

# Military Leadership in a VUCA Environment and BANI Scenario: A Systematic Literature Review

Felisberto Kiluange<sup>1</sup>, Carlos Rouco<sup>2</sup> and Ana Paula Silva<sup>3</sup>

<sup>1</sup>Higher Military Technical Institute (ISTM), Luanda, Angola

<sup>2</sup>Intrepid Lab/ CETRAD, Lusófona University, Lisboa, Portugal

<sup>3</sup>CeiED-Lusófona University, Lisboa, Portugal

[a22102219@alunos.ulht.pt](mailto:a22102219@alunos.ulht.pt)

[carlos.rouco@ulusofona.pt](mailto:carlos.rouco@ulusofona.pt)

[p4000@ulusofona.pt](mailto:p4000@ulusofona.pt)

**Abstract:** The World has been subjected to successive and rapid changes that modified its order and given rise to a constant state of certainty of uncertainties, as a fluid state of accelerated change and vagueness in the global scenario. For some authors we are living in an environment of Volatility, Uncertainty, Complexity and Ambiguity (VUCA), as for others in a Brittle, Anxious, Nonlinear and Incomprehensible (BANI) scenario that affects organizations, with serious implications for their leadership and management. In the case of countries' military organizations, this affects the operations' design, the type of equipment used and fundamentally their training, from which we highlight leadership. So, how is military leadership characterized in a VUCA world and BANI scenario? According to this research question we carried out a systematic literature review with a qualitative approach doing an update of a previous similar study carried out by the authors, looking for new publications that could enrich the comprehension of the topic. Thus, studies were searched in different databases, according to the selected criteria. Guided by the review question we adopt the PRISMA protocol for screening process divided into three phases: identification, screening and inclusion of studies. So, eleven studies were added. Data collected point out that as traditional leadership models are unable to faithfully reflect the modelling of new challenges and realities and military leadership in a VUCA world and BANI scenario is characterized by a complex combination of competencies in a personal, relational and organizational level. Among them the capacity to think out of the box, to be creative, innovative, intuitive, resilient, flexible and adaptative, based on a state of constant awareness and mindfulness to see the global situation and make the best decisions. No other study was found addressing the same research question. So, it seems to be the first study to systematically analyze military leadership in a VUCA environment. This way, it can be a contribution to understanding this topic and to frame future empirical studies.

**Keywords:** VUCA World and BANI Scenario, Military Leadership, Military Organizational Culture, Higher Military Education, Systematic Literature Review.

---

## 1. Introduction

The successive and rapid changes that have altered the modern world and given rise to a constant state of certainty about political, economic, social and climatic uncertainties, among others, have led many authors to take on the challenge of studying these characteristics. Among them, the studies of Bauman (2000, 2004) on liquid modernity, referring to the uncertainty, fluidity, vagueness and accelerated changes that characterize contemporary society. Other authors pointed out that the world lives in an environment characterized by Volatility, Uncertainty, Complexity and Ambiguity, which gave rise to the acronym VUCA (Codreanu, 2016; Calvosa & Franco, 2022; Abukalusa & Oosthuizen, 2023).

According to some documents VUCA term was originally coined in the late 1990s by the US Army War College (Whiteman, 1998); Stiehm & Townsend, 2002) to “describe the new theatre of war as volatile, uncertain, complex and ambiguous” (Elkington, 2018, p.66), and the “challenges of military leadership” (Calvosa & Franco, 2022, p. 2) by the end of the cold war (Lawrence, 2013; Casey Jr., 2014; King & Badham, 2019); and the events of September 11 (Bennett & Lemoine, 2014). So, this “acronym was initially devised to describe how the post-cold world war might behave in extreme conditions, showing the need to structure organizations to deal with problems that could be presented by the environment” (Calvosa & Franco, 2022, p.2).

Subsequently, the term has been transposed to various professional contexts, particularly leadership, management, administration and business (Elkington, 2018; Fuentealba, Flores-Fernández & Carrasco, 2023). Thus VUCA environment has been shaping contemporary society, with implications at all levels of organizations, which has led to the emergence of many studies. The term appears in the literature in different ways: VUCA world, VUCA environment, VUCA context, VUCA scenario, VUCA framework, VUCA conditions, VUCA business conditions and recently VUCA paradigm (Calvosa & Franco, 2022; Casey Jr., 2014).

As Calvosa and Franco (2022, p.3) argues, "consensus among authors on the value of studying, analyzing and applying the concepts of the VUCA environment comes from the realization that traditional management models are unable to faithfully reflect the modelling of new challenges and realities". Therefore, the VUCA environment is seen by some authors as a threat, in a fatalistic perspective, and by others as an opportunity to transform the surrounding environment according to their interests, to create added value, manage risks, changes and innovations (Singh et al., 2020; Calvosa & Franco, 2022). Thus, for some leaders, it goes from being a breaker to a platform for success (Levey & Levey, 2019).

Volatility refers to the unstable nature, speed, volume, magnitude and dynamics of change (Bennett & Lemoine, 2014; Green et al., 2019; Taskan, Junça-Silva & Caetano, 2022), generated by uncertainty due to the unpredictable and lack of information of the issues and events that may occur. This ends up confusing the discernment of issues, by the inability to understand/interpret them clearly (ambiguity) (Taskan et al., 2022). In the meantime, complexity have the potential to attract chaos and confusion to any organization, due to the uncertainty of reality and the quantity and mixture of conditions, factors and meanings to analyze (Bennett & Lemoine, 2014; Green et al., 2019; Taskan et al., 2022; Fuentealba et al., 2023). Nevertheless, for Green et al. (2019, p.2), the concept of volatility has not yet been fully incorporated, "whether in shaping attitudes, transforming pedagogical delivery or predicting future professional roles".

According to Lawrence (2013), the volatility of the present time demands agility from leaders, complexity requires understanding; uncertainty requires vision, and ambiguity requires a constant search for clarity.

