. However, there are currently a large number of works and studies dedicated to the organizational culture of the military and individual elements of the military culture in the fields of philosophy, psychology, pedagogy, culturology, as well as military sciences. But the interesting thing is that none of them have an overlapping, common idea about

military culture. Each author who studies military culture approaches it from his perspective, they exhibit different positions regarding the content of the concept, its structural elements, and its scope. A single idea summarizes these studies - the idea that military culture is an integral part of social culture. It would be appropriate to mention one issue that, compared to other countries, research on military culture has been conducted on a larger scale in Russia, and a certain scientific-theoretical base has been formed. P. Sorokin, L. Evseeva, S. Klimov, V.Kruglov, O.Marusenko, N.Morozov, O.Romax, L.Larkin, L.Cherpagina, I.Shegolev, etc. scientists and researchers have played a special role.

2. THE MAIN DIRECTIONS OF THE RESEARCH
2.1 Concept of military culture

Military culture in itself is a multifaceted, multidirectional, complex concept. Therefore, it would be appropriate to examine this concept according to several characteristics. As its name suggests, it is formed from two different combinations of words - military and cultural words. The meaning of the word Harb is battle, battle, and defense. Culture acts as a set of material and spiritual values, wealth, and conditions of life and behavior created by people in the process of cooperation, not given by nature. Culture is the main social factor that regulates various areas of human relations, from daily communication to the functioning of the global economy (Evseeva: 2014, p.92).

Military culture - as a constituent element of general culture, regulates the interaction of members of society with the military sphere and acts as a means of assimilation between them. Thanks to it, the military socialization of the young generation and the education of military patriotism are carried out, rich experience is gathered in the field of military training and educational work through military-theoretical concepts and military doctrines, and the principles and technologies of military art are applied to real life. Military culture has autonomy, in a certain sense it acts as an independent concept that includes the rules principles, and moral values existing in the military field. At the same time, it plays the role of the nucleus of social culture and regulates the mutual social relationship between the military sphere and society as a form of general culture (Klimov: 2012, p.55).

For a more in-depth study of military culture, it would be appropriate to consider it in a broad and narrow sense. In a broad sense, military culture means the material and moral values, forms of activity, and rules of conduct created by people in the country's military field. It includes economic, political, social, and spiritual components (military economy, military policy, military ideology, armed struggle, Armed

Forces, weapons and military equipment, military science, military art, military doctrines, military concepts, military traditions, artistic related to the military field culture, etc.) is included. In the narrow sense, military culture means a historically determined, stable complex of thinking and behavior patterns of people in the military field, which are formed in groups and on a massive scale. Both parties interact with each other and it is impossible to take one of them in isolation from the other (Marusenko: 2010, p.43).

2.2. The structure of military culture

When looking at the scientific literature, one of the issues that attract attention is related to the efforts of some authors to ignore the military culture as a subculture. This in itself is a fundamentally wrong idea. While subculture reflects the norms and principles, lifestyle, and rules of behavior of people belonging to a specific category (for example, young people, the poor), under the name of military culture, we refer to the material and moral values, semiotic-symbolic elements that belong to the military field as a whole, we also understand the norms and principles and rules of joint action of military personnel. This includes the lifestyle, norms, and values of military personnel, language, rituals, symbols, artistic culture, and art. As can be seen from the comparison, military culture is a broader concept, while subculture,

unlike it, has a limited sphere of activity.

Military culture as a phenomenon of social life permeates all areas of the military organization. Its constituent elements can be applied to each representative of the military structure separately and to the collective as a whole. The military culture includes, on the one hand, subcultures of military personnel belonging to various types of troops of the military field, and on the other hand, military personnel of various statuses and categories - cadets, soldiers, ensigns, officers (divided into junior, senior and senior officers) with unique characteristics are distinguished (Romanova: 2008, p. 26).

When thinking about military culture, these concepts that reflect the lifestyle of military personnel first come to mind: authority, active lifestyle, strict regime, discipline, hierarchical authority, responsibility, sacrifice, etc.

There are different opinions about the structural elements of military culture. V. Kruglov, doctor of military sciences, notes that "the content of military culture consists of certain components that interact with each other." Among these components, he includes political culture, management and administrative culture, disciplinary culture, headquarters and military-technical culture, and culture of mutual relations between military personnel (Kruglov: 2015, p. 4).

O. Romakh distinguishes four sub-systems in the structure of military

culture as a whole training system - normative value system, moral-ideological system, behavioral system and material system (Romax, et.al: 2010, p.31).

Many authors distinguish military culture according to the possibilities of realization in peace and war conditions. They believe that the elements of military culture can be used both during just-defensive wars and unjust-aggressive wars. According to S. Klimov, "elements of military culture influence the behavior of a person during war and military conflicts, determine his attitude towards the defense of his homeland." (Klimov: 2012, p. 59).

On closer examination, we see that each author is right in his own right, and military culture contains all these listed elements. However, the most important flaw in the approach of the authors is related to the fact that they try to analyze these elements not in unity, but in isolation from each other, in separate groups. It should not be forgotten that military culture is an integral part of social culture, and all material and moral values, rules of conduct, and ways of thinking existing in the military field act as components that determine its formation. On the other hand, most authors for some reason ignore the fact that military culture is a means of integration and socialization between the military and society. Finally, although these authors list individual components of military culture, the issue of its object and subject remains open and they do

not attempt to give it a concrete definition. I think that military culture can be approached from a sociological point of view as follows: military culture is the totality of material and moral values, wealth created and created by people in the military field of the country, the sum of the lifestyle, activity, and behavior rules of military personnel, the social relationship between the military and society. It is a communication tool.

2.3. The content of military culture

When talking about the content of military culture, it is important to note that it, like general culture, has semiotic and symbolic characteristics. This means that it can also be seen as a system that contains different types of signs and symbols that can be read as text, in which different aspects of the military sphere of society are encrypted. Weapons and military equipment, military uniforms, military accessories and equipment, military towns and barracks, as well as other material elements have a symbolic-semiotic character as well as practical purpose. For example, weapons symbolize the power and might of the army and navy, as well as the state as a whole. Each weapon is individually able to provide certain information about its owner. Even in ancient times, any weapon made it possible to determine the status of its owner. Thus, the sword tied to the warrior's belt served as a symbol of its bearer being from a noble family (Cherpagina: 2014, p.117).

It should be noted that the weapon has not only a semiotic feature but also acts as a tool that forms a positive way of thinking about the state and creates self-confidence in the process of establishing state-citizen relations. The fact that any state has modern equipment and weapons instills confidence in its citizens in the power of the state and creates a foundation for them to feel in a state of peace, security, and protection. It is no coincidence that after every military parade with the display of military equipment, the civilian population who watches it develops a high sense of confidence and pride in their army and state, and their feelings of fear and anxiety for their personal lives completely disappear and are erased from their minds. We had the opportunity to observe a clear example of this after the parade organized in Azadlig Square as a symbol of victory over the enemy after the Patriotic War, a glorious page of our modern history, which was carried out to liberate the historical lands of Azerbaijan from the long-term Armenian occupation. In addition to the military equipment, which plays an important role in ensuring a fair victory over Armenia, the display of equipment seized from the enemy as military booty in the parade evokes a feeling of sympathy for the strength, power, and invincibility of our army among the citizens of Azerbaijan, and also in the current information war, foreign countries do not want the development

and advancement of our country. and it fundamentally overthrew the negative stereotypes, pessimistic thoughts, and myths purposefully formed in public opinion by the internal villains, our eternal and eternal enemies.

The symbolic content of military culture can also be applied to military uniforms. Each military uniform indicates the affiliation of its bearer to a specific type of army and military unit of the Armed Forces. It also acts as a carrier of information about the owner's military rank, duty, awards, and honors. It is even possible to determine the military unit to which a military serviceman belongs, the type of army, his level of professionalism, as well as the name of the military educational institution he graduated from, through the uniform (Morozov: 2010, p.71).

Military culture is not homogeneous in its internal content. It has a dualistic character, it functions as a single system containing two different sets of norms. It is possible to distinguish formal and informal military culture within it.

2.3.1. Formal military culture

This includes norms and principles of coexistence, etiquette rules, as well as official events organized by the military leadership, official rituals, and ceremonies, etc., established in statutes and other military legislation.

2.3.2. Informal military culture

This includes the spiritual and moral qualities of military personnel, which are indicators of their culture, as well as the values related to their folklore, artistic entertainment, and satirical culture. (Romax: 2009, p. 127).

The objects of military culture should be purposefully related to the entire military infrastructure of society, its financial maintenance, family and household conditions of military servicemen's families, and the entire military-industrial complex engaged in the production and reproduction of weapons (Bystrova: 2014, p. 186).

In addition, to deeply analyze the content of this concept, we must be able to define the exact boundary between the ideal type of military culture and the culture that belongs to a specific state or a certain historical period. It is clear that since the beginning of society, there have been many different examples of military culture formed by different socio-economic formations, as well as states with different management systems and political regimes (Shegolev:2014, p.374).

2.4. Approaches to military culture in Azerbaijan and conditions for its realization

Each society creates its own more or less developed military culture. The military culture of the Azerbaijani society is significantly different from the military culture existing in other societies and has its characteristics. The military traditions of our country span several hundred years from a historical point of view. For the people of Azerbaijan, high patriotism, standing guard, and defending the Motherland with arms in hand are characteristic features of our national mentality. The roots of these traditions go back to the era of Shah Ismayil Khatai, the author of the "Whole Azerbaijan" idea. The representatives of the Azerbaijan Democratic Republic, which entered the stage of history as the first democratic republic in the East at the beginning of the last century, and left an indelible mark on the statehood and military history of Azerbaijan, although their life was short, also rendered great services and made valuable contributions in shaping the military and cultural values of our state. After our country was occupied by Soviet Russia, the leadership of the Union began to work with great effort and purposefully in the direction of weakening these traditions. But they could not achieve it. The Azerbaijani people, who have a fighting spirit by nature, proved their struggle and perseverance against the background of the brilliant examples of heroism realized by their brave and brave sons and daughters in the Great Patriotic War. Hundreds of Azerbaijani military personnel who fought against the Germans in the ranks of the Red Army and our compatriots working on the rear front were honored with orders and medals for the heroism they demonstrated by

fulfilling their civic duties with honor and dignity and were awarded the title of Hero of the Soviet Union, the highest state award of the USSR.

In 1991, after liberating from 70 years of Soviet slavery, the Republic of Azerbaijan gained its independence, as well as in other fields, fundamental reforms were carried out in the military field. The start of the process of building an army, which is the guarantor of the independent state's defense and security, led to the emergence of new approaches to military culture. In the first years of our independence, despite the negative dynamic development of the domestic situation under the influence of both internal and external factors, the strengthening of national self-awareness and national self-assertion tendencies among people in the society led to the introduction of several new concepts contrary to the traditional Soviet ideology into the official lexicon of the state - "patriotism", "civic duty", "national statehood", "national traditions" etc.

All these changes had a strong impact not only on the daily life of society, but also on other areas of strategic importance - science, education, and the army. Due to the influence of general cultural changes, the education of patriotism came to the fore both in the military field and in the field of science and education, and all the values in society began to be formed by them.

Due to the emergence of a new political way of thinking in society, the dictionary of political terminology of the military personnel began to be updated. This dictionary includes several new concepts that can significantly affect the officer's life and activities - military-strategic direction, defense adequacy, quality parameters in the construction of the Armed Forces, military security within the framework of the modern security model, defense awareness, democratization in the army, etc. concepts like Without using them, it was impossible for an officer to correctly direct his activities in dynamically changing service conditions, to choose effective, modern training methods for personnel training. Subsequently, these concepts, analogously, combined with other elements of military culture, such as service motivation, loyalty to the Motherland, meritorious service, and competence, gave impetus to the process of building an army that reflects modern requirements.

With the return to power of the national leader Heydar Aliyev in our country, there was a turning point in the construction of the army, where new priorities began to be applied. Those priorities were aimed at the organization of all values in the army by the rapidly changing world requirements - international standards, rejecting the outdated stereotypes existing in the former Soviet military system. This process did not bypass

the military schools that are directly engaged in the training of specialized officer personnel in our country and set several new requirements and tasks for professional training. If the general requirements for officer personnel in the former Soviet army system were based mainly on two parameters - the training of personnel with high physical fitness and the ability to work with technical equipment, the new requirements, which differ from it in their versatility and scope, are more focused on high intellectual knowledge, strong convictions, was directed to the formation of national officers who meet all the criteria with strong physical and moral-psychological training, a rich world view, and the ability to use modern equipment and ammunition perfectly.

Among the new requirements, to speed up the adaptation of the officers to military service, the maximum improvement of their service motivation, moral and moral qualities, taking into account their interests, wishes, and desires, and the effective organization of their leisure time were the main ones. The consistent and worthy follower of H.Aliyev's policy, the President of the Republic of Azerbaijan, the Commander-in-Chief of the Armed Forces, Ilham Aliyev, is the logical result of continuing that trend in our country without turning back and with great determination, turned it into the owner of the world, and placed it among the 50 most powerful armies in the world.

Among the most important values that exist in the field of military culture in Azerbaijani society - love for one's homeland and people, loyalty to military duties, protection of the honor and dignity of a warrior, friendship, military partnership, courage and tolerance, heroism and willingness to sacrifice oneself, etc. such higher values apply. These elements of military culture are of exceptional importance in the training of commanders and are now widely used in practical activities in the training of qualified officers in the army. However, it is applied in the training of military personnel with a slight change in form and content. Since the military sector of society is an institution that bears the weight of the country's defense directly on its shoulders, cultural norms and values are applied here within the framework of the military-patriotic ideology and by the requirements of the strict military regime, and art as a means of training and education in the thinking of the officer's personality reflects the general worldview and exemplary ethics. it is used as a factor aimed at the formation of behavior. In other words, every important element in the military, including cultural values, is aimed at educating the young generation in the spirit of military patriotism, strengthening their feelings of love for the land, and the Motherland, and forming spiritual and moral values such as bravery, bravery, heroism, friendship, companionship, and generosity. It is not by chance that

military culture is also viewed as a moral field that includes the ethics of courage, endurance, kindness, obligatory mutual assistance (for example, "sacrificing one's life for the cause of one's comrades") with long-standing traditions in society.

Since ideological work is the brain center of every army, an orientation tool that encourages it to possible victories and successes, it is especially necessary to apply the elements of military culture in this field. Regardless of their specialty, if the elements of military culture are instilled in ideological working hours as well as during the educational process in association with the material and moral values, wealth and forms of activity, and rules that they should protect and expect, positive results will be achieved in the training of military personnel in the future results.

