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A Quest to Identify the Emerging Leadership Skills in VUCA World and Investigation of Their Applications in Various Organizational Levels and Security Environments

Ali Can Kucukozyigit
Old Dominion University, akucukoz@asu.edu

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by

Ali Can Kucukozyigit

B.S. August 2001, Turkish Military Academy, Turkey
M.S. September 2006, Naval Postgraduate School
M.A. July 2011, Turkish Army War College, Turkey

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Approved by:

Charles B. Daniels (Director)

Ariel Pinto (Member)

Resit Unal (Member)

Ipek Bozkurt (Member)

Kaitlynn Castelle (Member)

ABSTRACT

A QUEST TO IDENTIFY THE EMERGING LEADERSHIP SKILLS IN VUCA WORLD AND INVESTIGATION OF THEIR APPLICATIONS IN VARIOUS ORGANIZATIONAL LEVELS AND SECURITY ENVIRONMENTS

Ali Can Kucukozyigit
Old Dominion University, 2020
Director: Dr. Charles B. Daniels

The theoretical framework of this research is based on "skills approach" that emphasizes the leader's capabilities (skills, knowledge, and capabilities) that can be learned, taught, and fostered. VUCA (Volatile, Uncertain, Complex and Ambiguous) environment is chosen as the focal point of this research as the leadership skills are extracted from studies referring to such environment. Although the acronym is dominantly used in management and business domains, the military also uses it to describe the complex operational environments like in Iraq and Afghanistan. The identification of individual leadership skills and delivering the right skill, at the right time, to the right individual is the only way to employ the "employee/leader we need" instead of "employee/leader we have." It is harder than ever to specify with any degree of certainty which skills are required. It is also needed to have quality leaders, who need to qualify as both experts and generalists at the same time.

The primary purpose of the research is to identify, categorize the emerging leadership skills required in a VUCA environment, and also to examine how the military officers perceive the identified emerging skills in various security environments and organizational levels. To achieve this, the research employs the hybrid method. The qualitative part delivers a content analysis on the identification and the categorization of emerging leadership skills that feed into the survey instrument used in quantitative part to investigate the relationship between security environments and application of these emerging leadership skills as military officers perceive

it. The fact that the primary data is collected from active and retired military officers from various nations, services, and ranks makes this research more noteworthy.

This research fills a gap by identifying and categorizing leadership skills that VUCA environment necessitates in broad and practically applicable perspective and also provides empirical evidence to show that military officers favor some leadership skills more than others in the different security environment and organizational level.

The findings will contribute to the leadership and organizational management domains by providing a broad and holistic perspective to improve our understanding of leadership skillsets in VUCA environment and by increasing the knowledge on skills and organizational-security context relationship. The results show that retired military officers think statistically significantly different than those on active duty. The results of this research also demonstrate a need to create a better understanding of the VUCA dynamics in military, and the findings can be used as the foundation for further research in the area of VUCA leadership skills.

Keywords: VUCA world leadership, complexity, military leadership, military culture

The views expressed in this dissertation are those of the author and do not reflect the official policy or position of the United States Armed Forces, Department of Defense, the U.S. Government, Turkish government or Armed Forces, or any other NATO Nations & their Armed Forces or any government entity.

This dissertation is dedicated to my greatest motivator, supporter, and beloved wife, *Duygu*! Thank you for your never-ending support, encouragement, faith, and patience that keeps me strong and make me proud in life.

With you standing with me, I am ready for the newest and hardest endeavors life might introduce any moment!

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NOMENCLATURE AND ABBREVIATIONS

ACC	Army Capstone Concept
ALDS	Army Leader Development Strategy
CAOC	Combined Air Operation Center
CCJO	Capstone Concept for Joint Operation
COE	Center of Excellence
COIN	Counterintelligence
CRCT	Critical Reasoning and Creative Thinking
DOD	Department of Defense
FM	Field Manuel
HR	Human Resources
HTS	Human Terrain System
JFAC	Joint Force Air Component
JME	Joint Military Education
MAGTF	Marine Air Ground Task Force
ML	Military Leadership
NATO	North Atlantic Treaty Organization
NGO	Non-governmental Organization
NCO	Non-commissioned Officer
QDR	Quadrennial Defense Review
ROJE	Review of Joint Education
TRADOC	Training and Doctrine Command
UNMIK	UN Interim Administration Mission in Kosovo
USJFCOM	US Joint Forces Command
USFK	US Forces Korea
VUCA	Volatile Uncertain Complex Ambiguous

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CHAPTER 1

INTRODUCTION

This chapter is an introduction to the overall research and gives an overall big picture of what to find in the research. It contains the background of research, details the problem to be investigated, enumerates the research questions, and articulates the significance of the research along with the operational definitions of the key terms used in the research.

1.1 Background of the Research

The initial spark for this research is inspired by a scenario Kreie (2014) mentions in the work. Kreie sets up a scenario, summarized in Table 1 below, in which one surgeon selection must be made out of three available to perform a much-needed procedure. There are three different medical doctors available to choose from. There is a surgeon who just finished medical school but has not performed a surgical procedure since graduation. There is another one who has never completed medical school but has illegally performed many procedures so far. The last one has completed medical school, performed several procedures until ten years ago but has not practiced medicine for ten years now.

Table 1. Surgeon Alternatives in Scenario (Adapted from Krei, 2014)

	Education	Experience	Likes Improving Skills
Surgeon 1	Just finished medical school	No surgical procedure	No
Surgeon 2	Never completed medical school	Illegally performed many procedures	Yes
Surgeon 3	Completed medical school	Had several procedures until ten years ago	No, the last procedure was ten years ago

In this scenario, the quest for an appropriate medical doctor will never be over until a

"qualified surgeon who has attended medical school, performed surgical procedures, and continued to improve his / her crafts" is found (Kreie, M. K. 2014, p.1). The appropriate doctor has to be someone who attended the medical school, performed many surgeries and continued to craft his/her surgeon skills. What if we are obliged to choose one of the three doctors for our own surgery? What would be the magnitude and breadth of the undesired consequences of choosing one of the three surgeons? Which one would be chosen? In a similar vein, if we make an analogy for leaders in military, the need for developing "qualified leaders" for a job in military is as important as the need for "qualified surgeons" because the results of their decision and actions could result in life and death consequences for individual or devastation for the nation. Hence, the scenario sets the stage for the exam question; what can be inferred for military leaders from this scenario? The situation is not the same when we think about leaders in such scenarios. We cannot just wait for an appropriate leader; we need to use the leader "we have at the moment" regardless of their skills and abilities. What kind of crafts and skills should military leaders possess when it is inevitable for them to lead in complex security environments? It can easily be inferred from the aforementioned scenario that leadership cannot be limited to schools, we need leaders who received the right training and education in schools, plus deployed and are seasoned in the various diverse military environments and continue crafting their skills just like in the seventh habit "sharpening their saw" (Covey, 2004) throughout their career. Leaders should have all "yes" in their skills-improvement column of the preceding table.

In his book "Leadership: Theory and Practice", Peter G. Northouse makes an introduction to leadership by describing it as a "highly sought-after and highly valued commodity" (Northouse, 2013, p.1). According to Northouse, all leadership related research provides a picture of a leadership process that is far more complicated and sophisticated than most simplistic views propose (Northouse, 2013). Stogdill (1974) claims that there are almost

as many different definitions of leadership as there are people who have tried to define it. That means when one started the sentence "Leadership is…" never come up with the same ending to some else's sentence. The statement of James MacGregor Burns[1] on leadership is an exact match for explaining the complexity of the situation: he captures the challenges in leadership studies saying, "one of the most observed and least understood phenomena on earth" (1978, p.2).

For the sake of this research, the following definition is used as the operational definition of the leadership; "leadership is a process whereby individual influences a group of individuals to achieve a common goal" (Northouse, 2013, p.5). Definitions will be detailed in the next chapter, but one noteworthy thing is that the leadership process includes four fundamental notions: *process*, *influence*, *groups*, and a *common goal*. It is not surprising that definition of the dimensions of leadership has been by developing 65 different classification systems over the last 60 years (Fleishman et al, 1991). These classification systems varied from the focus of group processes to personality perspectives, from power leadership to skills perspectives (Northouse, 2013). Leadership does not occur in a vacuum; process, influence, people (groups), and common goal and influence comprises leadership and all these cannot be isolated from the environments. It is known that different environments necessitate the employment of different leadership skills, types, and approaches.

Let's look at the environment that how the military operates. When the security environment military operations are considered, it evolves, changes and the spectrum of operations for military gets larger and diversifies as in Figure 1 (Echevarria, 2001). As the complexity increases, there need to be certain leadership skills that military leaders must possess and there needs to be a systematic leadership development program that addresses the

[1] Political scientist who was also a campaigner for John F. Kennedy

acquirement of these skills by the leaders as they promote higher up in the hierarchy. This is especially important for upper-and-out organizations like the military. Due to this changing nature and the variety of the spectrum of operations, the search for getting the leader to perfection should be a continuous process. If the military does not identify and adapt to the necessities of the complex environment, they might have to go with the leaders that they have as opposed to the leaders that they need. Continuously sharpening their skills gets especially important when preparing them for the VUCA security environment.

Figure 1. The Spectrum of Operations

"Leadership: Theory and Practice" is one of the most frequently consulted resources throughout this research. In this book, Northouse (2013) includes four chapters to leadership styles, five chapters to leadership approaches and three chapters to leadership theories, one of which is "skills approach." The following chapter details the literature review and justifies why the skills approach is the most suitable theory for the research. Skills approach is the theory that this research is based since it emphasizes the leader's capabilities that can be taught and

developed, contrary to some others (e.g. trait approach). Skills approach emphasis on skills, knowledge, and abilities that can be learned, thought and fostered (Northouse, 2013). The military uses VUCA to describe "volatile, uncertain, complex and ambiguous" operational environment like the extreme situations in Iraq and Afghanistan which were entirely new and dramatically altered the nature of warfare (George, 2017). The acronym VUCA was first employed in 1987 to reflect or describe the complexity, volatility, ambiguity, and uncertainty of the general situations in some leadership theories (Swanwick, 2017). Following that, in 1991, the Army-War College of US introduced the "VUCA concept" to define the new volatile, uncertain, complex, and ambiguous multilateral universe apparent at the close of the Cold War to describe the complexity of the military operational environment. Nevertheless, the popularity of the use of VUCA acronym started after 2000.

To understand and appreciate the need for a quest into identifying emerging leadership skills, the environment that leaders face today must be comprehended fully to see if it requires revisiting the leadership skills considering the impacts of VUCA environment. What is changing in the environment that the military operates? Based on the Army`s experiences since the end of Cold war (and of course including Iraq and Afghanistan), the Army Leader Development Strategy (ALDS) makes an assessment that the future operational environment will be even more uncertain, complex, and competitive as hybrid threats challenge us across the full spectrum of operations. (A Leader Development Strategy for 21st Century, 2009). Halpin (2011) discusses, the more military role becomes broader and more complex, the more it becomes harder to specify with any degree of certainty what knowledge and skills are required of military leaders. Even if it is very useful to analyze all knowledge, skills, and abilities required of military leaders in the 21st century and identify the demands and characteristics of the leadership context within the contemporary military environment, it would not be feasible to provide the necessary training, education, and experience to fully

prepare each and every commander for his or her next leadership role (Halpin S, 2011). However, it is a fact that if the skills are not identified, no leaders will be provided the necessary training and education.

Cone (2013) describes a crucial point about the education and development of military leaders. He mentions that the 21st century Army is much broader than developing quality leaders, who need to qualify as both experts and generalists at the same time and adds that such leaders cannot be mass produced. He implies the Army's future success rests on its ability to make talent management a core competency. The system requires the capability to provide some future Army leaders opportunities to acquire expert skills, while others, particularly those marked for senior-level leadership, along paths that expose them to as many experiences as possible. By helping, leaders find where their unique talents best fit, every soldier is allowed to obtain the training, education, and experience necessary for them to contribute best to the Army's total well-being. Great leaders remain the ultimate strategic reserves as well as the key guides along the path of preparation. When faced with unforeseen situations, the search is on for smart and adaptable leaders to ensure the "Army we have" can be rapidly transformed into the "Army we need." Moreover, soldiers deserve the best leadership the Army can deliver, and that requires investing in leader development not just money, but also time. Wars necessitated delaying the professional education of many of the leaders. In reality, leader development system is mortgaged to provide immediate battlefield leadership. That bill is now due (Cone, 2013). This is especially relevant to a VUCA environment. The initial step to transforming from the Army we have into Army we need is identifying what kind of skills the leaders need to acquire and develop in that Army we need.

A summary of an extensive literature review (Chapter 2) in regard to what is changing in the aforementioned full spectrum of operations is depicted in Figure 2. These inevitable and already observed changes are affecting and shaping what kind of leadership skills are employed

in accordance with these changes.

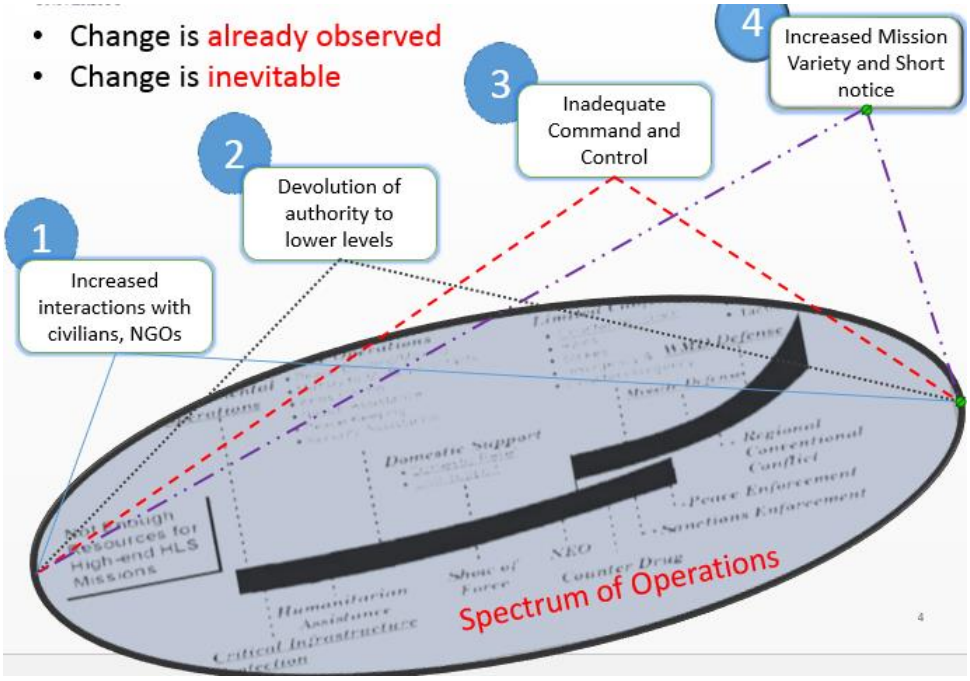


Figure 2.The Main Shifts in Leadership Practices in Full Spectrum Operations.

A summary of four fundamental shifts extracted from the literature is given here.

The first aspect of the shift in the military environment according to Leonard (2006) is that recent operations require widespread interaction with civilian populations, coalition forces, civilian agencies, and non-governmental organizations (NGOs). These are the situations in which leaders must learn to strike a balance between persuasion and the use of force.

The second aspect of the shift in the context of military leadership that has not received a great deal of attention is the devolution of authority to lower organizational levels. The traditional approach to military education and training is an incremental layering of knowledge and skills. The operational environment in Iraq or Afghanistan, for example, resulted in the dispersion of forces, with relatively junior officers expected to take initiative and/or respond to

local events with minimal guidance from those higher in the chain of command (Halpin S, 2011, p.485).

The third aspect of shift is the previous command and control tools becoming inadequate. Anderson and Anderson (2013, p 25) note that it is likely that the traditional Command and Control (C2) tools will not suffice in this complex and rapidly changing environment**.** Is change something that military leaders are not familiar with? Of course, not. However, even though military leaders always have been dealing with change and imperfect knowledge over the millennium, we understand that the future holds knowledge with more depth and breadth, a change that accelerates very rapidly, and presents magnified conflicts of interests and fluidity of conditions (Hailes, 2013).

The fourth aspect of shift is the transition from one type of security environment to another with short notice. The complexity of the operational environment will push future operations to occur across the spectrum of conflict**.** Improved service and institutional adaptability to deal with rapid change (A Leader development strategy for 21st Century, 2009, p.8). Leaders must be capable of those of different experiences, cultures, and functions. They must also be able to mentally shift from war to peace and back again (Ahern, S, 2008.p.7). A summary is in Table 2 below.

Table 2. Changes Observed in the Operational Environment

Changes Captured form Literature	**Summary**
Observed Major Shift 1	widespread interaction with civilian populations, coalition forces, civilian agencies, and non-governmental organizations (NGOs)
Observed Major Shift 2	devolution of authority to lower organizational levels
Observed Major Shift 3	previous command and control tools becoming inadequate
Observed Major Shift 4	the transition from one type of security environment to another with a short notice

1.2 Problem Statement

Leadership is a vast area of study and research, and there have been many different formulations, theories and approaches to be able to understand and benefit from it better. The volatile, uncertain, complex and ambiguous (VUCA) environment puts emphasis on leadership skills in emerging environments in which organizations operate and challenges the traditional leadership skills (Bennet & Lemoine, 2014b). It also makes the previously applied, tested and worked models obsolete, thus putting the current operational models in questioning, and also sees it critical having leaders with necessary skills and expertise of finding new and effective solutions to new kind of problems (Raghuramapatruni & Kosuri, 2017). It is no surprise that this will require revisiting how the leaders lead in this novel environment in which traditional leadership skills and models will be questioned. The military domain is one of the main areas that leadership is applied to on a day to day basis, therefore its leadership practices will certainly be impacted as well. This can be particularly named as "Military Leadership (ML)."

The primary problem that this research addresses is identifying the emerging leadership skills. This is actually what makes this research important as there is a gap in the literature in terms of providing a holistic view to emerging skills. The emerging leadership skills has to be identified and conceptualized to be ready for delivery during leadership education. The second problem is that how well the correlations between emerging leadership skills and their application (as perceived by military officers) in various organizational levels and security environments is understood does not have an answer in the literature. This is another problem that this research is tackling. Understanding these relationships will pave the path towards developing a structured leadership development concept. Once the leadership skills are identified and categorized, the security environment and organizational-level effect on the application of these skills must be studied by the researchers and practitioners for further

development, refinement, and enrichment across various domains. Understanding how the organizational context of leadership influences the leadership processes within challenging environments is of particular importance for researchers and practitioners studying leadership and leadership processes within the military environment (Halpin, 2011, p.480). The military cannot teach a one-size-fits-all leadership for every level leader, and for every environment since each circumstance likely to require different skills. There is no 'one size fits all' leadership dynamics model.