With the wide dissemination and application of the term VUCA, some authors have studied other related factors and proposed changes to the acronym, from where we highlights: Disruptive, Volatile, Uncertain, Complex, and Ambiguous (DVUCA) (Calvosa & Franco, 2022) and Brittle, Anxious, Nonlinear and Incomprehensible (BANI) (Cascio, 2021). BANI is proposed by this author as an alternative to VUCA, which he believes has been worn out by its widespread use and by leaving out other aspects that he considers important. Thus, he proposed the term brittle as an alternative to volatile to refer to systems that despite all evidence of strength break down, in part or in whole, under certain pressure; As well anxious or anxiety-inducing, to refer to the intrapersonal elements that each person mobilizes to deal with the catastrophic situations that come their way, thus encapsulating a more personal and intra subjective dimension of the term; non-linearity describes processes in which there is extreme disproportionality between causes and effects, thus reflecting more than a complex environment, a totally chaotic one (Cascio, 2021, p.102). And finally, he proposes the term incomprehensible to describe "a world in which the consequences of the interaction of actions and choices are functionally impossible to understand. They don't make sense because the underlying processes are too chaotic, too complex, too large for the human brain to fully comprehend" (Cascio, 2021, p.103). Nevertheless, as Calvosa and Franco (2022, p.3) point out, "it is a recent concept, very little disseminated, accepted or investigated, and not published in scientific media".

Some authors advocate the need for leadership training in a VUCA environment, based on a recent global study on VUCA Leadership Preparedness (Levey & Levey, 2019; Haniff & Daya, 2023). Ramachandran (2021, p.89) pointed that in VUCA environment, "leaders are unprepared to lead effectively. In this fast-changing and disruptive environment, command and control structures fail. They are far removed from the source and are forced to act with a limited understanding of events and their meanings".. Kiluange, Rouco, Silva et al (2024, p.206) argue that military leadership "takes place in an environment of constant change, high complexity, stress and risk of life, with external environment having a major impact on internal environment of military organization, reflecting on their psychological well-being and professional performance". Based on this theoretical framework and to summarize the literature's lessons to be learnt (Barros, 2022), this study aims to characterize military leadership in a VUCA environment and BANI scenario.

## 2. Methodology

Based on the research question we carried out a systematic literature review (Vilelas, 2020), with a qualitative approach, it means a thematic analysis to find the most important research categories or themes doing an update of a previous study made on the first semester of 2023 (Kiluange et al., 2024) looking for new publications that could enrich the discussion.

Thus, studies were collected through an electronic search of the different databases, according to the selected criteria (**Table 1**). For screening process we used the protocol *Preferred Reporting Items for Systematic Reviews and Meta-Analysis* (PRISMA) (Page et al., 2021; Costa & Rouco, 2023), divided into three phases: identification,

screening and inclusion of studies, guided by the review question: How is military leadership characterized in a VUCA environment and BANI scenario?

**Table 1: Selection criteria**

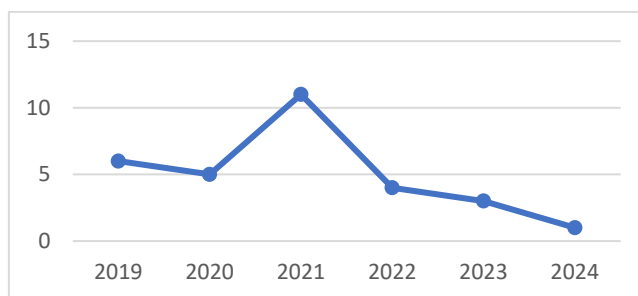
<b>Inclusion criteria</b>	Type of documents: Articles, conference papers with blind peer review, theses, dissertations, books and chapters. Keywords: "Military Leadership" AND VUCA OR BANI. Selected languages: Portuguese, Spanish, English OR French. Time of publication: between January 2019 and March 2024. Databases: RCAAP, SciELO, Science Direct and Scopus. Subject areas: Social Sciences; Psychology; Business, Management and Accounting; Arts and Humanities; Decision Sciences and Neurosciences.
<b>Exclusion criteria</b>	Documents whose full texts were not in open access, duplicated, or outside the scope of the search, in other languages than those selected and in different fields of knowledge than those indicated.

Source: Adapted from Costa and Rouco (2023)

### 3. Main Results

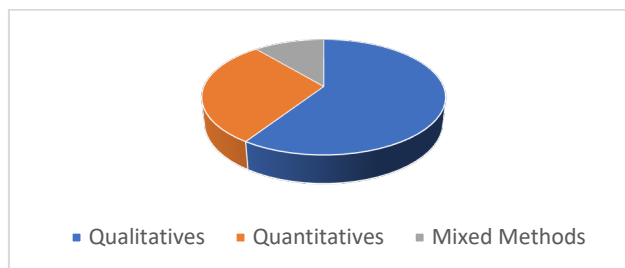
Although several studies have existed before to describe crisis contexts, such as world wars, natural disasters and epidemics like the Spanish flu or the black plague, the first recorded study to use the term VUCA is from 2008 (Fuentealba et al., 2023). As the evidence from this study shows, no records were founded of research orientated around the same review question.

Studies considering leadership in a VUCA environment have seen a significant increase in the pandemic years of the Covid-19 and a decrease right after it ended (Figure 1). Many authors believe that the pandemic has accelerated the VUCA environment at a personal, family, organizational and national level (Ramachandran, 2021; Mwenje & Manyanga, 2023; Kulinich et al., 2023).



**Figure 1: Studies per year**

Among the methodologies used in the studies selected, most follow a qualitative approach, corresponding to 60.71%, some follows a quantitative approach (28.57%), and very few follow a mixed approach, making up 10.71% (Figure 2). The study's evidence points to the scarcity of studies on the subject which are fundamentally empirical.