The main indicator of the level of military culture in each army is the organization of the defense of the Motherland at the expense of minimal losses, spending the necessary resources and forces within a limited time frame. Based on this, it is possible to analyze the cultural level of the army and the people as a whole. It is a matter of pride that, regardless of complex historical circumstances and harsh changes, the notions of honor, dignity, love for the people, duty, and loyalty to the Motherland have been passed down from generation to generation, and have always had special importance as

irreplaceable national and moral values and credos for every officer in the Azerbaijani army preserved. From time to time prominent representatives of our army - A. Shikhlinski, S.Mehmandarov, J.Nakhchi-vans, H.Aslanov, etc. devoted their fundamental work to searching for ways to improve the fighting ability of the army at the expense of moral values. Thanks to this, a training system was formed in our country, which has not lost its relevance to this day and is based on rich traditions.

The practical application of each of the above-mentioned elements was demonstrated by the "April battles" of 2016, which were aimed at restoring the territorial integrity of our country, liberating Nagorno-Karabakh and surrounding territories occupied by Armenian usurpers, and which began on September 27, 2020, and on November 9, Azerbaijan we clearly saw during the large-scale military operations carried out under the name "Iron Fist" during the Patriotic War, which ended with absolute victory. Despite the tough obstacles and difficulties in front of him, the Azerbaijani soldier who broke the will of the great enemy in front of him by saying "First is the country" and marched on the danger with great determination and determination, managed to give him a worthy response. Having achieved a great victory in just 44 days, the Azerbaijani army managed to inscribe its name in world military history with golden letters by skillfully using deceptive

maneuvers and innovations during the military operations carried out in a coordinated manner with the participation of all types of troops. Jabrayil, Fuzuli, Gubadli, and Shusha operations, which were carried out based on hand-to-hand combat tactics without any firearms, are still being investigated today by the world's leading military experts and experts.

During the Patriotic War, the Azerbaijani army demonstrated to what extent it had a wide military potential - weapons, ammunition, military equipment, and material equipment capabilities, applied a flexible operational plan from complex situations in extreme conditions, and could easily exit with minimal losses, but also extremely high It also showed that it has qualified personnel with professionalism, who develop and carry lofty values such as love of the Motherland, love of the land, etc. The examples of great courage, heroism, perseverance, and self-sacrifice, which are important manifestations of military culture, exhibited by the members of our army in the course of military operations, were written in golden letters in the modern military annals of Azerbaijan. I don't think I'm wrong if I say that the "Iron Fist" operation, aimed at liberating the historical lands of our people from 30 years of occupation, was also a strong message of the people-army-government unity to our foreign enemies who don't want the development of Azerbaijan.

3. CONCLUSIONS & ACKNOWLEDGMENT

In conclusion, I would like to note that one of the most important requirements facing the Azerbaijani army today is to draw achievements from other fields of culture into the field of military activity without wasting time. Directing existing cultural values, including all the achievements of military culture, to the reforms carried out in the military field, in many ways, means ensuring the success, success, determination to win, and a reliable future of the army in advance. If the command of the Armed Forces combines all efforts in this area, we can achieve more effective results in military management. Undoubtedly, this issue should be carried out in connection with high-level military knowledge, exemplary personnel, and combat training. Fulfillment of all these while anticipating the current requirements will ultimately lead to the scientific organization of the future activities of the army based on cultural values and will add strength to the strength of the Azerbaijani army.

In the future, to implement and strengthen the value standards of military culture in the process of building an army, it would be appropriate to continuously promote them among the personnel (mainly during ideological working hours).

REFERENCES

[1] Bystrova T.Yu., (2014) *Cultural Studies: textbook* / – Ekaterinburg: Publishing House of the Ural. University, 192 p.

[2] Chepragina L.N., Military Culture in the Process of Interaction of Universal Archetypes and the Historical Environment. *Humanities.* Tambov, No. 8 (136). p.p. 117-121, 2014.

[3] Evseeva L.V., (2014) *Research of the Phenomenon of Military Culture: Cultural-Anthropological Approach.* Moscow, p. 92.

[4] Klimov S. N., Value-Humanistic Content of Military Culture// *Scientific and Methodological Collection.* No. 5, Golitsyno, Moscow, p.p.55-59, 2012.

[5] Kruglov V.V., Phenomenon of Military Culture// *Nezavisimoe – Voyennoye Obozreniye.* Moskva, p.p. 4-5, 2015.

[6] Marusenko O.N., Social institution of the army and its influence on the values of military service // *Law and education (scientific journal)*, No. 1, p. 43 2010; https://naukarus.com/j/pravo-i-obrazovanie

[7] Morozov N., (2010) Education of a general and an officer as the basis for victories and defeats. Historical essay on the life of the Russian army during the Napoleonic wars and the times of the parade ground, Vilna, *Electrotypography "Russian initiative",* (1909). - p.p. 1-47, 71-127.

[8] Romanova E.N., Military culture, and its main characteristics. *Bulletin of the Sam GU*, No. 1 (60), p. p. 1-28, 2008.

[9] Romakh O.V., Larkin L.G., The structure of military culture as a factor in the development of society // *International Journal of Experimental Education*, No. 12, p. 31-34, 2014.

[10] Romakh O. V., Culturology. Theory of Culture // *Fundamental Research*, No. 3, p.p. 121-121. 2009

[11] Sorokin P.A., Sociological interpretation of the "struggle for existence" and the sociology of war, Moscow, 2004. p. 27.

[12] Shchegolev I.M., (2014) Philosophy of the Army: textbook // - *Moscow: Military University*, p. 374.

THE INFLUENCE OF MIGRATION UPON INNOVATION IN GROWTH POLES

Edith Mihaela DOBRESCU

Institute for World Economy, Romanian Academy, Bucharest, Romania

Migration has significantly influenced economic landscapes in recent years, particularly within growth poles - regions characterized by concentrated economic development and innovation. This article examines how migration and innovation intersect within these growth poles, analyzing the dynamic relationship between diverse populations and emerging industries. Migrants contribute unique skills and perspectives that foster creativity and technological advancement, thereby enhancing these regions' economic vitality.

Key words: *migration, growth poles, innovation, economic development, global economy*

1. INTRODUCTION

Migration serves as a pivotal catalyst in economic development, driving both innovation and progress in various regions. By facilitating the exchange of ideas, skills, and resources, migratory flows not only contribute to labor market adaptability but also stimulate entrepreneurial ventures within growth poles. The dynamic interplay of diverse talents energizes local economies, enhancing productivity through the infusion of varied perspectives and expertise. Moreover, the phenomenon of Brain Drain exemplifies this relationship; although often perceived negatively, it underscores how talented individuals migrate in search of better opportunities, enriching their home countries upon their return or through remittances. As the literature indicates, this intricate relationship is far from simplistic, necessitating a nuanced understanding of both historical patterns and contemporary definitions of migration, as discussed in the extensive review of literature (Roos, 2024). Indeed, the role of public planning, which emphasizes centrality and temporality, further accentuates migration's significance in shaping innovative economic frameworks (Fache et al., 2011).

2. THEORETICAL FRAMEWORK

Understanding the dynamics of migration and its impact on innovation necessitates a robust theoretical framework that integrates multiple perspectives. Key theories such as Myrdals spread-backwash dichotomy

provide foundational insights into regional development, highlighting how migration can catalyze growth in core areas while potentially disadvantaging peripheral regions (Gaile, 1975). This duality underscores the complexity of migrations influence on innovation within growth poles, suggesting that while cities may benefit from skilled newcomers, surrounding regions might face economic decline. Additionally, the concept of a broader region, particularly in the context of administrative reform, emphasizes the need for cohesive spatial planning that addresses regional inequalities (Ladias C et al., 2006). By contextualizing these theoretical constructs, our framework will explore how the flow of migrants can enhance creativity and technological advancement in growth poles, ultimately contributing to sustainable development and competitive regional economies. (Adams-Kane, et al., 2011). This integration paves the way for a nuanced analysis of the interplay between migration patterns and innovation outcomes.

2.1. The relationship between migration and innovation theories

The intricate interplay between migration and innovation theories underscores the transformative role that migrant populations play in the evolving economic landscapes, particularly within growth poles. As noted in the literature, regional growth is not solely determined by individual factors but rather by the synergistic interplay of multiple dimensions, such as innovation, human capital, and social networks (J P Manso et al., 2015). Migrants often introduce diverse skills and entrepreneurial initiatives, which enhance the innovation ecosystem within host regions and contribute to rich cultural exchanges. (Pryor,2023). This infusion of fresh perspectives can catalyze local economies significantly by fostering collaboration and knowledge exchange, as migrant networks frequently serve as critical connectors between disparate cultural and business environments. Urbanization, alongside the clustering of economic activities in specific areas, facilitates this dynamic process whereby cities become the focal points for innovation and creativity (Beall et al., 2011). Furthermore, the efficiency of regional policies designed to promote innovation is heavily contingent upon recognizing the competitive advantages that diverse populations bring to local economies. These advantages become particularly evident when migration aligns with carefully structured national and regional growth strategies (Fratesi, 2011). Therefore, understanding the complex nexus between migration and innovation not only sheds light on how diverse human capital can drive economic success but is also essential for developing effective economic policies. Such policies should aim to leverage human capital across borders,

emphasizing the importance of inclusivity and collaboration in harnessing the full potential of migrant contributions. By doing so, policymakers can create environments that are conducive to sustained economic growth while simultaneously fostering social cohesion and intercultural understanding.

2.2. Case studies of growth poles influenced by migration

Migration acts as a catalyst for innovation, particularly within established growth poles, which are characterized by concentrated economic activities and the presence of dynamic networks that facilitate collaboration and exchange. (Pierpaolo, 2009). A multitude of case studies reveal that regions such as Silicon Valley exemplify how diverse immigrant populations can invigorate local economies through entrepreneurship and creativity. In such hubs of innovation, migrants often bring unique perspectives and skills that are instrumental in facilitating the development of novel solutions and business models, which can cater not only to co-ethnic communities but also to broader markets as well. For instance, (Barnes et al., 2007) highlights the experience in Lincolnshire, where migrant workers transitioned from low-skilled labor roles to successful entrepreneurship, thus significantly enhancing regional economic diversity and fostering competitiveness within

various industries. These efforts illustrate the substantial potential for migrant-driven enterprises to not only break into wider markets but also drive innovation and sustain long-term economic growth within their regions. Furthermore, as diverse ideas and experiences converge in these growth poles, they create a fertile ground for collaboration across different sectors, producing new opportunities and enhancing productivity. In this context, social innovation emerges as a crucial strategic approach, as noted by (J McNeill, 2013), where local actors activate resilience and sustainable community development through diverse economic endeavors. The synthesis of social innovation with migration's impact on innovation offers a comprehensive perspective on how public sector policies and practices can effectively nurture this interplay, enabling regions to adapt to complex global changes while maximizing economic benefits. (Bank et al. 2007) Consequently, understanding the intricate relationship between migration and innovation within these growth poles can provide valuable insights for policymakers aiming to harness this dynamic for comprehensive economic development and social progress, ensuring that the benefits of such diversity can be maximized for sustainable futures. Migration has emerged as a significant driver of innovation within economic growth poles, particularly in regions that attract diverse labor forces from

various cultural backgrounds. (Fitzgerald, et al, 2008). The influx of migrant workers often leads to the establishment of businesses that cater initially to co-ethnic markets, providing familiar products and services that resonate with their specific communities, but these businesses gradually expand to meet the needs of broader regional audiences as they gain stability and recognition. For instance, as highlighted in recent analyses, the region of Lincolnshire has witnessed a proliferation of migrant enterprises that not only fulfill local labor demands but also stimulate economic diversification by introducing new business models and competitive practices (Barnes et al., 2007). This development aligns with the notion that structured patterns of migration can enhance competitive advantages in labor-intensive sectors, fostering a spirit of entrepreneurship among migrants, who are often resourceful and driven by necessity. Moreover, migration dynamics are shaped by broader economic forces, including uneven development and competitive pressures, which influence how labor markets adapt and respond to these demographic changes (Fitzgerald et al., 2008). As migrant populations grow, they not only fill essential roles in various industries but also bring unique perspectives and skills that enhance innovation across sectors. Consequently, successful growth poles leverage the potential of these vital migrant contributions to not only

enrich local economies but also innovate by reconfiguring traditional industrial practices and expanding the market landscape.(Hertrich,2023).

This transformative effect underscores the critical role that migration plays in shaping resilient and adaptive economic frameworks within thriving regions, demonstrating that embracing diversity can yield substantial long-term benefits for both local residents and incoming migrant communities alike.

2.3. Implications of migration on future innovation in growth poles

At the intersection of migration and innovation, growth poles are uniquely positioned to harness the dynamic potential of diverse human capital, presenting a significant opportunity for future development. The infusion of varied skill sets and perspectives brought by migrants not only enhances creative problem-solving but also leads to the establishment of robust collaborative networks that stimulate entrepreneurial activities essential for the evolution of industries. These networks, often characterized by rich cross-cultural exchanges, generate an environment that is particularly conducive to technological advancements and commercial endeavors that may be significantly less likely to emerge in more homogenous settings. As growth poles attract talent from various regions, they not only reinforce their competitive edge in global markets

but also cultivate a more adaptable and innovative workforce that is better equipped to respond to complex challenges and changing consumer demands. The implications extend beyond mere economic metrics; societal integration and cultural exchanges enrich local communities, leading to overall socioeconomic resilience that benefits all stakeholders involved. (Marinoni,2023)

This interconnectedness fosters a sustainable ecosystem of innovation where both migrants and host communities thrive, benefiting from shared knowledge, resources, and networks. (Rudolf, 2009).
The collaboration spurred by this diversity is crucial in addressing future global challenges and propelling advancements in various sectors, ultimately reinforcing the idea that the melding of different cultures and ideas is a key driver of progress. (Ugo, 2004) Thus, growth poles emerge not just as centers of economic activity, but as vibrant hubs of coexistence that can successfully navigate the complexities of a rapidly changing world, propelling future growth and shared prosperity.