Military leadership studies usually make an effort to mention some of the leadership skills for the future environment and place emphasis on how important they are for the military; however, these studies are not investigating identification of the leadership skills from a broader perspective, and not coming up with categorization of skills that better fit in this future environment. Such identification and categorization will contribute to the individual leadership education and development of a military leaders throughout their career. In addition to that from an organizational point of view, it will also help better prepare manpower (from an applied leadership perspective) how to learn to tackle with problems of leading in such environments from a military senior leadership and talent management perspective.

This is very critical for the military organizations since the military cannot hire or contract combatant leaders/commanders with explicit technical and tactical warfighting knowledge. As a hierarchical fat organization, the military has to recruit, teach the basic skills of warfighting and leadership, develop and sharpen their members' saws in order to prepare them for the next task they will assume in complex security environments. The military cannot recruit all of its members and it cannot replace a defective leader (e.g. an infantry officer) through outsourcing (which would be may be possible for a civilian organization), it is the organizational responsibility for them to prepare and deliver the necessary leadership education, and make sure that its leaders acquire the necessary skills before they need to use

them. Skills should be identified now so that leaders should incorporate those skills into their leadership skills toolbox. They need to learn, acquire, and internalize these skills as needed before they assume new tasks and responsibilities through assignments, promotions and when they are deployed across the full spectrum.

Moreover, the military has to constantly address the fast-changing security environment at the various operational environments at all levels of the organization as described. The military has to constantly look for the necessity for the need for new skills, identify them, and have its leaders acquire these skills and develop further. This is a "constant battle," and if not fought in a systematic and structured way, it might quickly turn into a "losing battle." The traditional military leadership skills probably will not be sufficient to achieve success in today's VUCA environment. In this environment, one thing is for sure that military will be called again to deploy and engage the enemy, sooner or later even though the location, nature or date of conflict that will be fought is unknown (Cone, 2013, p.3). That is why military leaders must be served with the required skills of a complex security environment by their organizations. Albert Einstein said, "We cannot solve our problems with the same thinking we used when we created them." If this quote were to be applied to the leadership in a VUCA environment, it might read like, "We cannot lead to solving the VUCA problems with the same education, skills and social mindset intended to lead to solving the traditional (non-VUCA) problems." As a hierarchical and centralized decision-making organization, the military also has to understand that some of these leadership skills can be more salient in various security environments. They need to know whether or not the organizational level and security environment make any difference in how salient skill is across the spectrum of operations. As the military role becomes broader and more complex, it becomes harder to specify with any degree of certainty what knowledge and skills might be required for military leaders.

Gaining an awareness of these leadership skills in a VUCA environment is a necessary first step in developing tools to overcome the difficulties over time. However, we need to be rigorously working towards identifying the skills needed for the military leaders, so that we provide as much as training possible to as many as leaders we can reach. If we are not in search of the first step (identification the skills), we cannot do the second step (delivering the education as much as possible) nor of course the third step (utilizing those skills when needed in the field). This requires talent management to be a core competence for the military.

Understanding how the organizational context influences the leadership processes within complex environments is of particular importance for researchers and practitioners studying leadership and leadership processes within the military environment. Given changes in the global political landscape and associated changes in both civilian and military organizations, current formulations of leadership appear to be inadequate to encompass the apparent complexity of the environment within which leadership is now unfolding (Halpin, S, 2011, p.480). Military leaders are performing superbly in combat in Iraq and Afghanistan today, but we must review and revise our leader development strategy to prepare the next generation of leaders for the complexities of the future operational environment waged across the spectrum of conflict. This review and revise require continual adaptation. (A Leader development strategy for 21st Century, 2009, p.2)

1.3 Purpose of the Research

The primary purpose of the research is to identify, categorize the emerging leadership skills required in a VUCA environment, and examine how the military officers perceive the identified skills in various security environments and organizational levels.

1.4 Research Question and Sub-Questions

The primary research questions are as in the following;

Research Question 1: What are the emerging leadership skillsets in a VUCA environment?

Research Question 2: How does the perception of these skills by military officers vary regarding different security environments? (War and Humanitarian Assistance) and levels of the organization? (Strategic and Tactical).

The following Sub-questions are generated in order to answer the primary research questions;

Subquestion 1: What are the leadership theories and approaches, and which one is a better fit for studying military leadership in a VUCA environment?

Subquestion 2: What is the challenge with military culture in implementing these skills?

Subquestion 3: Which leadership skills are more salient than others in different security environments as per the perception of military officers?

Subquestion 4: Which leadership skills are more salient than others in different organizational levels as per the perception of military officers?

Subquestion 5: Does the rank of military officers have an impact on how they perceive leadership skills?

These questions will be addressed by carrying out a literature review to identify the changes in the security environment, administering a survey to be responded by active and retired military officers, and analyzing the data collected firsthand. The research will focus on the military officer's perception of the emerging leadership skillsets in two different operating environments; war and humanitarian assistance and two different organizational levels; strategical and tactical.

1.5 Significance of the Research and Contributions to Literature

VUCA concept is shortly explained in the background of the research part previously. VUCA environment will require Human Resources (HR) and talent management professionals

to change the focus and methods of leadership development. VUCA environment, as Friedman (2005) notes, is taking even the ablest of leaders who may find their skills growing obsolete as quickly as their organizations change in this volatile, unpredictable conditions. HR and talent management professionals must position their organizations to succeed in today's turbulent business environment by developing agile leaders. Applying the VUCA model as a framework to re-tool leadership development models may enable HR and talent management professionals to identify and foster the leaders their organizations need now and, in the future, (Lawrence, 2013, p.2-3). The VUCA Prime can be seen as the continuum of skills leaders can develop to help make sense of leading in a VUCA environment. They can use the VUCA Prime as a "skills and abilities" blueprint when creating leadership development plans (Lawrence, 2013, p.6). To do so, it needs to start during the selection process (Lawrence, 2013, p.7). The acronym for VUCA prime is "Vision, Understanding, Clarity, and Agility."

This research identifies the emerging leadership skills that are necessary for leading in VUCA environment and also examines military officers' perception of how they see leadership skills in the different security environment and different organizational skills to understand the effects of organizational levels and security environment on the application of leadership skills. The expected finding of this research may well serve as a catalyst to hierarchical flat organizations like military and law enforcement to understand the emerging leadership skillsets better and contribute their individual leadership development efforts as well as organizational talent management efforts. When the research is completed, three main results are expected as contributions to the literature.

The first significance of the research is that it contributes to the theoretical knowledge by identifying and categorizing the results that help understand what kind of emerging leadership skills are needed in VUCA environment and explaining the relationship between strategic and tactical levels of the organization and leadership skills, as well as the relationship

between security environment and leadership skills. In other words, this research is an elaboration of three skills model by Robert Katz (1974) focusing on military settings. The research will increase the individual awareness of commanders about what kind of leadership toolbox his/her subordinates need to possess to be more effective in VUCA environments. The senior leadership and talent management experts will benefit these skillsets when executing organizational functions like recruit, training, promotion, and deployments. This research is unique in that it provides a holistic approach to leadership skills while focusing on the investigation of the military context. Therefore, this study is filling a gap within the military literature and help increase the awareness of leaders and senior management. The foundational leadership approach which this research is based on is "Skills Approach." This approach is one of the approaches widely accepted in the recent leadership body of knowledge. The research examines it in a military context extending and expanding it to the security environment and organizational levels.

The second significance of the research is that the research findings will have managerial and practical benefits, specifically for military organizations. HR and senior management will benefit from empirical findings of this research that provides a better understanding of the leadership skills needs in the VUCA environment, taking into account the difference in security environments and organizational levels. It will enable human resources specialists and senior military management to understand how leadership perceived and performed by military members, helping shape leadership development dynamics under the light of skills identified. This serves as an important finding to increase the effectiveness of leaders in the middle and long run by shedding light to processes of all the way from recruiting new soldiers and cadets, developing and fostering them, selecting the right individual for the new jobs and promoting them over the course of their career. Such a basic plan especially contributes to the leadership education and development of an officer throughout his/her career

and also better prepares manpower to tackle with problems of leading in complex environments from a military senior leadership perspective.

The third significance of the research is that by identifying the applicability of the skills (from the perception of military officers) will be a guide for human resources people and senior leadership in military organizations since it is not possible to outsource a combatant commander or staff. Military, for the most part, has to develop its leadership with necessary skills starting from personnel's early career. Military leadership studies usually make an effort to mention some of the leadership skills for the future environment and place emphasis on how important they are for the military; however, they do not propose a basic plan of applicability of these skills within the leadership development plan. The results of the study can assist senior leaders in the management in the preparation of a leadership development plan considering the effects of VUCA environment, organizational level, and security environment. The identified skills will be utmost important when navigating through the VUCA environment. There are many occasions that civilians and military personnel work together. As a part of or as a leader of the team, awareness about military personnel's leadership perception will help to create a better working environment for civilians and military.

1.6 Operational Definition of Key Terms

Operational Definition of Leadership

For the sake of this research, the following definition is used as the operational definition of the leadership; "leadership is a process whereby individual influences a group of individuals to achieve a common goal" (Northouse, 2013, p.5). However, it is useful to include leadership definitions that the military uses. The leadership definition in FM 6-22 *Army Leadership* (2012), is used for the sake of the research: "Leadership is the process of influencing people by providing purpose, direction, and motivation to accomplish the security environment and improve the organization" (FM 6-22,2012, p.1). In its simplest form,

leadership involves one person influencing another to engage in some purposeful or goal-directed behavior. The US Army defines leadership as "the process of influencing people by providing purpose, direction, and motivation while operating to accomplish the mission and improving the organization" (Department of the Army, 2006, p. 1–2). Similarly, the US Air Force defines leadership as "the art and science of influencing and directing people to accomplish the assigned mission" (Department of the Air Force, 2006).

Operational Definition of VUCA Environment

The acronym VUCA (volatility, uncertainty, complexity, and ambiguity) was first employed in 1987. The aim was to reflect or describe the complexity, volatility, ambiguity, and uncertainty of the general situations in some leadership theories (Swanwick, 2017). In 1991, the Army-War College of US introduced the "VUCA concept" to define the new volatile, uncertain, complex and ambiguous domain as the Cold War gets to an end. The military uses VUCA to describe the extreme situations in Iraq and Afghanistan which were entirely new and dramatically altered the nature of warfare (George, 2017). VUCA prime is one acronym that is widely used to encounter the VUCA environment with vision, understanding, clarity, and agility.

Operational Definition of Security Environment

War

This is an environment that can be associated with traditional/conventional warfighting, where strategic and tactical weapons are widely used. Planning, supporting, and executing engagements with the enemy is the prime concern. This level includes the use of a nation`s total resources with extreme aggression and destruction, resulting in non-combatant/civilian losses and suffering. There might be more than one front where two or more states are in open conflict. The most classic example would be WWI and WWII.

Humanitarian Assistance and Disaster Relief (HA)

HA is an environment where short-term assistance is provided until the long-term support is established by governmental or other agencies (usually a few weeks), i.e. natural disasters like flooding, hurricane, or earthquake. This might occur in your home country or in a foreign country where the aim is to save lives and reduce suffering. Although the primary responsibility for disaster relief lies within the civilian realm, the military provides short term support to deliver relief effort during the catastrophic incident recovery (such as air transport, logistics, urgent communications) and provides security for relief forces. This necessitates MULTI-NATIONAL and MULTI-AGENCY planning and execution, which might include military and civilian personnel, local authorities, and other nations. NO ORGANIZED ENEMY THREAT to forces. Operation Tomodachi is an example of military assistance operation to support Japan after the 2011 earthquake and tsunami.

Operational Definition of Organizational Levels

Tactical Level (TL)

Tactics are the employment and ordered arrangement of forces in relation to each other. Planning and execution of battles, engagements, and achievements of military objectives that are assigned to forces. Forces would include platoon, company, battalions, brigades, divisions, and corps; squadrons and wings, ships, flotillas, and battle groups, and units assigned to support a joint task force.

Operational Level (OL)

The operational level links the tactical employment of forces to national/military strategic objectives. Forces would include major task force under a joint commander, a Marine Air Ground Task Force (MAGTF), or similar sized and organized military organizations. Sub-unified commands under a geographic combatant commander would be considered operational level, such as US Forces Korea (USFK). Joint Force Air Component (JFAC) and Combined Air Operation Center (CAOC) would be at the operational level as well.

Strategic Level (SL)

The strategic level develops an idea (or set of ideas) for employing the instruments of national power. SL Also achieves theater, national, and multi-national objectives in a synchronized and integrated fashion. SL Includes the geographic combatant commands, the Joint Chiefs of Staff and DOD. Single Service Commands would also be at this level in most countries.

CHAPTER 2

LITERATURE REVIEW

"If we are to develop leaders
prepared for the future security environment,
we must ensure that the scrimmage is harder than the game."
(A Leader Development Strategy for 21st Century, 2009, p.8)

2.1 Introduction

This chapter establishes a background for the research topic in an effort both to provide a comprehensive literature review of the research executed on leadership theories and culture specific to the military and to outline the literature gap to be researched.

A systematic search was conducted through library databases to identify relevant articles and dissertations regarding changing nature military operational environment, the unique culture of military context and leadership theories and leadership skills as they relate to VUCA environment. Therefore, research material is divided into four categories; major shifts in the operational environment, characteristics of military culture, leadership theories, and emerging leadership skills in the VUCA world. Besides the articles, dissertations and other publications found on the online databases, the interlibrary loan system is also used to obtain relevant books outlining the major theories on leadership and culture. Leadership: Theory and Practice by Peter G. Northouse was one of the most frequently consulted leadership resources. The periodicals covering military domain and military joint and service publications were also a primary source for this research. The delivery of these efforts constituted the qualitative section of this research.

A wide range of literature was reviewed to assess the current state of knowledge on major shifts in the operational environment, military culture, leadership styles and approaches,

and emerging leadership skills that VUCA environment necessitates. The literature review reveals that substantial literature exists in the leadership skills that VUCA necessitates, yet the literature remains largely unsubstantial in identifying and categorizing the skills with a broad and holistic perspective. Figure 3 presents a brief breakdown of the topics of the literature review carried out.

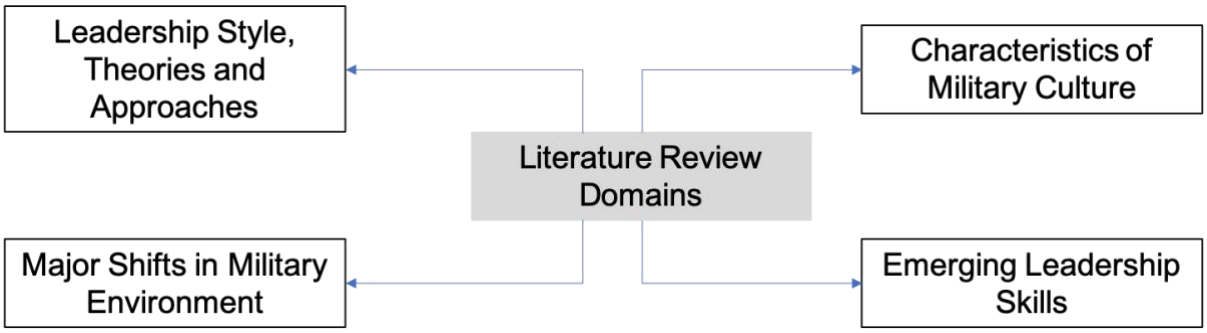


Figure 3. Literature Review Conceptual Map

The first literature review area was "Major Shifts in Military Operational Environment" which has revealed clearly that there are inevitable and already observed main shifts in the environment that the military operates. The next area that is studied was Leadership Styles, Theories and Approaches. After analyzing the theories that might be applicable to the military, the initial literature review revealed that "Skills Approach" was the most appropriate leadership body of knowledge domain to base this research on. Another literature review area was the characteristics of a military domain that makes it unique, this is studied to explore the characteristics of military culture as it has an impact on the military leadership application. A final literature review was about emerging leadership skills that military leaders should possess due to influences by VUCA features. This exploration resulted in the identification and categorization of the leadership skills, which the researcher names "emerging leadership

skillsets" which is covered in Chapter 4.

2.2 Compiled Definitions of Leadership

James McGregor Burns (1978, p.2) captures the challenges in leadership studies saying '*one of the most observed and least understood phenomena on earth*" In his book, Northouse makes an introduction to leadership by describing it as a "*highly sought-after and highly valued commodity*" (Northouse, 2013, p1). According to him, all the research on leadership provides a picture of a leadership process that is far more complicated than everyone really thinks (Northouse, 2013, p1). Leadership is a vast area of study and research, and there have been many different formulations, theories and approaches on it to understand and benefit from it better. Northouse (2013) includes four chapters on leadership styles, five chapters on leadership approaches, and three chapters on leadership theories. A literature review map is included in
In its simplest form, leadership involves one person influencing another to engage in some purposeful or goal-directed behavior. The US Army defines leadership as "the process of influencing people by providing purpose, direction, and motivation while operating to accomplish the mission and improving the organization" (Department of the Army, 2006, p. 1–2). Similarly, the US Air Force defines leadership as "the art and science of influencing and directing people to accomplish the assigned mission" (Department of the Air Force, 2006)
Stogdill (1974) claims that there are almost as many different definitions of leadership as there are people who have tried to define it. That means someone who started the sentence "*Leadership is…"* to describe the phenomenon has almost no chance to come up with the same ending of some else`s sentence. As Northouse (2013) claims, all leadership related research provides a pictorial map of a leadership process which is far more complicated and sophisticated than most simplistic views propose. As a matter of fact, even though the Harvard Business Review published more than 500 articles since 1923, each is an effort to somewhat defining leadership (Nohria & Khurana, 2010). Yet, there is no single definition of leadership

that scholars agree upon.

Table 3 provides select definitions of leadership consolidated from multiple sources.

Table 3. Select Definitions of Leadership

Leaders Definition	Source
the ability to inspire confidence and support among the people who are needed to achieve organizational goals.	Dubrin, 2010
the art and science of influencing and directing people to accomplish the assigned mission	US Airforce (2006)
the process of influencing people by providing purpose, direction, and motivation while operating to accomplish the mission and improving the organization	Department of the Army (2006)
the ability of an individual to influence, motivate and enable others to contribute toward the effectiveness and success of the organizations of which they are members	House (GLOBE), 2004
the art of influencing others to their maximum performance to accomplish any task, objective or project.	Cohen, 1990
an interaction between two or more members of a group that often involves a structuring or restructuring of the situation and the perceptions and expectations of members.	Bass, 1990
the process of influence between a leader and those who are followers.	Hollander, 1978
the process (act) of influencing the activities of an organized group in its efforts toward goal setting and goal achievement.	Stogdill, 1950

Unsurprisingly, a vast amount of different ways of conceptualization of leadership in the literature and although not all scholars agree on a single definition, some common components can still be noticed. Northouse (2013, p. 5) groups those central components into four: leadership:

is a	*PROCESS*
involves	*INFLUENCE*
occurs in	*GROUPS*
involves	*COMMON GOALS*

He reflects these central components in his definition that he uses throughout his book which is: “leadership is a process whereby an individual influence a group of individuals to achieve a common goal.”