**Figure 2: Methodological design of the studies**

The screening process for the systematic review is described in the PRISMA diagram in Figure 3 and the selected studies are listed in Table 2. As the data points, the studies on leadership in a VUCA context have seen a



**Table 2: List of included studies in the previous review**

Nº	Author (Date)	Country	Sample	Study design	Main results
1	Máquina (2016)	Angola	99 Army, Air Force and Navy officers	Quantitative. Cross-Sectional.	The competencies that characterize the Leadership Competency Model are all positively and strongly correlated with extraordinary effort, effectiveness and satisfaction.
2	Yeşilbaş and Çetin (2019)	Turkey	2 732 (initial study) and 2 308 (the end)	Quantitative. Longitudinal.	Exploratory factor analysis produced an 18item scale with 4 factors: competence, benevolence, integrity and fairness. A scale to measure subordinates' trust in the military leader.
3	Jansen and Delahajj (2020)	The Netherlands	Dutch (Rec) Platoon in Afghanistan	Qualitative. Cross-Sectional	Leadership acceptance depends much more on group processes and contextual factors than on leadership characteristics (...) suggests that a lack of attention to group dynamics and a lack of active entrepreneurship on the part of the leader can catalyze "group entrepreneurship".
4	Cakiroglu et al. (2020)	Portugal	20 NATO country officials.	Qualitative. Cross-Sectional	Five dimensions emerged: driving forces for change, triggers for shared leadership, specific cases of shared leadership, operational team environment and operational team characteristics.
5	Masliy et al. (2020)	Ukraine	30 Military Academy students	Qualitative. Longitudinal.	Leadership programs taught in English and based on content related to the specialty have contributed to fostering the leadership qualities of students at the Military Academy.
6	Trachik et al. (2020)	USA	1 096 Active-Duty Soldiers	Quantitative. Cross-Sectional	The leader who promoted a purpose prevented suicide in his unit, increased resilience and decreased the risk of suicide ideas.
7	Cakiroglu et al. (2021)	Portugal	209 Mid-level multinational officers	Quantitative. Cross-Sectional	Task complexity is the critical predictor of a positive attitude towards shared leadership, and that attitude towards shared leadership is positively related to perceived team effectiveness through self-management in a military context.
8	Gonçalves (2021)	Brazil	Not applicable	Qualitative. Theoretical	Leadership is developed at the direct, organizational and strategic levels. Since current cadets will be the future Generals and Commanders of the Army, their training must be geared towards solving the problems of the future, providing a framework of leadership skills for this purpose.
9	Bunin et al. (2021)	USA	Not applicable	Qualitative. Theoretical	Defends three key issues: planning and adaptability, cooperation and communication.
10	Šimanauskienė et al. (2021)	Lithuania	275 Top military leadership; 891 Middle management	Qualitative. Cross-Sectional	Top managers: strong and significant correlation at the level of factors such as Intellectual stimulation and Delegation, Rewards and Delegation (RD), Delegation and Innovation Support (DIS), and Innovation Support and Rewards. Middle managers: two strong correlations between factors such as RD, and DIS.
11	Prasetyo et al. (2021)	Indonesia	310 Indonesian Army Officers	Quantitative. Cross-Sectional	Participatory Military Leadership has a positive effect on staff performance.
12	Denny (2021)	USA	7 Senior officers of the National Guard	Qualitative. Cross-Sectional	Theoretical model of key competencies for senior military leadership in domestic operations, along with essential contributors to effectiveness, in disaster and crisis response operations.
13	Bekesiene et al. (2021)	Lithuania	220 experienced soldiers; 37 leaders	Mixed methods. Transversal.	6 "cause" constructs: persuasion skills, leadership skills, results orientation, accurate forecasting, building interpersonal relationships and cooperation with managers.
14	Sakato (2021)	Angola	238 Angolan Armed Forces Officers	Quantitative. Cross-Sectional	In the opinion of Commanders, the transformational leadership style occurs more frequently in the Angolan Armed Forces, while for subordinates the transactional style predominates.
15	Yogev et al. (2022)	Israel	225 Major-Generals and 22 Chiefs of Staff (1948-2018)	Mixed methods. Transversal.	Although the Chiefs of Staff constitute only 8.9% of the senior officers, the number of articles written by officers is 36.5%, while by Generals only 3.4%, focused on the themes of: Military History, Military Theory and Doctrine and daily routine.
16	Metwally and Ruiz-Palomino (2022)	Egypt	Not applicable	Qualitative. Theoretical	Ethical military leadership impacts psychological well-being, mental health and military performance in times of crisis.
17	Siew and Koh (2023)	Singapore & New Zealand	19 Military officers	Qualitative. Cross-Sectional	Military leadership development is a process that is defined by the experiences of establishing oneself as a vocational leader, developing confidence in leadership skills and leading with clarity of mission and genuine concern for one's "subordinates".