3. CONCLUSIONS

The intricate relationship between migration and innovation within growth poles reveals significant implications for both urban development and policy formulation. As cities evolve into melting pots of diverse ideas and cultural

perspectives, fostering innovation becomes a natural consequence of this demographic shift. Urban centers, marked by their economies of scale and potential for social change, highlight the advantages of migration in stimulating economic growth and technological advancement (Beall et al.). Moreover, the effectiveness of initiatives designed to attract new talent is critical, as demonstrated by evaluations of programs that have successfully enhanced a towns appeal and developmental trajectory (Rudolf et al., 2009). This investigation underscores the need for interdisciplinary approaches that incorporate insights from various fields to optimize the benefits derived from migration. Ultimately, recognizing and harnessing the potential of migrants as catalysts for innovation is essential for sustaining growth and addressing urban challenges in an increasingly interconnected world.

REFERENCES

[1] Adams-Kane, et al., (2011). *Growth Poles and multipolarityGrowth poles and multipolarity*. Policy Research Working Paper Series 5712 The World
[2] Bank. Barnes, Ian, Cox, Val (2007). *EU migrants as entrepreneurs in Lincolnshire: exploiting the enterprise culture* in The International Journal of Enterpreneurship and Inovation , Volume 8, Issue 3
[3] Beal J. et al., (2011) *Urbanization and Development: Multidisciplinary*

Perspective, Oxford University Press, pp. 3-17

[4] Christos Ladias, Eleni Stamatiou (2006). Regional Policy in Greece of Tomorrow. The Perspectives of the Broader Regions, ERSA conference papers, European regional Associates Studies

[5] Fache, Jacques (2011). *Spatial Theory, Temporality and Public Action,* European Spatial Research and Policy, Sciendo, vol. 18(1), pages 19-40

[6] Fitzgerald, Ian, Hardy, John (2008). *Cross Border Trade Union Collaboration in the Context of Competition and Arbitraging Labour in an Enlarged Europe*, Paper be presented at ESRC Research Seminar Series 'Changing Cultures of Competitiveness', University of Manchester, 9 th July 2008

[7] Gaile, Gary L. (1975) *Notes on the concept of spread.* Discussion Paper 219, Nairobi: Institiute for Development Studies

[8] Hertrich, T. J., & Brenner, T. (2023). *Classification of regions according to the dominant innovation barriers: The characteristics and stability of region types in Germany*.Regional Science Policy & Practice, 15(9), 2182-2223.

[9] J. P. Manso, A. F. D. Matos, Cláudia Carvalho (2015). Determinants of Regional Growth in Portugal: An Empirical Analysis. Volume (8), 11-31. Economics & Sociology

[10] Marinoni, A. (2023). Immigration and entrepreneurship: The role of enclaves. *Management Science*, *69*(12), 7266-7284.

[11]Pierpaolo Giannoccolo (2009). *The Brain Drain. A Survey of the Literature*. SSRN Electronic Journal 29

[12] Pryor, R. J. (2023). *Migration and the process of modernization 1*. In *People on the Move* (pp. 23-38). Routledge.

[13] Roos, C., Nagel, M., & Seeliger, M. (2024). *Theorizing the effects of EU emigration for origin countries: win-win, dependency or agency?. East European Politics*, 1-20.

[14] Rudolf, Wawrzyniec (2009). *Territorial Marketing as a Method of Reduction of Outward Migration*, In: Comparative Economic Research. Central and Eastern Europe, Vol. 12, nr 3, s. 121-132

[15] J. McNeill (2013). *How do public policy and programs enable social innovation activities that contribute to more sustainable forms of local and regional development*, in EnvironmentalScience, Economics, Sociology, Political Science

[16] Ugo Fratesi (2004). *Regional policy from a supra-regional perspective*,44th Congress of the European Regional Science Association: "Regions and Fiscal Federalism", 25th - 29th August 2004, Porto, Portugal.

CONSIDERATIONS REGARDING THE EVOLUTION OF GROSS DOMESTIC EXPENDITURE ON R&D (GERD) IN ROMANIA AND EU COUNTRIES. PART II – DYNAMIC RHYTHMS

Cristina ANTONOAIE

Regional Department of Defense Resources Management Studies, Brasov, Romania

In this paper we have analyzed the evolution of Gross Domestic Expenditure on R&D (GERD) in Romania and EU countries on the last ten years with the available data (2013-2022) provided by the EUROSTAT database. The time series indicators that we used are the dynamic rhythms.

Key words: *GERD, time series, indicators, dynamic rhythms*

1. INTRODUCTION

All sectors of activity have a Gross domestic expenditure on R&D (GERD) at national and regional level. We have analyzed the data from business enterprise sector (BES); government sector (GOV); higher education sector (HES); and private non-profit sector (PNP).

2. METHOD

The time series indicators that we used in our analysis are the dynamic indices with fixed base $i_{t/1\%} = \dfrac{y_t}{y_1} \cdot 100$ (1)

and the dynamic indices with chain base $i_{t/t-1\%} = \dfrac{y_t}{y_{t-1}} \cdot 100$. (2)

We also calculated the changing rates of dynamic rhythms with fixed base $r_{t/1\%} = (i_{t/1} - 1) \cdot 100$ (3) and the changing rates of dynamic rhythms with chain base. $r_{t/t-1\%} = (i_{t/t-1} - 1) \cdot 100$. (4)

The data are from the years 2013 to 2022.

3. RESULTS AND DISCUSSION

3.1. All sectors of performance

With the data available of GERD in all sectors we calculated the rhythms with chain base in EU Countries and then we extracted the minimum and the maximum values for each of the 27 countries. You can see those results in Table 1 to Table 4.

Table 1 Rhythms with chain base – minimum and maximum values in all sectors (a)

Country	AT	BE	BG	CY	CZ	DE	DK
MIN	-1.947	3.377	-13.661	-4.731	-8.829	-3.129	-1.308
R	2020/2019	2020/2019	2016/2015	2015/2014	2016/2015	2020/2019	2017/2016
MAX	49.542	106.110	142.607	142.943	81.081	52.309	43.143
R	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013

Table 2 Rhythms with chain base – minimum and maximum values in all sectors (b)

Country	EE	EL	ES	FI	FR	HR	HU
MIN	-17.085	1.574	-1.468	-11.340	-1.321	-4.180	-9.217
R	2016/2013	2014/2013	2014/2013	2016/2013	2020/2019	2014/2013	2016/2015
MAX	96.825	110.472	48.517	18.731	21.225	170.490	78.864
R	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2021/2013

Table 3 Rhythms with chain base – minimum and maximum values in all sectors (c)

Country	IE	IT	LT	LU	LV	MT	NL
MIN	-2.760	-4.689	-15.926	-4.163	-27.464	-17.889	1.459
R	2018/2017	2020/2019	2016/2015	2020/2019	2016/2015	2016/2015	2015/2014
MAX	73.247	25.147	107.770	24.988	109.374	101.150	54.568
R	2022/2013	2019/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013

Table 4 Rhythms with chain base – minimum and maximum values in all sectors (d)

Country	PL	PT	RO	SE	SI	SK
MIN	-4.730	-1.161	-3.874	-5.513	-14.194	-30.890
R	2016/2015	2014/2013	2020/2019	2014/2013	2017/2013	2016/2015
MAX	177.607	82.607	133.756	32.907	28.560	75.976
R	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013

Analyzing the minimum values among the rhythms (R) with chain base we have the minimum value in Slovakia ($R_{2016/2015}$ = -30.89% meaning that the value of GERD decreased with 30.89% from 2015 to 2016) and the maximum value in Belgium ($R_{2020/2019}$ = 3.377% meaning that the value of GERD increased with 3.377% from 2019 to 2020).

Analyzing the maximum values among the rhythms (R) with chain base we have the minimum value in

Finland ($R_{2022/2013}$ = 18.731% meaning that the value of GERD increased with 18.731% from 2013 to 2022) and the maximum value in Poland ($R_{2022/2013}$ = 177.607% meaning that the value of GERD increased with 177.607% from 2013 to 2022).
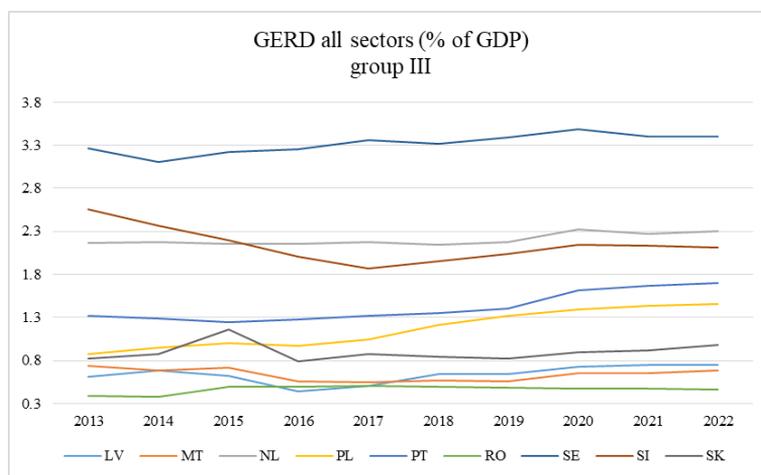
In Romania we have the minimum value $R_{2020/2019}$ =-3.874% meaning that the value of GERD decreased with 3.874% from 2019 to 2020 and the maximum value $R_{2022/2013}$ = 133.756 % meaning that the value of GERD increased with 133.756% from 2013 to 2022.
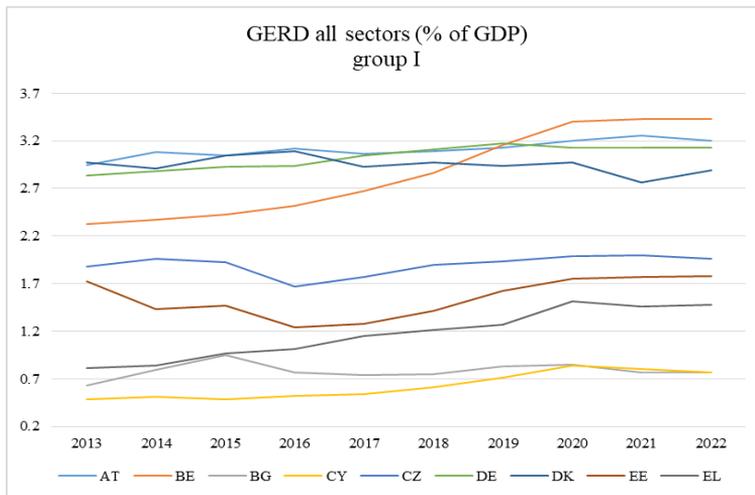
Fig. 1 The evolution of GERD in all sectors (AT – EL)
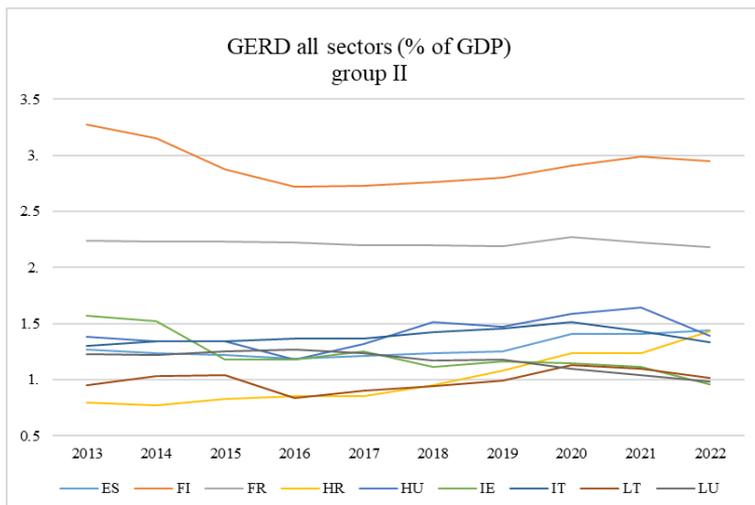
Fig. 2 The evolution of GERD in all sectors (ES – LU)

Fig. 3 The evolution of GERD in all sectors (LV – SK)

As you can see in Figure 1 to Figure 3 above, the GERD in all sectors (% of GDP) has the highest values in Sweden – GERD $\in$ [3.1%-3.49%], Belgium – GERD $\in$ [2.33%-3.43%], and Austria – GERD $\in$ [2.95%-3.26%].

The lowest values of GERD in all sectors are in: Latvia – GERD $\in$ [0.44%-0.75%], Malta – GERD $\in$ [0.55%-0.69%], and Romania – GERD $\in$ [0.39%-0.51%].

3.2. Business enterprise sector

For the GERD in business enterprise sector we calculated the rhythms with chain base in EU Countries and then we extracted the minimum and the maximum values. The results are in Table 5 to Table 8.

Table 5 Rhythms with chain base – minimum and maximum values in business enterprise sector (a)

Country	AT	BE	BG	CY	CZ	DE	DK
MIN	-3.037	3.538	-13.777	-2.659	-2.538	-6.328	-3.831
R	2020/2019	2020/2019	2016/2015	2015/2014	2020/2019	2020/2019	2017/2016
MAX	45.414	118.436	169.374	411.825	118.063	52.726	38.995
R	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013

Table 6 Rhythms with chain base – minimum and maximum values in business enterprise sector (b)

Country	EE	EL	ES	FI	FR	HR	HU
MIN	-19.776	2.706	-1.768	-15.225	-1.691	-7.722	-11.521
R	2014/2013	2019/2018	2014/2013	2016/2013	2020/2019	2014/2013	2022/2021
MAX	131.830	209.882	57.850	17.263	23.512	192.957	94.385
R	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2021/2013

Table 7 Rhythms with chain base – minimum and maximum values in business enterprise sector (c)

Country	IE	IT	LT	LU	LV	MT	NL
MIN	0.210	-6.764	-8.249	-11.966	-34.948	-0.988	0.752
R	2022/2021	2020/2019	2015/2014	2020/2019	2015/2014	2016/2015	2015/2014
MAX	92.252	44.500	295.678	26.455	166.827	158.067	60.994
R	2022/2013	2019/2013	2022/2013	2019/2013	2022/2013	2022/2013	2022/2013

Table 8 Rhythms with chain base – minimum and maximum values in business enterprise sector (d)

| Country	PL	PT	RO	SE	SI	SK
MIN	3.478	-3.443	-1.873	-8.125	-16.150	-12.714
R	2020/2019	2014/2013	2020/2019	2014/2013	2017/2013	2014/2013
MAX	319.378	139.199	374.066	42.003	18.297	117.632
R	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013

Analyzing the minimum values among the rhythms (R) with chain base we have the minimum value in Latvia ($R_{2015/2014}$ = -34.948% meaning that the value of GERD decreased with 34.948% from 2014 to 2015) and the maximum value in Belgium ($R_{2020/2019}$ = 3.538% meaning that the value of GERD increased with 3.538% from 2019 to 2020).