The leadership theories fall into three primary approaches: leadership traits, leadership behaviors and leadership contingencies (Nohria & Khurana, 2010; Bjerke, 1999). Besides this categorization, Northouse (2013) covers three theories, five approaches and four styles of leadership as adopted in Table 4 in the book. This research is going to focus on four of the approaches that most of the studies cluster on, which are trait approach, skills approach, situational approach and style approach. The focuses leadership approaches that are examined in the literature review is bolded.

Table 4. Leadership Approaches, Styles and Theories (Adapted from Northouse, 2014)

Theories	Contingency Theory
	Path-Goal Theory
	Leader-Member Exchange Theory
Approaches	**Trait Approach**
	Skills Approach
	Situational Approach
	Style (behavioral) Approach
	Psychodynamic Approach
Styles	Transformational Style
	Servant Style
	Authentic Style
	Team Style

Leadership Approaches

This section of the literature review focuses on four leadership approaches; trait approach, skills approach, situational approach, and style approach. The aim of this review is to explore the literature and come up with the most appropriate leadership approach for what this study aims to achieve. The early leadership studies focused on the personal attributes, abilities, skills or characteristics of the leader. They assumed that leadership is a quality of great men who are born different than others, hence their personal attributes make them natural leaders (Kaiser & DeVries, 2000). The dominant idea was that leadership can be understood by studying the distinguished characteristics of great leaders. Many scholars tried to identify critical traits of leadership, but with limited success to the correlations between individual correlations and successful leadership performance.

Trait Approach

During the course of the 20th century, scholars were very interested in *Trait Approach,* and this comes as the "first systematic attempts to study leadership" (Northouse, 2013, p. 19) theory that was studied to determine what make the 'great men' a 'great man.' All were focused on identifying the inmate qualities, characteristics owned by high level social, military and political figures (Northouse, 2013). However, the trait theories showed limited success to explain the relationship between individual traits and successful leadership. Studies could not yield a definitive list of leadership traits. The first good overview of traits study came from Stodgill (1948, 1974) as a result of his two surveys in 1948 and 1974. In his first survey, he came up with eight traits and in his second one with ten characteristics. After these first studies, many more studies were conducted, and the theory is still alive in the modern day as well. It was believed that people were born with some traits that make them a leader. It began with focusing on identifying qualities of top figures, transformed to take into account the impact of

different situations to leadership and then transformed back again to refocus the vital effects of inmate traits to be an effective leader (Northouse, 2013). A useful summary of leadership traits and characteristics can be found in Table 5.

Table 5. Summary of Traits and Characteristics (as cited in Northouse, 2013)

Stogdill (1948)	Mann (1959)	Stogdill (1974)	Lord, DeVader, and Alliger (1986)	Kirkpatrick and Locke (1991)	Zaccaro, Kemp, and Bader (2004)
intelligence	intelligence	achievement	intelligence	drive	cognitive abilities
alertness	masculinity	persistence	masculinity	motivation	extraversion
insight	adjustment	insight	dominance	integrity	conscientiousness
responsibility	dominance	initiative		confidence	emotional stability
initiative	extraversion	self-confidence		cognitive ability	openness
persistence	conservatism	responsibility		task knowledge	agreeableness
self-confidence		cooperativeness			motivation
sociability		tolerance			social intelligence
		influence			self-monitoring
		sociability			emotional intelligence
					problem solving

Researchers using the trait approach only takes into account the leaders themselves in their research, and what they are trying to explore and understand is to answer this question "what qualities and personalities make them great leaders." They are believed to be gifted and special people. But when the aims of this research and the characteristics of the military domain is considered, actually it is not very useful. The military consists of leaders that function in a team, squadrons, platoons, task forces, all the way up to politic/military levels. They have to lead in various organization levels and security environments because the military cannot recruit all the "gifted people." Besides, there is a career path in the military from bottom to the top level lasting 30-40 years to let them gain experience, and to acquire technical and tactical knowledge. Gifted people's ideas do not really work for the military. They may work when promoting a few high-level senior militaries though. There is a hierarchy in the military, so

there is no way promoting a gifted Major to Colonel in a few weeks due to his gift. However, the traits approach has some strengths as seen in Table 6.

Table 6. Strengths of Traits Approach (Adapted from Northouse, 2013)

Strengths of **the Trait Approach**
Intuitively appealing
Leaders are a special kind of people
The difference comes from special traits they possess
They are gifted people
The approach with the breadth and depth of century of studies to back it up (credibility)
Devoted only to leaders, so yields a more intricate and deeper understanding of the phenomenon
What to look for to become a leader

Moreover, the trait approach did not take the behaviors of the followers into account. The focus was shifted from "who the leaders are?" to "what leaders do?" quickly. This gave rise to the emergence of studies of behaviors and styles of leaders to identify the best or most effective leadership styles (Bjerke, 1999; Pendleton & Furnham, 2012). Northouse (2013) extends the list of traits and characteristics of a leader by adding to intelligence, self-confidence, determination, integrity, and sociability.

Style (Behavioral) Approach

This approach emphasizes the *behavior* of the leaders whereas the trait approach emphasizes personality characteristics, meaning mostly inmate qualities. Style approach is interested in what leaders do and how they act in certain conditions (Northouse, 2013). This can be considered more or less an expansion from inmate quality leader-centric approach to including their action towards others in different settings like environmental effects. The focus

of the style approach is “to explain how leaders combine task and relationship behaviors to influence subordinated in their efforts to reach a goal” (Northouse, 2013, p.75). Perhaps, the earliest study about the leadership styles was conducted by Kurt Lewin and his colleagues in 1939. They focused on how leaders influenced followers and directed group activities rather than the personal characteristics and attributes. The study outlined three leadership styles which are authoritarian, democratic, and laissez-faire (Lewin, Lippitt, & White, 1939). Some of the other first studies conducted at Ohio State University in the late 1940s, which were based upon the findings of Stodgill’s (1948) studies.

Blake and Mouton’s Managerial Grid can be considered one of the best-known leadership behavior models (Northouse, 2013). The leadership grid was designed to explain the leadership behaviors by two factors: concern for production and concern for people. The factors are self-explanatory and refer to the behaviors that cluster under production orientation (initiating structure) and employee orientation (consideration). The Leadership Grid as shown in Figure 4, displays five major leadership styles: Impoverished Management (1,1), Country-Club Management (1,9), Authority-Compliance Management (9,1), Team Management (9,9), and Middle of the Road Management (5,5).

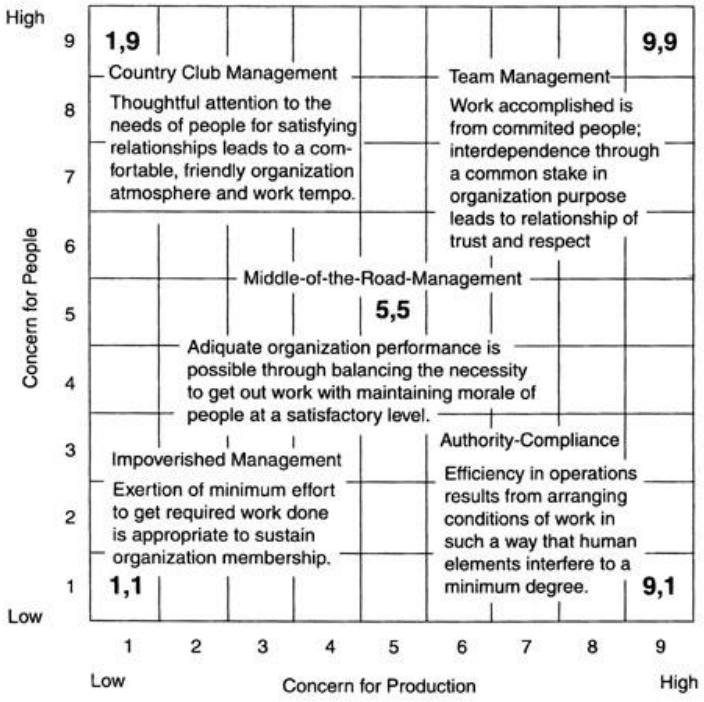


Figure 4. The Leadership Grid (as cited in Northouse, 2013, p.80)

Style approach is more useful than the traits approach in military settings for some valid reasons. First of all, it broadens the concept to include relationship and tasks, which is an essential part of military leadership since a military person has always a task to accomplish and does that with interactions with other individuals or entities. Secondly, it deals with not only the individual characteristics but their behaviors in specific conditions, which is a perfect fit for military leadership since the same leader has to take different actions in order to the accomplish the same mission but in different situations this time. Third and last, there is a great room for personal improvement by checking their acts and behaviors with the theory and so changing if they wish so. This is also helpful for the leaders as they go up in the chain of command. Table 7 summarizes the strengths of the style approach.

Table 7. Strengths of Style Approach (Adapted from Northouse, 2013)

Strengths of **Style Approach**
Broadened the understanding of leadership to include the behaviors of the leaders, meaning what they do in a specific situation
A wide spectrum of study validates and gives credibility to the basics of the approach
The core of the process is tasks and relationship, which constitutes the leadership process
Leaders can learn about themselves and assess the actions, by doing so they may change to improve their style

Situational Leadership Approach

The premise of the Situational Leadership Approach, developed by Hershey & Blanchard (1969), is that different conditions demand different types of conditions, so being an effective leader requires adapting to the style that different situations demand. The theory introduces the group's maturity (employee's competence and willingness) level as a situational factor and states that different leadership behaviors which can be clustered in supportive and directive behaviors should be applied depending on the situation. The situation is determined according to the employee's competence and willingness. The theory suggests that the leadership style should vary regarding the group's competence and commitment, ranging from low competence and low commitment to high competence and high commitment. Leadership styles defined by Hersey and Blanchard are: directing (high directive-low supportive), coaching (high directive-high supportive), supportive (high supportive-low directive), and delegating (low directive-low supportive) (Northouse, 2013) as in Figure 5 which gives a graphical description of four leadership style in the theory.

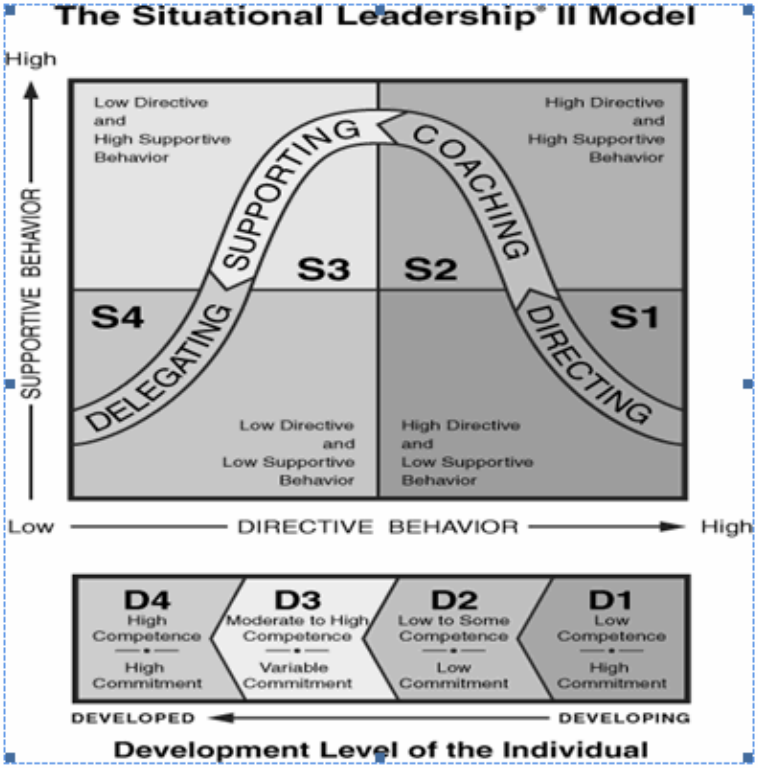


Figure 5. Situational Leadership II (as cited by Northouse, 2013, p.100)

In very simple words, when there is low supportive low directive behavior, leaders can delegate when there are high supportive low directive behavior leaders can support when there is low supportive high directive behavior leaders can delegate can direct and when there is high supportive low directive behavior leaders can coach.

Skills (Competency) Approach

The final leadership approach to elaborate is *Skills Approach*. The first attempt to mitigate the trait problem by seeing leadership as a set of developable skills was Robert Katz in his article published in 1955 that has a title "Skills of an Effective Administrator" in Harvard Business Review. In the early 1990s, many publications were made resulting in Mumford and his colleague's study which resulted in a comprehensive skill-based model of leadership. Katz (1955, p. 34) suggested that effective leadership depends on three basic personal skills:

technical, human, and conceptual. He further argued that these are different from traits of who leaders are (innate characteristics); these are actually what leaders can do and accomplish, the elaboration of skills approach, as seen in Table 8. This approach is very powerful for the military because of two fundamental reasons: first "these skills can be acquired and leaders can be trained to develop them" (Northouse, 2013, p.44), and second "skill implies an ability which can be developed, not necessarily inborn, and which is manifested in performance, not merely in potential".

Table 8. Elaboration of Skills Approach (adapted from Northouse, 2013)

Skill	Explanation	Details	Example
Technical (deals with Things)	Proficiency in a specific activity Specialized knowledge Analytical Ability	Knows; Methods and Processes Procedures Techniques More concrete things	Surgeon Musician Engineer Accountant
Human (deals with People)	Ability to work effectively as a group To build cooperative efforts in his team	Knows; His own assumptions, beliefs Understanding others Skilled communicator with others Encourage others to participate	Leader of a team Manager of a company
Conceptual (deals with Concepts, ideas, relations)	Ability to see the big picture To translate knowledge into action	Recognize how various functions affect each other Visualize the relationship between individual business to industry	Leader of a company Manager of a company

Skills approach "takes a leader-centered perspective on leadership" (Northouse, 2013), but it is different in how it does that. Skills approach can be named as "competency approach" since it is dealing with competencies of a leader that can be taught, learned and developed,

unlike trait approach which focuses only great man's inmate quality and characteristics.

Technical skills are dealing with things; human skills are related to people; and conceptual skills are related to the concept, ideas, and relations (Katz, 1955). In the early 1990s, many publications were made resulting in Mumford and his colleagues' study which resulted in a comprehensive skill-based model of leadership. Katz argues that in practical life it is really difficult to determine where one ends and the other one starts, but he still ranks the importance of three skills between lower management, middle management, and high level (top) management. The technical skills are most needed in lower levels and the need decreases as going up to middle and top management; however, in contrast to technical skills, the need for conceptual skills increases as going up the middle and top management. Technical skills are imperative in lower levels whereas conceptual skills are utmost important at top management. In addition to all these, human skills are needed and essential at all levels. It is the one out of three skills that is, once acquired at the lower levels, will benefit and are needed in middle and top management as well. This is depicted by Northouse (2013) as in Figure 6.

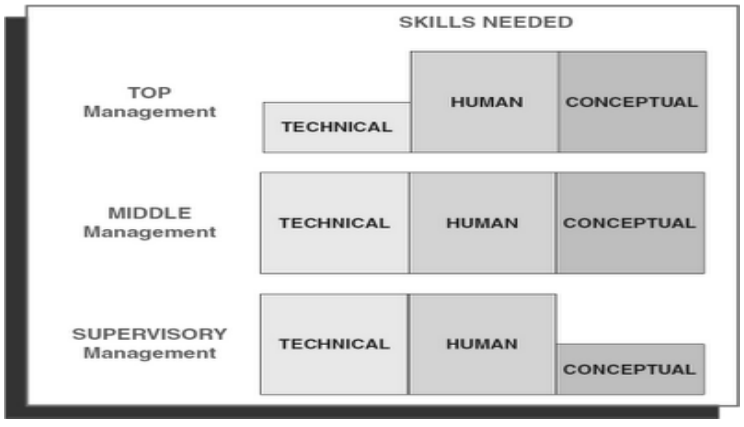


Figure 6. Management skills Necessary in Three Levels of an Organization (as cited in Northouse, 2013, p.45)

Although Katz conceptualized leadership in terms of skills, empirically based research did not show up until the mid-1990s. With the funding of the US Army and DOD, researchers tried to develop a comprehensive theory of leadership in organizations with the main goal of explaining the underlying elements of effective performance. Based on this extensive project, Mumford and his co-workers come up with a formulation of "skill-based model of leadership" (Northouse, 2013). The model is characterized as capability model since it focuses on and examines the leader's skills and knowledge and the leader's performance (Mumford, Zaccaro, Harding, et al, 2000, p.12). They emphasize what leaders do (being effective by utilizing their skills, knowledge, and capability) as opposed to what they are. The model they proposed can be seen in Figure 7.

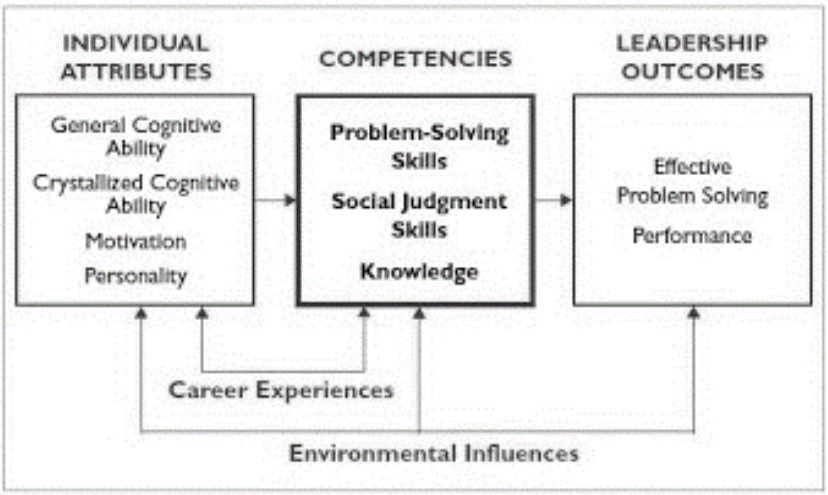


Figure 7. Skill Model Leadership (as cited by Northouse, 2013, p.55)

Competencies are the heart of the model; these are the key competencies for effective performance. Individual attributes on the left are the attributes that have an impact on leadership skills and knowledge, which play a very important role in the model. On the right-hand side exists the leadership outcomes which are strongly influenced by leaders' competencies seen in the heart of the model. Career experiences definitely make an impact on

the characteristics and competencies of the leader and it experiences acquired throughout the career influence their knowledge and skills. Environmental influence, both internal and external is the factors outside the leader`s control. Internal factors include technology, facilities, subordinates, and external influences include economic, political, social issues as well as earthquake or flooding (Northouse, 2013).