Source: Own elaboration of the data

**Table 3: List of included new studies in the review**

Nº	Author (Date)	Country	Sample	Study design	Main results
18	Antonacopoulou et al. (2019a)	Norway	Not applicable	QT	In a VUCA environment military leadership is more than a personal characteristic or a relational process, is an Sensuous Organizational Learning framework to serve the common good.
19	Antonacopoulou et al. (2019b)	Norway	Not applicable	QT	As individuals, communities and organizations that comprise the institution grow and elevate their practical judgements to serve the common good the capacity to engage in reflexive critique heightens organizational agility and leadership.
20	Levey and Levey (2019)	USA	Not applicable	QT	To invest in mindful leadership training for personal and organizational resilience is a key factor to overcome stress, overwhelming and burnout and increase well-being, reducing the healthcare's costs.
21	Green et al. (2019)	UK	137 students and 12 staff using a VUCA Framework.	QtL	Whilst of limited statistical significance the results do highlight the links between internal (student, staff, course) factors and the VUCA world.
22	King and Badham (2019)	Australia	Not applicable	QT	The mindfulness is a real solution for leadership in uncertainty.
23	Roche et al. (2020)	New Zealand, USA, UK	Not applicable.	QT	Mindfulness involves a sustained change in employee's mindset, which may require a substantial and sustained investment to take root, since being mindful at work takes more than being involved in a (high-quality) intervention, requires thinking holistically about the workplace context.
24	Ramachandran (2021)	India	Not applicable	QT	In general leaders are unprepared to lead effectively in this fast-changing and disruptive environment were command and control structures fail. They act on incomplete or insufficient information.
25	Pereira and Eusébio (2021)	Portugal	5098, individuals, by military and civil personnel	QtC	A comprehension of how the non-operational stress factors are relevant, from a preventive and interventional point of view, to the adjustment of the training provided for military personnel and to decision support at the command level of the various units of the Portugal Army.
26	Pereira et al. (2021)	Brazil	Not applicable	QT	Essential competences for leadership in a VUCA environment: agility, team alignment, capacity to learn, capacity to decide, capacity to innovate, resilience and self-knowledge.
27	Luthans and Broad (2022)	USA	Not applicable	QT	Positive psychological capital can help combat the mental health fallout from the pandemic and VUCA environment.
28	Munk and Ahmad (2022)	Ukraine	Not applicable	QT	They argue that since modern warfare is hybrid, where cyber warfare plays a crucial role in military strategies, the mobilization of cyber agents is essential to guarantee a country's cyber defense.
29	Kulinich et al. (2023)	Ukraine	Not applicable	QT	Differences between preventive and curative strategies of developing emotional intelligence and intuition, the strategy of non-linear thinking in the VUCA concept and mindfulness training for staff and managers.
30	Mwenje and Manyanga (2023)	Zimbabwe	138 employees	MMC	Possession of certain skills-set coupled with preparation enhance chances of an organization survive in a VUCA world. There's a need to invest on critical skills for leadership personnel.
31	Coronado-Maldonado and Benítez-Márquez (2023)	Spain	Not applicable	QT	Emotionally intelligent leaders improve both behaviors and results and have an impact on work team performance. So, mindfulness practice is recommended for leaders as it helps develop emotional intelligence, social skills and support within organizations. The practice of mindfulness therefore favors the development of resilience and counteracts the effects of BANI and VUCA environments.
32	Begeç and Akyuz (2023)	Turkey	Not applicable	QT	Leadership requirements for digital ecosystems are entirely different from traditional leadership understanding, and orchestration stands out as a key concept.
33	Freire (2023)	Brazil	Not applicable	QT	Synthesis of the main lessons learnt by the Brazilian Army in the fight against Covid.
34	Fattoum et al. (2024)	UK	Not applicable	QT	Delegated autonomy may not be enough to manage the emerging complexity in a VUCA environment. It is necessary to develop intuition combined with knowledge and experience in order to make decisions.

**QT:** Qualitative. Theoretical; **QC:** Qualitative. Cross-Sectional; **QtC:** Quantitative. Cross-Sectional; **QtL:** Quantitative Longitudinal; **MMC:** Mixed Methods Cross-Sectional

Source: Own elaboration of the data

#### 4. Synthesis and Discussion

As Table 2 and 3 show, studies about military leadership in a VUCA environment are very recent, as VUCA is an emergent category. Most studies are theoretical as literature review or experience report and studies with an empirical approach are not enough to validate findings and generalize conclusions. No reported studies about

military leadership in a BANI scenario were found. So, the analysis remains on VUCA environment. From the survey carried out, this appears to the authors be the first study to characterize military leadership in a VUCA environment. Despite the scientific production on VUCA and the authors' attempt to separate its four components, there are overlaps between them in the literature. On the other hand, the literature suggests that the four components are not always present in a situation or scenario, which requires a more careful and in-depth analysis of the situation.

Considering the studies selected for analysis, the categories assumed for meta-synthesis in this study emerged, namely: characterization of the military context in a VUCA environment, characterization of military leadership in a VUCA environment, Military Higher Education and leadership competences training in a VUCA environment and Methodology for military leadership in a VUCA framework.

#### **4.1 Military Context in a VUCA Environment**

Military context seems to be shaped by the pandemic covid-19 years and by the conflict of Russia-Ukraine (Mun, 2022), in a era of strong digitalization and increasing artificial intelligence, affecting command, control (Ramachandran, 2021) and communications systems (Begeç and Akyuz, 2023) in a complex hybrid war where activism is essential (Mun, 2022).

In fact, military leadership should be expressed by 'responsible action to serve the common good' (Antonacopoulou et al., 2019a; Antonacopoulou et al., 2019b). Furthermore, the volatility, uncertainty, complexity and ambiguity that characterize military operations, moving from the conventional to unconventional warfare, are conducive to the development of high level of stress, overwhelm and burnout on the part of military forces, which can compromise the success on the ground (Trachik et al., 2020; Pereira & Eusébio, 2021). Given the complexity and non-linearity that characterizes military context, there is a need to understand it, mobilizing more appropriate analysis' tools for the internal and external environment of military organizations, to make them more proactive and less reactive, since the global context is reconfiguring military command and leadership.

As pointed out by Gonçalves (2021), Sakato (2021) and Denny (2021), military leadership manifests itself at the direct, organizational and strategic levels, according to the hierarchical levels of command, and is developed in the same way. So, military context is "influenced by many factors that are difficult to predict and determine their course - the geopolitical situation, natural disasters - often, one minor situation has a significant impact on the entire environment, which could not have been predicted in advance" (Kulinich et al., 2023, p.2783). So, leaders need to be intuitive and creative, facing challenges and taking risks to lead effectively.

#### **4.2 Characterizing Military Leadership in a VUCA Environment**

The common good is the mission of the military organization what attending to the VUCA conditions shapes the ways of knowing and acting of both individuals, communities and the organization as a whole, aligned by Institutional Reflexivity, High Agility Organizing and Learning Leadership (Antonacopoulou et al., 2019a). The mission of the military organization is thus the compass for the performance of these professionals, who in a VUCA environment are calling for reforms and updating of military leadership learning models. These reforms are necessary because traditional leadership and teaching-learning models are proving inadequate for the disruptive realities of the present and future, marked by the complexity of so many factors at play in the success of their mission.