Analyzing the maximum values among the rhythms (R) with chain base we have the minimum value in Finland ($R_{2022/2013}$ = 17.263% meaning that the value of GERD increased with 17.263% from 2015 to 2016) and the maximum value in Cyprus ($R_{2022/2013}$ = 411.825% meaning that the value of GERD increased with 411.825% from 2013 to 2022).

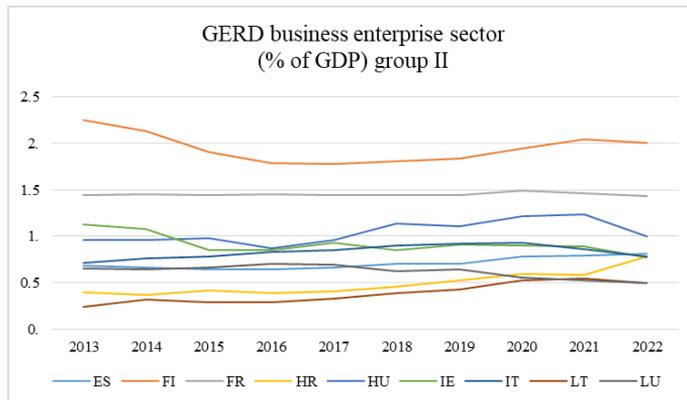In Romania we have the minimum value $R_{2020/2019}$ =-1.873% meaning that the value of GERD decreased with 1.873% from 2019 to 2020 and the maximum value $R_{2022/2013}$ = 374.066% meaning that the value of GERD increased with 374.066% from 2013 to 2022.
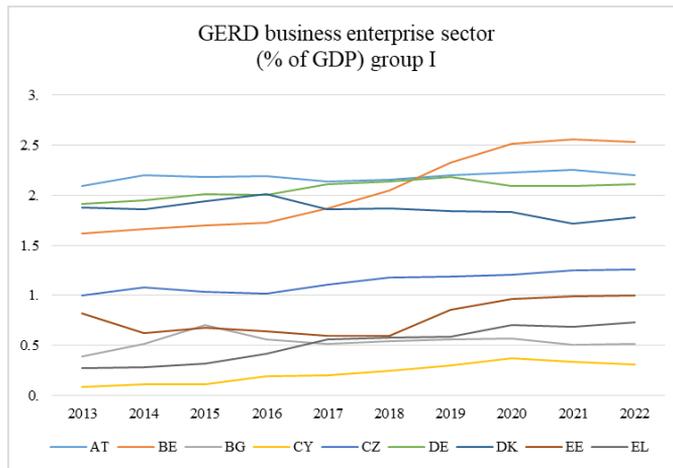
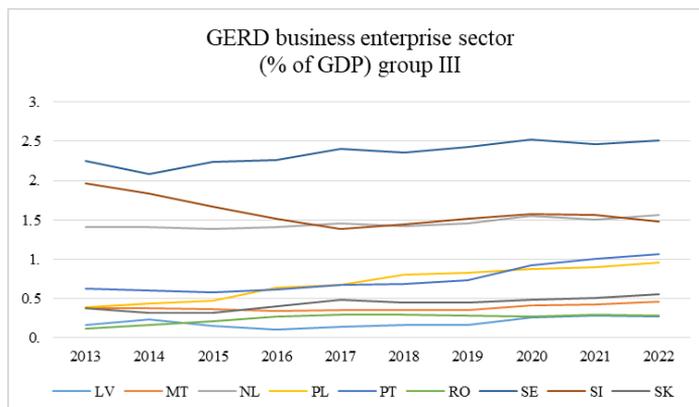**Fig. 4** The evolution of GERD in business enterprise sector (AT – EL)

Fig. 5 The evolution of GERD in business enterprise sector (ES – LU)

Fig. 6 The evolution of GERD in business enterprise sector (LV – SK)

In Figure 4 to Figure 6 we can see the GERD in business enterprise sector with the highest values in Sweden – GERD ϵ [2.08%-2.52%], Belgium – GERD ϵ [1.62%-2.53%], and Austria GERD ϵ [2.09%-2.25%].

The lowest values are in Cyprus – GERD ϵ [0.09%-0.37%], Romania – GERD ϵ [0.12%-0.30%], and Latvia – GERD ϵ [0.11%-0.29%].

3.3. Government sector

The next sector for which we calculated the rhythms with chain base for GERD in EU Countries was the government sector. You can see those results in Table 9 to Table 12.

Table 9 Rhythms with chain base – minimum and maximum values in government sector (a)

Country	AT	BE	BG	CY	CZ	DE	DK
MIN	0.828	3.704	-11.556	-15.011	-18.846	-12.314	-1.885
R	2020/2019	2020/2019	2016/2015	2016/2013	2016/2015	2022/2021	2014/2013
MAX	154.000	116.879	107.950	9.467	51.742	41.305	85.121
R	2022/2013	2022/2013	2022/2013	2019/2018	2022/2013	2021/2013	2022/2013

Table 10 Rhythms with chain base – minimum and maximum values in government sector (b)

Country	EE	EL	ES	FI	FR	HR	HU
MIN	-5.533	-8.455	-2.659	-18.947	-5.335	-7.105	-12.711
R	2016/2015	2016/2015	2016/2015	2016/2013	2020/2019	2016/2015	2016/2013
MAX	123.728	57.855	36.662	9.040	7.251	85.835	36.495
R	2022/2013	2022/2013	2022/2013	2017/2016	2022/2013	2022/2013	2022/2013

Table 11 Rhythms with chain base – minimum and maximum values in government sector (c)

Country	IE	IT	LT	LU	LV	MT	NL
MIN	-1.982	-1.662	-10.386	-8.105	-13.069	-93.519	-3.779
R	2016/2015	2015/2014	2018/2017	2016/2015	2016/2013	2016/2015	2022/2021
MAX	38.734	30.515	60.493	12.509	27.100	109.719	27.405
R	2022/2013	2022/2013	2017/2013	2015/2013	2022/2013	2015/2013	2021/2013

Table 12 Rhythms with chain base – minimum and maximum values in government sector (d)

| Country	PL	PT	RO	SE	SI	SK
MIN	-90.303	-14.695	-10.028	-5.530	-10.992	-46.817
R	2016/2015	2016/2013	2014/2013	2015/2013	2014/2013	2016/2015
MAX	60.895	19.639	32.591	53.060	54.798	106.465
R	2020/2019	2022/2013	2022/2013	2021/2013	2022/2013	2015/2013

Analyzing the minimum values among the rhythms (R) with chain base we have the minimum value in Malta ($R_{2016/2015}$ = -93.519% meaning that the value of GERD decreased with 93.519% from 2015 to 2016) and the maximum value in Belgium ($R_{2020/2019}$ = 3.704% meaning that the value of GERD increased with 3.704% from 2019 to 2020).

Analyzing the maximum values among the rhythms (R) with chain base we have the minimum value in France ($R_{2022/2013} = 7.251\%$ meaning that the value of GERD increased with 7.251% from 2013 to 2022) and the maximum value in Austria ($R_{2022/2013} = 154 \%$ meaning that the value of GERD increased with 154% from 2013 to 2022).

In Romania we have the minimum value $R_{2014/2013} = -10.028\%$ meaning that the value of GERD decreased with 10.028% from 2013 to 2014 and the maximum value $R_{2022/2013} = 32.591 \%$ meaning that the value of GERD increased with 32.591% from 2013 to 2022.
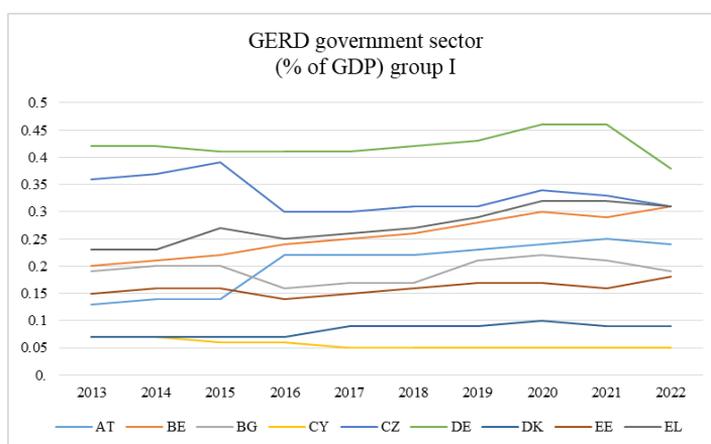
Fig. 7 The evolution of GERD in government sector (AT – EL)
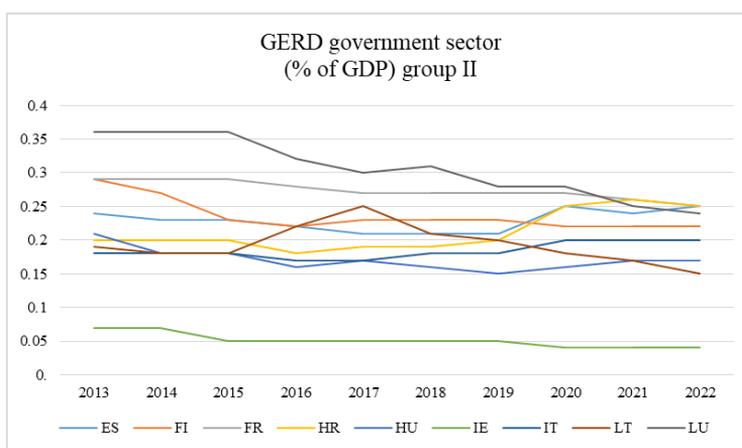
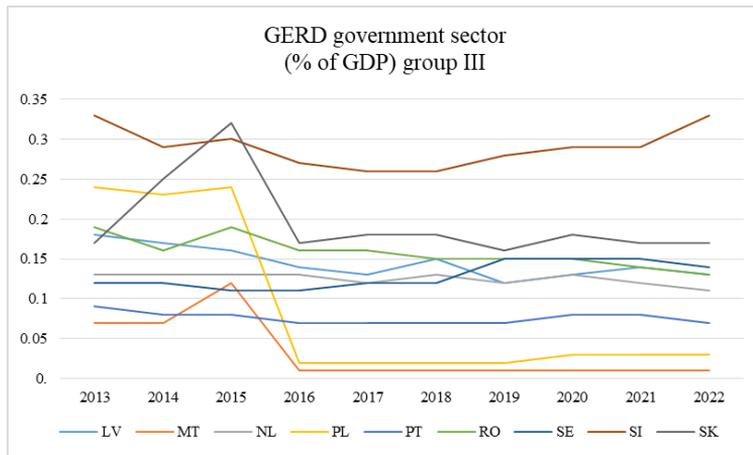**Fig. 8** The evolution of GERD in government sector (ES – LU)

Fig. 9 The evolution of GERD in government sector (LV – SK)

The data of GERD for the Government sector are in Figure 7 to Figure 9. In Germany – GERD ϵ [0.38%-0.46%], Czechia – GERD ϵ [0.30%-0.39%], and Luxembourg – GERD ϵ [0.24%-0.36%] are the highest values.

In Cyprus – GERD ϵ [0.05%-0.07%], Ireland – GERD ϵ [0.04%-0.07%], and Malta – GERD ϵ [0.01%-0.12%] are the lowest values. In Romania – GERD ϵ [0.13%-0.19%].

3.4.Higher education sector

We calculated the rhythms with chain base in EU Countries also for GERD in higher education sector. You can see those results in Table 13 to Table 16.

Table 13 Rhythms with chain base – minimum and maximum values in higher education sector (a)

Country	AT	BE	BG	CY	CZ	DE	DK
MIN	0.332	-0.927	-21.675	-16.539	-25.730	2.772	-0.304
R	2016/2015	2014/2013	2015/2014	2016/2013	2016/2013	2015/2014	2014/2013
MAX	42.004	61.807	75.415	80.345	29.228	53.979	48.625
R	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013

Table 14 Rhythms with chain base – minimum and maximum values in higher education sector (b)

Country	EE	EL	ES	FI	FR	HR	HU
MIN	-30.362	-13.113	-1.485	-0.604	-0.054	-5.459	-24.940
R	2016/2013	2016/2015	2016/2015	2015/2014	2014/2013	2017/2016	2016/2013
MAX	53.437	65.105	37.797	32.279	19.716	209.132	76.371
R	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013

Table 15 Rhythms with chain base – minimum and maximum values in higher education sector (c)

Country	IE	IT	LT	LU	LV	MT	NL
MIN	-15.535	-5.747	-41.056	-1.760	-36.111	-8.067	-2.026
R	2018/2017	2016/2013	2016/2015	2014/2013	2016/2015	2014/2013	2016/2015
MAX	23.064	7.854	38.389	67.624	126.964	67.325	46.628
R	2017/2013	2021/2020	2022/2013	2022/2013	2022/2013	2022/2013	2022/2013

**Table 16** Rhythms with chain base – minimum and maximum values in higher education sector (d)

Country	PL	PT	RO	SE	SI	SK
MIN	1.618	-3.762	-32.114	-3.384	-10.775	-56.262
R	2020/2019	2020/2019	2016/2015	2019/2018	2015/2013	2016/2015
MAX	203.441	27.366	55.870	9.168	59.377	100.807
R	2022/2013	2022/2013	2015/2014	2021/2020	2022/2013	2015/2013

Analyzing the minimum values among the rhythms (R) with chain base we have the minimum value in Slovakia ($R_{2016/2015}$ = -56.262% meaning that the value of GERD decreased with 56.262% from 2015 to 2016) and the maximum value in Germany ($R_{2015/2014}$ = 2.772% meaning that the value of GERD increased with 30.89% from 2015 to 2016).

Analyzing the maximum values among the rhythms (R) with chain base we have the minimum value in Italy ($R_{2021/2020}$ = 7.854% meaning that the value of GERD increased with 7.854% from 2020 to 2021) and the maximum value in Croatia ($R_{2022/2013}$ = 209.132% meaning that the value of GERD increased with 209.132% from 2013 to 2022).