Skills approach is very much self-explanatory; however, one point is worth to emphasize. The skills approach makes the leadership "available for everyone," meaning that leadership can be learned and developed as necessary to be an effective leader. It also takes into the effect of career experiences and environmental effects which are fundamental to the military settings. This qualifies skills approach as the theoretical base for this research that is focusing on military leadership domain. Military is a career-oriented occupation where officers start from the lowest ranks and make it to the top leadership, and during these years they are involved in numerous environmental conditions (from peace to crisis to war to peacetime training etc.) and organizational levels (strategic, operational, and tactical) all of which affect their leadership effectiveness. Moreover, this approach is consistent with the military education and leadership development rationale, which is scattered over the years as officers promote and assume new and broader responsibilities. Table 9 summarizes the strengths of skills approach.

Table 9. Strengths of Skills Approach (Adapted from Northouse, 2013)

Strengths of **Skills Approach**
Stresses the importance of developing leadership skills
Makes leadership available to everyone
Competencies can be learned and developed to become a better leader
Takes into account environmental effects and career experiences
Captures many of intricacies and complexities of leadership not found in other models
Consistent and suitable for most of the leadership education and development programs

As seen in the literature review so far, the primary focus of the earlier studies is on studying individual leader traits and characteristics, and they are most of the time a working-class male who are most popular among people. Later on, studies focus not only on the leader but also on followers, peers, supervisors, work setting, environment, and culture. So, this expansion has led to broader study perspectives. Leadership is no longer simply described as an individual characteristic or difference but rather is depicted in many models not limited to shared, relational, strategic, global, and complex social dynamics (Avolio, 2007).

The delivery of this literature review area is the investigation of leadership approaches and the selection of the theoretical base of the study. After investigating leadership approached, the researcher chooses the "skills approach" as the theoretical base of this research since it is the most appropriate one for the notion of the research for three reasons; it makes the leadership skills available for every member of the organization, meaning defines them as can be "learned, acquired and developed" by everybody. Also, it takes career experiences into account, and finally it considers environmental influences for effective leadership performance.

2.3 Major Shifts Observed in Military Domain that Impacts Military Leadership (ML)

As mentioned earlier, central components for leadership are process, influence, groups and common goals (Northouse, 2013, p. 5). As the military role becomes more complex, it becomes harder to specify what knowledge and skills are required of military leaders. Identifying and understanding the main shift in the operating environment of the military will help us understand the environmental influences on leadership applications and signal us what skillsets leaders will be needed to deliver a successful leadership performance. Therefore, military leadership (ML) stand out as a specific leadership domain on its own due to the major shifts observed military domain that impacts how the leaders lead and also due to its unique culture that is resided in the profession. ML is a more specific area and is the dominant theme in the research as it is different from a business organization leadership.

Current formulations of leadership appear to be inadequate to encompass the apparent complexity of the environment within which leadership is now unfolding. (Halpin, S, 2011, p.480)**.** Quadrennial Defence Review (2010, p.3) mentions that given the complex security environment and the range of missions, capabilities, and institutional reforms necessary to protect and advance US interests. It adds that the US faces a complex and uncertain security landscape in which the pace of change continues to accelerate. The Department of Defense will continue its work to ensure that military personnel are prepared for the full range of complex missions that the future security environment will demand.

The current operating environment is characterized by unprecedented lethality, volatility, complexity, tempo, and variety (Morath et al., 2011, p.455). So, there is no doubt that leadership is a critical phenomenon since human capital will be a key element of the success for survival as always. Uncertainty and complexity will be prevailing factors in the future operational environment and military organizations will have to respond to a broad range of threats and challenges posed by highly adaptive adversaries (TRADOC Pam 525-3-0, 2009). Drath (2013) argues that the complex system lies beyond the scope of one individual, it is virtually impossible for an individual leader to accomplish the work of leadership. In the last decades, military leadership is called to perform many extensive tasks in a wide spectrum from peacekeeping to nation building, disaster response to counterterrorism or traditional combat (Barton, 2013), as well as irregular, asymmetric warfare and counterinsurgency (COIN) operations (Laurence, 2011)**.**

The Capstone Concept for Joint Operation (CCJO) (2012, p.8) and The Army Capstone Concept (ACC) describe a future characterized by uncertainty, complexity, rapid change, and persistent conflict. One could argue that today's military challenge is no more complex than that of the 1970s and 1980s. Certainly, the defense of Western Europe against an attack from the Eastern Bloc countries would have been an incredibly complex undertaking; however, that

complexity would have been evident in the difficulty of coordinating the defense. The individuals and units knew the tasks they needed to accomplish and were skilled in those tasks. The complexity faced today stems from the uncertainty of opponent and mission: we cannot know against whom we need to prepare to fight, nor indeed can we know when we will be called upon to assume any of many other roles rather than fighting (Leonard et al, 2006).

According to Field Manual 7-0, Training for Full Spectrum of Operations (2008) today, the Army must meet the challenge of a wider range of threats and a more complex set of operating environments while incorporating new and diverse technology. If this is the case, then senior military leadership must be articulating some ways to identify the skills for this future environment and ensure that military leaders at all levels are delivered and developed these skills. In 2005, the US Military Academy started a course entitled "Winning the Peace" to educate better its future Army officers about just some of the complex challenges of winning the peace throughout the world, which involves enormous complexities (Ahern, S, 2008, p.1). Quadrennial Defense Review (2010, p.54) mentions that DOD will continue to work to ensure commissioned and noncommissioned officers are prepared for the full range of complex missions that the future security environment will likely demand. Too often, a focus on weapons acquisition programs and overall force structure crowd out needed attention concerning how the military departments generate, train, and sustain their leaders. As part of DOD commitment to ensuring that tomorrow's leaders are prepared for the difficult missions they will be asked to execute, DOD will place particular emphasis on stability operations, counterinsurgency, and building partner capacity skill sets in its professional military education and career development policies. One thing for sure is that the military will be called again to deploy and engage the enemy, sooner or later. The kind of conflict that will be fought next is unknown in location or date (Cone, R, 2013, p.3). So, leaders must be prepared for the next call, and this time, it will be more complex and uncertain. Traditional military leadership skills

probably will not be sufficient to achieve success in today's Volatile, Uncertain, Complex and Ambiguous (VUCA) world. So, it is clear that the future security environment is far different from today, necessitating emphasis on specific leadership skillsets.

The delivery of the second literature review area is the four aspects of the change are identified in the environment by the literature review: (1) widespread interaction with civilian populations, (2) coalition forces, civilian agencies, and nongovernmental organizations; (3) devolution of authority to lower organizational levels; (4) previous command and control tools being inadequate and the transition from one type of security environment to another with short notice.

The first aspect of the shift in the military environment is captured from various studies, "interaction with organizations and agents other than military." According to Leonard et al. (2006) recent operations require widespread interaction with civilian populations, coalition forces, civilian agencies, and nongovernmental organizations (NGOs). These are the situations in which leaders must learn to strike a balance between persuasion and the use of force. (p. 30). In a similar vein, Montgomery (2007, p.2) argues that "success in the future Army environment will be measured by the leader's ability to build relationships with various governmental intra-agency, military, multinational, and non-governmental organizations." Similarly, it can be noted that "today's leaders face unprecedented challenges as organizations struggle to adapt to ever-accelerating rates of change both internally and with the external environment in which they are embedded" (Avolio, Walumbwa & Weber, 2009, p.669).

The leaders must be able to deal with complexity on many fronts and many levels; institutions must generate experience before soldiers need it. Methods of delivery and timely educational content that generates experience must be tested as well as a developing force structure. Educational delivery must go beyond bricks and mortar. Leadership systems must equip soldiers to meet the complex, diverse mission demands of today. The prospect of having

time to learn from mistakes on the modern battlefield is gone. Soldiers must have experience embedded in them before they arrive in the area of operations (Hirari, S, 2005, p.87). To be able to train and educate future leaders, it must be institutionally embedded into a leadership development plan to acquire the necessary skills to accommodate these interactions and uncertainty.

The second aspect of the shift in the context of military leadership that has not received a great deal of attention is the "devolution of authority to lower organizational levels." The traditional approach to military education and training is an incremental layering of knowledge and skills. The junior officers are given diminished responsibility; as they rise through the ranks, they are given additional training and education to prepare them for the increased responsibilities they will be expected to take on. Under this model, cultural knowledge and related skills would be gradually developed over an officer's career. By the time the officer achieved battalion or brigade commander level in the Army, for example, they would be well equipped to handle those responsibilities. However, the operational environment in Iraq or Afghanistan, for example, resulted in the dispersion of forces, with relatively junior officers expected to take initiative and/or respond to local events with minimal guidance from those higher in the chain of command. (Halpin S, 2011, p.485) Joint Military Education publication (2013, p. 13) mentions that they also need to be able to operate on intent through trust and empowerment.

The third aspect of change is previous "command and control tools being inadequate." Anderson and Anderson (2013, p 25) note that military leaders have to acquire a new way of operating by adopting a different leadership style than previous military doctrine would endorse and must embrace new forms of organizational culture and operational practices. It is likely that the traditional command and control tools will not suffice in this complex and rapidly changing environment**.** Although military leaders always have been dealing with change,

imperfect knowledge, and conflict of interests over the millennium, it is understandable that the future holds knowledge with more depth and breadth, change that accelerates very rapidly, and presents magnified conflicts of interests and also the fluidity of conditions (Hailes, 2013). That is why military leaders are in a tough situation due to the fact that even they do not know the answers to what to do, how to respond to these situations and which course of action to choose. Most of the time, it is difficult for commanders to formulate elaborate plans with clear instructions, and it appears that higher risks are encountered when there is great control (Wheatly and Frieze, 2010). Future conflict will be "an unpredictable and uniquely human activity." The 20th century's clear lines among adversaries (state, state-proxies, and non-state) and threats (conventional and unconventional) will blur in future conflicts (DCDC, 2012, p.6; DCDC, 2013).

Review of Joint Education (ROJE, 2013) also gives some examples of changing operational and security environment. These are economic challenges, resource constraints, rapid change in technology, and the rise of cyberspace domain as a dimension to military operations. In addition, ROJE (2013) cites domestic threats such as terrorism and natural disasters, as well as complexity itself embedded in modern warfare and cultural awareness of military and civilian leaders. It is worthwhile to note that George Casey[2] points out that being the commander, he did not know all the answers in Iraq as well, and continues emphasizing that a fuzzy idea coming out of his headquarters did not get clearer as it was passed down to his subordinate commands and commanders. One of his main focus areas was to make his directions as clear as possible for the chain of command, but he confesses that this was tough to accomplish due to the complex and uncertain military environment (Casey, 2013). In other words, there are complex environments where even the top-level single authority does not

[2] A former US Army General who commanded Multi-National Force in Iraq from June 2004 to February 8, 2007

know how and when to move forward.

Hailes (2013) captures the external forces in the change in leadership as the technological component, continuously evolving and rapidly changing the strategic landscape and changing nature of warfare. Revolutionized communications at a cascading rate impact the military environment, strategic landscape hosts and present vastly different and new threats to the military and warfare are moving from episodic war/conflicts to continuous competition and conflict (Polasky, 2011).

The fourth aspect of shift is "the transition from one type of mission to another with the short notice." Except for the buildup and attack phases of the 1991 Gulf War and the initial weeks of the 2003 invasion of Iraq, these operations were not characterized by conventional combat between opposing classical military forces. Rather, they were an increased variety of operational types, including peacemaking, peacekeeping, peace enforcement, counterinsurgency, combating terrorism, foreign internal defense, training, and others (Morath et al, 2011, p. 457) As discussed in Army Field Manual FM 3.0 Operations (2008) the operational environment of the future will be complicated by globalization, population growth, inadequate resources, climate change, inadequate governance, and the spread of lethal weapons. The international nature of commercial and academic efforts could also have dramatic impacts. The complexity of the operational environment will push future operations to occur across the spectrum of conflict (A Leader Development Strategy for 21st Century, 2009, p.8). They must be capable of those of different experiences, cultures, and functions. They must also be able to mentally shift from war to peace and back again (Ahern, S, 2008.p.7). Soldiers race across deserts in armored vehicles, fight in urban settings, fly over extreme mountainous terrain, hunt down and kill the enemy, and the very next day provide humanitarian aid to civilians, administer medical clinics, restore power to cities, build schools and hospitals and establish local governments (Hirari J T. 2005, p.86). Not only must military units be able

to perform multiple missions, but they must be able to transition from one mission to another rapidly. It is not uncommon for units operating in Afghanistan to be engaged in combat in an insurgent-initiated ambush and an hour later be engaged in a civil construction project in a nearby village (Morath et al, 2011, p. 456). “Future leaders [at all levels of the military organization] may need ... to act as civil servants, diplomats, mayors, city managers, negotiators, and police chiefs ... [and as such they must be able] to transition from supervising a city council meeting to conducting raids on suspected enemy headquarters” on short notice (Leonard et al., 2006, p. 30). Operating within a foreign culture can significantly increase the uncertainty and ambiguity of the situation. This is especially a fact when the military operation is against an insurgent or irregular force that does not wear uniforms ignores international laws of warfare and seeks to blend into the local noncombatant population. (Morath et al, 2011, p. 457)

All the major shifts captured add up to the complexity of the military environment and makes it difficult for one individual/commander to be able to grasp and direct every aspect. In this challenging environment, the leader’s involvement in the process with their already acquired skills is now more important for organizational success than it was in the past, because the existing high information flow and rate of exchange empower the individual easy access to what he or she needs; however, it is likely that “exceedingly large number of entities, dynamic interactions, continuous unforeseen emergent conditions, and a high degree of uncertainty in a complex system would continue to make the individuals confused to define their roles and this contributes in the system appropriately” (Secilmis, 2012). Figure 8 below, summarizes the finding in this section.

Figure 8. Observed Changes in the Military Operational Environment

2.4 The Cultural Characteristics of Military that Impacts Military Leadership Applications

If the major shifts mentioned previously are going to make an impact of how military leaders will lead along with other VUCA factors, it will have to make an impact on the individual and organizational cultures of the military as well. The military has a unique culture apart from other corporate cultures, so the culture might be an impediment to the application of the VUCA required skills to be implemented individually or organization wide. If the military takes it seriously and recognizes the VUCA required skills necessary for its members, then a welcoming environment for these skills should be created with cultural alignments. The main argument that this part is that some important characteristics of military culture that might prevent the application of the skills, not necessarily comparing civilian corporate and military organizational culture.

Scholars from different disciplines have studied culture for a long time and defined it in different ways; some developed their own definitions. Geertz (1973) defines culture as the

means by which people communicate and develop their knowledge about attitudes towards life. Hofstede, one of the most cited scholars about culture, defines culture as the collective programming of the mind that distinguishes the members of one group from others (Hofstede, 2011). It can be defined as the learned beliefs, values, rules, norms, symbols, and traditions that are common to a group of people. It is these shared qualities of a group that make them unique. In short, culture is the way of life, customs, and script of a group of people (Northouse, 2013). It is a learned, shared, and transferred way of doing things in a particular society. Generally speaking, culture defines groups of people and distinguishes them from other groups with the way they eat, greet and treat, and tackle the problems. It explains the distinctness between groups of people and reveals itself in beliefs, attitudes, and behaviors of groups of people (Research and Technology Organization, 2008). Trompenaars and Hampden-Turner claim that culture presents itself on different levels. National or regional culture, being on the highest level, organizational or corporate culture and professional culture, being on the lowest level, are their categorizations (Trompenaars and Hampden-Turner, 1997). Hofstede comes up with a similar classification: national, organizational and occupational culture (Hofstede, 1997). Schein (2004), as being a most referred authors, defines organizational culture as *"*a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.*"* He analyzes culture on three levels; artifacts, espoused beliefs, and values. Hampden-Turner (1997) calls it layers and analyzes culture in three layers - explicit products, norm, and values - whereas Hofstede (1994) classifies elements of culture in four categories: symbols, heroes, rituals, and values. Regardless of being a leader/manager or a subordinate, behaviors of a person are influenced by the cultural values of which that leader or manager grew up. Since leadership deals heavily with interpersonal relationships, the

leadership process is affected by the different cultural values (Dubrin, 2010). Many studies try to explain the relationship between culture and leadership. Leadership styles are consistent within a culture and vary considerably across cultures. Therefore, different leadership styles or leadership prototypes can be observed in different societies (Triandis, 1994).

Civilian and military cultures are more intertwined in the societies which still use conscription. Even though there is no conscription system, military culture is not so much apart from the civilian culture since the individuals from society constitute the military. Individuals who join the military bring their civilian norms and values to military culture. According to Army Leadership Handbook (2007), army culture is a consequence of customs, traditions, ideals, ethos, values, and norms of conduct that have existed for more than 230 years. That is why it is necessary to pick up things that build up military culture and makes leadership applications different (not easy or difficult) from other cultures at any level. It can be easily noticed that military organizations have very many shared cultures that are valid, regardless of what nation they belong to. The following discussion outlines the basic characteristics of military culture that might affect leadership delivery excluding national/regional cultural differences.

Although it is a fact that military headquarters are consulted, the *budget* of the military is designated and approved by a separate body outside the military organization on a yearly basis. Depending on the nation, that body could be the congress, parliament, government or the head of the nation. The budget is allocated according to the planned projects. This definitely limits the military's ability to make organizational plans beyond the current fiscal year (Druckman, Singer, and Van Cott, 1997). As a matter of fact, there is tremendous pressure to achieve military aims while at the same time fiscal constraints are increasing. Increased efficiency and resilience with reduced costs are required but still greater agility, versatility, collaborative relationship with Allies, partners, friends, global integration in operations,

technical advancements, shared sources, networked communications are expected from the military (Anderson and Anderson, 2013).

One of the first unique characteristics of military organizational culture is the main *mission and purpose*. It is to prepare for and fight the war, and if necessary, to use of force to protect the interests of the nation or to defer the enemy (Druckman, Singer, and Van Cott, 1997). This is the utmost important aim, and this is why nations need army during peacetime as well since we do not know when the next call will be. However, one thing for sure is that the military will be called again to deploy and engage the enemy, sooner or later. So, this puts tremendous pressure on military leaders since they are the ones defending the nation in the front line.

The *career path* for military personnel is more predictable and structured. Given that completing certain training and serving at a specific position, one can foresee what kind of future assignments he/she would assume can, more or less, be predicted in the future. The posts are generally linked to the ranks. There are mandatory minimum serving durations for each rank. This requirement has some consequences. In order to be the commander of a brigade or a fleet, one should serve an identified number of years in the military and have a rank that is also linked to brigade level. On the other hand, it is possible for a talented youngster to climb on the echelon of managers in a relatively short period of time. Furthermore, the pay structure of the military is fixed and determined according to rank and time in service (Druckman, Singer, and Van Cott, 1997), which in other words means bonus payment as motivation is not as common as it is in other organizations.

Although there is an increase in the number of female members every year, the military personnel are mainly men and the military are perceived as a *masculine profession*. The percentage of the female in NATO military is around 10% (Women and NATO: A Necessarily Gendered Perspective, 2013). The military has its own culture and serves as the basis of

military effectiveness where loyalty, hierarchy, leadership, teamwork, obedience, are fundamental to military culture (Greene, Buckman, Dandeker, and Greenberg, 2010).