In general, the studies analyzed focus on a personal characteristics perspective when it comes to leadership (Kulinich et al., 2023; Siew & Koh, 2023; Sakato, 2021). Some focus on a relational perspective (Levey & Levey, 2019; Jansen & Delahajj, 2020; Šimanauskienė et al., 2021; Cakiroglu et al., 2021; Metwally & Ruiz-Palomino, 2022). However, in a VUCA environment, strategically combined action is needed that integrates personal and relational characteristics with the organization's mission. In this way, "leadership becomes an organizational characteristic and not merely a personal or relational process" (Antonacopoulou et al., 2019a, p.15).

Nevertheless, in today's increasingly web-enabled digital world leadership requirements for digital ecosystems are entirely different from traditional leadership understanding, and orchestration stands out as a key concept (Begeç & Akyuz, 2023). This implies that military leaders need to develop a set of digital skills to enable them to operate the cyber and technological defense ecosystem.

In a VUCA environment organizational military leadership have to pay attention to a precise understanding of the problems experienced, articulation of the unity of command in a very well-defined chain of command,

installation and operation of a secure, efficient and effective Command and Control System, preservation of logistical capacity, development of adaptability, flexibility and speed to deal with unforeseen situations, broadening of the concept of interoperability (combining military and civilian, public and private institutions); ability to overcome the country's infrastructure deficiencies (Freire, 2023).

The complexity of the military context makes military leader play the roles of Commander and Manager at certain times (Sakato, 2021). As well as motivating, inspiring and influencing subordinates through the action of command, military leader is responsible for leading them to victory. Thus, imply that military leader had developed confidence in leadership skills to lead with clarity of the mission and genuine concern for one's subordinates (Siew & Koh, 2023). This ethical stance of military leadership has a positive impact on psychological well-being, mental health and military performance in times of crisis (Metwally & Ruiz-Palomino, 2022). The consideration of leadership styles in a military context (Sakato, 2021) assumes a strategic place of paramount importance if one considers the need for "the application of crisis management in certain circumstances and its benefits" (Kulinich et al., 2023, p.2781) as military leadership are expected to perform in peace, war and crisis situation.

Since military leadership is strongly influenced by hierarchy and discipline, the initiative and freedom to make decisions varies according to levels of authority, autonomy and intuition (Šimanasukienė et al., 2021; Fattoum et al., 2024). However, shared leadership has a positive effect on team autonomy and effectiveness on the ground (Cakiroglu et al., 2021).

Levey and Levey (2019, p.740), argue that "awareness of the reactions taking place in the mind and body is of particular importance so that the military leader can, from a position of balance and self-awareness, make personal and professional decisions that will immediately affect him, his subordinates and superiors, as well as the entire nation". Thus, the decision-making process plays a key role in a VUCA context requiring intuition, creativity, innovation and resilience that characterizes a developed mindfulness (King & Badham, 2019; Roche et al., 2020). Understanding the VUCA concept implies that the leader understands the connection between different processes and circumstances, has developed critical thinking, is capable of (re)building if something fails, with a clear vision of their role in these processes and forecasting their trends (Kulinich et al., 2023). Thus, in a VUCA environment military leadership should be more focused on organizational leadership than a personal characteristics or a relational process of leadership (Antonacopoulou et al., 2019a).

### **4.3 Military Higher Education and Leadership Competences Training in VUCA Environment**

According to Antonacopoulou et al. (2019a), in military contexts, learning takes place according to professional practices, configuring learning practices, developed according to values, actions and possible errors. These elements are in constant tension, giving rise to different learning cycles – single loop learning takes account of actions, double loop learning takes account of actions and values, and triple loop learning takes account of actions, values and learning practices making an organizational leadership learning models. For (Antonacopoulou et al., 2019b), these models are based on cultivation of reflexivity going beyond reflecting on one's and other's assumptions and perspective and critically reassessing how each one responds in a VUCA environment. This is particularly essential to define courses of action and this capacity for reflexivity requires practice through systematic activities throughout leadership learning process to foster individually (logbook, for e.g.) and collectively reflection (for example theoretical discussions, practical exercises) (Antonacopoulou et al., 2019). So, leadership learning development must be a combination between individual reflection and collective reflection to develop an understanding, internalization and appropriation of his meanings and social and practical implications.

Military leadership to meet the VUCA context can be developed by combining different teaching-learning methods and different ways of organizing teaching to encourage reflexivity at individual, collective and organizational level. To this end, in addition to the theoretical and practical sessions included in the curriculum, some military higher education institutions in some armies develop Annual Leadership Conferences to discuss essential topics in this area and Mentoring Programs, from senior officers to low-ranking officers, to facilitate dialogical reflection and the exchange of experiences that facilitate the development of the leadership competencies needed for such troubled contexts (Antonacopoulou et al., 2019b).

Understanding the impact of VUCA environment in military leaders' mental well-being (Luthans & Broad, 2022) and the comprehension of how the non-operational stress factors are relevant, from a preventive and interventional point of view, training provided for military personnel and to decision support at the command

level need to be adjusted (Pereira & Eusébio, 2021). Providing a positive psychological capital can help combat the mental health fallout from the pandemic and VUCA environment (Luthans & Broad, 2022)

Levey and Levey (2019) argue that VUCA preparedness of leaders is directly linked to organizational effectiveness, justifying their need. Military higher education (seems to be a privileged environment for developing leadership competences for a VUCA world (Masliy et al., 2020). However, many leadership development programs focus on mastering and manipulating variables from the outside world, without considering the need to train leaders in more intrapersonal dimensions, i.e. to teach them to lead from their personal characteristics and abilities (Levey & Levey, 2019). Leadership should be developed as a personal, relational and organizational quality, supported by an orientation towards practice (Antonacopoulou et al., 2019b). In this way, theory and practice must complement each other, from the design to the development of leadership competences, which in professional practice express the military' competences to solve professional problems in today's uncertain environment. As John Dewey said, If we teach today's students as we taught yesterday's, we rob them of tomorrow.

Gonçalves (2021), defends the need to look at the challenges of the future, which is uncertain and changing, and for which current cadets, who will be the Army's future generals and commanders, must be prepared. This requires that their training be geared towards solving the problems of the future and not today, providing them with a framework of leadership skills to do so. However, from the selected studies for the review, emerged some leadership competences in a VUCA context (Table 4).