In Romania we have the minimum value $R_{2016/2015}$ =-32.114% meaning that the value of GERD decreased with 32.114% from 2015 to 2016 and the maximum value $R_{2015/2014}$ = 55.878% meaning that the value of GERD increased with 55.878% from 2015 to 2014.
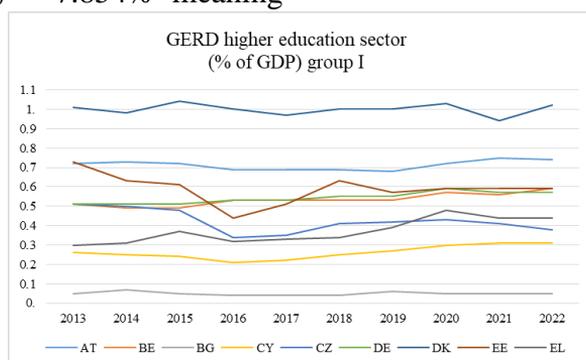
Fig. 10 The evolution of GERD in higher education sector (AT – EL)
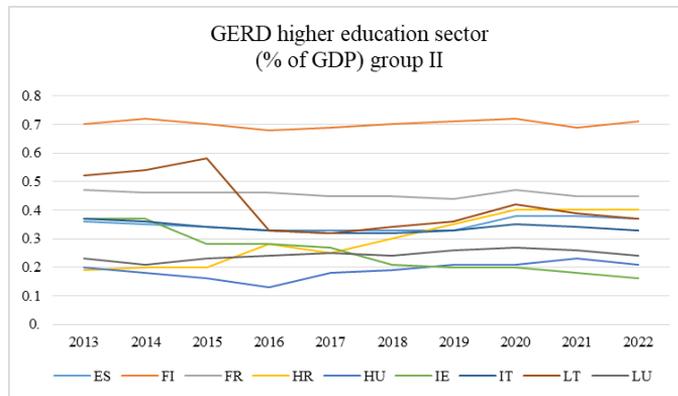
Fig. 11 The evolution of GERD in higher education sector (ES – LU)
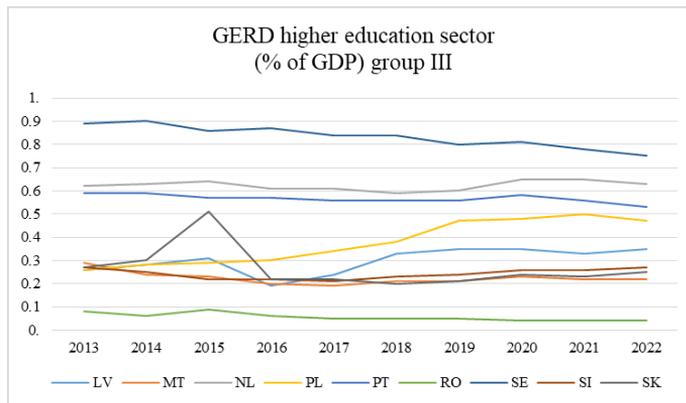
Fig. 12 The evolution of GERD in higher education sector (LV – SK)

In Figure 10 to Figure 12 we can see the data for GERD in the Higher education sector.

In Denmark – GERD $\in$ [0.94%-1.03%], Sweden – GERD $\in$ [0.75%-0.89%], and Austria – GERD $\in$ [0.68%-0.74%] are the highest values.

In Ireland – GERD $\in$ [0.16%-0.37%], Bulgaria – GERD $\in$ [0.04%-0.06%], and Romania – GERD $\in$ [0.04%-0.08%] are the lowest values.

3.5.Private non-profit sector

The last sector for which we calculated the rhythms with chain base in EU Countries was the private non-profit sector. You can see those results in Table 17 to Table 19. No available data for Germany, Croatia, Hungary, Ireland, Lithuania, Luxembourg, Latvia, Malta, and Netherlands.

Table 17 Rhythms with chain base – minimum and maximum values in private non-profit sector (a)

Country	AT	BE	BG	CY	CZ	DK
MIN	-2.718	-13.120	-52.751	-10.120	-41.918	-16.941
R	2021/2020	2021/2020	2016/2015	2015/2014	2016/2015	2017/2013
MAX	77.983	232.403	193.511	154.060	82.556	17.820
R	2022/2013	2019/2013	2017/2016	2022/2013	2022/2013	2019/2018

Table 18 Rhythms with chain base – minimum and maximum values in private non-profit sector (b)

Country	EE	EL	ES	FI	FR	IT
MIN	-37.161	-26.785	-6.250	-7.304	-2.153	-36.554
R	2022/2021	2020/2019	2017/2016	2022/2021	2017/2016	2018/2013
MAX	128.513	41.098	212.334	26.059	66.197	17.173
R	2020/2013	2018/2017	2022/2013	2019/2013	2022/2013	2019/2018

Table 19 Rhythms with chain base – minimum and maximum values in private non-profit sector (c)

Country	PL	PT	RO	SE	SI	SK
MIN	-41.558	-7.979	-18.777	-45.483	-46.257	-92.747
R	2015/2014	2015/2014	2016/2015	2018/2013	2018/2013	2019/2018
MAX	167.074	223.420	83.439	8.112	3101.070	298.373
R	2016/2015	2022/2013	2022/2013	2016/2015	2022/2013	2015/2013

Analyzing the minimum values among the rhythms (R) with chain base we have the minimum value in Slovakia ($R_{2019/2018}$ = -92.747% meaning that the value of GERD decreased with 92.747% from 2018 to 2019) and the maximum value in France ($R_{2017/2016}$ = -2.153% meaning that the value of GERD decreased with 2.153% from 2016 to 2017).

Analyzing the maximum values among the rhythms (R) with chain base we have the minimum value in Sweden ($R_{2016/2015}$ = 8.112% meaning that the value of GERD increased with 8.112% from 2015 to 2016) and the maximum value in Slovenia ($R_{2022/2013}$ = 3101.07% meaning that the value of GERD increased with 3101.07% from 2013 to 2022).

In Romania we have the minimum value $R_{2016/2015}$ =-18.777% meaning that the value of GERD decreased with 18.777% from 2015 to 2016 and the maximum value $R_{2022/2013}$ = 83.439 % meaning that the value of GERD increased with 83.439% from 2013 to 2022.

Fig. 13 The evolution of GERD in private non-profit sector (AT – SI)

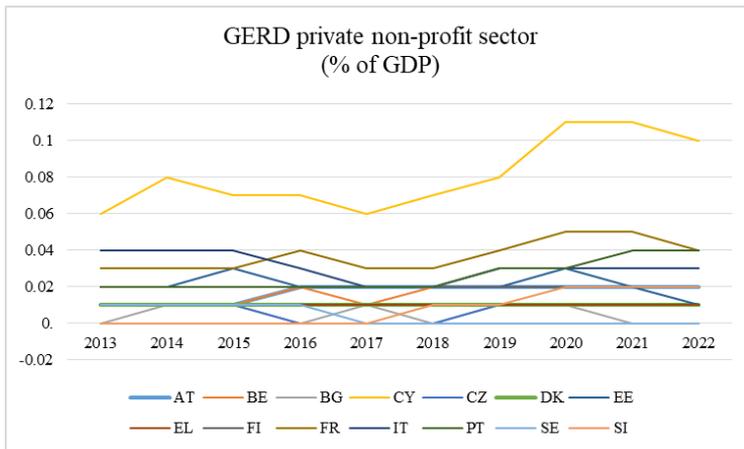In Figure 13 we can see the data for GERD in private non-profit sector.
The highest values are in Cyprus – GERD ϵ [0.06%-0.11%], France – GERD ϵ [0.03%-0.05%], and Portugal – GERD ϵ [0.02%-0.04%].

The lowest values are in Greece – GERD ϵ [0.01%-0.01%], Bulgaria – GERD ϵ [0.00%-0.01%], and Sweden – GERD ϵ [0.00%-0.01%] In Romania – GERD ϵ [0.00%-0.00%].

4. CONCLUSIONS

The Gross Domestic Expenditure on R&D (GERD) in Romania has for all the sectors of activity presented here (business enterprise sector, government sector, higher education sector, and private non-profit sector) the lowest values among the EU Countries.

For the EU-27 – GERD ϵ [2.1%-2.3%] for all sectors. For business enterprise sector in EU-27 we have GERD ϵ [1.34%-1.51%].

For the government sector – GERD ϵ [0.24%-0.27%], for higher education sector– GERD ϵ [0.47%-0.50%], and for private non-profit sector – GERD ϵ [0.01%-0.03%].

Romania needs more investments in all the sectors of activity, in order to have a successful development.

REFERENCES

[1]https://ec.europa.eu/eurostat/data/database last retrieved 18 July 2024.
[2]https://ec.europa.eu/eurostat/databrowser/view/rd_e_gerdtot/default/table?lang=en&category=scitech.rd.rd_e   last retrieved 18 July 2024.
[3]https://ec.europa.eu/eurostat/databrowser/view/rd_e_gerdsc/default/table?lang=en&category=scitech.rd.rd_e   last retrieved 18 July 2024.
[4]https://ec.europa.eu/eurostat/databrowser/view/rd_e_fundgerd/default/table?lang=en&category=scitech.rd.rd_e   last retrieved 18 July 2024.
[5]https://ec.europa.eu/eurostat/databrowser/view/rd_e_gerdfund/default/table?

lang=en&category=scitech.rd.rd_e last retrieved 18 July 2024.

[6]https://ec.europa.eu/eurostat/databrowser/view/rd_e_gerdcost/default/table?lang=en&category=scitech.rd.rd_e last retrieved 18 July 2024.

[7]https://ec.europa.eu/eurostat/databrowser/view/rd_e_gerdact/default/table?lang=en&category=scitech.rd.rd_e last retrieved 18 July 2024.

[8]https://ec.europa.eu/eurostat/databrowser/view/rd_e_gerdsobj07/default/table?lang=en&category=scitech.rd.rd_e last retrieved 18 July 2024.

[9]https://ec.europa.eu/eurostat/databrowser/view/rd_e_gerdreg/default/table?lang=en&category=scitech.rd.rd_e last retrieved 18 July 2024.

[10]https://ec.europa.eu/eurostat/databrowser/view/rd_e_gerdins/default/table?lang=en&category=scitech.rd.rd_e

THE EVOLUTION OF THE SYSTEMIC EVALUATION WITHIN THE MILITARY ORGANIZATION

Răzvan BICHIR

In the military system, the control-evaluation function has taken on several aspects that increasingly distinguish the military body from other organizations in the society. This function is visible throughout the military system, on all its levels, but with some obvious particularities related to hierarchy, directionality, continuity, focus, purpose and objectives, professionalism and realism. In the Romanian Armed Forces, the control and evaluation activities have evolved conceptually, together with the stages of pre-accession to NATO, as continuous, increasingly necessary activities, which involve reviews and analyses, with the aim of establishing the level of pre-specified objectives fulfillment, in order to apply corrective measures and eliminate possible shortcomings. The evolution of control and evaluation in the Romanian military system has been gradual and has been closely related to the evolution of the military body, both from a doctrinal and a structural-organizational point of view, especially after 1990.

Key words*: control and evaluation, normative framework, integration, reviews, systemic evaluation*

1. INTRODUCTION

The military system has created, developed and perfected its own control-evaluation system. This is represented by specialized structures and norms, which respond to the demands and requirements of the central public authorities in this field, and it includes the structures of internal managerial control, internal audit and, why not, the anti-fraud structure (for the investigation of corruption and fraud among staff assigned to positions in the structures of the Ministry of National Defense and in the structures under its subordination or, as the case may be, in its coordination). In addition to these, the Control and Inspection Corps also operates, completing the picture of the structures intended to implement the evaluation-control policies in the military system.

We remember, however, that prior to the 1990s, control in the military system was subordinated to state control, as an ideology, and, as action -it was materialized especially through rigid actions, both as planning and as results, which were usually completed by qualifications, accompanied by punitive, administrative and

sometimes even prosecution measures.

With the integration into NATO (2004) and then into the European Union (2007), the entire Romanian society discovered that the control-evaluation function has new values and connotations, more or less different from those previously known, from the communist era. Basically, what fundamentally distinguishes the current stage of Romanian society development from the one before 1990, is the acceptance and implementation of a new philosophy regarding the implementation of public policies [1] and the evaluation of their outcomes.

In fact, by integrating into the Euro-Atlantic structures, Romania adhered to the global NATO and the EU strategy, which entailed the conception, application, evaluation and reporting of the results of public policies that were carried out within a period of time known as "strategic planning and programming cycles ".

2. THE CONCEPTUAL AND OPERATIONAL EVOLUTION OF EVALUATION IN THE ROMANIAN ARMED FORCES

In its evolution, the Romanian Armed Forces strove to build a structure compatible with the requirements of the era, designed to face the challenges imposed by the risks and threats of the time, led by commanders which were capable of fulfilling the assigned combat missions.

Like any complex system, which makes up an organized whole, the Ministry of National Defense represents a set of elements (forces, principles, rules, etc.), dependent on each other and interrelated, which organizes the field of military thinking, participates in the regulation of activities in the field of national security and defense and makes their orderly transposition in practice work according to the intended purpose.

In order to substantiate the decision making process and achieve functional interdependency at the level of the ministry, as well as at the level of all NATO structures, an interface between the management and the subordinate structures was and is necessary, an interface that would ensure a real, unbiased and transparent system evaluation, that would be the barometer providing real data and come up with viable and timely proposals aimed at correcting the multitude of problems the military system faces.

The evaluation activity highlights the important vector of the managerial process of the military body which, performed with professionalism at all levels of the hierarchy, ensures the foundation of a beneficial leadership act for the optimal functioning of the system.

2.1. The current legal framework regarding the systemic evaluation of the military body

From the institutional perspective, the issue of control and evaluation in the Ministry of National Defense is related, relatively recently, to the re-establishment of the General Inspectorate of the Ministry of National Defense [2], in 1994. However, this aspect did not exclude the control activities in the army units, carried out by the General Staff, especially on the operational line.

Starting from 1998, the General Inspectorate of the Ministry of National Defense directed its efforts towards the elaboration and finalization of a new regulatory framework regarding control and evaluation in the Romanian Military System [3], which included new regulations, experienced during the years 2000-2001.

Through this approach, a unitary, integrated and operational system was designed for the evaluation and self-evaluation of military structures, which also allowed the definition of the real and objective state of their ability to fulfill the missions for which they have been established.

Simultaneously with the completion of the legal framework regarding the control and evaluation in the Romanian Armed Forces, the General Inspectorate of the Ministry of National Defense also worked on the conceptual operationalization of the "state of the armed forces" issue, as well as that of the "state of a military structure".

The transformations produced in the military system, especially as a result of the implementation of concepts regarding force structure projections, new defense planning concepts, etc. determined that decisions at the top level of the military system should be based on real data and information regarding the state of the military structures and the military system as a whole.

For these reasons, it was necessary to rethink and harmonize the institutional control and evaluation system, based on which the state of the army can be defined and evaluated.