In the military, there is a common rule that *"the commander is responsible for everything his/her unit can or can't accomplish under any circumstances."* That is why it is very difficult for senior to give his subordinates much room for individual decision making and maneuver as the environment is dynamic and there is no time to learn from individual experience and errors. Since whatever they do will hurt back to him somehow.

Lang (1965) argues that military differs distinctively in *discipline and control.* These are the very first notions when we think about the characteristics of military life. Discipline can be defined as members' willingness to comply with rules, to accept orders and authority and the way the organization deals with disobedience (Druckman, Singer, and Van Cott, 1997). Unlike most other organizations, the military's rule of conduct has the force of law. The relations between the leaders and the subordinates are clearly defined by law. For example, the disobedience to order is a major crime and requires a trial. If obedience occurs during wartime, it requires magnified punishments. Furthermore, in order to enforce its standards, most military has its own judicial and penal system. Wearing uniform, saluting, timeliness in every activity, hierarchical structure all feed into that discipline and control culture.

In a very bluntly speaking, the job of the soldier is seen as to prepare for and to fight wars. An ultimate *sacrifice* is expected from its members. For example, Army Leadership Handbook (2007, p.2) mentions that army culture includes a unique service ethic expected of every soldier to make personal sacrifices in selfless service to the nation. Military members volunteer for the military service knowing that they will sacrifice their lives when mission necessitates. Military culture demands its members to put the team or group before themselves. Moreover, military personnel are subject to coercive actions in forms of discipline if they don't make those sacrifices voluntarily (Greene, Buckman, Dandeker, and Greenberg, 2010). Since

tasks may be dangerous or life-threatening, many preventing precautions have been developed including the use of legitimate violence, detailed checklists, and carrying arms (Soeters, 2000). The distinction between civilian and military culture arises from the military's main mission or purpose which is to prepare for and fight the war, and if necessary, to use of force to protect the interests of the nation or to defer the enemy (Burk, 1999; Druckman, Singer, and Van Cott, 1997). War still determines the norms, values, and symbols that define the military culture. On the other hand, corporations mainly aim to maximize their benefits. Druckman, Singer, and Van Cott (1997) define military organizations as "greedy organizations." There are many institutional expectations from its employees. Active duty personnel are on permanent call. Their shifts are subject to unusual changes. Cancellation of leave is a very common practice. The end of a workday is determined by the fulfillment of the mission, rather than the legal working hours. Daily working hours can be easily extended in order to accomplish the mission without extra payments. Military culture demands its members to put the team or group before their own selves. Military members should be ready to sacrifice their lives if required. Military personnel are subject to coercive actions in forms of discipline if they don't make those sacrifices voluntarily (Greene, Buckman, Dandeker, and Greenberg, 2010). These are an all different type of sacrifices that military members have to accept.

Respect is also a characteristic element of distinction in military culture. In the military, respect is shown to the rank and office from where the order is given, not necessarily to the person. Subordinates perceive positions rather than the individual leadership character. But in the civilian leadership, there is respect for both the person and the rank (Cairney, 2011). According to Lang (1965), military organizations differ clearly from other organizations in the *communal* character of the military life. It is often hard to draw a line between personal and military life. The military often times live together in the designated military housing for reasons like security, being able to be reached, close proximity to base in case of emergency,

building relations with other families and support each other.

Langley (1965) also talks about authoritarian ideology and gives emphasis on hierarchy in the military. Due to the natural result of the importance of unity/coherence of thought and action of its people, the decision-making process is more centralized than many other cultures (Soeters, 2000).

The budget of the military is designated and approved by a separate body outside the military organization (consulting with the military), this limits the military`s organizational plans beyond the budget year since it is allocated according to planned projects and actions. (Druckman, Singer, and Van Cott, 1997). So, it is not easy for military leaders to make transformational changes in a few weeks since you do not have the money. This may serve as an impediment to leading people with innovative ideas in the short run.

The military cannot *hire (or outsource) the warriors* at every level. In the military, there is no way that a platoon leader or operational planners can be hired or outsourced from the civilian population whereas we can employ a civilian dentist, doctor, teacher, and so on. That is the effect of a mandatory career path which becomes really important in leadership practices, making leadership development a key element. Military organizations usually lack the idea of vertical development since they stifle vertical development and want power/ranks rule rather than the best and divergent thinking. This can be valid in situations where vertical development is not required, nevertheless, new security challenges require more evolved mindsets (meaning vertical development) to solve the challenge we face now and will be facing in the future (Anderson & Anderson, 2013).

Negotiation of work conditions, payments or benefits, military personnel generally can’t establish or join the work syndicates legally. Not surprisingly, strikes and other work actions are manned (Druckman, Singer, and Van Cott, 1997).

Some problems with *recognizing success* in military settings can be mentioned at this

point. Military culture is more inclined to appreciate and value tactical and technical expertise. However military organizations must learn to accept, value, and reward cultural knowledge and soft skills. There is no question that social, emotional, and cultural competencies also deserve to be recognized, valued, and rewarded as much as traditional (tactical and technical) competencies (McFate, 2007). This is very different from civilian where people give more emphasis on social, emotional and cultural expertise.

It is very challenging for today's officers to implement most of these applications since the reward and promotion system is set up for traditional authoritative *command and control style*, not a coaching style (Anderson & Anderson, 2013). So even though officers who acquired and are ready to apply emerging leadership skills will be hesitant to implement them, due to the fact that the environment favors authoritative, command and control style and heroic leaders, not coaching style leaders. What makes it different maybe also the differences in understanding of leadership between senior and junior member. Authoritarian command and control environment might well be a problem by itself. Anderson & Anderson (2013) carried out a workshop in a military organization where senior officers were asked about identifying "principles that would generate the solutions to the risks they faced". Some answers included global mindset, cross-boundary collaboration, networking manpower, seeing the future and thinking out-of-the-box. Although they knew exactly what they needed, when they were asked what they would feel "if such was the foundation of their leadership mindset, behaviors or organizational style of their subordinates" the answer was "No, we would not agree." So, they knew where to go, but they were not equipped properly to reach that destination. Authority is very important in the military environment since the result of what is done can be a matter of life or death. Anything diverging from this perspective and undermining the authority might be seen as something deteriorating the success of the mission.

The summary of the challenges of military culture is in Figure 9.

Figure 9. Some Unique Characteristics of Military Culture

Leadership function has leaders, environment, followers (people), tasks (common goals), and relationship (process) dimensions and it is all about influencing as described in the beginning. All of the abovementioned aspects and many more constitutes that dimensions, thus directly or indirectly affect the leadership, its leader's practices and its perception by subordinates or followers. Most of the aforementioned cultural characteristics are different than civilian organizations with different intensity and consequences. For this matter, the military organizational and individual culture is unique from civilian organizations.

There is an increasing concern with the role of the environment in the investigation of leadership. Some have concluded that the various domains, paradigms, and variables included in the general organizational leadership literature are so diverse that it is unlikely that a meaningfully unified theory of leadership effectiveness can be developed in the foreseeable

future (Osborn & Hunt, 2007). This predicament may also be true for the field of military leadership, within which a variety of independent research interests is being pursued in complex environments. However, while changes in the global political and military situation over the last two decades have introduced, if anything, added complexity to military leadership, those same changes have helped to highlight and crystallize understanding of key contextual variables impacting the practice of military leadership. This, in turn, has contributed to identifying new issues (cross-cultural skills, shared leadership) and highlight continuing issues (ethical leadership, communications, dispersed leadership), and other aspects of the contemporary environment. It is an accepted premise within the military leadership community that these challenges will facilitate future growth, and the community will grow in response to these challenges (Halpin, S, 2011, p.486).

2.5 Literature Gap Analysis

Leadership literature holds an abundance of leadership styles, theories, and approaches that define different dynamics of leadership; similarly, there are numerous studies done in the military leadership body of knowledge. The literature review revealed that the security environment that the military operates is becoming more multifaceted, complex, and uncertain. The military is also tasked with carrying out diverse tasks with limited resources and also transitioning from one to the other rapidly in this environment. The junior officers are in situations that they are expected to lead as if they have skills like their seasoned seniors. Therefore, all of these make an impact on leadership practices and skills and on the way that a military member leads. There is a consensus that leaders in this complicated environment tasked with diverse responsibilities should be equipped with the appropriate skills some of which might be difficult to implement in military culture. There is a trend in literature to identify the skills needed to lead effectively in uncertain environments, however, they are not

close to providing a holistic view, dispersed and limited. With all of this in mind, it becomes crucial to identify the emerging skills for military leaders and understand the applicability of each skill to the different environment military operates and different levels of hierarchy. Studies are useful for understanding and exploring the leadership phenomenon itself, however most of the times they are not specific and do not reflect the effects of any environment and organizational level in the military. Nevertheless, there is no one-stop-shop source providing a holistic view on these new skills that identify all that exist in literature and it is not studied yet how to tailor these skills to military settings such that military makes the most benefit out of it. In conclusion, the literature review reveals the fact that there is still a research gap in our understanding of VUCA effects on leadership skills. Table 10 below summarizes the literature gap analysis by summarizing what is known and what is unknown.

Table 10. Literature Gap Analysis

What is known?	What is to contribute?
• The security environment is VUCA, therefore impacting successful leadership performance • Military culture can make a difference in how leadership styles and skills are applied in this domain • There is a lack of military-focused, holistic studies on leadership skills • In general, the skills-based approach works well for military domain	• What are the leadership skills that the VUCA environment necessitates from a broad perspective? • The relationship between the emerging leadership skills and military organizational level is unknown • The relationship between the emerging leadership skills and military security environment is unknown

2.6 Delimitations

As the survey questions develop, the respondent is decided to be military officers. NCO and enlisted personnel are outside of the scope of this research. The primary reasons for this

delimitation are that officers have a larger perspective to see from a wider angle within the organizational levels and functions, they are more likely to experience the situations in survey questions, and as they are promoted they also go higher in the chain of command to assume more responsibilities and lead larger people, process, and content challenging their leadership skills.

The research target population is not aiming a single command, country, rank or service. This is intentionally preferred by the researcher since this is one of the first empirical studies done in a military context and is aimed to be generalizable.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the focus of the study and the theoretical framework, including the selection of a survey methodology and quantitative analysis, explanation of variables used, the surveys were chosen to operationalize the variables, the deployment of the survey to the population of interest, and the samples collected. The methods used for performing the quantitative analysis of the hypotheses are also explained.

The research is designed to examine the existing literature to identify and categorize emerging leadership skills and to understand the application of these skillsets in different security environments and organizational levels. The method for the research attacks the research questions by employing two parts as follows:

The first part is the qualitative part where there will be a thorough literature review on the changes in the security environment and leadership skills required to lead effectively in such environments. The delivery of this literature review will be the identification of the main shift observed in the environment, identification, and categorization of emerging leadership skills as the delivery of the content analysis. The literature review will also shed light on the difficulties that might be encountered during the implementation of these skills in unique military culture.

The second part is the quantitative part where there will be a survey instrument through which the data will be collected from military officers from various nations, services, and ranks. The targeted sample audience is active and retired military officers from the North Atlantic Treaty Organization (NATO) member countries since they have over sixty years of the shared culture of military leadership. This part will help to understand the internal perception of the

military officers about their relationship of these skills, identified in the first part, in different security environments and organizational levels.

Methodology dominantly accepted within the social sciences is quantitative (Burrell & Morgan, 1979; Crotty, 1998; Saunders & Bezzina, 2015). Nevertheless, quantitative research methodology is also used for testing objective theories (hypotheses) by exploring the relationship between variables (Creswell & Creswell, 2017).

3.2 Theoretical Framework

The primary purpose of this study is to identify and categorize the emerging leadership skills in VUCA environment and also examine the relationship between the military officers' perception of leadership skills in the various security environment and organizational levels. The theoretical base for this research is "skills approach" as identified in the previous chapter. Creswell (2009) mentions three types of research design methods, which are qualitative, quantitative, and mixed. Qualitative and quantitative methods represent different extremes in the research spectrum. According to Creswell (2014), qualitative research is especially valuable when the researcher is uncertain of which important variables to inspect or where there is a need to develop a meaning of a phenomenon. Spiggle (1994) endorses the use of qualitative research when "researchers are interested in understanding and interpreting the meanings and experiences of their informants," and some of the following characteristics include being vague, intangible, and not well understood (Ormston, 2014). Qualitative research is defined as the comprehensive and purposeful initial discovery of a social phenomenon, conducted to define the nature of problem, in a natural setting, using respondents who share observations based on their own experiences (Creswell & Poth, 2013; Saunders & Lewis, 2012; Zikmund, Babin, Carr, & Griffin, 2013). Qualitative research uses inductive reasoning, whereas quantitative research uses deductive reasoning. Mixed method (hybrid design) is in the middle

since it has some elements from both qualitative and quantitative methods. This research uses a mixed method since it has a qualitative part with an exploration of the literature on the changes in the environment, emerging leadership skills, and military culture. It also shows the characteristics of quantitative design since a survey construct is used to collect and analyze data and to test the hypothesis with data collected. Data analysis provides insight into determining the relationship among variables.

Survey research is one of the two inquiry methods that can be used in quantitative research according to (Creswell, 2009), where the other one is experimental research. Survey research designs are "procedures in quantitative research in which investigators administer a survey to a sample or to the entire population of people to describe the attitudes, opinions, behaviors, or characteristics of the population" (Creswell, 2012, p. 376). Survey research differs from experimental research in that survey researchers do not experimentally manipulate the conditions. However, survey research cannot explain cause and effect as well as experimental research can. Nevertheless, survey research describes trends in the data rather than offering rigorous explanations. Survey research often correlates variables (Creswell, 2012). According to Trochim and Donnelly (2008), there are three types of the research projects: descriptive, relational, and causal. He mentions two reasoning methods: inductive and deductive. The type in this research is "descriptive and relational" using the "deductive reasoning" approach. It will be used because of the fact that the hypotheses and variables are developed through an extensive literature review and hypothesis are tested with the primary data collected through the survey instrument.

The theoretical framework and methodology of this research proceed as described in Figure 10. The specific steps that were taken to conduct the research are listed in this figure. As each step in the process progressed, the new information discovered, or new knowledge needed required iterations back to previous steps to incorporate the new findings or knowledge.

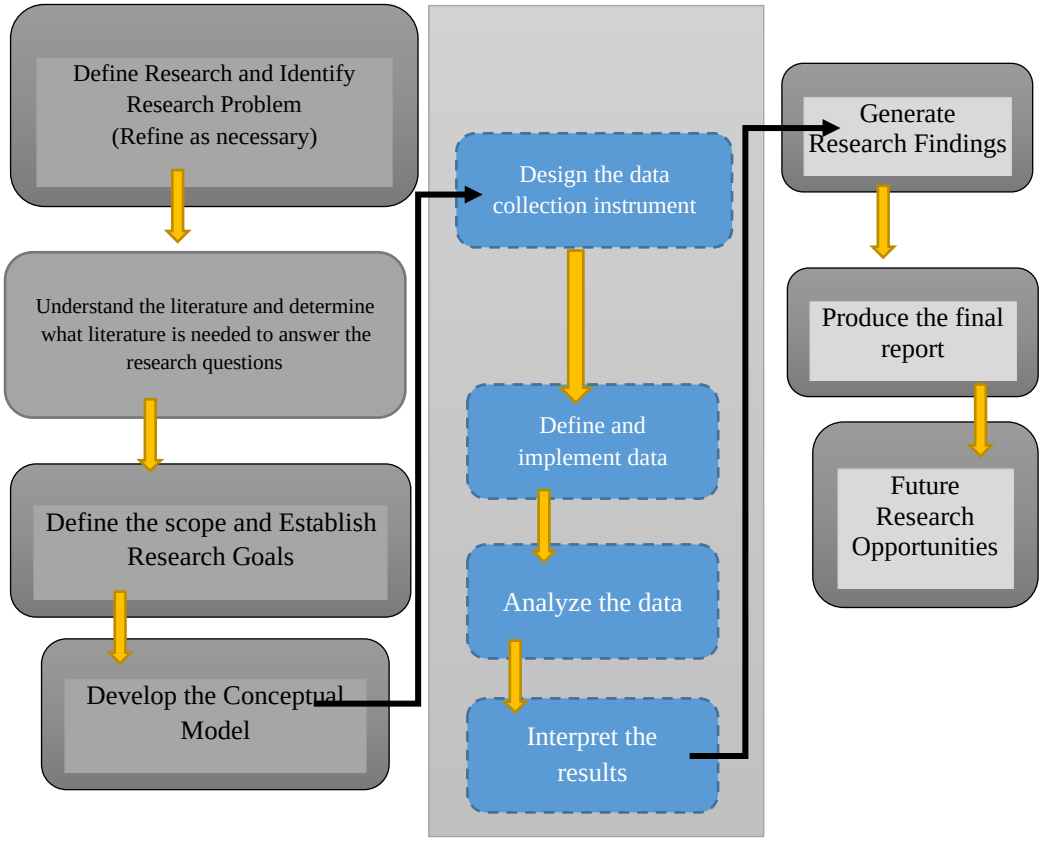


Figure 10.Theoretical Framework of the Research

A deductive approach was used in this research project. In the initial stage of the research, the leadership theory that was suitable for this study was determined. After the thesis was formed, research goals were established and defined by a series of hypotheses (Trochim & Donnelly, 2008). In addition, a conceptual model was created to illustrate the theoretical foundations of the research. A literature search was subsequently conducted to determine the extent of knowledge already documented. A gap analysis was reached after this documentation. The tools and methods required to investigate the research question were then defined. The researcher developed a survey instrument using categorized leadership skills and employed to

the survey population. The surveys were administered, and data were collected to test the hypotheses (Trochim & Donnelly, 2008). Finally, analysis of the data was used to confirm or invalidate the hypotheses (Trochim & Donnelly, 2008). In the final stage, after approval from the dissertation committee, the findings will be published. The unit of analysis for this research will be the individual military officers who participated in the survey. The military officers' beliefs about the application of leadership skills and perceptions about how salient they are in the various security environment and organizational level are the key elements of quantitative research.

Step-1: Define Research and Identify Research Problem

This research is designed to examine the existing literature to determine the observed main shifts in the military environment making it a VUCA environment. Those shifts necessitate revisiting the traditional leadership skills to tailor them as necessary to novel situations. A similar examination is designed to deliver the identification and categorization of the leadership skills in such an environment. To explore the relationship of these identified skills and various security environment and organizational levels, a wide-ranging and diverse group of military officers will be surveyed to solicit their perceptions of emerging leadership skills.

