

The Winning Strategy and the Risk Management of The Indonesia Navy Defense in Anticipating the VUCA Environment

Arip Supriyadi ¹ and Budi Setyoko ²

* Correspondence Author: aripsupriyadi54@gmail.com

^{1,2} Sekolah Staf dan Komando Tentara Nasional Indonesia (SESKO TNI), Bandung, Indonesia

INDEXING	ABSTRACT
Keywords: Keyword 1; Grand Strategy Keyword 2; The Indonesia Navy Keyword 3; VUCA Keyword 4; Environment	The strategic planning and defense systems in Indonesia present a fascinating subject for discussion. The aim of this article is to ensure that all parties involved in defense design are more conscious of the developments within a VUCA (Volatile, Uncertain, Complex, and Ambiguous) strategic environment. This article used the descriptive method with in-depth elaboration analysis. The result shows that developing a grand strategy to achieve victory, several key considerations must be taken are Evaluating risks and uncertainties, Analyzing the distinction between security and safety, Interpreting the concept of victory as encompassing peace, not just success in conflict, Basing effective strategies for addressing threats and vulnerabilities on thorough research, Identifying and addressing threats and vulnerabilities are crucial for maintaining global stability and peace. We have to consider the VUCA environment in making the grand strategy. Volatility refers to a dynamic, non-linear system where causes and effects can lead to imbalances. Uncertainty refers to unpredictable conditions that necessitate Indonesian Navy careful approach in planning defense strategies and determining the appropriate structure for the armed forces. Complexity illustrates the patterns of past events but cannot predict their recurrence. Ambiguity refers to an uncertain situation that requires the Indonesian Navy to be prepared to act if conditions escalate to a more dangerous level than anticipated. The Grand Strategy of the Indonesian Navy Defense must take into account the VUCA Strategic Environment, which encompasses Volatility, Uncertainty, Complexity, and Ambiguity. Understanding the complexity of VUCA is vital as it enhances organizational self-awareness, particularly within the military

Article History

Received 21 March 2025; Revised 16 June 2025; Accepted 30 June 2025 ;

Publish 02 July 2025

INTRODUCTION

The determination of a victory in a war is often based on subjective assessments rather than definitive supporting facts or conditions, as it relies on the opinions of individuals or groups. Consequently, victory in war may not align with the actual parameters observed on the battlefield, such as the number of casualties or the territory gained. While these factors do influence success, ironically, the most crucial element is one's perception of the circumstances, rather than the reality, as well as described by Johnson and Tierney (2006), Whitehead (2010), Sullivan (2012), Roberts (2020), and also Sun and Wang (2025).

Nothing is guaranteed forever, because a battle won today doesn't ensure victory tomorrow, as well as described by Sachs (2012). Therefore, when developing a strategy for victory, it's crucial to have a broad vision, making the implementation

flexible and adaptable to sudden changes (Rosen, 1991 ; Kagan, 2007). Consequently, a rigid approach where the boss's orders must be followed one hundred percent even if the field conditions don't permit it is increasingly being abandoned.

To achieve lasting success in designing a winning strategy, one must develop a well-thought-out concept. Maturity in this context means that the strategist must possess a broad vision, anticipate potential scenarios, and devise appropriate solutions to address them (Chermack, 2011). These qualities are essential for strategy designers because, as is well-known, they will inevitably encounter a VUCA (Volatile, Uncertain, Complex, and Ambiguous) environment (Dearlove, 2023). Victory serves as an analytical framework encompassing the execution of military operations with the aim not only to win the war but also to achieve political objectives (Vego, 2009 ; Seybolt, 2007).

The strategic planning and defense systems in Indonesia present a fascinating subject for further discussion. The aim of this article is to ensure that all parties involved in defense design are more conscious of the developments within a VUCA (Volatile, Uncertain, Complex, and Ambiguous) strategic environment. Such developments increase the risk and variety of threats, meaning defense design must always be prepared for a range of potential scenarios.