Thus, a concept compatible with the one practiced in the armies of NATO member states for assessing the state of the military system was designed and operationalized. It included a set of status indicators, which, subject to a quantification process, could provide decision-makers with data and information regarding the situation in which, the military structures and the army as a whole are at a certain moment.

Within this systemic concept, as in the evaluation systems of modern armies, information on the state of the military body is the result of two levels of analysis: the first concerns the state of units and large units, based on control, inspections and self-assessment [4] reports of commanders the respective units and the second, which aims at the systemic assessment of the ability to fulfill the directions of action and military objectives, embodied in plans and programs, based on the measurement of the

achieved performances and their comparison with the initially established values and standards.

From the study of specialized literature, but also as a result of the exchange of experience with structures with similar attributions in some modern military systems, where determining the state of the military body was a common practice, the Inspectorate proposed and established a series of state indicators, which should be taken into account when determining its condition. These indicators mainly targeted: the management of the military system, the operational potential of the forces [5], the morale of the forces, military discipline, the the military personnel's health, the equipment and infrastructure and the international agreements / operational partnerships necessary to cover security needs.

At that time, these multidimensional indicators also represented the important basic elements of the system of integrated defense planning policy, the essence of which is that the planning, programming, budgeting and evaluation of human, material and financial resources intended for the army is carried out on long term, in an integrated concept, based on programs.

Most of the times, in the military system, the emphasis is on technical considerations, in most fields of activity. The issue of evaluation was no exception, so it was and it is easier to summarize the result of quantitative components evaluation and it is more difficult to analyze and synthesize on qualitative components.

Starting from 2001, the Inspectorate of the Ministry of National Defense consolidates its expertise function, through which the Minister of National Defense exercises his specific tasks of control and evaluation of the activities carried out in the military system, in all areas of administrative and operational management. Thus, the Inspectorate was appointed to carry out the entire control and evaluation activity.

In 2004, as a result of joint analyses carried out with the General Staff, the Inspectorate took over only the level of systemic evaluation of the military body, succeeding, at the same time, in promoting and approving a new legal framework regarding the evaluation system through inspections in the military system [6]. On this occasion, it was also established that the evaluation activity continues to be managed and monitored by the Inspectorate of the Ministry of National Defense, through the "Organizational Program of Inspections (POI)" [7], a document that is drawn up and approved by the Minister of National Defense in each year of training.

In order to operatively pursue the competences assigned to the Control and Inspection Corps, as well as to increase the efficiency of the specific activities performed for the coordination of planning and monitoring of inspections and controls

in the Ministry of National Defense, it was requested, based on the Order of the Minister of National Defense no. M 183 of 2005 [8], the development of an IT application whose purpose was to generate the Organizational Plan of inspections and controls, mentioned in art. 15, para. (1) from the Instructions regarding the planning, organization and execution of inspections and controls in the Ministry of National Defense, approved by Order of the Minister of National Defense MS 56 from 15.06.2015.

The main effect of this legislative act is to create the necessary conditions for all the central structures, the general staffs of the armed forces' categories and the headquarters' commands to be contained in a unitary database, which can be consulted by the personnel with leadership positions from all echelons, for the purpose of systemic assessment of the military body and improving the inspection and control activity in the Ministry of National Defense.

Thus, according to the order of the head of the Control and Inspection Corps [9], the IT application for the management of inspections and controls in the Ministry of National Defense-InsCon, intended for the computerization of the management of inspection and control activities, planned at the level of the central structures and those subordinated or coordinated, went into operation them, which form the basis of the annual development process of the Organizational Program of Inspections and Controls within the Ministry of National Defense, hereinafter referred to as POIC.

At the same time, the competences regarding the types of inspections that are carried out in military structures were separated and established by the instructions of the Inspectorate of the Ministry of National Defense and of the General Staff [10]. There has been a clear separation between the precise structural evaluation (control) process of the military structures, managed by the General Staff (SMG) and its subordinate echelons, and the system evaluation, regarding the fields of operation of the military body [11], managed by Inspectorate of the Ministry of National Defense.

The fact that the Inspectorate of the Ministry of National Defense managed to state the interdependence relationships between control and system evaluation and conceptually separate the system evaluation from the structural one, demonstrated the ability of this military structure to adapt and the rapid integration into the complex of Euro-Atlantic military values.

The ongoing reform of the miltary system in recent years has not bypassed this segment of activity, so that in 2007, the Inspectorate of the Ministry of National Defense (IMApN) unified with the Control Corps and formed the Control and Inspection Corps (C.Ctrl.Insp.). This moment represented another stage in

the conceptual development of the system evaluation of the military body, when this activity became the general mission of the Control and Inspection Corps. Thus, the areas of competence that reflect the general mission of the Control and Inspection Corps [12] were established, the most relevant ones being:

- the systemic evaluation of the policies, programs, processes, structures and resources assigned according to the approved plans;
- identification of data and information regarding the state of the military body in the assessed fields of activity and the promotion of solutions/proposals for correction addressed to the Minister of Defense, in support of the decision-making cycles;
- management of evaluation activities planning (inspections, controls) within the military body.

Together with the aforementioned transformations, the field of system evaluation and structural evaluation of the military body also experienced requirements regarding intrinsic modernization. Thus, year after year, the inspection and control activity focused on supporting the military leadership in order to fulfill the commitments with NATO, simultaneously with the fulfillment of the objectives, tasks and responsibilities planned for the stages of the process of implementation of the Romanian Armed Forces Transformation Strategy.

The most important development directive in this field was the one provided in the Transformation Strategy of the Romanian Military Forces (approved in 2007) and had as its basic objective the optimization of the "systemic and structural evaluation process and its effective connection to the transformation of the Romanian Armed Forces" and "the systemic and structural evaluation will aim to identify the status and evolution of the planned parameters of the transformation process and will provide the data and information necessary to certify the correction decisions".[13]

Being aware of the importance of the systemic and structural evaluation function, in support of the leadership exercised by the Minister of National Defense and as one of the elements for substantiating his decisions, through the concrete activities carried out by the Control and Inspection Corps and by the General Staff, so far most of the requirements established in the Transformation Strategy of the Romanian Armed Forces have been fulfilled.

2.2. References of transformations in the field of control and evaluation

The transformation of the Romanian Armed Forces [14] was conceived in relationship with the NATO transformation process. In the conditions of the transformation of forces, concepts and capabilities, the pragmatic document available to the

decision-makers through a consolidated military vision, regarding the future shape of the force structure and the capabilities necessary to fulfill future missions, was the Transformation Strategy of the Romanian Armed Forces, which represents the medium and long- term vision regarding the size, training and endowment of the Romanian Armed Forces, in order to participate in future operations. The adopted and designed concepts and capabilities were translated into requirements and plans through the defense planning process in accordance with NATO standards.

The purpose of the transformation of the Romanian Armed Forces was to create a modern, downsized, professionalized, adequately equipped, deployable, interoperable force structure, with self-support and multidimensional protection capability, with a flexible leadership, which, based on optimal information and data, can make decisions in a short time.

The materialization of the general objective of the transformation process will be supported by the fulfillment of the 17 objectives, among which "the optimization of the systemic and structural evaluation process and the effective connection with the transformation of the Romanian Armed Forces".

Moreover, during the third stage, that of full integration into NATO and the European Union (2016-2025), one of the objectives of the transformation process was "to focus systemic and structural evaluation activities on the process of endowing and modernizing with technology and equipment".

In the field of "systemic and structural assessment", the transformation of the structure intended for planning, execution and completion of systemic and structural assessment activities aims, during the three stages of the transformation, to achieve the following general requirements:

- determining the correctness of the implementation of policies and the development of plans and programs initiated within the main areas of activity of the military system, in direct connection with the main directions of action established by the Strategy for the Transformation of the Romanian Armed Forces, in order to identify possible dysfunctions / deviations from the planned / foreseen parameters, to establish the causes and to promote solutions / remedial recommendations necessary for leading the military institution;

- creating a modern, efficient, credible, specialized multidisciplinary systemic and structural assessment structure;

- amplifying the catalyst role in the development of the cycle: decision-planning-execution-evaluation-correction.

The establishment of the systemic and structural evaluation structure aims to create a modern, professionalized entity, with an increased degree of adaptability, an efficient, multidisciplinary expert

structure, through which the Minister of Defense can exercise their attributions of evaluating the specific activities of the military body, the results of which develop the data and information support necessary to substantiate decisions and to manage the planning and implementation of all inspection activities in the Romanian Armed Forces.

The system evaluation in the Romanian Armed Forces practically started with the entry into force of the "Instructions regarding the general inspector's planning, organization, execution and completion of inspections " - approved by the Order no. M 120 / 2004 of the Minister of National Defense. Initially viewed with skepticism, and even considered difficult to implement, they brought scientific arguments and elements, algorithmizing and periodizing the actions of the structures involved, in the inspection act, at different stages, starting from the first stage, that of planning and up to the identification of malfunctions and the monitoring of the fulfillment of the measures intended to lead to the desired system correction.

In approaching this new philosophy [15], one started from adopting new principles, according to which the inspection was to have a collegial, working character, for the joint identification, by the inspectors and the inspected, of the solutions necessary to eliminate the problems found in the investigated structure. In fact, the new normative framework allowed for a true metamorphosis of the inspection, its transformation from a formal act into a participatory process of real understanding of the achievements and dysfunctions of the inspected structures, which allowed an objective and effective evaluation of their activity.

Conceived in a deeply pragmatic manner, the instructions established the algorithm and "steps" of the inspection process, offering, in numerous annexes, models of documents that had to be used during the activities. Their modernity attracted the appreciation of our foreign partners and even frequent requests for presentation, explanation, provision, as a particularly useful tool for the proper functioning of the military systems, on their way to restructuring and democratization.

Thus, the legal act regulating the evaluation activity gave confidence to all those inspected, favored teamwork efficiency, streamlined the inspection times and allowed the development of other related actions, intended to lead to a better knowledge of the pesonnel's morale, to strengthen cohesion and morale which are vital to any military defense system.

Moreover, starting from 2005, the evaluation activities carried out by the Inspectorate of the Ministry of National Defense were more and more complex and included a wide range of fields of activity, related to the restructuring and modernization plans and programs carried out after 1999 in the Romanian Military System.

In the context of the military system reform, in 2007 the Inspectorate of the Ministry of National Defense merged with the Control Corps, forming a new structure, called the Control and Inspection Corps. From this moment, the second stage in the conceptual development of the system evaluation of the military body began, an activity that also became the general mission of the Control and Inspection Corps, a natural evolution viewed from the perspective of the responsible employment of resources and a tool through which the Minister of National Defense can fully exercise his leadership functions.

The new control and inspection structure, simultaneously with carrying out tasks on the line of its own transformation, in the conceptual, organizational and action plans, planned, organized and carried out mission-specific activities in support of achieving the objectives of the military system transformation process on short, medium and long term, being able to ensure:

- conceptually: adapting and improving the legal and methodological framework regarding planning, organizing, conducting and finalizing evaluations, in accordance with the process and stages of transformation of the Romanian Armed forces;

- organizationally: creating a modern structure that is capable to adapt to the process of the transformation of the army, efficient, credible and connected to similar institutions in the other military systems of the NATO member states;

- actionally: high specialization, having the possibility of multidisciplinary expertise in the systemic and structural evaluation of the domains specific to the military institution.

In order to implement its mission, the new evaluation structure acted to accomplish the following specific requirements:

- the restructuring and operationalization of the new systemic and structural evaluation mechanism by merging the structures with attributions and responsibilities in the field;

- the elaboration and implementation of a new normative framework that will regulate the activity of the new systemic and structural assessment structure according to the place, role, mission and areas of competence conferred by law;

- the configuration and implementation of a modern system of specific training and attestation of evaluators compatible with similar ones in the armies of other NATO member states;

- the adoption of computer procedures and applications that lead to the improvement of the process of collecting, storing, processing and interpreting data and status information of the military body.

Later, through the appearance of the Order of the Minister of National Defense no. MS 56/2015, "Order on

the planning, organization and execution of inspections and controls in the Ministry of National Defense". All aspects related to the definition of the fields of activity and their typology were clarified and explained, the fact that the assessment is carried out only through inspections was conceptually delimited, competences were established, redundancies and parallelism were eliminated in the exercise of inspections and controls between the responsible military structures, but it also established the ways of planning, monitoring and effective capitalization of the results obtained through inspections and controls.

Thus, it should be mentioned that, between 2005 and 2020, the Inspectorate and then the Control and Inspection Body planned and carried out multiple system evaluations, with topics from various fields, according to the objectives established on the basis of the Romania's Military Strategy, the Transformation Strategy of the Romanian Armed Forces, the Transformation Program of the Romanian Armed Forces, but also the Defense Planning Directives.

3. CONCLUSIONS

A first observation reveals the fact that, the evaluations carried out during 2005-2020, mainly focused on the important fields of activity in the military system (ensuring a high level of readiness, developing the capabilities that are necessary and

relevant for the fulfillment of the missions of the Romanian Armed Forces, education and training). At the same time, the evaluations in the field of environmental protection, labor protection (currently health and safety at work), technical supervision and legal metrology, were performed year by year, considering that, in the mentioned subfields, the most conceptual transformations were registered, while practical achievements were reduced.

The system evaluations focused on the previously mentioned fields of activity due to the multiple transformations that have taken place in recent years and the necessity to monitor and measure their evolution, in order to apply corrections and eliminate the dysfunctions encountered.

The results of all the evaluations were characterized by transparency. Thus, after they had been reported to the Minister of National Defense and distributed to the structures responsible for applying the identified recommendations and solutions, they were published, in summary, in the Armed Forces Information Bulletin, thus allowing the dissemination and knowledge of the evaluation results at the level of the entire military system.

At present, the legal framework for evaluating the military structures of the Romanian Armed Forces is regulated by the Order of the Minister of National Defense no. MS 56/2015, "Order on the planning, organization and execution of inspections and

controls in the Ministry of National Defense". System evaluation in the Romanian Military System has been and continues to be the mission of the Inspectorate of the Ministry of National Defense, respectively of the Control and Inspection Corps.

During 2005-2020, the system evaluations mainly focused on the important fields of activity in the military system, as a result of the multiple transformations that have taken place in recent years and the necessity to monitor and measure their evolution, in order to apply corrections and eliminate the encountered dysfunctions.

ENDNOTES

[1]https://ro.scribd.com/doc/143244347/politici-publice-europene: Politicile publice preiau elemente, tehnici și metode din economie, drept, sociologie, psihologie sau științe politice.