The heart of every research project is the problem. "The first step in the research process is to identify the problem with unwavering clarity and to state it in precise and unmistakable terms" (Leedy & Ormrod, 2013, p. 27). Researchers begin a study by identifying a research problem (Creswell, 2012). Creswell (2012) defines a research problem as the controversies or concerns that guide the need for conducting a study. After the research problem is identified clearly and precisely, sub-questions are generated. Research questions will be addressed by carrying out a literature review to identify the changes in the security environment, constructing

a survey to be answered by active and retired military officers and analyzing the data collected from that survey. The research will focus on the military officer's perception of the emerging leadership skillsets in two different operating environments, War and Humanitarian Assistance, and two different organizational levels, Strategical and Tactical.

Step-2: Understand the Literature and identify Literature Gap

Leedy and Ormrod (2013) identify the role of literature review and its benefits in the following. It helps whether the researcher answered the research problem, offer new ideas, perspectives, reveal sources of data, help to interpret and making sense of findings, show how others have handled methodological and design issues in similar studies, reveal methods of dealing with similar difficulties for the research problem.

Understanding the literature to assess what literature is needed to answer the research questions. In order to figure out whether the research problem is unique and has added value to the literature, a comprehensive literature review is required.

Exploring the literature to assess and identify the gap in the literature is critical to be able to answer the research questions. A substantial body of literature exists for leadership styles, approaches, and theories but there is no agreed upon definition of leadership or categorization of theories. Skills approach is the one that this research is based on due to the fact that it relates to a hierarchically robust organization like the military. This approach makes the leadership available for everyone, taking career experiences and environmental influences into consideration.

Abundant literature exists that proposes the impact of VUCA environment on leadership but literature on how the leadership dynamic is affected by this is not enough. Synthesizing the literature as it relates to impact of VUCA environment on leadership skills and how security environment and organizational level makes an impact on their application

will address existing gaps which will help maximize the awareness of leaders, HR, and senior management. The literature review will help to refine the statement of the research problem. Literature is generally too theoretical to help senior military leadership to use in the human capital recruitment phase and to develop an individual leadership development as an individual assumes higher responsibility. Understanding the significance of leadership skills in different levels of the organization and different security environments will have an impact on recruiting military officers and their carrier development efforts. This is especially important for the hierarchical fat organizations like military.

The delivery of this extensive literature review will be on the changes in the security environment, and the identification and categorization of emerging leadership skillsets required to lead effectively in such environments. The military culture has unique features, so it is also explored during the literature review to be able to shed light on the difficulties that might hint on the expected problems during implementation of these skills in a military context. An insignificant amount of research and work has been conducted to propose that leadership skills need to be visited due to VUCA nature. Literature is scarce in terms of looking leadership skills comprehensively and specifically considering its variability in the different security environment and organizational levels.

Step-3: Develop the Scope and Establish Purposes

The purpose statement acknowledges why the study is being done and what outcome is expected (Creswell, 2009). “The purpose for research consists of identifying the major intent or objective for a study and narrowing it into specific research questions or hypotheses” (Creswell, 2012, p. 9). Purpose statements and research questions provide critical information about the direction of the study. Specifically, research questions shape the literature review and data collection process (Creswell, 2012).

The conceptual model will include all the elements that will be investigated in the research and will help the researcher to stay in the scope of the research. In order to establish achievable research goals, the scope of the research needs to be defined clearly. The scope will provide a boundary for the research. The boundary will provide a framework to focus on the main topic and address the research questions in a coherent manner. The scope (sample population) of this research is the investigation of leadership skills within the military officer community, only officers are recruited to participate in the survey. Non-commissioned officers (NCO) and enlist soldiers are not the subjects of this study. The researcher did not differentiate between different services and branches since they have a common understanding of leadership. No specific Nation, Command, Service or Service Branch is targeted, the only criteria to respond to the survey was being an officer (active or retired). Another scope for this research is about organizational levels and secure environments to explore the relationships with identified leadership skills. Tactical and strategical levels are selected in terms of organizational levels; War and humanitarian assistance are selected in terms of security environment to study.

Step-4: Develop a Conceptual Model- Determine the Measures and Measurement Tools

Measures and measurement tools will help the researcher to comprehend which data to inspect, analyze, and interpret. Figure 11 shows the independent variables are adapted from Echevarria (2001) “Spectrum of Operations” for the military forces is used to decide the operational environment for the sake of this research. The researcher defined Operating Environment (OE) category that consists of the 5 (five) mission types that are carried out in different levels of security.

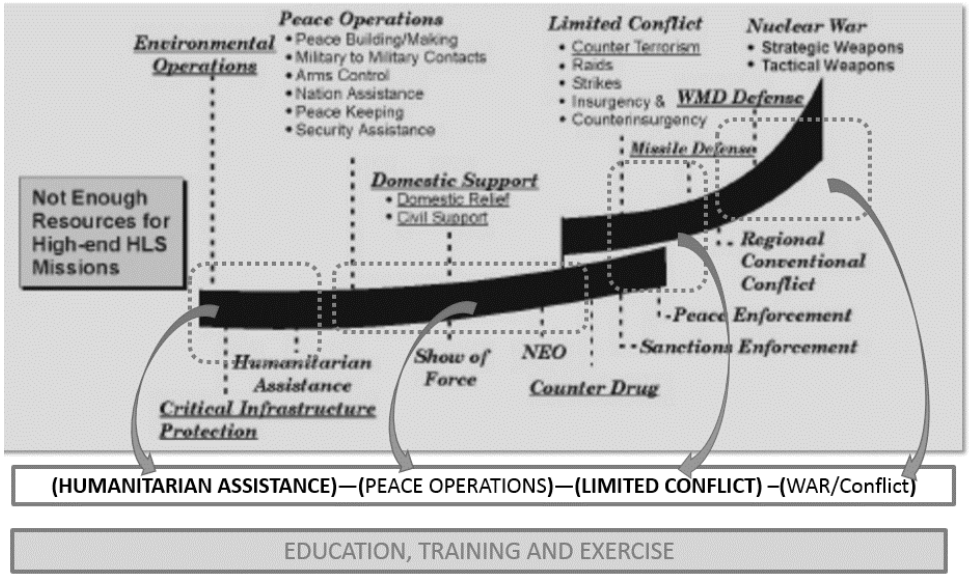


Figure 11.Security Environments from Full Spectrum of Operations

The dashed circles to describe different security environment, in which very often the distinguishing line is blurred, meaning it is hard to decide which one ends and the other one starts. The Operating Environment independent variable elaborated as follow,

- War/Conflict (W) (including strategic and tactical use of weapons, widely use of hard power)
- Limited Conflict (LC) (counterterrorism, raids/strikes, insurgency, and counterinsurgency)
- Peace Operations(PO) (peacemaking/peacekeeping, domestic relief, and nation Support, arms control, security assistance)
- Humanitarian Assistance (HA) (natural disaster times like flooding, hurricane or earthquake)
- Education, Training, and Exercise (ETE)

Education, training and exercise routines (ETE) is not shown in Echevaria's (2001) work but still included since the researcher considers it as an important environment where

leadership skills are applied. War and Humanitarian assistance are selected as independent variables out of five security environments for the investigation.

Table 11 shows the typical organizational levels in a military environment, which is different than a typical civilian organization. Strategic levels will be the same in both types of organizations but in the military, the lowest level is tactical level whereas in a civilian organization the lowest level is the operational level.

- Tactical Level (TL) (includes platoon, company, and battalion level units and their equivalents in other services)
- Operational Level (OL) (includes brigade, Corps level and their equivalents in other services)
- Strategic Level (SL) (Headquarters Army, Navy, Marine Corps, and Air Force)
- Political-Military Level (PML)

Tactical and Strategical levels are chosen for analysis amongst these levels for research purposes.

Table 11. Military Organizational Levels

Category	**Variables**
Organizational Level (OL)	•Tactical Level (TL) •Operational Level (OL) •Strategic Level (SL) •Political military level (PML)

Using the selected environment and organizational levels, independent variables for the research are identified in Table 12 as WT, WS, HT, and HS. These variables are used for data analysis and hypothesis testing. These independent variables specifically created to investigate how the perception of military officers about leadership changes in different environments.

Table 12. Independent Variables

Independent Variables	**Variables Code**
War Tactical	WT
War Strategical	WS
Humanitarian Tactical	HT
Humanitarian Strategical	HS

Dependent variables for this research are the emerging leadership skill needed in a VUCA environment identified by this research. These dependent variables are categorized under 8 (eight) categories as seen in Figure 12 to make the analysis easier. The participant's belief and perceptions about leadership are the key elements of this research.

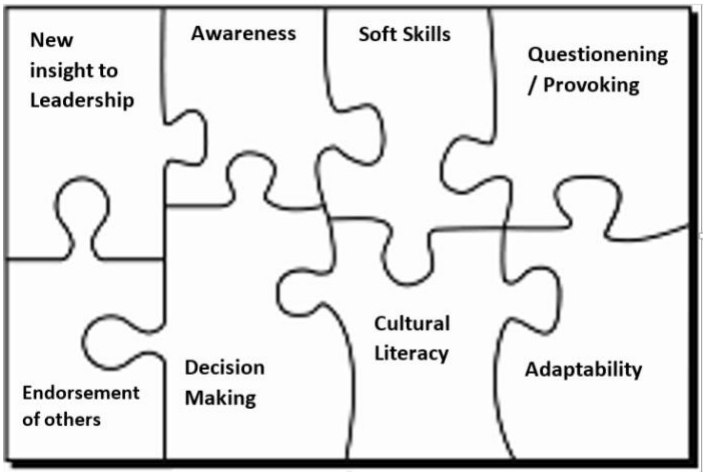


Figure 12 Eight Categories of Emerging Leadership Skills

In this research, the researcher developed a set of questions (34 items) that will be answered by respondents. The answers will be for each independent variable (4 total) rated on a Likert scale from 1-5. For example, "self-awareness is a critical skill for leaders." question will be answered on a 1-5 scale as "5- I strongly agrees 2-I agree 3-I am not sure 4-I disagree 5-I strongly disagree." The researcher included demographic questions and responses to the questionnaire. The unit of analysis for this research will be the individual officers from different nations who participated in the survey.

The following constructs are hypothesized.

H_1: No significant relationship exists between military officers' perception of leadership skills in *War environment and organization levels*

H_2: No significant relationship exists between military officers' perception of leadership skills in *Humanitarian environment and organization levels*

H_3: No significant relationship exists between military officers' perception of leadership skills in *Tactical level and different security environments*

H_4: No significant relationship exists between military officers' perception of leadership skills in *Strategic level and different security environments*

H_5: No significant relationship exists between military officers' rank and their leadership skills perception in *different levels and different security environments*

Figure 13 below provides an illustration of the pictorial research model detailing individual independent, dependent variables and how they relate to each other.

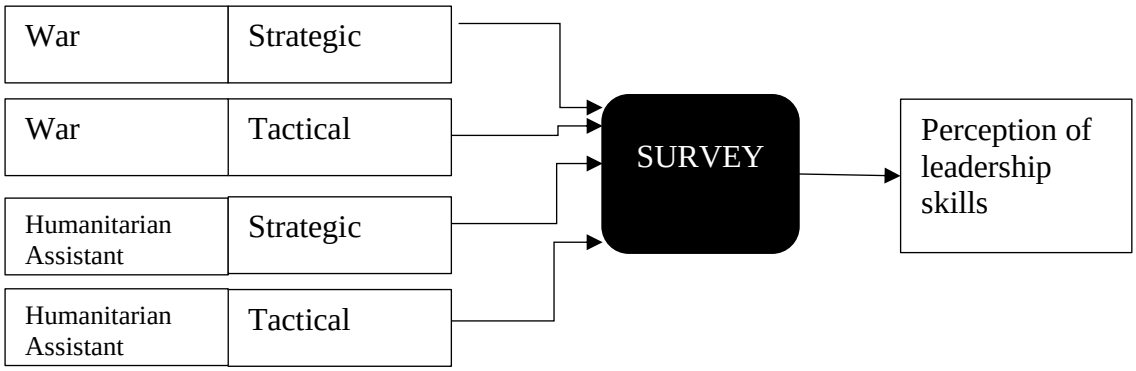


Figure 13. Conceptual Model for Variables

Step-5: Data Collection, definition and implementation of data, analysis, and interpretation of data

Quantitative research collects data through surveys or experiments which "provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2009, p. 12). This research will collect the primary data via a self-administered online survey through Qualtrics software.

3.3 Data Collection and Data Analysis Process

This section explains the guidelines for choosing appropriate sample size, the structure and administration of survey instrument, and the analysis of first-hand data and discusses how reliability, validity, and statistical significance standards were chosen for this research.

Sample Size

Survey design also covers the issue of population and sample. There are two methods

for sampling: probability and nonprobability sampling (Leedy &Omrord, 2010). Probability sampling covers all members of the target population and uses random sampling whereas nonprobability sampling does not cover the whole target population and choosing participants is made through judgment (Fink, 2003).

The sample size is an important factor in the research. It may lead to rejection of an actually true hypothesis or failure to reject an actually false hypothesis. This is very vital in research since it develops arguments about the research results. Different views exist on the sampling size; however, this survey meets Hair, Anderson, Tatham, and Black's (1995) 15-20 observations per independent variable for generalizability and 50 total observations for factor analysis criteria. The target population for this survey is both active and retired officers from NATO member nations at any rank and from service branches.

The theoretical (target) population in the research is a military officer (Lieutenant to Colonel) as well as the retired in NATO member nations since they have a shared culture of working together more than a half-century. The survey is distributed directly via email over Qualtrics to approximately around 130. At least 82 responses would have been adequate (examine Table 15 on calculations of sample size) with a comfortable margin for analysis.
Random sampling is a method of probability sampling. Probability sampling (simple random) used to have a representative sample (Bernard & Bernard, 2012; Moghimi & Subramaniam, 2013). In this method, each member of the population has a known non-zero and equal probability of being selected.

In general, the larger the sample size, the narrower the confidence interval. If the sample size is too small, the confidence interval may be too wide to provide useful information (Bonett & Wright, 2011). If the sample size is too small, the confidence interval (CI) may be too wide to provide useful information (Bonett & Wright, 2011). In addition, Van Voorhis and Morgan (2007) discusses that when the sample is larger, they more accurately represent the

characteristics of the populations from which they are derived. In general, it is accepted that the larger the sample size, the narrower the confidence interval. On the other hand, this may lead to a [Type I Error] in which the data support the rejection of a null hypothesis, while, in fact, it is true, or a [Type II Error] in which the data do not support the rejection of a null hypothesis, while, in fact, the null hypothesis is false. As a result of all this different discussion, one of the most frequently asked questions is "how large should a sample size be?" (Van Voorhis & Morgan, 2007).

H_0 **[Type I (α) error]** → {when actually TRUE}→Rejection→due to sample size

H_0 **[Type II (β) Error]** →{when actually FALSE}→Not supporting Rejection→due to sample size

Unfortunately, the literature does not provide a consistent answer to this fundamental question (Bonett & Wright, 2011). Here, a brief discussion about how to calculate a reasonable (acceptable) sample size (N) and then the estimated sample size for the research is provided.

Green (1991) suggests sample size (N) > 50 + 8 m (where m is the number of independent variables) for testing the multiple correlations. Harris (1985) argues that the number of participants should exceed the number of predictors by at least 50 (i.e., the total number of participants equals the number of independent variables plus 50). Tabachnick and Fidell (1989) claim that the sample size should be at least 5m (where m is the number of Independent Variables). Van Voorhis and Morgan (2007) argues for regression equations using six or more independent variables and suggest that an absolute minimum of 10 participants per independent variable is appropriate. Table 13 summarizes the sources and their suggested sample sizes. A factor with four or more loadings greater than 0.6 "is reliable regardless of sample size." (Field, 2009), (p. 647). Moreover, to determine the adequate sample size similarly to factor analysis, Kaiser-Meyer-Okin (KMO) can be used that "represents the ratio of the squared correlation between variables to the squared partial correlation between

variables." (Field, 2009), (p. 647).

This research has 4 independent variables that are coded as in the parenthesis.

- War Tactical (WT)
- War Strategical (WS)
- Humanitarian Tactical (HT)
- Humanitarian Strategical (HS)

So, this means m (a number for independent variables) is 4 (four) m=4. The calculation for the aforementioned suggestions is carried out and depicted in Table 13.

Table 13. Suggested Sample Sizes in Literature

Sources	Suggested Sample Size	Result
Green (1991)	sample size (N) > 50 + 8.m (number of Independent Variables)	82
Harris (1985)	sample size (N) > 50+m (number of Independent Variables)	54
Tabachnick and Fidell (1989)	sample size (N) =5.m (where m is the number of Independent Variables)	20
Van Voorhis and Morgan (2007)	sample size (N) =10.m (10 participants per independent variable)	40

When the results of the calculations are examined, it is clear that the sample size should be at least 82 to be statistically confident about analysis. According to Leedy (2010), random sampling is good if the population of interest is spread out over a vast area which makes it unfeasible to make a list of every person and make randomization procedures.

Survey

Regarding survey design, Fink (2003) identifies four types of survey: self-administrative questionnaire, interview, structured record review, and structured observation. For the purpose of this research, a web-based, self-administered, one-time only questionnaire is employed.

The application for being exempt to Institutional Review Board (IRB) is submitted and the approval of the Engineering Human Subjects Review Committee (EHSRC) is attained for the survey to be administered. The Old Dominion University's (ODU) EHSRC determined that this project was exempt from IRB review, according to federal regulations. The exempt letter and the approval email from ODU EHSRC are in Appendix F.

A pilot group of experienced individuals (including ex-military officers) are recruited to review the survey to determine ease of response, clarity of the emerging leadership skills questions, how well it reflects the intended purpose and the background information presented at the beginning of the survey, which was included in the pilot study. The group comprised of five participants and the feedback was received both face to face and by electronic means. Participants were asked to review the survey questions, survey instructions and comment on the comprehension and clarity of the questions and to suggest recommendations to improve the survey. A summary of feedback received from the pilot study is presented here:

- Time to take the survey was rather long, so the instructions to be distributed prior to the survey if possible,
- The targeted respondents must definitely be either active or retired military officers, otherwise some survey questions might not make sense,
- Some questions are written as "double-barreled," the way the sentence is developed should be edited,

- One participant noted that the background information should be clarified more, even a table could be provided with a summary of the background information,
- Three questions in general questions section is recommended to be deleted as the analysis would be so meaningful.

All of this feedback is assessed and incorporated into the survey instrument and shared with the participants as appropriate. They were content with the final format of background information and leadership skills questions were clear and understandable. After taking into considerations of the participants, the survey information and questions are modified, and the final version is created. The pilot study survey is included in Appendix B and D, and the final version of the questions are included in Appendix C and E.

Data collection is going to be performed utilizing a web-based self-administered closed-end questions survey. This will be distributed to military members (no specific rank, service or command is targeted) with researcher's professional connections. No personal data, name, surname, profession, e-mail addresses and phone number will be collected, and the results will be used in an aggregated format so that it will be impossible to trace back any individual. The responses were automatically stored in the investigator's personal, password-protected account in Qualtrics. For analysis purposes, the responses are transferred into Excel forms with codes and then into SPSS. The responses will be prescreened for completeness and accuracy before starting the statistical analysis. Possibly, not all of the data could be readily used in the analysis. If there is a problem in that regard, then the data provided by the respondent will be excluded from further investigation.