LITERATURE REVIEW

Du and Chen (2018), Zamani and Soudane (2022), Spain and Woodruff (2023), Barrera (2024), Kiluange *et al* (2024), and also Maftei and Radu (2024) outlined that in defense planning amidst a VUCA strategic environment, the strategic concept of victory can be described as follows:

- Possessing exceptional adaptability to the dynamics of environmental and era developments.
- Being able to anticipate uncertainty by developing flexible and well-thought-out plans.
- Having the capacity to manage complex problems by breaking them down into smaller components to find solutions.
- Having the ability to handle ambiguity by gathering valid and thorough information before taking actions and making decisions.

In the implementation of VUCA and the development of studies by Lubowiecki-Vikuk *et al* (2023), programs and activities are constantly changing due to operational activities as previously mentioned. The solution is to implement innovative strategies and programs. When carrying out innovative programs, defense planning staff must consider several factors. First, the principles of military planning programs aim to assist the Commander in timely decision-making (Shortland, 2018). Second, programs and activities are designed to support planning, training, and procurement within the assigned personnel period. Third, planning includes recommendations for organization, training, and equipment based on the type of operational tasks (war) assigned (Fazekas, 2022).

RESEARCH METHOD

This article used the descriptive method with in-depth elaboration analysis. Descriptive research with in-depth elaboration analysis involves collecting, processing, and analyzing data to provide an overview of the existing problem. This approach can also be viewed as a method for identifying patterns and relationships within the data. Descriptive research steps with in-depth elaboration include :

1. Describe the problem being researched

2. Describe the objectives of the research
3. Conduct in-depth studies related to the results and discussions from various sources
4. Describe the results and discussions with real steps
5. Providing recommendations and suggestions from research results

RESULT AND DISCUSSION

The Importance of the Grand Strategy in Achieving the Victory

In warfare, achieving military victory is insufficient, but political victory must also be pursued. Understanding the distinction between these types of victories enables the weaker side to defeat the stronger one. War involves a combination of strategy, luck, and victory at the strategic level. While ideas can triumph in every battle, they may still lose the war if they falter at the strategic level. Mastery of the tactical, operational, and strategic levels is essential for achieving comprehensive victory. Even if a military wins tactically and operationally, it may experience failure in war if it has failed at the strategic level.

Power does not guarantee victory, and defeats can provide valuable lessons. Success in large-scale conflicts requires a blend of military strategy and smart tactics. With a deep understanding of the complexities of war and the various ways to achieve victory, leaders can choose the most effective strategic path thoughtfully. By maintaining a balance between tactics and strategy and having a thorough understanding of the war's purpose, a meaningful and worthy victory can be achieved without compromising principles and integrity.

Selecting a strategy that aligns with the objectives of the Idea is crucial to prevent strategic failure. Grand strategy, a key concept in military and national security, encompasses the utilization of all state instruments of power, not just the military, to attain long-term goals (Betts, Richard, K, 2019). It involves balancing resources to achieve various objectives and can be either offensive, defensive, or a mix of both. The significance of grand strategy lies in its ability to endure beyond the tenure of a single government or leader, enabling countries to consistently pursue their strategic goals despite changes in leadership.

Strategic leaders must recognize that grand strategy encompasses both war and peace. They need to utilize all state instruments of power and maintain a balanced allocation of resources to achieve long-term objectives. This grand strategy may include offensive or defensive tactics, depending on the situation and desired goals. While specific strategies may evolve over time, grand strategy remains crucial for achieving national security and military objectives. It provides a robust foundation for a nation to address challenges both domestically and internationally. Therefore, it is essential for leaders and strategists to comprehend and effectively implement the concept of grand strategy in national security planning.

When developing a grand strategy to achieve victory, several key considerations must be taken are :

- Evaluating risks and uncertainties.
- Analyzing the distinction between security and safety.
- Interpreting the concept of victory as encompassing peace, not just success in conflict.
- Basing effective strategies for addressing threats and vulnerabilities on thorough research.
- Identifying and addressing threats and vulnerabilities are crucial for maintaining global stability and peace.