**Table 4: Leadership competencies in a VUCA environment**

Dimensions	Leadership competences in a VUCA environment	Author/Date
Personal	Effective and wise decision-making; <b>mindfulness, resiliency</b> , creativity, wisdom; awareness, understanding, clarity through strategy, cognitive agility; effective <b>communication</b> , commitment, openness; planning, adaptability, cooperation, activism in the hybrid warfare model; <b>emotional intelligence, intuition</b> , non-linear thinking; open mindedness, dynamism, <b>flexibility, agility, adaptiveness</b> , formulating strategies; attentiveness, alertness, awareness, appreciation, anticipation, alignment, activation; problem structuring and autonomy.	Antonacopoulou et al. (2019); Levey and Levey (2019); Green et al. (2019); King and Badham (2019); Roche et al. (2020); Ramachandran (2021); Bunin et al. (2021); Munk & Ahmad (2022); Kulinich et al. (2023); Mwenje and Manyanga (2023); Coronado-Maldonado & Benítez-Márquez (2023); Fattoum et al. (2024)
Relational	<b>Trust</b> in leaders; <b>empathy</b> , compassion; collective mindfulness/collective wisdom; social skills; technology-centered, <b>collaborative</b> , transformational, participative, agility-focused and innovation-focused.	Yeşilbaş and Çetin (2019); Levey and Levey (2019); King and Badham (2019); Coronado-Maldonado and Benítez-Márquez (2023); Begeç and Akyuz (2023)
Organizational	Precise understanding of the problems experienced; articulation of the unity of command in a very well-defined chain of command; Secure, efficient and effective Command and Control System; preservation of logistical capacity; adaptability, flexibility and speed to deal with unforeseen situations; broadening of the concept of interoperability (combining military and civilian, public and private institutions); ability to overcome the country's infrastructure deficiencies to serve the common good.	Freire (2023); Antonacopoulou et al. (2019b)

Source: Own elaboration of the data

As shown in Table 4, most of the selected studies addresses a personal or relational dimensions of military leadership in a VUCA environment. Very few studies addresses the Organizational level. But, since the VUCA environment affects all individuals, communities and institutions, how can (military) leadership be effective only at the individual or relational level, without a concertation of strategies, factors and actors?

#### 4.4 Methodology for Military Leadership Development in a VUCA Framework

For Levey and Levey (2019), a methodology based in VUCA framework demands to reflect on the preparedness and capability of ourselves and subordinates, regarding to the four domains of the VUCA framework of leadership preparedness. Thus, he suggests employing a Likert scale, addressing the following questions:

1. Volatility: How well do you anticipate and wisely respond to the volatile nature and speed of change?
2. Uncertainty: How wisely and decisively do you act when you lack certainty or a clear sense of direction?
3. Complexity: How wisely do you respond to complexity and confusion, and navigate the chaos present in the world around you?
4. Ambiguity: How well do you maintain your effectiveness when faced with a lack of dependable reference points or predictability?

According to Green et al. (2019, p.1), “the VUCA concept provides a framework for acknowledging these factors and a basis for planned leadership responses (...) each VUCA term needs to be considered individually”. The VUCA matrix presented by these authors shows that there is a direct proportional relationship between knowledge of the situation and the ability to predict the results of action in such an environment and defines each of the four dimensions of the matrix. Based on the nature of the VUCA world concept, researchers have developed a similar matrix to address it, embodied in the terms Vision, Understanding, Clarity, and Agility (VUCA), as essential elements for leaders to be agents of change in a world undergoing constant and accelerated transformation (Levey & Levey, 2019).

## 5. Conclusion

### 5.1 Strengths

According to the data no other study was found addressing the same research question. So, it seems to be the first study to systematically analyze military leadership in a VUCA environment. This way, it can be a contribution to understanding this topic and to frame empirical studies theoretically.

### 5.2 Limitations

Despite the study's strengths, it has limitations in terms of the small number of studies available and selected for the review, based on the inclusion criteria. On the other hand, given the exploratory nature of the study, it is limited to a summarizing the evidence found rather than an in-depth discussion of it. Finally, no empirical analyses were carried out on the synthesized evidence.

### 5.3 Implications for Research and Practice

Synthesizing what is known about military leadership in a VUCA environment can point the way to future research and practice. It would facilitate military leadership to better understand each component of the term and its implications for successful military command and leadership, given the constantly and rapidly changing environments. Nevertheless, as a large majority of studies are theoretical, as literature review and experience report we suggest that more empirical studies need to be done in order to compare findings and generalize conclusions. Furthermore, such research would make it possible to understand the role and/or implications of the VUCA constructs in strategic decision-making. Could the term be an insightful matrix for analyzing situations and guiding modalities of action?

### 5.4 New Trends

There is a tendency to focus on the application of artificial intelligence, the influence of mindfulness on organizations, the impacts of COVID-19 and the Ukraine war as accelerators of VUCA environments.

## References

- Abukalusa, K., & Oosthuizen, R. (2023). Organisational adaptive leadership framework through systems thinking. *South African Journal of Industrial Engineering*, 34(3), 245–257. <http://dx.doi.org//10.7166/34-3-2955>
- Antonacopoulou, E. P., Moldjord, C., Steiro, T. J., & Stokkeland, C. (2019b). The New Learning Organisation: PART II - Lessons from the Royal Norwegian Air Force Academy. *The Learning Organization*, 27(2), 117–131. <https://doi.org/10.1108/TLO-10-2018-0160>
- Antonacopoulou, E., Moldjord, C., Steiro, T., & Stokkeland, C. (2019a). The New Learning Organisation: PART I – Institutional Reflexivity, High Agility Organising and Learning Leadership. *The Learning Organization*, 26(3), 304–318. <https://doi.org/10.1108/TLO-10-2018-0159>
- Barros, F. (2022). A criação do conhecimento nas Forças Armadas: Uma análise dos sistemas de lições aprendidas à luz do modelo SECI. *Coleção Meira Mattos*, 16(56), 259–277. <https://doi.org/10.52781/cmm.a073>