There will be an introduction part of the survey where there will be necessary background information. This is expanded and detailed following the feedback from the pilot test. Demographic questions are important that they help the researcher to investigate the effects of the specific independent variable on how emerging leadership skill is specific

organizational level or security environment. The questions are designed to evaluate the military officer's perception of categorized emerging leadership skills in security environment (War and Humanitarian Assistance) and organizational level (tactical and strategical). 5-point Likert scale (1-5) is going to be used as the measurement scale for the perception. Figure 14 shows the structure of the survey.

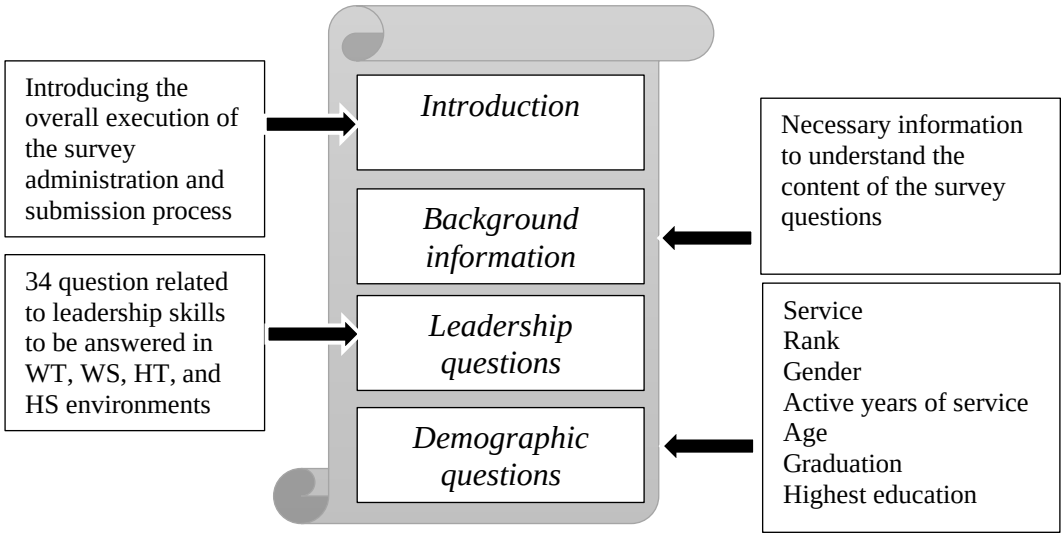


Figure 14. Web-based and Self-Administered Leadership Survey Structure

Each question in the leadership skills section is related to one leadership skill category. Table 14 depicts the question number in the survey and related emerging leadership skill category.

Table 14. Survey Question number and Related Emerging Leadership Skillset

Question Number	Related Skillset Category	Question Number	Related Skillset Category
1-5	New insights to leadership	19-22	Adaptability
6-9	Awareness	23-25	Culture
10-13	Soft Skills	26-31	Decision making
14-18	Questioning	32-34	Endorsement of others

Figure 15 shows an outline of the survey administration process. The survey will be initially administered to a small pilot group to establish the following purposes; to be adequate for its intended purposes, to make sure that the survey is not too long or too short, and to establish the expertise of the author in this domain (Iarossi, 2006). The pilot test (through Qualtrics software) will be run to evaluate the validity and reliability of the questionnaire. Five to ten experienced military officers' group will be asked to review the content of the questionnaire (including purpose and background information) and judge on the clarity and comprehension of the questions and the success of their success in being able to measure what is intended to measure. There were two main contributions from the pilot test; one was about giving more detail and expanding the background information for the survey and the other one was about being able to take the survey on personal devices like tablets and phones along with the computers.

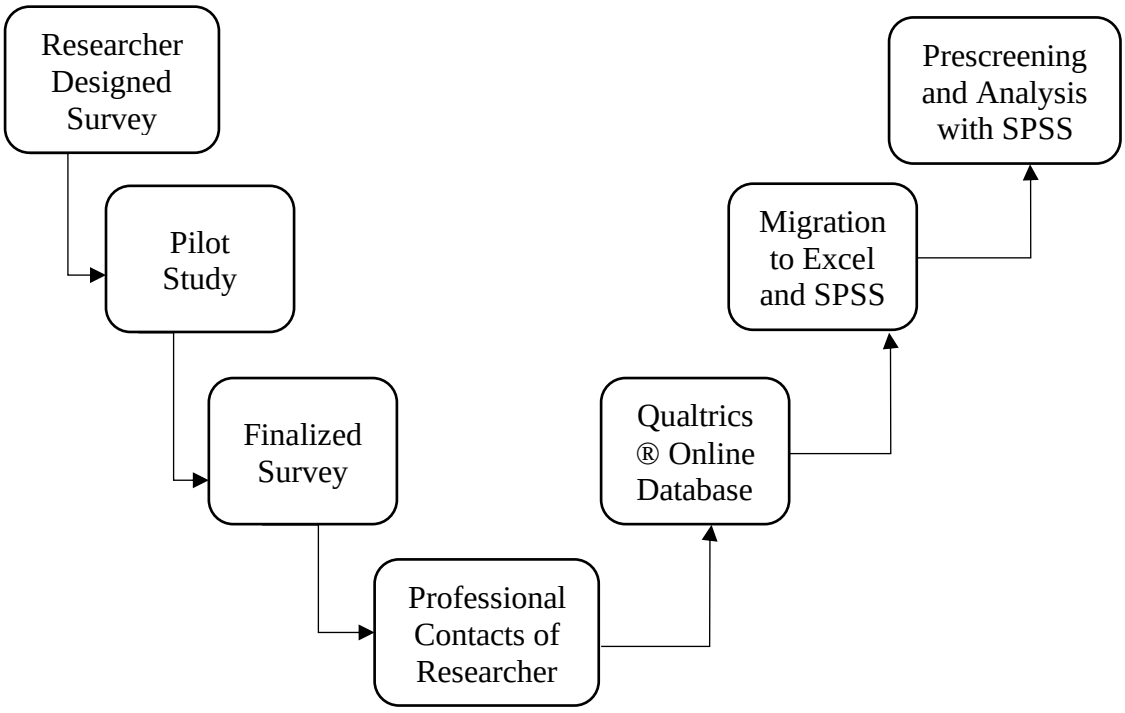


Figure 15. Survey Administration Process

Survey questions can be open-ended or closed-ended, which in this research only closed-

ended questions are used. There will be no interaction between the researcher and the sample population. Open-ended questions are those the respondents answer in their own words, whereas closed-ended questions are those they answer pre-determined answers to. According to Fink (2003), closed-ended questions work better for statistical analysis and interpretation, hence the survey will use closed-ended questions. Nominal, ordinal, and numerical answers are used in closed questions responding in a Likert scale from 1 to 5. The data will be available to the researcher once the participants completed the online and/or printed survey, there will be no need for interpretation of the answers since they are closed-end questions.

Creswell (2012) identifies getting necessary permissions as an important step in collecting data. In this regard, permission to conduct the pilot study and follow-on study is obtained through ODU Engineering Human Subjects Review Committee Approval process, (also known as IRB process) in order to meet proper conditions of the study. Since no personal identification information is collected or stored, individual privacy and confidentiality, an application for an exemption using the Old Dominion University Application is obtained.

Fink (2003) also identifies components of a survey as the identifying objectives, survey design, instrumentation, administering, data analysis and reporting. The goals of this survey are developed from the hypotheses. The main purpose of the survey is to collect meaningful data to test the hypotheses. The unit of analysis for this research will be the individual officers who are from different nations and ranks who chose to participate in the survey. The participants' beliefs and perception of leadership are the key elements of the research. To achieve the aim, a one-page introduction and background information about the leadership styles as well as the purpose of the survey will be provided for them before they take the survey as provided in Appendix A.

Analysis of Primary Data

In this study, correlation analysis will be the main statistical method to be used in order to figure out the relationship between four independent variables (War-Tactical, War-Strategic, Humanitarian-Strategic, Humanitarian Tactical) and leadership skills.

Several analysis approaches will be employed. Once the data are collected, data analysis will be performed by utilizing statistical methods. Data analysis includes pre-analysis of data, data cleaning, and coding. Test for normality will be used to determine if the variable is normally distributed. Spearman's Rho for non-normally distributed data and Pearson's Coefficient for normally distributed data is going to be employed. ANOVA analysis method will also be employed along with the Factor Analysis (FA). FA will help reduce the number of factors to be used. SPSS statistical software is the main software used for the application of all these methods and tests. In the analyses, values of correlations, differences, and commonalities will be examined in the test results of the dataset. The results of the data analyzed are interpreted to test the Hypothesis and finally formulate the research findings.

Generate Research Findings and Produce Final Report

The last step is to generate and report the findings in the final report that states how the research findings address the research questions, what the conclusions and limitations are. After statistical analysis, the results and findings will be discussed and the final report that states how the research results address the research questions and recommend areas of future research will be produced. This step also discusses implications and makes recommendations for future research.

Validity and Reliability

There is a difference in usage of reliability and validity terms between qualitative

researchers and quantitative researchers, but they seem to agree with the basic principle and meanings. Qualitative researchers often do not want to use them because of their notion that is related to pure measurement (Neuman, 2006). Validity and Reliability are two central issues that must be achieved in research. Even though it is nearly impossible to achieve 100% percent, researchers must give an extensive explanation of how they establish validity and reliability. "Perfect reliability and validity are virtually impossible to achieve" (Neuman, 2006, p.188). According to Leedy & Ormrod (2010, p.28). Leedy & Ormrod (2010, p.29) explains this as "reliability is a necessary but insufficient condition for validity."

In very basic and simple terms, validity refers to whether an instrument measures what it was designed to measure; it is the accuracy, meaningfulness, and credibility (Leedy & Ormrod, 2010). On the other hand, reliability refers to the ability of the measure to produce the same results under the same conditions (Field, 2009). According to Rosenthal & Rosnow (1991), reliability is the consistency of measurement over time or the stability of measurement over a variety of conditions. It is the extent to which measurements are repeatable when different persons perform the measurements, on different occasions (Drost, 2011). The consistency of measurement (Bollen, 1989), or stability of measurement over a variety of conditions in which basically the same results should be obtained (Nunnally, 1978). The common notions in all these different sources are recognized as; being consistency, being repeatable (different occasions), stability over time, getting the same results.

It is very helpful to start with an overview of these terms as to how they tap into one another and finally of course to the 'overall research validity.' Gliner, Morgan & Leech (2009, p. 343) provides a diagram (Figure 16) which is adapted below to explain how they feed into the validity of the research. The diagram must be read from top to bottom following the arrows. This diagram perfectly shows how overall research validity depends on the four major aspects.

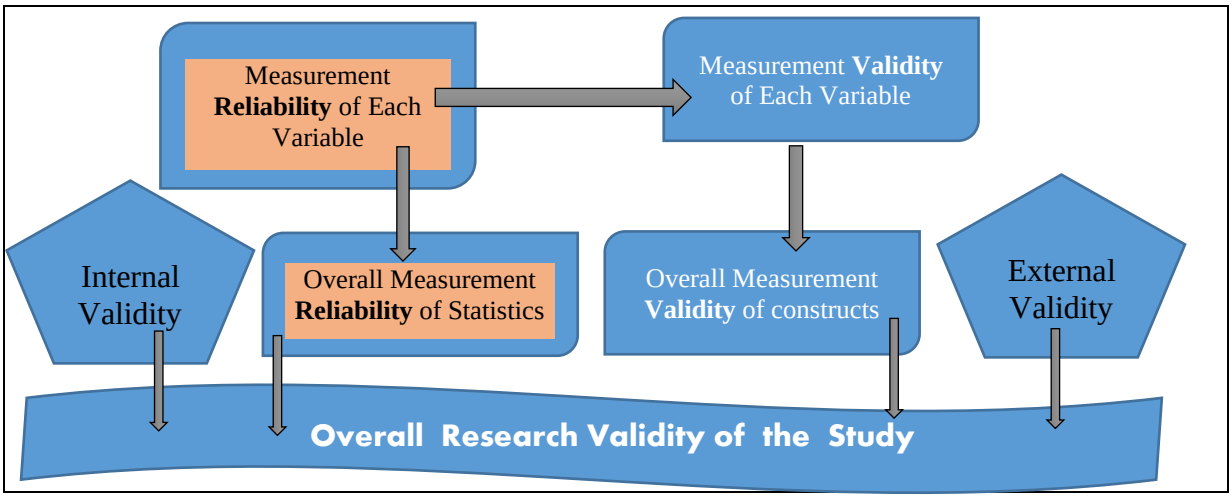


Figure 16. Schematic Diagram of Relationship Between Reliability, Validity and Overall Research Validity

Reliability is necessary for validity and easier to achieve validity. It does not guarantee and is not sufficient for validity. A measure can produce the same results, which means reliability, but may not match the definition of the construct, which means validity (Neuman, 2006). Figure 17 which is adapted from Neuman (2006, p.197) gives an understandable and simple illustration of both terms.

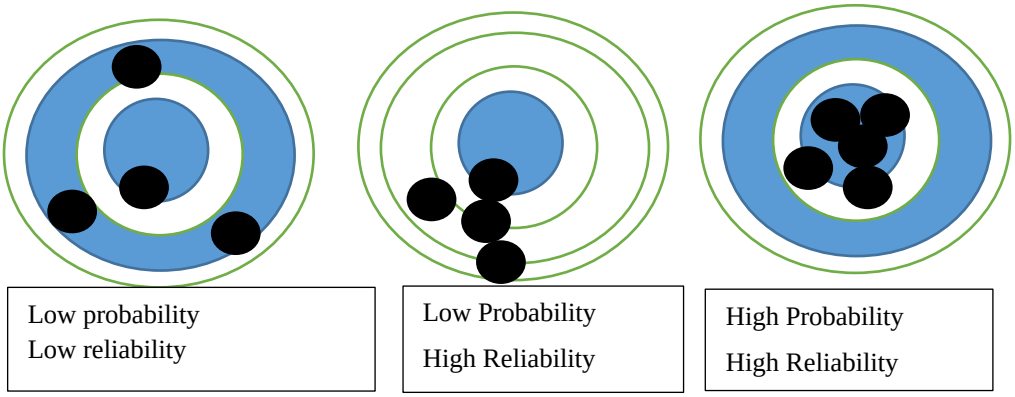


Figure 17. Validity and Reliability Relationship

Neuman (2006) and Leedy & Ormrad (2010) is basically explaining measurement validity in four categories; face, content, criterion, and construct.

Face Validity is the easiest one to achieve for a researcher. It is the judge of the scientific community that the indicators really measure the construct. It is the degree that instrument 'looks like' (appears) to measure what it is intended to do. (Ahire & Devaraj, 2001). Face validity is insufficient, however, using in combination with other measures it may reinforce overall validity (Gliner & Morgan, 2000). Face validity will be achieved by sharing the results with a panel of experts from military and engineering managers and their feedback will be solicited if the qualitative and quantitative results make sense.

Content Validity can be explained if the answer to the question is given; Is the full content of a definition represented in measure? Content validity is the degree that the instrument covers the domain of concept (Ahire & Devaraj, 2001). The content validity is achieved by an extensive literature review about the emerging leadership skills for the complex security environment is carried out, and the skills are identified. Then, these are transformed into survey questions. This validity is to be achieved with consulting my advisor and the committee members as well; with their comments and direction, content will be developed such that it covers the domain described in the research.

Construct Validity is for measures with multiple indicators. Construct validity refers to how well a researcher translated or transformed a concept, idea, or behavior – that is a construct – into a functioning and operating reality (Trochim, 2006). The degree that indicators associate with each other and represent a unified/single concept. (Ahire & Devaraj, 2001). Theoretical Background, Girden (2001) mentions that Construct Validity can be achieved Confirmatory Factor Analysis if Acceptance Criteria > 0.4. Construct validity is going to be achieved with the tools to be employed. Explanation of the assumptions, limitations, and delimitations, factor analysis, and expert review are used for construct validity check as well. Sample selection (random sampling) and expert review are used for validity check.

Feedback from others and respondent validation are two important concepts in terms of

reliability. During the generation of finding, before it becomes official, I am going to seek the opinions comments of experts, advisors, and military members if they agree or disagree with my findings and interpretations will be sought. The results will be communicated back to the participant in my research who will be asked, “Do you agree? Do the findings make sense to you?” After the interpretation of the results, the researcher plans to go back to the respondents and ask their opinions about the generated research findings. If they agree and the interpretations make sense for them then validity will be achieved.

Statistical Validity, According to Neuman (2006) is the correct statistical procedure being chosen and applied, moreover, all assumptions are met. A statistic is invalid, and results do not make sense if the major assumptions are violated. Statistical validity is going to be established using appropriate statistical tools and techniques. Correlation Analysis, Cronbach’s Alpha values, Pearson’s Rho and Spearman’s Coefficient are amongst the techniques to be employed. The test of normality for the data will decide which correlation method to be used.

External Validity is in other words “generalizability” of the results. To achieve this, the survey is distributed to the military officers in various countries, branches, and ranks. Since the sample group is not one rank, say NCOs or captains, or not a single unit, say 101 Airborne Marine Division, generalizability will be high. An impediment to this claim arises if the responders are all let’s say captains or all from the Army, or all from the US Military.

Reliability is the extent to which measurements are repeatable when different persons perform the measurements, on different occasions (Drost, 2011). Reliability is the consistency of measurement (Bollen, 1989). Reliability is the consistency of measurement over time or the stability of measurement over a variety of conditions. The most commonly used technique to estimate reliability is with a measure of association, the correlation coefficient often termed the reliability coefficient (Rosenthal & Rosnow, 1991). The reliability check concerning this research included the reliability tests and the variables employed. The most commonly used

technique to estimate reliability is with a measure of association, the correlation coefficient often termed the ` reliability coefficient`. According to Ahire & Devaraj (2001) when Cronbach's Alpha [Acceptance Criteria: Alpha > 0.6] then reliability exceeds general acceptance criteria.

Neuman (2006) recommends four ways to increase the reliability of measures; clearly conceptualizing all constructs, increasing the level of measurement, using multiple indicators of a variable and using pretests, pilot studies and replication. Some of these techniques are utilized to increase the reliability of measures. In this research, pilot test studies, as well as feedback from the panel and prescreening of the data will help establish reliability. Their comments about comprehension, clarity, and being to the point will be sought. Their comments for improvement will be reflected in the survey and overall survey, sections or questions will be tailored as appropriate.