Considering the VUCA Strategic Development

1. Volatility

Volatility refers to a dynamic, non-linear system where causes and effects can lead to imbalances. To understand this better, consider an example: while the Navy is focused on executing their programmed activities, an unforeseen event suddenly necessitates an immediate decision. In essence, volatility involves any changes to previously agreed-upon plans due to unexpected circumstances. The factors that cause volatility are :

- Shifts in political conditions make it impossible for planners to predict the types of conflicts they might encounter in the future. This situation hinders their ability to simulate scenarios and devise comprehensive plans.
- Fluctuations in economic conditions hinder the possibility of long-term planning. This is because designing an effective defense requires sufficient resources. A changing economic landscape will significantly impact the availability of resources in the future.

A defense system that remains relevant to the times is crucial for Indonesia, a nation abundant in natural resources. The immense potential of these resources makes it a target for other countries seeking to seize such wealth, which could lead to sudden attacks. Therefore, it is vital for the defense planners of the Indonesian Navy to factor in technological and natural resource development aspects when creating a strategic defense system. Defense planners in this case can use volatility to the advantage of the competition through:

- Using tools such as future orientation analysis.
- Constantly evaluating decisions to ensure they meet the demands of national defense in Technological developments to secure resources Indonesian nature

Defense that is always relevant to the times in particular, Indonesia is needed as one of the countries with abundant natural resources. The potential is so great that it becomes a target for other countries that want to seize all that wealth so that they can suddenly attack. Indonesian Navy defense planners must be able to consider aspects of technological and natural resource development in realizing a strategic defense system.

High volatility also makes it difficult for Marine Corps defense planners to prepare for future conflicts, but on the other hand, it doesn't mean it always has a bad impact. The reason is because volatile situations are useful for forcing planners to make quick and informed decisions. If the planner is a little behind to adjust appropriately and quickly to the changes. The defense strategy may have expired so that it is no longer effective in maintaining the country's resilience. Therefore, it is very important to continue to follow the development of scientific and technological advances because these two things will also affect the shape and pattern of war in the future. Although asymmetric warfare patterns and forms still occur in some areas, conventional warfare techniques are rapidly evolving.

Future wars are likely to consider reducing the impact of damage and casualties among civilians by applying high-precision weapons technology and the application of robotic technology to various weapon systems to reduce the deployment and deployment of war personnel and equipment. Thus, military power is one of the most effective ways to protect national interests. No matter how powerful a weapon system is, it is bound to become obsolete along with the rapid changes in today's high-tech world. This is the military's responsibility to balance technology and train its personnel to use the most effective military hardware and tactics as the times change. Military forces are trying to keep pace by implementing technological advances in military units.

In addition to technology issues, preparing yourself for situations

The volatile ones can also be applied through:

- Accept change and build motion space for problems unknown issues.
- Observing, orienting, deciding, and acting can helping leaders make good decisions in VUCA situation.

2. Uncertainty

Uncertainty refers to unpredictable conditions that necessitate Indonesian Navy careful approach in planning defense strategies and determining the appropriate structure for the armed forces. This pervasive uncertainty leaves planners unsure about potential threats and opportunities to mitigate risks. Such uncertainty negatively impacts operational effectiveness and can lead to resource wastage. In essence, uncertainty places planners in a dilemma, perpetually surrounded by doubts and concerns about emerging risks. For example, political policy changes have had a major impact on the power structure of the Indonesian Navy.

In the international system context, Indonesia is situated in the Indo-Pacific region. This region is highly strategic, serving as a hub for the global economy and shifts in global power. Additionally, it has inherited numerous unresolved political and security issues from the Cold War era. Notably, two major powers are projecting their foreign policies in the Indo-Pacific: China with its New Maritime Silk Road and Economic Belt, and the United States with its Trans-Pacific Partnership (TPP) policies. Consequently, there are concerns about how these developments might impact Indonesia's future.