- Bauman, Z. (2000). *Liquid modernity*. Polity Press; Blackwell
- Bauman, Z. (2004). *A Cultura No Mundo Líquido Moderno*. Zahar
- Begeç, S., & Akyuz, G. A. (2023). Requirements of collaborative and transformational leadership in digital ecosystems: Techno-orchestrating leaders in a VUCA world. *Revista de Administração de Empresas*, 63(5), e2022-0155. <http://dx.doi.org/10.1590/S0034-759020230505>
- Bekesiene, S., Meidute-Kavaliauskiene, I., & Hošková-Mayerová, Š. (2021). Military Leader Behavior Formation for Sustainable Country Security. *Sustainability*, 13(8). <https://doi.org/10.3390/su13084521>
- Bennett, N., & Lemoine, G. J. (2014). What VUCA Really Means for You. *Harvard Business Review*.
- Bunin, J. L., Chung, K. K., & Mount, C. A. (2021). Ten Leadership Principles from the Military Applied to Critical Care. *ATS Scholar*, 2(3), 317–326. <https://doi.org/10.34197/ats-scholar.2020-0170PS>
- Cakiroglu, S. S., Caetano, A., & Costa, P. (2020). How do mid-senior multinational officers perceive shared leadership for military teams? A qualitative study. *Team Performance Management: An International Journal*, 26(5/6), 301–318. <https://doi.org/10.1108/TPM-11-2019-0109>
- Cakiroglu, S., Caetano, A., & Costa, P. (2021). Liderança compartilhada, autogestão e eficácia percebida da equipe no contexto militar. *Military Psychology*, 1–12. <https://doi.org/10.1080/08995605.2021.1962179>
- Calvosa, M. V. D., & Franco, I. de melo. (2022). *Descomplicando o VUCA (Volatility, Uncertainty, Complexity and Ambiguity). Investigação e Considerações sobre as Publicações A1 da Área 27 do Qualis/Capes*. 1–16.
- Cascio, J. (2021). A educação em um mundo cada vez mais caótico. *Boletim Técnico do Senac*, 47(1), Artigo 1. <https://doi.org/10.26849/bts.v47i1.879>
- Casey Jr., G. W. (2014). Leading in a «VUCA» world. *Fortune*, 169(5), 75–76. Scopus.
- Codreanu, A. (2016). A VUCA action framework for a VUCA environment. Leadership challenges and solutions. *Journal of Defense Resources Management Studies*, 7, 31–38.
- Coronado-Maldonado, I., & Benítez-Márquez, M.-D. (2023). Emotional intelligence, leadership, and work teams: A hybrid literature review. *Heliyon*, 9(10), e20356. <https://doi.org/10.1016/j.heliyon.2023.e20356>
- Costa, F. K. F. da, & Rouco, J. C. D. (2023). Mapping Military Leadership Competencies: A Systematic Literature Review. *European Conference on Management Leadership and Governance*, London, 19(1). <https://doi.org/10.34190/ecmlg.19.1.1966>
- Denny, W. (2021, abril 24). Senior Military Leadership in Domestic Operations: An Exploratory Study. *Homeland Security Affairs*, 17, 1–34.
- Elkington, R. (2018). Leadership Decision-Making Leveraging Big Data in Vuca Contexts. *Journal of Leadership Studies*, 12(3), 66–70. <https://doi.org/10.1002/jls.21599>
- Fattoum, A., Chari, S., & Shaw, D. (2024). Configuring systems to be viable in a crisis: The role of intuitive decision-making. *European Journal of Operational Research*, 317(1), 205–218. <https://doi.org/10.1016/j.ejor.2024.03.034>
- Freire, R. (2023). Lições Aprendidas pelas Forças Armadas Brasileiras nas Tarefas de Apoio às Políticas Estatais no Combate à Pandemia do COVID-19. *Nação e Defesa*, 165, 101–115.
- Fuentealba, D., Flores-Fernández, C., & Carrasco, R. (2023). Análisis bibliométrico y de contenido sobre VUCA. *Revista Española de Documentación Científica*, 46(2), Artigo 2. <https://doi.org/10.3989/redc.2023.2.1968>
- Gonçalves, R. de A. (2021). Liderança estratégica presente na trajetória de oficiais do Exército Brasileiro. *Revista de Relaciones Internacionales, Estrategia y Seguridad*, 16(2), 177–190. <https://doi.org/10.18359/ries.4977>
- Green, S., Page, A. F., De'ath, P., Pei, E., & Lam, B. (2019). VUCA challenges on the Design-Engineering student spectrum VUCA. *DS 95: Proceedings of the 21st International Conference on Engineering and Product Design Education, Glasgow*. <https://doi.org/10.35199/epde2019.100>
- Haniff, N., & Daya, P. (2023). Distributed leadership: A model for student leadership engagement. *South African Journal of Higher Education*, 37(4), 102–122. <https://doi.org/10.20853/37-4-5078>
- Jansen, M. M., & Delahajj, R. (2020). Leadership Acceptance Through the Lens of Social Identity Theory: A Case Study of Military Leadership in Afghanistan. *Armed Forces & Society*, 46(4), 657–676. <https://doi.org/10.1177/0095327X19845027>
- Kiluange, F., Rouco, J. C. D., Silva, A. P., & Fragoso Baio, L. G. (2024). Characteristics of Leadership in a Military Context: Systematic Literature Review by PRISMA Method. Em Á. Rocha, C. H. Fajardo-Toro, & J. M. R. Rodríguez (Eds.), *Developments and Advances in Defense and Security* (pp. 197–208). Springer Nature. [https://doi.org/10.1007/978-981-99-8894-5\\_17](https://doi.org/10.1007/978-981-99-8894-5_17)
- King, E., & Badham, R. (2019). Leadership in uncertainty: The mindfulness solution. *Organizational Dynamics*, 48(4), 1–15.
- Kulinich, T., Materynska, O., Aleskerova, Y., Kuzmenko, H., & Balian, I. (2023). Leadership in Unstable Conditions: Change Management Strategies and Effective Crisis Management for Achieving Success. *WSEAS Transactions on Business and Economics*, 20, 2781–2788. <https://doi.org/10.37394/23207.2023.20.236>
- Lawrence, K. (2013). *Developing Leaders in a VUCA Environment*.
- Levey, J., & Levey, M. (2019). Mindful leadership for personal and organisational resilience. *Clinical Radiology*, 74(10), 739–745. <https://doi.org/10.1016/j.crad.2019.06.026>
- Luthans, F., & Broad, J. D. (2022). Positive psychological capital to help combat the mental health fallout from the pandemic and VUCA environment. *Organizational Dynamics*, 51(2), 1–13. <https://doi.org/10.1016/j.orgdyn.2020.100817>
- Máquina, D. J. (2016). *Modelo de gestão de competências de liderança para as Forças Armadas Angolanas* [Master Thesis, Academia Militar]. <https://comum.rcaap.pt/handle/10400.26/13537>