[2] Government Decision no. 385 / 18.05.1999: "The General Inspectorate of the Ministry of National Defense hascomposition: Inspectorate for Land Forces, Inspectorate for Aviation and Air Defense, The Inspectorate for the Navy, the Inspectorate for Financial Management Control, the Inspectorate for Endowment and Logistics, Inspectorate for Environment and Labor Protection, Inspectorate for Regulations, Section for Summary of the State of the Army, the Commission on Jurisdiction of Imputations and the Section for Secretariat, Personnel and Administrative Issues".

[3] Revista Inspectoratului General, Anul I, nr. 1 / 1999, p. 36.

[4] Self-evaluation – specific activity, carried out periodically by the leaders of organizations (collectives), at deadlinesestablished and whenever necessary, based on established criteria or indicators, usually in the instructions of control, through which they determine the level of status existing in their own structures, report dysfunctions and, based on that analyses, correct their own decisions or previously undertaken actions - Collection of terms, concepts and notions of reference in the fields of military policy, national security and armed defense, Military Publishing House, 2000.

[5] Operational potential - the possibilities of a military structure to fulfill its missions according to the place, role and destination in peacetime, in crisis situations and in war - www.mapn.ro, General Staff, Terminology military.

[6] Order of the Minister of National Defense, M 120 / 2004, Instructions regarding the planning, organization, execution and completion of inspector general inspections.

[7] Idem, art. 14;

[8] Order of the Minister of National Defense no. 183 of 29.11.2005 for the approval of SMG/ACT-6, Methodology of creation, implementation and commissioning of military IT systems.

[9] The disposition of the head of the Control and Inspection Body no. A-2188 of 07.06.2018 regarding the entry into operation of The IT application for the management of inspections and controls in the Ministry of National Defense-InsCon

[10] The disposition of the Chief of the General Staff, no. SMG 93 / 2008 regarding the execution of control, assessment operational and self-evaluation of structures subordinate to the General Staff.

[11] Revista Inspectoratului M.Ap.N., nr. 1 / 2004, p. 63

[12] http://www.mapn.gov.ro/ Structuri, Corpul de control și inspecție, Misiune generală, domenii de competență (accesed on 18 aug. 2021)

[13] The Transformation Strategy of the Romanian Army, subchapter 4.5.

[14]https://www.mapn.ro/programe_stra tegii/Strategia de transformare a Armatei României, Bucuresti 2007 (accesed on 09 sept. 2021)

[15] Revista Corpului de control și inspecție, nr. 1 /2020, p. 15,

REFERENCES

[1] Government Decision no. 385 / 18.05.1999:

[2] Order of the Minister of National Defence, M 120 / 2004, Instructions regarding the planning, organization, execution and completion of inspector general inspections.

[3] Order of the Minister of National Defense no. 183 of 29.11.2005 for the approval of SMG/ACT-6, Methodology for creating, implementing and commissioning military IT systems.

[4] Provision of the Chief of the General Staff, no. SMG 93 / 2008 regarding the execution of control, operational evaluation and self-evaluation of structures subordinate to the General Staff.

[5] Provision of the head of the Control and Inspection Body no. A-2188 of 07.06.2018 regarding the entry into operation of the IT application for the management of inspections and controls in the Ministry of National Defense-InsCon

[6] ***Collection of terms, concepts and notions of reference from the fields of military policy, national security and armed defense, Military Publishing House, 2000.

[7] Magazine of the General Inspectorate, Year I, no. 1 / 1999.

[8] M.Ap.N. Inspectorate magazine, no. 1/2004, p. 63

[9] Magazine of the Control and Inspection Body, no. 1/2020.

[10]https://ro.scribd.com/doc/14324434 7/politici-publice-europene: Public policies take elements, techniques and methods from economics, law, sociology, psychology or political science.

[11] www.mapn.ro, General Staff, Military Terminology.

[12] http://www.mapn.gov.ro/ Structures, Control and inspection body, General mission, domains of competence.

[13]https://www.mapn.ro/programe_stra tegii/ The Transformation Strategy of the Romanian Armed Forces, Bucharest 2007.

THE INTEGRATED SUPPORT GRANTED BY THE EU TO THE STATE OF UKRAINE

Silviu Vasile

Armed Forces Academy „Alexandru cel Bun"
Security and Defence Department, Doctoral School,Chisinau

The EU condemns in the strongest possible terms Russia's unprovoked and unjustified war of aggression against Ukraine, which it says is a flagrant violation of international law, including the UN Charter, and calls on Russia to immediately and unconditionally withdraw all its military personnel and equipment. throughout the territory of Ukraine, with full respect for the sovereignty, independence and territorial integrity of Ukraine within its internationally recognized borders, and to cease all hostilities. Ukraine's peace formula is supported as the only legitimate and credible path to a comprehensive, just and lasting peace in accordance with the UN Charter. The future of Ukraine and its people lies in the European Union. The EU will stand with Ukraine on the path of reconstruction and reform every step of the way. The EU is united and resolute in its support for Ukraine. Since the start of the large-scale invasion, Team Europe has mobilized more than €88 billion to help Ukraine and its people. In March 2022, the EU activated the Temporary Protection Directive and EU Member States have since been providing protection to Ukrainian citizens displaced by the war, with more than 4 million people under temporary protection in the EU. The temporary protection was extended until March 2025. The EU has made it clear that it will stand by Ukraine and its people as long as necessary and on all fronts: humanitarian, economic, financial, political, diplomatic and military. It is heartbreaking to witness countless objects of cultural heritage systematically and deliberately destroyed and looted as part of Russia's large-scale aggression in Ukraine.

Key words: EU, volunteer movement, EUMAM Ukraine, UN Refugee Agency, UN Charter, Temporary Protection Directive.

1. INTRODUCTION

The EU reacted quickly and decisively to Russia's aggression, adopting restrictive measures that have massive and serious consequences for Russia and has stepped up its political, humanitarian, military and financial support of the Ukrainian economy and society and its contribution to the country's reconstruction. The Parliament also supported Ukraine's efforts to become an EU candidate country and called on EU countries to launch accession negotiations. Information is ordered in reverse chronological order, meaning the most recent event will appear at the top and the oldest at the bottom. On February 24, 2022, Russia's already

eight-year war in Ukraine turned into a full-scale invasion.

The volunteer movement in Europe provides huge support to the civilians and armed forces of Ukraine.

Among the symbols of volunteer support are handmade candles sent to soldiers in the Ukrainian trenches. They transmit light and human warmth. And it encourages soldiers to persevere in difficult circumstances. They are also a symbol of solidarity between the people of Ukraine and the EU working tirelessly in the face of adversity.

MEPs call on NATO allies to honour their commitment to Ukraine and pave the way for Kyiv to be invited to join the defence alliance.
In the resolution, adopted MEPs stress that they expect that the accession process will start after the war is over and be finalised as soon as possible.

Through military assistance to Ukraine, the EU aims to strengthen the capabilities and resilience of the Ukrainian armed forces and protect the civilian population against unprovoked and unjustified Russian military aggression.

The EU is united in its unwavering support for Ukraine and will continue to provide Ukraine and the Ukrainian people with strong political, financial, economic, humanitarian, military and diplomatic support as long as it is needed.

Also taking into account the military support provided by EU Member States, the total EU support to the Ukrainian army is estimated at EUR 43.5 billion.

Between 2022 and 2024, the EU has mobilized €6.1 billion under the European Instrument for Peace to address Ukraine's pressing military and defense needs.

Through the European Peace Facility, the EU funds the provision of lethal and non-lethal military equipment and materials, such as personal protective equipment, first aid kits, fuel, ammunition and missiles.

In addition, in March 2024, the EU decided to increase the financial ceiling of the European Peace Facility by EUR 5 billion by establishing a specific assistance fund for Ukraine. Thus, the total financial support allocated through the European Peace Facility reaches EUR 11.1 billion.

In May 2024, the Council gave the green light to use windfall and windfall revenues resulting from the implementation of EU sanctions against Russia to help Ukraine. The

windfall net profits generated by frozen Russian assets are used to support the Ukrainian armed forces, the defense industry and the reconstruction of Ukraine. Funds are channeled through the European Peace Facility and other EU programmes.

On 15 November 2022, the Council launched the EU Military Assistance Mission in Support of Ukraine (EUMAM Ukraine), with an initial duration of two years. On November 8, the Council decided to extend the mandate for another two years, until November 15, 2026.

The concept of the EUMAM Ukraine is to provide individual, collective and specialized training for the armed forces of Ukraine. In addition, EUAM supports Ukraine's efforts to investigate and prosecute international crimes and return law enforcement to the occupied and adjacent territories. The EU and its member states are committed to contribute, in the long term and together with partners, to the security commitments towards Ukraine. These commitments will help Ukraine defend itself, resist destabilization efforts, and deter future acts of aggression. But while the Europeans will always remain open to anyone serious about seeking a negotiated and just end to the war, Russia has so far made it clear that it intends to persist in its war crimes. Until this changes, we must conclude that the only way to end the war is to provide Ukraine with the means to expel the invader.

Therefore, the EU's task is to do everything in its power to support Ukraine.

EUMAM Ukraine works closely with all other international partners who share the same vision and is open to the participation of non-EU countries.

In March 2023, the Council agreed on a three-pronged plan to accelerate the supply and joint procurement of ammunition and missiles for Ukraine. The first two strands, worth EUR 1 billion each, are financed by the European Instrument for Peace. The first directive, adopted on 13 April 2023, allows the EU to reimburse member states for materials donated to Ukraine from existing stockpiles or reprioritization of existing orders.

The second directive, adopted on 5 May 2023, supports the joint procurement of ammunition and missiles from economic operators established in the EU or Norway.

Building on existing support, the EU's security commitments include predictable, long-term and sustainable support for the security and defense of Ukraine, including

through Common Security and Defense Policy missions. These commitments will help Ukraine defend itself, resist destabilization efforts, and deter future acts of aggression. For its part, Ukraine is committed to continuing reforms, including in line with its path to the European Union.

2. THE STRAINED RELATIONS BETWEEN RUSSIA AND UKRAINE

In addition, military assistance measures and with the resources made available to help Member States meet the needs of Ukrainians fleeing the war in the EU, total support to Ukraine and Ukrainians amounts to apprx. €100 billion. These agreed measures will finance both the provision of equipment and supplies to the Ukrainian Armed Forces by EU Member States, including personal protective equipment, first aid kits and fuel, as well as military equipment designed to deliver lethal force for defensive purposes.

In addition, on 17 October 2022, the EU agreed to establish a two-year Military Assistance Mission in support of Ukraine (EUMAM Ukraine). This provides for training for the Ukrainian Armed Forces as well as the coordination and synchronization of Member States' own training support for Ukraine.

At the same time, the EU introduced an unprecedented package of sanctions against the Kremlin as well as the Lukashenko regime in Belarus.

The EU will provide Ukraine with €50 billion in loans and grants until the end of 2027. Over the past two and a half years, the EU has provided Ukraine almost EUR 122 billion, in the form of economic, financial and military support. Of this amount, EUR 1.5 billion comes from frozen Russian assets. The EU continues to work tirelessly with international partners to ensure that Ukraine receives support and to hold Russia accountable for its actions.

Ukraine's path to EU membership has made significant progress, reflecting the will of its people to achieve democratic reforms. In December 2023, EU leaders decided to start accession negotiations with Ukraine in response to the country's commitment to continue reforms. Even in times of war, she continued to make progress and introduce reforms – from new legislation to expand the rights of national minorities to improving the judiciary and ensuring a system of checks and balances on power.

However, EU-Russia relations have become increasingly strained over the years, not least because of the Kremlin's consistent attacks on Ukraine's sovereignty, including its 2014 annexation of Crimea and the full-scale invasion launched in 2022.

Russia's illegal and unprovoked invasion of Ukraine is not only an attack on the country's territorial integrity, but also poses a grave risk to the security and stability of all of Europe.

In March 2022, the EU adopted its Strategic compass for securityand defence, stating that Russia represented a long-term and direct threat for European security.

After the annexation of Crimea in 2014, EU economic sanctions targeted Russia's financial, defence and energy sectors.

Ever since the start of Russia's full-scale invasion of Ukraine in February 2022, the EU and the Parliament have supported the country by condemning Russia's aggression, sanctioning those responsible and providing material and financial aid. Another aspect of EU-Russia relations is energy. Controversy over the new Nord Stream 2 pipeline highlighted the country's leverage as the EU's main energy supplier. The EU granted Ukraine the suspension of import taxes and export quotas.

All EU countries, as well as Norway, North Macedonia, Iceland, Turkey and Serbia, are providing material assistance to Ukraine, from medical supplies and shelter items to vehicles and energy equipment.

Logistics centers have been established in Romania, Slovakia and Poland to route items to Ukraine more efficiently.

These measures, which first entered into force in 2022, were renewed until June 5, 2025 for Ukraine.

In March 2022, the electricity networks of Ukraine were successfully synchronized with the continental European network. With Ukraine the EU established the EU-Ukraine solidarity corridors in May 2022. The purpose of these essential corridors is to ensure that Ukraine can export agricultural products (including grains, oilseeds and related products), but also imports the goods it needs. Subsequent sanctions adopted by the EU included measures such as a ban on imports from Russia of oil and coal and introducing a price cap related to the maritime transport of Russian oil. According to the UN Refugee Agency, almost six million refugees from Ukraine have been registered across Europe since the war began.

On March 4, the Council of the European Union unanimously decided

to activate the Temporary Protection Directive to provide quick and effective assistance to people fleeing the war in Ukraine. Hundreds of thousands of children, including orphaned children and children in foster care, have left Ukraine because of the war.

The protection and promotion of children's rights is a priority for the EU.

3. EU SUPPORT AND CONDEMNATION OF RUSSIAN AGGRESSION

On 8 June 2022, the Council adopted conclusions on the EU Strategy on the Rights of the Child, with a particular focus on the protection of children's rights in crisis or emergency situations.

In the context of Russia's war of aggression against Ukraine, the Council noted the need to protect children facing armed conflict and the consequences of such conflict.

In a political declaration adopted in June 2022, the Council reaffirmed its commitment to protecting all children who have fled the war in Ukraine, especially those separated from their families.

In conclusions adopted in June 2024, the Council reiterated its concern at the increase in violations of children's rights in the context of armed conflicts, exacerbated by the proliferation of wars, including Russia's war of aggression against Ukraine and the illegal deportation and forcible transfer of Ukrainian children from its context.

This means that those fleeing war will be granted temporary protection in the territory of the European Union: rights of residence, right of access to the labor market, access to housing, social assistance, medical or other assistance and means of subsistence. Ukraine formally submitted its application to join the European Union on 28 February 2022.