On the other hand, the ASEAN region holds significant strategic importance both economically and militarily due to its connection between the Pacific and Indian Oceans. In the past two decades, ASEAN countries have bolstered their military capabilities, particularly focusing on their naval and air forces. Similar to Southeast Asia, East Asia also faces territorial disputes and regional conflicts. To address these potential conflicts, ASEAN countries continue to enhance their defense forces and strengthen their internal relations to accommodate major powers in the region. This is closely linked to globalization, which involves the integration and interdependence of political, social, cultural, economic, technological, and other aspects.

If referring to the background, the East Asian region is an open area and a very strategic place located at the center of global economic growth, so become one of the centers of exchange between the world's major powers. In addition, the region inherited many unresolved political and security issues from the Cold War era. Several countries in East Asia have made economic progress, including Japan, followed by Taiwan, South Korea and now China. Meanwhile, traditional security issues in the form of sovereignty disputes continue to cause tensions in relations between countries in the same area including countries in Asia Southeast. As a result, the region has become one of the most tense and competitive areas for the military today. In addition to analyzing potential global problems that can affect the country's defense. Marine Corps intelligence personnel also understand regional policy phenomena that may or may not pose a direct threat directly that has an impact on defense planning strategies.

For example, China is the largest trading partner for many countries in the region, such as South Korea. If one day China suddenly stops trading, it can result in the country others decided to do the same. International trade will stop when many countries follow this trend and stop trading with each other. If that happens, many people will lose their jobs. Facing these uncertainties, the strategies that will be used are:

a. Formation Strategy

Strategies designed to transform the strategic environment and directing the system towards a new structure mainly through technological innovation. The goal is to change the playing field and establish new rules of competition, as well as take a leading role in the competition. However, because innovating technology cannot be applied in a short time, the formation strategy tends to be a long-term strategy to invest resources to deal with future dangers.

b. Adaptation strategies

Strategies designed to maximize performance under a range of contingencies. Most commonly used by parties who already have positions in the system and want to maintain the status quo because they know they will often have to deal with many problems in the near future. So they need to maintain resources to meet contingencies. Britain in the 1920s is a good example of a country that used an adaptive strategy because it was trying to manage a large empire and had many peacetime missions and obligations to meet in the near future.

c. Reconstitution strategy

The third strategy is reconstitution, which is designed to minimize costs and invest resources in the long term to rebuild. From this strategy each country can secure a more advantageous position in the future. Countries that have been defeated militarily and need to undergo drastic reforms often use the reconstitution strategy. The emphasis is on internal reform and trying to minimize the problems that the country must face so that it can focus on development.

3. Complexity

Complexity illustrates the patterns of past events but cannot predict their recurrence. This is because the pattern only appears among several possibilities. Complex situations also involve overlapping rules of individual components and the relationships or connections among planning staff. Consequently, understanding the overall outcomes of decisions becomes challenging. Such complexity arises due to the involvement of many individuals with diverse perspectives in developing a plan. Highly complex plans are at risk of being interpreted in multiple ways and are difficult to implement in reality.

The complexities in defense planning stem from the need to thoroughly identify threats and adversaries. There are at least two main types of threats that must be considered: military and non-military threats. Military aggression remains a possibility, while non-military aggression is also frequently employed. Non-military threats can include internal conflicts based on ethnicity, religion, and terrorism sponsored by state and non-state actors. Threats from both state and non-state actors can escalate, creating unexpected challenges. Such adversaries possess powerful elements of surprise that can ultimately impact the strategic environment.

An example of a complex situation is the presence of an armed and organized threat capable of endangering Indonesia's sovereignty, territorial integrity, and national safety. Such military threats can manifest as both aggressive and non-aggressive actions. In these circumstances, prioritizing the country's military competence is crucial, as it determines their ability to counter and eliminate all military threats from both internal and external sources to maintain regional integrity. Therefore, the strategic environment of VUCA in defense planning must accurately analyze the complexity of threats and adversaries. Mistakes in identifying these threats and adversaries can lead to a weakened national defense, particularly for the Indonesian navy.