- Masliy, O. M., Heorhiiev, V. M., Babak, V. I., Ivanchenko, I. A., & Bachynska, N. Y. (2020). Developing leadership qualities in students of the Military Academy during the study of specialism-related disciplines using a foreign language. *Revista Tempos e Espaços Em Educação*, 13(32), Artigo 32. <https://doi.org/10.20952/revtee.v13i32.14968>
- Metwally, M., & Ruiz-Palomino, P. (2022). The Organisational Psychology of Ethical Military Leadership during Times of Crisis: Lessons from the COVID-19 Pandemic. *Journal of Military Ethics*, 21(3–4), 337–346. <https://doi.org/10.1080/15027570.2023.2177419>
- Munk, T., & Ahmad, J. (2022). “I Need Ammunition, Not a Ride”: The Ukrainian Cyber War. *Comunicação e Sociedade*, 42, 221–241. [https://doi.org/10.17231/comsoc.42\(2022\).4021](https://doi.org/10.17231/comsoc.42(2022).4021)
- Mwenje, J., & Manyanga, F. (2023). Leadership characteristics in a volatility, uncertainty, complexity and ambiguity (VUCA) environment, a case study of Zimbabwe hospitality industry during Covid 19 era. *Journal of African Studies and Development*, 15(3), 62–68. <https://doi.org/10.5897/JASD2023.0674>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, n71. <https://doi.org/https://doi.org/10.1136/bmj.n71>
- Pereira, R., & Eusébio, R. (2021). Riscos psicossociais. Uma ameaça no meio militar. O papel da autoeficácia, qualidade da liderança geral e conflito trabalho-família no burnout. *SOCIOLOGIA ON LINE*, 27, 79–98.
- Pereira, R., Lacerda, L., & Cunha, C. (2021). *Competências do líder em um mundo VUCA: Uma revisão de escopo*.
- Prasetyo, H., Thoyib, A., Aisjah, S., & Wijayanti, R. (2021). The Relationship Between Military Participative Leadership and Personnel Performance with Remuneration as Moderation Role. *Quality - Access to Success*, 22(185). <https://doi.org/10.47750/QAS/22.185.04>
- Ramachandran, R. (2021). Leading in a VUCA World. *Ushus Journal of Business Management*, 20(1), 89–111. <https://doi.org/10.12725/ujbm.54.5>
- Roche, M., Good, D., Lyddy, C., Tuckey, M. R., Grazier, M., Leroy, H., & Hülsheger, U. (2020). A Swiss army knife? How science challenges our understanding of mindfulness in the workplace. *Organizational Dynamics*, 49(4), 1–9. <https://doi.org/10.1016/j.orgdyn.2020.100766>
- Sakato, A. de O. (2021). *Estudo dos estilos de liderança nas Forças Armadas de Angola* [Master Thesis, Universidade Autónoma de Lisboa]. <https://repositorio.ual.pt/handle/11144/4902>
- Siew, D. H. K., & Koh, J. H. L. (2023). Being and becoming beginning military leaders: Implications for leadership learning. *Military Psychology*, 35(2), 142–156. <https://doi.org/10.1080/08995605.2022.2088986>
- Šimanauskienė, V., Giedraitytė, V., & Navickienė, O. (2021). The Role of Military Leadership in Shaping Innovative Personnel Behaviour: The Case of the Lithuanian Armed Forces. *Sustainability*, 13(16), Artigo 16. <https://doi.org/10.3390/su13169283>
- Singh, J. P., Chand, P. K., Mittal, A., & Aggarwal, A. (2020). High-performance work system and organizational citizenship behaviour at the shop floor. *Benchmarking: An International Journal*, 27(4), 1369–1398. <https://doi.org/10.1108/BIJ-07-2019-0339>
- Stiehm, J., & Townsend, N. W. (2002). *The U.S. Army War College: Military Education in a Democracy* (Illustrated edition). Temple University Press.
- Trachik, B., Tucker, R. P., Ganulin, M. L., Merrill, J. C., LoPresti, M. L., Cabrera, O. A., & Dretsch, M. N. (2020). Leader provided purpose: Military leadership behavior and its association with suicidal ideation. *Psychiatry Research*, 285, 112722. <https://doi.org/10.1016/j.psychres.2019.112722>
- Vilelas, J. (2020). *Investigação: O processo de construção do conhecimento* (3ª Ed.). Edições Sílabo.
- Whiteman, W. E. (1998). *Training and educating army officers for the 21st century: Implications for the United States Military Academy*. US Army War College.
- Yeşilbaş, İ., & Çetin, Ş. (2019). Trust in military leader: Scale development and validation. *Military Psychology*, 31(2), 147–159. <https://doi.org/10.1080/08995605.2019.1578150>
- Yogev, H., Cohen, R., & Lewin, E. (2022). Military Leadership by Intellectual Officers: A Case Study of the IDF. *Journal of Strategic Security*, 15(4), 51–75. <https://doi.org/10.5038/1944-0472.15.4.2044>