Once adopted, the temporary protection went into effect immediately and will be valid for one year. This could last up to three years – unless the situation in Ukraine improves enough for people to return home. On 23 June 2022, the EU Leaders' Summit unanimously agreed to grant Ukraine candidate status, following a recommendation by the European Commission on 17 June. On 14 December 2023, EU leaders agreed to open accession negotiations with Ukraine, which officially began on 25 June 2024 with an intergovernmental conference in Luxembourg.

Citizens outside Ukraine and stateless persons with legal residence in Ukraine who cannot return to their country or region of origin, such as

asylum seekers or beneficiaries of international protection and their family members, will also benefit from protection in the EU. Others who are legally in Ukraine for a short period of time and who are able to return safely to their country of origin will be granted access to the EU to transit before returning to their country of origin. The Ukraine Facility provides stable funding of up to EUR 50 billion in grants and loans to support Ukraine's recovery, reconstruction and modernization for the period 2024-2027.

The decision to establish the Mechanism for Ukraine entered into force on March 1, 2024. In the future plan to support the country's security climate submitted on 20 March 2024, Ukraine presented its vision for reconstruction and modernization and the reforms it intends to undertake as part of its EU accession process. On 14 May 2024, the Council issued a positive assessment of the plan.The purpose of EU aid was to provide short-term financial aid, to finance Ukraine's immediate needs and, last but not least, to support Ukraine on its way to European integration.

EU leaders have repeatedly condemned Russia's indiscriminate attacks against civilians and civilian infrastructure and reiterated that international humanitarian law must be respected.The EU stands firmly with Ukraine and the Ukrainian people and will continue to provide political, financial, economic, humanitarian, military and diplomatic support as long as and with the intensity required.

REFERENCES

[1] Giles, K. (2016). Handbook of Russian information warfare. NATO Defence College Research Division.
[2] Khaldarova, I., & Pantti, M. (2020). Fake news: The narrative battle over the Ukrainian conflict. In The Future of Journalism: Risks, Threats and Opportunities (pp. 228- 238).
[3] Khaldarova, I. (2016). Strategic Narratives of the Ukraine Conflict Projected for Domestic and International Audiences by Russian TV Channels. Media and the Ukraine Crisis: Hybrid Media Practices and Narratives of Conflict, Peter Lang.
[4] Bolin, Göran, Paul Jordan and Per Ståhlberg. 2016. "From Nation Branding to Information Warfare: The Management of Information in the Ukraine-Russia Conflict."

FOUNDATIONS FOR SECURITY LEADERSHIP

Cornel ZAMFIRESCU*

*Valahia University of Targoviste

The article presents the connectivity between self-determination theory, needs theory, and digitalization in security leadership, highlighting their influence on organizational strategies. Self-determination theory, emphasizing autonomy, competence, and relatedness, complements needs theory, which highlights the professional importance of the decision-maker. In security leadership, the application of these theories underpins ethical decision-making and shapes an environment of trust and collaboration. AI supports this mechanism by analyzing data and presenting adaptive solutions, giving leaders tools to effectively respond to contemporary challenges.

Key words: *security leadership, security risks, intelligent leadership*

1. INTRODUCTION

Institutional leadership aims to use human resources in a complex integrative way to ensure the achievement of institutional objectives in a dynamic and competitive environment. In this context, institutional leaders use new technologies and management practices flexibly and innovatively to ensure an inclusive and effective institutional climate, ensuring the sustainability of organizations. The current external context dominated by multiple challenges represents a new threshold for the orientation of the concerns of the institutional leadership forced to respond pro-actively and effectively to external security threats so that the outputs of the institutional system are effective in capturing the opportunities and ensure the integration of the institution in the macroeconomic context.

2. SPECIALIZED BACKGROUND

Security leadership represents an important orientation that is intended to ensure the stability and protection of the organization at regional and national levels. The external environment of organizations has been increasingly subject to the effects of globalization, and in this context, new challenges such as cyber threats (Dragomir, 2017), acts of terrorism, and climate change are points of reference in formulating

and implementing effective security strategies. Effective security leadership ensures the elimination of uncertainty factors (Dragomir, 2017) from the internal and external environment of the institution, orienting towards global security objectives and in this sense, the skills of strategic analysis and critical decision (Dragomir, 2017) must be complemented with the skills of managing available resources (Dragomir, 2017).

The study of the specialized literature was carried out by using some meta-analysis tools made available by the Web of Science platform. Some 321 publications on the importance of leadership in

organizations were investigated, with over 90% of them in the period 2012-2024. If until 2019 the average of articles on the Web of Science platform was 22 articles per year, after the outbreak of the pandemic and the geopolitical conflict, an increase in interest in this field of research was noted, with the average of published articles being 35 articles per year. The 321 publications attracted a total of 4,295 citations with a citation average of 13.5 articles per item and an impressive Hirsch index of 28 points. Regarding the interest in publication, a number of 5 clusters of interest can be observed, they are represented differently in Figure 1.

Fig.1 Bibliometric analysis on security leadership on a sample of 321 publications on the Web of Science platform

The 5 clusters aim at organizational culture and its interaction with security leadership, the adoption of organizational policies to achieve resilience and combat vulnerabilities induced by climate change and information risks (Dragomir, 2017), digital transformation and the decision process in the Industry 4.0 era, crises of security in the European Union and the threats under the geopolitical context and last but not least the impact of covid 19 on organizational security.

3. SECURITY LEADERSHIP PERSPECTIVES

It is appreciated that an intelligent leadership in security requires an ability to understand and foresee geopolitical dynamics as well as the ability to coordinate work teams involved in maintaining security. Maintaining inter-institutional cooperation is particularly important in managing security risks and developing an organizational culture based on integrity, accountability and collaboration can ensure an adequate response to vulnerabilities induced by multiple crises.

From a security perspective, leadership is complemented by complex needs for stability and protection against increasingly diverse and complex threats. We appreciate that in the field of security, the mix of leadership skills consists of common skills, necessary for effective institutional leadership, and specific skills regarding adaptation to security challenges. Figure 1.2 shows the most important dimensions of institutional security leadership.

Conceptualization
• Security leadership is represented by the ability to inspire, coordinate, and manage human and material resources to prevent, respond to, and recover from a security incident. It includes both operational leadership, which refers to the direct management of resources during crises, and strategic leadership, which focuses on creating and implementing security policies.
Competencies
• Security leaders must possess a wide range of skills, such as the ability to assess threats and vulnerabilities and create proactive action plans, the ability to make quick and informed decisions in crisis situations when information may be incomplete or contradictory, and the ability to communicate instructions and information clearly to both the general public and other agencies.
Theories
• Transformational leadership emphasizes motivating and inspiring the team to achieve greater goals and innovate in the face of obstacles.   • Servant leadership focuses on the needs and development of team members,

	creating a trusting and collaborative environment.
•	Emotional leadership emphasizes adapting the leadership style to a threat or crisis.
Challenges	
•	Managing unusual and unpredictable threats, such as cyberattacks or terrorism.
•	The need to coordinate efforts between different agencies and organizations, each with its own mandates and resources.
•	Addressing technological vulnerabilities in an increasingly complex digital environment.
Values	
•	Long-term success in security depends on developing a strong organizational culture based on integrity, accountability, and cooperation.
•	Leaders have the duty to cultivate and promote ethical principles, as well as to create an atmosphere of openness and trust.
The influence of technology	
•	Technology is both a source of vulnerabilities and a means of protection.
•	Leaders must stay up to date with the latest developments and ensure that their security strategies include effective technological solutions.

Fig.2 Important dimensions of institutional security leadership

It is observed that security represents a special field of leadership considered challenging due to the necessary mix of strategic operational and interpersonal skills. The analysis of motivational theories highlights some fundamental concepts whose relevance for institutional leadership remains current both from the perspective of opportunities for managing the labor factor and from the perspective of the adaptive behavior of people engaged in executive functions based on their own interests, subjective perceptions and personal goals that affect behavior and performance at work.

Regarding security leadership, David McClelland's theory of needs circumscribes the skills of effective leadership from the perspective of the ability to delegate tasks, coordinate work teams, and assess security risks. A diagram of the connection between the theory of needs and security leadership is shown in Figure 3.

Fig. 3 McClelland's Theory of Needs and the Connection to Institutional Security Leadership

From the perspective of security leadership, the theory of self-determination characterizes the skills of leaders from the perspective of identifying the conditions necessary to ensure an optimal level of self-determination of employees, respectively establishing the boundaries between assigned tasks and tasks assumed by employees. In other words, the more flexible the level of assignment of tasks (Dragomir 2017) and the more employees are interested in assuming them, the higher the level of organizational performance will be. The diagram representing the connection between self-determination theory and security leadership is shown in Figure 4 below.

Fig. 4 Self-Determination Theory (SDT) and the connection to institutional security leadership

4. CONCLUSIONS

In conclusion, modern approaches to institutional leadership involve a diverse set of skills and qualities that are essential to navigating contemporary challenges and opportunities. From emotional intelligence and adaptability to social responsibility and technological innovation, today's leaders must be prepared to guide their organizations with vision, empathy, and integrity. They do not just manage, but inspire and transform, building resilient, innovative, and future-oriented organizations. Modern leaders must identify and develop emerging talents within the organization, providing opportunities for mentoring, coaching and continuous training. Investing in the development of future leaders not only ensures the long-term sustainability of the organization, but also promotes a culture of growth and excellence. Modern leaders must identify and develop emerging talents within the organization, providing opportunities for mentoring, coaching, and continuous training. Investing in the development of future leaders not only ensures the long-term sustainability of the organization but also promotes a culture of growth and excellence. In the era of digitalization, leaders must also be innovators, able to embrace and use technology to improve the processes and performance of institutions. Digitalization brings with it new opportunities, but also new challenges, and leaders must be prepared to navigate this ever-changing landscape. Here, the ability to think strategically and implement effective technological solutions becomes an indispensable asset. In conclusion, modern approaches to institutional leadership require a reconceptualization of the role of the leader. They must be visionary, empathetic, adaptable, and technologically competent. Their success is not measured only by immediate results but by the ability to create resilient, innovative, and future-oriented organizations. Thus, modern leadership is distinguished by the ability to embrace change, to inspire, and to lead with a clear vision, based on strong values and ethical principles.

REFERENCES

[1] Aven, T. and Zio, E. (2021) 'Globalization and global risk: How risk analysis needs to be enhanced to be effective in confronting current threats', *Reliability Engineering & System Safety*, 205, p. 107270. doi : https: //doi.org/10.1016/j.ress.2020.107270.

[2] Abdulrasool, FE and Turnbull, SJ (2020) 'Exploring security, risk, and compliance-driven IT governance model for universities: applied research based on the COBIT framework',

International Journal of Electronic Banking, 2(3), pp. 237–265. two : 10.1504/IJEBANK.2020.111438.

[3] Asamoah, D. *et al.* (2022) 'Antecedents and outcomes of supply chain security practices: the role of organizational security culture and supply chain disruption occurrence', *International Journal of Quality & Reliability Management*, 39(4), pp. 1059–1082. two : 10.1108/IJQRM-01-2021-0002.

[4] Buckley, PJ (2020) ' The theory and empirics of the structural reshaping of globalization.', *Journal of International Business Studies*. England, pp. 1580–1592. two: 10.1057/s41267-020-00355-5.

[5] Boustras, G. and Waring, A. (2020) 'Towards a reconceptualization of safety and security, their interactions, and policy requirements in a 21st-century context', *Safety Science*, 132, p. 104942. doi: https://doi .org/10.1016/j.ssci.2020.104942.

[6] Cremer, F. *et al.* (2022) 'Cyber risk and cybersecurity: a systematic review of data availability', *The Geneva Papers on Risk and Insurance. Issues and practice*, 47(3), pp. 698–736. two: 10.1057/s41288-022-00266-6.

[7] Chowdhury, N. and Gkioulos, V. (2021) 'Cyber security training for critical infrastructure protection: A literature review ', *Computer Science Review*, 40, p. 100361. doi: https://doi.org/10.1016/j. cosrev.2021.100361

[8] Dragomir, F. (2017), 'Artificial Intelligence techniques cybersecurity', *Proceedings International Scientific Conference Strategies XXI*, Vol.3, pp. 147-152.

[9] Dragomir, F. (2017), 'Application of the method of covering zeros in decision-making foundations', *International scientific conference Strategies XXI. The Complex and Dynamic Nature of the Security Environment*, pp. 342-347.

[10] Dragomir, F. (2017), 'Effectiveness of the use of forces and means of fighting', *International scientific conference Strategies XXI. The Complex and Dynamic Nature of the Security Environment*, pp. 342-352.

[11] Dragomir, F. and Alexandrescu, G. (2017), 'The axiomatic character of decision', *Bulletin of "CAROL I" National Defense University*, Vol. 6, pp. 16-22.

Dragomir, F. (2017), 'The modeling of decisional problems', *Bulletin of "CAROL I" National Defence University*, Vol.1, pp.72-75.

[13] Dragomir, F. (2017), 'Applications of intelligence artificial in the foundation decision', *Bulletin of "CAROL I" National Defense University*, Vol. 4, pp. 56-61.

[14] Dragomir, F. (2017), 'The efficacy of a loss servicing system', *Annals–Series on Military Sciences,* Vol. 9, pp.97-105.

[15] Dragomir, F. (2017), 'Mathematical models specific to the military domain', *Strategic Impact*, No. 64, pp. 62-67.

[16] Dragomir, F. (2017), 'Programming Applications linear', *Bulletin of "CAROL I" National Defense University*, Vol.4, pp.59-64.

[17] Dragomir, F. (2017), 'Efficiency action soldier using theory graphs' *Bulletin of "CAROL I" National Defense University*, Vol. 2, pp. 48-55.

[18] Ghahramani, F. *et al.* (2023) 'Continuous improvement of information security management: an organizational learning perspective', *European Journal of Information Systems*, 32(6), pp. 1011–1032. two : 10.1080/0960085X.2022.2096491.

[19] Hogenbirk, S. and van Dun, DH (2021) 'Innovative ethics officers as drivers of effective ethics programs: An empirical study in the Netherlands', *Business Ethics, the Environment & Responsibility*, 30(1), pp. 76–89. doi: https://doi.org/10.1111/beer.12310

[20] Moerschell, L. and Novak, SS (2020) 'Managing crisis in a university setting: The challenge of alignment', *Journal of Contingencies and Crisis Management*, 28(1), pp. 30–40. doi: https://doi.org/10.1111/1468-5973.12266.