VUCA strategic environment in defense planning must be able to analyze the complexity of threats and enemies accurately. Mistakes in identifying threats and enemies can result in a weak national defense, especially the navy. Defense planning is directed to face the complexity of threats in the form of military and non-military. An example of a complex situation here is the presence of a threat that uses armed and organized force and is considered to have the ability to endanger state sovereignty, the integrity of the territory of the entire nation. Military threats can be in the form of military threats in the form of aggression and non-aggression military threats. Facing such a situation makes the country's military competence a top priority because this will determine whether or not it is able to fight and eliminate all military threats from internal and external parties in order to maintain territorial integrity. So it can be said that military competence is directly proportional to the guarantee of state security and defense. Various strategies that can anticipate complexity are :

- a. Have a deep understanding of the problems
- b. Identifying Root Causes Based on Cause and Effect Relationships
- c. Optimizing Commander through Operational Visualization

4. Ambiguity

Ambiguity refers to an uncertain situation that requires the Indonesian Navy to be prepared to act if conditions escalate to a more dangerous level than anticipated. This ambiguity makes it difficult to discern which actions will escalate or de-escalate tensions. Even well-intentioned military decision-makers can inadvertently increase tensions due to this uncertainty. Ambiguity arises from the low accuracy and validity of obtained information, which can lead to information management failures and, consequently, incorrect defense planning decisions. Therefore, even though the Indonesian Navy is supported by trained intelligence to gather data and strategic information, they must still prioritize accuracy and data validity to avoid being misled.

The importance of understanding the validity of information so as not to be deceived. Usually this type of deception is directed at changes in observable data, for example, leading a party to believe in the presence of special forces, or hiding information gathering efforts. To unravel and detect such camouflage, it is very necessary to collect more data on many paths and direct it to inductive conclusions, trying to find the right pattern from the observations. To minimize ambiguity, planners should categorize information into distinct groups, such as differentiating between pre-planning and planning, and distinguishing between strategic planning and operational planning. All collected information must be verified for accuracy. This is particularly critical when the military conducts espionage to uncover confidential details from other countries, such as strategies, military capabilities, and locations for their operations. The reason is that the obtained information may be misleading.

Thus, ambiguity is a dynamic situation in facing the problem of predicting future events. Future events cannot be predicted accurately, so military planners must respond to every development in the VUCA strategic environment that can come from:

- Enemies
- Threats
- Limitations
- Cognitive
- Mental
- Psychological
- International system
- Strategic interactions

- Intelligence and deception
- Resources
- Technology

Achieving a Winning Strategy with VUCA

Realizing that VUCA is so complex is very important because on the other hand it will also make every party in the organization, especially the military, more self-aware. As is known, in a military organization, when carrying out its duties, it consists of various components such as the commander and staff, as well as other operational components. These components must function and interact with an equally complex external environment. National defense planners must not only plan, but must also represent their organization during the necessary interactions with the maze of entities in other organizations that form the strategic environment.

Military organizations in carrying out their duties consist of commanders and staff, as well as operational components as the organization's goals. These components must function and interact with an equally complex external environment. Even now in its application according to Gidley, (2017) explains that the business world has also adopted VUCA in the field of strategy and planning. The reason is because by realizing VUCA, businesses are more aware of any changes that could affect the company's survival in the future.

According to Kornelsen, (2019: 27-41) explains that a strategic environment that has a VUCA nature should encourage leaders to emphasize collaboration rather than individual efforts to develop an adequate organizational vision, defense planners develop the ability to collaborate, cooperate, and compromise to influence external institutions. Given the breadth of defense planners' responsibilities and the far-reaching effects of decisions, strategic planners must consider a variety of facts, influences, and planners must consider everything, perhaps just a little too much.

Defense planning staff must approach the VUCA challenge with intelligence, energy, and urgency, confident that this reality and complexity can easily be turned into competitive advantage when turned against the enemy. Mastering the strategic environment requires strategy. Strategy in practice requires forecasting future cause-effect relationships or it will be impossible to carry out purposeful action in war. More specifically, of course, achieving victory through VUCA is not only achieved by being aware of it, but there is a series of processes that must be carried out to describe the VUCA situation into something simpler.

Risk Management in the Anticipation Of Vuca

Risk management is a process of monitoring, managing, and making decisions to avoid the risk of loss or inefficiency of the organization. In this regard, although the defense components, be it the army, navy, or air force, are not a business, they are all still organizations that have an important task, namely maintaining territorial sovereignty. An activity that will certainly give rise to many risks, so it definitely requires a good management system. Risk management in anticipation of Vuca aims to:

- Realizing a system that is increasingly approaching the ideal good government.
- Providing a strong basis for decision making and planning
- Encouraging proactive and anticipatory management
- Improving the effectiveness of allocation and efficiency of use of organizational resources;
- Improving regulatory compliance;
- Improving stakeholder trust;

- Improving organizational resilience;
- Determining and managing risks faced and minimizing the impacts caused;
- Improving organizational performance in achieving goals
- Creating employee awareness and concern for the importance of risk management.

The determination of risk criteria is a mandatory stage after the determination of the scope and context in the risk management stage has been completed. So the meaning of risk criteria here is a standard that shows the high or low possibility or frequency of a risk becoming a reality and how significant the impact or consequences will be in the future. In terms of formulating these risk criteria, it would be better if they were in line with the risk management framework in accordance with the specific objectives to be achieved. The steps to implement optimal risk management in facing a VUCA environment are:

a. Determination of risk criteria

Risk criteria are absolutely mandatory to be implemented before entering the risk management process itself (Rachmina, 2021). Its implementation here is also not made once and then left alone but must continue to go through evaluation or review to be updated according to needs and changes that occur. Then how the level of new risk can be divided into several specific criteria only if after all risks have been identified for each goal or target, Thus all risk criteria are specific to each risk. In order for the presentation of the measurements to be accurate, there are several aspects that need to be considered first in determining the risk criteria, namely:

- The nature and type of uncertainty that can affect the results and objectives (both tangible and intangible)
- How the consequences (both positive and negative) and possibilities will be determined and measured;
- Time-related factors;
- Consistency in the use of measurements;
- How the level of risk is determined;
- How the combination and sequence of various risks will be calculated;
- Organizational capacity.

b. Setting Parameters to Dive Further into Risk Analysis and Risk Levels

Parameter determination here, its application includes:

- Creating a combination of the significance of the impact caused with the probability of its occurrence. From here the magnitude of the risk can be estimated.
- The results of the magnitude of the risk obtained are then entered in the risk analysis matrix to calculate the extent of the risk level.
- The level of significance of the impact, the level of probability of occurrence, and the level of risk all use numbers between 1-5 to indicate its achievement.

c. Setting Risk Appetite

Risk appetite is the basis for determining risk tolerance, namely the quantitative limits of the level of probability of occurrence and the level of acceptable risk impact, as stated in the risk criteria. In addition, risk appetite shows the level of courage that can be implemented by a party to take risks in an effort to realize the goals/targets they want to achieve. Some tend to play it safe, but there are also those who choose the high risk, high gain path. The determination of risk appetite for each risk category is categorized

into several categories as follows:

- Risks at a level that is still low or very low are acceptable and do not require a risk mitigation process.
- Risks with moderate to very high levels need to be prioritized for handling to reduce the risk level to a safer level.

CONCLUSION

Securing military victory is not enough, but also political triumph must also be pursued. Recognizing the difference between these types of victories allows the weaker side to overcome the stronger one. Power alone does not guarantee success, and defeats can offer valuable lessons. Achieving success in large-scale conflicts requires a combination of military strategy and smart tactics. Choosing a strategy that aligns with the Idea's objectives is essential to avoid strategic failure. The Grand Strategy of the Indonesian Navy Defense must take into account the VUCA Strategic Environment, which encompasses Volatility, Uncertainty, Complexity, and Ambiguity. Understanding the complexity of VUCA is vital as it enhances organizational self-awareness, particularly within the military. However, we must implement the Risk management in anticipating the VUCA with Determination of risk criteria, Setting Parameters to Dive Further into Risk Analysis and Risk Levels, and also Setting Risk Appetite

REFERENCES

Authored Book

- Chermack, T. J. (2011). *Scenario planning in organizations: how to create, use, and assess scenarios*. Berrett-Koehler Publishers.
- Dearlove, D. (2023). *Certain Uncertainty: Leading with Agility and Resilience in an Unpredictable World*. John Wiley & Sons.
- Johnson, D. D., & Tierney, D. (2006). *Failing to win: Perceptions of victory and defeat in international politics*. Harvard University Press.
- Kagan, F. (2007). *Finding the target: The transformation of American military policy*. Encounter Books.
- Rosen, S. P. (1991). *Winning the next war: Innovation and the modern military*. Cornell University Press.
- Sachs, J. (2012). *Winning the story wars: Why those who tell (and live) the best stories will rule the future*. Harvard Business Press.
- Seybolt, T. B. (2007). *Humanitarian military intervention: the conditions for success and failure*. Oxford University Press, USA.
- Sullivan, P. L. (2012). *Who wins?: Predicting strategic success and failure in armed conflict*. Oxford University Press.
- Vego, M. N. (2009). *Joint operational warfare: Theory and practice*. Government Printing Office.
- Whitehead, A. N. (2010). *Process and reality*. Simon and Schuster.

Internet Source

- Roberts, B. (2020). On Theories of Victory, Red and Blue. *Livermore Papers on Global Security*, 7. <https://cgsr.llnl.gov/sites/cgsr/files/2024-08/CGSR-LivermorePaper7.pdf>

Journal Articles

- Barrera, M. S. (2024). Strategies For Enhancing Military Leadership: A Case Study Of

- Vuca Prime In The Colombian Aerospace Force. *Journal of Defense Resources Management (JoDRM)*, 15(1), 95-108.
- Du, J., & Chen, Z. (2018). Applying Organizational Ambidexterity in strategic management under a “VUCA” environment: Evidence from high tech companies in China. *International Journal of Innovation Studies*, 2(1), 42-52.
- Fazekas, F. (2022). Application of Artificial Intelligence in Military Operations Planning. *AARMS–Academic and Applied Research in Military and Public Management Science*, 21(2), 41-54.
- Lubowiecki-Vikuk, A., Budzanowska-Drzewiecka, M., Borzyszkowski, J., & Taheri, B. (2023). Critical reflection on VUCA in tourism and hospitality marketing activities. *International Journal of Contemporary Hospitality Management*, 35(8), 2983-3005.
- Shortland, N., Alison, L., & Barrett-Pink, C. (2018). Military (in) decision-making process: A psychological framework to examine decision inertia in military operations. *Theoretical Issues in Ergonomics Science*, 19(6), 752-772.
- Spain, E., & Woodruff, T. (2023). The applied strategic leadership process: Setting direction in a VUCA world. *Journal of Character and Leadership Development*, 10(1), 47-57.
- Sun, W., & Wang, J. (2025). Measuring combat effectiveness: a novel method based on two-dimensional frontline advancement rate. *International Politics*, 1-25.
- Zamani, H., & Soudane, J. A. (2022). Strategic leadership and VUCA environment (volatile, uncertain, complex and ambiguous). *Revue Internationale Des Sciences De Gestion*, 5(1).

Proceedings

- Kilunge, F., Rouco, C., & Silva, A. P. (2024, November). Military leadership in a VUCA environment and BANI Scenario: a systematic literature review. In *European Conference on Management, Leadership & Governance* (pp. 641-662). Academic Conferences International Limited.
- Maftai, V. L., & Radu, R. E. (2024). Analysis Of The Current Security Environment Through VUCA. In *International Scientific Conference" Strategies XXI"* (Vol. 20, pp. 286-292). " Carol I" National Defence University.