Regarding statistical significance, William Buchanan defines statistical significance as an indicator that expresses the likelihood that "a tendency we find in a sample is sufficiently strong for us to conclude that it also occurs in the population from which the sample is drawn" (Buchanan, 1988, p. 97). He notes further that a statistical significance of 0.05 indicates that the results are probably not a consequence of randomness and should suffice as a threshold measurement of significance (Buchanan, 1988, p. 97). For the sake of this research, the criteria for significance will be 0.05 and less.

CHAPTER 4

CONTENT AND DATA ANALYSIS, FINDINGS

4.1 Emerging Leadership Skills Identified Focusing on Military Leadership

Military leadership (ML) stand out as a specific leadership domain on its own as it is different from a business organization leadership. Therefore, ML is the dominant theme in this research as a more specific area to be explored.

The previous research underlined the increasing need for adaptable leaders in the military (Mueller-Hanson, White, Dorsey & Pulakos, 2005). Also, enhancing operational adaptability (both at the individual and organizational level) is perceived as essential in order to achieve success in future military operations (TRADOC Pam 525-3-0, 2009). Acknowledging the necessity that military leaders and future forces must develop operational adaptability in order to meet the challenges of future armed conflict, TRADOC Pam 525-3-0 (2009) changed the conceptual focus of the Army to operational adaptability, the ability to shape conditions and respond effectively to changing threats and situations with appropriate, flexible, and timely actions. The current and future security environment calls for adaptable leaders in the military and development of adaptive leaders has become a priority for the Army; however, there isn't enough research and practice related to adaptability yet (Mueller-Hanson et al., 2005). A contest between two learning and adapting forces, the rapid rate of change, uncertainty, and complexity will increase the challenge for military leaders. "Leaders are often late to recognize such changes, and even when they do, inertia tends to limit their ability to adapt quickly" (USJFCOM, 2010, p.8). Hailes (2013) notes that some militaries, with their current way of education and training its future leaders, are not keeping pace with the reality of the rapid change of technology, the introduction of very diverse, different threats, and

changing nature of the conflict. The organizational structure and decision-making procedures they now use are part of a problem, not the solution (Hailes, 2013). Cone (2013) sees the temptation to treat people as a commodity instead of individuals and he adds that at some point military personnel systems are going to have to resist this temptation to evolve into a look at each as an individual (Cone, 2013).

In many ways, the notion of adaptive behavior poses a formidable challenge to conventional military functioning. It is not uncommon for senior military officers to voice concerns concerning the adaptability of military personnel— "I do not know if I want my junior personnel to be adaptive. I want them to do the jobs they are trained to do, the way they are trained to do them" (Halpin S, 2011, p.484).

It is clear that effective leadership skills must be identified to develop a better leadership approach in a complex and uncertain environment without getting lost a huge leadership body of knowledge. An efficient way is to go perhaps in depth to minuscule fragments of leadership and try to identify some set of skills that are tangible that can be acquired and developed by individuals. All of us have to recognize that there is no excellent school or a good curriculum for leading the uncertainty, yet efforts must continue.

Although there are abundant theories, approaches, and styles for leadership, they are usually too generic and general to be useful by all leaders. Same is valid for the military leadership as well. There are few studies done to identify the leadership skills needed for such environment in the military but they are not holistic enough, a gap that this extensive literature review fills conceptualizing these skills, and also there is no body of knowledge how the significance of these skills vary in the different security environment and organizational levels. This section is the literature review that delivers emerging leadership skills in the military domain with a broad perspective.

As seen in Figure 18, Content, People, and Processes are three legs of the

transformational change stool in the organizations. To make the organizational change a reality, leaders that also focus on People and Processes are required. Historical leaders mostly focus only on content. After they approve the content, then dictate it to staff for implementation. That can be acceptable if a developmental or transitional change is needed; however, this kind of leadership does impair transformational change**.** (Anderson and Anderson, 2013). However, VUCA environment, it can be problematic if leaders just expect their staff to step in line and follow the directions for a pre-decided and approved content solution since the environment is very fluent and dynamic.

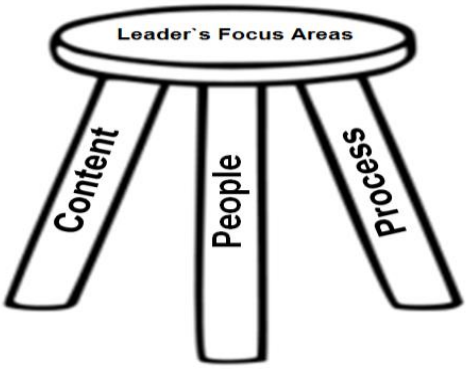


Figure 18. Historical leadership Focus Areas

Even if it were feasible to analyze all knowledge, skills, and abilities required of military commanders in the 21st century and identify the demands and characteristics of the leadership context within the contemporary military environment, it would not be feasible to provide the necessary training, education, and experience to fully prepare every leader for his or her next leadership role (Halpin S, 2011, p 483).

Diverse tasks in a wide spectrum from peacekeeping to nation building, disaster response to counterterrorism or traditional combat require agile, adaptive, and complex brave leaders. (Barton, 2013). They need to be courageous enough to see and exploit opportunities in

the challenges and complexities of the operational environment (A Leader Development Strategy for 21st Century, 2009, p.8). Leaders must be able to welcome and handle ambiguity as well as make judgments when the facts are unclear or still evolving (Boulton, 2011), which is tougher than it looks. It is likely that leaders do not and will not have standard solutions for all conditions and possibilities, so the key here is to be able to "manage the uncertainty" (TJ Ross and all, 2013). Achieving in the short term is about getting results but in the long-term, it is about setting the vision to obtain objectives (A Leader Development Strategy for 21st Century, 2009, p.10).

The current and emerging US Army leadership doctrine emphasizes the development of leadership qualities such as versatility, agility, adaptability, flexibility, creativity, and the motivation and ability to engage in continuous learning as essential for success in the contemporary and future operating environments. (Morath et al, 2011, p.456) Lifelong learning is a way to build leaders for the future and develop leaders into critical thinkers who can think and learn faster and dominate adversaries in future operations. (Hiriari, 2005, p.88) Think critically and strategically in applying joint warfighting principles and concepts to joint operations (JME, 2013, p.13).

Future leaders are that they should be innovative, self-aware, adaptive, and able to provide competent, confident leadership for an expeditionary Army with campaign qualities conducting joint, interagency, and multinational operations in the COE. (Hiriari, S, 2005, p.88) Leadership in the Joint, Interagency, Intergovernmental, and Multinational (JIIM) environment also requires innovative and adaptive leaders to the lowest levels (A Leader Development Strategy for 21st Century, 2009, p.8).

Leaders must be masters of operational art (A Leader Development Strategy for 21st Century, 2009, p.8), unfortunately, mastering superior warfighting skills (an easy way to go) is not enough anymore. In addition to mastering tactical and technical skills, leaders need

strong communication and diplomatic skills, as well as some of the sub-skills, including social, emotional, and cultural literacy or intelligence (McFate, 2007). Military leaders have to master humanitarian assistance, peacemaking, re-stabilization (Raybourn, 2013), foreign language and culture skills, intercultural and interpersonal communication and engagements (Raybourn, 2013). Building expertise in a foreign language, regional and cultural skills (QDR, 2010, p. XIII), along with the greater linguistic and cultural capabilities, it is also important to have culturally astute and able leaders to use their awareness and understanding to achieve an intercultural edge. Lack of these skills can be very dangerous especially when sides have lethal weapons and destructive power to employ (A Leader Development Strategy for 21st Century, 2009, p.8).

General Casey (2013) mentions that given human nature, cultural differences do not disappear in the war zone, so leadership must be continuously involved in them. Soft skills such as negotiation and consensus building, effective communication, being able to analyze ambiguous situations, being self-aware, thinking innovatively/critically and exercising creative problem solving are essential elements for the military environment especially for those who will operate international arena (Raybourn, 2013).

Today's military leaders in all levels, from tactical to politic military, must be highly skilled and knowledgeable in increasingly complex technologies and capable of autonomous decision-making in rapidly changing and ambiguous situations. An uncertain environment is forcing military leaders to view wider than ever before at all levels. They need to have the skills that are viewed as only necessary for senior leaders in the past, such as broad theoretical capacity, divergent thinking, and creative problem-solving skills (Bartone, 2013). It is important to develop adaptive, flexible, strategically aware leaders who can think "outside the box" (Ahern, S, 2008.p.7) so they know where to go and what appropriate skill they needed.Having said that they are not always equipped properly to reach that destination

culturally and experience-wise. Their awareness must be broad enough to operate with a global mindset and across the spectrum of conflict (A Leader development strategy for 21st Century, 2009, p.8).

Leaders should be able to create and enhance the capacity of others. Ronald (1994) sees a leader as someone who has the capacity to adapt to the changing needs of the organization. A leader should see and enhance the ability of the people so that when they encounter a problem in their levels and functions, they face reality, assume responsibility, and solve the problem on the spot. They must also develop skills to sense and take into account the second and third order effects of their actions on the political, diplomatic, and socio-economic situations for their countries' reputation (Raybourn, 2013). According to Joint Military Education (JME) (2013, p.13), they need to be able to understand the security environment and the contributions of all elements of national power, and they also need to understand the short- and long-term strategic, political, economic, legal, moral, and ethical implications of mission efforts. One who leads organizations by creating and maintaining a positive environment and by investing effort in their broadening vision of others develops a mature depth and breadth to perform the tasks. Developing includes assessing needs to improve self, others, and the organization (A Leader Development Strategy for 21st Century, 2009, p.10). They should have increased awareness and capability to work with situations they will face, while also teaching collaboratively with the complex array of actors on all sides of a conflict, including the skills to facilitate them new skills to help be more successful in people creating and implementing their solutions that abide by international standards (Ahern, S, 2008.p.7).

Leadership must be co-creative and thinking about the bigger picture, working openly across boundaries, being agile and flexible, and being open to influence and to sharing information and resources (Anderson and Anderson, 2013). They should be capable and open to working collectively at individual and organizational levels, provide and facilitate structures

so that others can work (Maltz and Witt, 2006).

Today's leaders are called upon to engage socially across cultures, to be able to build trust, be ready to create alliances and to be capable of influencing and understanding people and their motivations (McFate, 2007). If leadership is an emergent event rather than a person's actions and decisions, the individual who is anticipated as a leader must be ready to be a follower at different times for different purposes. When required, different people may act as leaders to help leverage the organization with their skills and experiences (Lichtenstien et al, 2006). They provide vision through purpose, motivation, universal respect, and direction to guide others extends their influence beyond the chain of command to build partnerships and alliances to accomplish complex work. Leading is conveyed by communicating (imparting ideas) and setting the example (A Leader Development Strategy for 21st Century, 2009, p.9). Thus, the process of exerting influence on others to achieve a common goal is not only important when working with subordinates but also comes into play when working with peers and superiors from allied nations (Halpin S, 2011, p.483). Because of the environment in which the military operates, leaders have to influence not only their regular followers (who are under their legal direct command and control) but also local leaders, key partners, and civilian organizations. In other words, leaders have to lead some people who are not under their direct command- legally, hierarchal. Ranks and command power is not merely useful to lead them, leaders have to have more skills and abilities to be able to collaborate with them due to legitimacy in commanding forces being negated when operating cross cultural boundaries. Increase awareness and critical thinking about our own perspectives, while also more clearly difficult moral, ethical, and legal considerations understanding other cultures, how they perceive us, and their motivations for acting (Ahern, S, 2008. p.7).

Security environment calls for leaders to take on more of a coaching role to enable subordinates to collaborate, think outside of the box, and strive to think more broadly and

strategically (Anderson and Anderson, 2013). To be able to play this role, Anderson and Anderson mention intentional (a conscious engagement and seek out for learning) and unintentional (happens as we go about our lives) learning (Anderson and Anderson, 2013). In the security environment and challenges of today, they propose that leaders must choose and adapt for a conscious intentional development type of learning (Anderson and Anderson, 2013), similar to vertical development idea.

Morland (2009) talks about celebrating diversity as a skill for a leader. They need an ability to sense what role differences and similarities play in shaping the behavioral patterns of the organization. Differences and similarities include but not limited to personal style, thought process or personality skills. They need to create conditions to develop and support different perspectives and provoke questioning (Stacey, 1992).

There is a growing realization that effective leadership does not necessarily reside in the leader's symbolic, motivational, and charismatic actions (Lichtenstein et al., 2006, p.2-12). Historically followers want to see leaders as "heroes" and leadership applications as "magic". We have always wanted to trust this someone, somewhere at all times of trouble. (Wheatley, 2011) This era is passing by now. In today's complex and interconnected problems, we may need fewer leaders as heroes with their magic, we need more leaders as 'hosts' with an understanding of the complexity and with the ability to participate in the system.

According to the job analysis results, some critical competencies of Human Terrain System (HTS) includes communication (especially influencing and persuading), critical thinking, personal relationship (including team building and coaching) and organizational/environmental awareness (community, social and external awareness) (Vasilopolis & Swartout, 2009). It also includes increasing awareness and critical thinking about our perspectives, as well as more clearly difficult moral, ethical, and legal considerations when making effort to understand other cultures, how they perceive us, and their motivations

for acting the way they act (Ahern, S, 2008.p.7).

Drath (2003) points out that leadership cannot be the actions created by a single leader. He clearly argues that individual leader development and leadership development (the whole process of creating direction, alignment, and commitment) should be thought separately. According to him, although it is clear that leadership development is becoming more crucial, it lags behind the leadership development in the military. Traditionally, military units have very often led by a single leader. In complex challenges, no one can say with any authority or accuracy just how things need to change (Wheatly and Frieze, 2010). So, one of the first things that organizations should learn and adapt is perhaps accepting and finding ways to live with this phenomenon successfully, which means no one can be in charge of the spectrums of military operations, crisis management, peace support, and combat. Let us consider Iraq or Afghanistan: can we say who is in charge of all the transaction, interactions, processes, overall system? It looks like no one! The "no one in charge" phenomena as "emergent phenomena resulting from thousands of small, local actions that converged to create powerful systems with properties that may bear little or no resemblance to the smaller actions that gave rise to them".

Leaders must learn to accept, value, and reward cultural knowledge and skills. Social, emotional and cultural competencies also deserve to be recognized, valued, and rewarded as much as tactical and technical competencies are (McFate, 2007).

In addition to mastering proficiency in the battlefield, today's military also fights insurgencies, renders humanitarian assistance, provides security to locals, and patrols civilian streets. These kinds of missions go beyond the limits and teachings of conventional warfare and kinetic effects of military actions (Laurence, 2011). The 2006 Quadrennial Defense Review (QDR) explains the need for leaders with a cooperative relationship, partnership skills, and cultural understanding, especially if the war is long and encompasses the local population and organizations.

Outcomes required are dramatically different from how people and organizations operate now. Creating new solutions is very much dependent on leaders to make a paradigm shift, in such conditions incremental and little changes (touch-ups to the current state) are not enough. Since the organization does not have time to wait and see if the proven solutions are effective before changing and adapting, all leaders and staff must figure it out as they march forward (Anderson and Anderson, 2013). This requires a cultural shift both at the individual and also at an organizational level.

Within organizations, ways must be set up to acquire critical inputs from all levels and functions of the organization for their best solution. Leaders need to understand how the organization is being affected by the solution. Staff who can make strategic decisions on their own, which can be injected with training, empowerment, and education required in these situations. These kinds of inputs cannot be achieved if the staff is accustomed to being told what to do all the time (Anderson and Anderson, 2013). Meaningful conversations amongst people from all levels and functions must be invested. It is crucial that leaders should be open for critical inputs from any level or function within the organization since rapid direction correction is imperative. The leaders must empower the subordinates, include them in the decision-making process, and increase collaboration with them (Anderson and Anderson, 2013).

A key component in developing leaders is feedback. Feedback provides important information leaders at all levels need to make professional adjustments. Feedback provides measures to gauge success. The task force recommended implementing a 360-degree assessment-and-feedback program in operational and institutional settings. At any level and any position, feedback is essential for growth. During analysis and research of previous studies, the task force discovered that the profession's feedback system is deficient. Most leaders only receive formal feedback from superiors in the form of an evaluation, but many successful

leaders use a feedback system that seeks input from all sources (subordinates, peers, and superiors) and are not necessarily linked to evaluations. We must formalize this philosophy throughout the Army (Hiriari, 2005, p.88). Setting up a 360-degree feedback loop is necessary for leaders since leadership should be able to monitor the changing environment continuously. What is important here is setting up a feedback loop that clearly defines and relays feedback to all stakeholders and, of course, the very top leadership (not only through the chain of command). If it is stuck in the command and control hierarchy, there will be missing parts or intended/unintended modification resulting in misunderstandings of feedback. The primary aim of this loop would be to try to capture and disseminate signals of changes in the complex environment. As Scheffer (2009) discusses there are often weak but persistent signals and implications for the changes (transformations) in complex systems. During or after the decision is made, an effort must be performed to capture the changes in the environment and system. To enable this, a feedback loop, reporting up/down and sides of the structure and also appropriate technological means should be in place. What this feedback loop will do is to help stop, modify or change our decisions in the time since each and every part of the whole will be carefully observing the changes.

Decentralization of the decision-making process can also help in this case, because the decision might be time-sensitive or there may be too many things going on causing primary decision process paralyzed. Policymakers must be trained to seek these weak signals and create a structure to share the understanding (Polasky and al, 2011). They need to be to anticipate and recognize change and lead transitions. (JME, 2013, p.13) Our future leaders must expect complexity and understand that they will have to operate decentralized. (A Leader development strategy for 21st Century, 2009, p.7) All identified leadership skills can be seen in Table 15.

Table 15. Emerging Leadership Skills identified in a VUCA environment

L	leader as “follower” when necessary	**L**	language and cultural skills	**L**	earn and adapt to “no one in charge” phenomenon
E	endorsement of subordinates to collaborate and foster	**E**	enables others to challenge	**E**	empowerment of subordinates and units
A	daptable and agile	**A**	alliance seeker	**A**	accept, value, and award cultural skills
D	decision making capability on his/her own	**D**	development and support of different perspectives	**D**	decentralization of the decision-making process
E	enhancement of the capacity of others	**E**	effect of second and third orders are remembered are considered	**E**	environmental and organizational awareness
R	role of coaching	**R**	recognition of human nature and cultural differences	**R**	recognize, value and award cultural and social competencies
S	self-awareness capability	**S**	soft skills (negotiation/consensus building)	**S**	seek weak signals of change
H	host leader, not a heroic leader	**H**	high communication capability	**H**	have a way to include staff in the decision-making process
I	influence on out-group members to an extent	**I**	intentional learning (seek out for learning opportunities)	**I**	identifies and seek inputs from all levels and functions of the organization
P	process and people focused, as well as content focused	**P**	provokes questioning	**P**	paradigm shift in the leadership paradigm

The analysis of the skills revealed similar leadership skills can actually be grouped in a larger level identity. The skills identified for the complex security environment are grouped into 8 (eight) different category as seen in Figure 19. All these individual and group skills

actually were inputs for the construction of the survey.

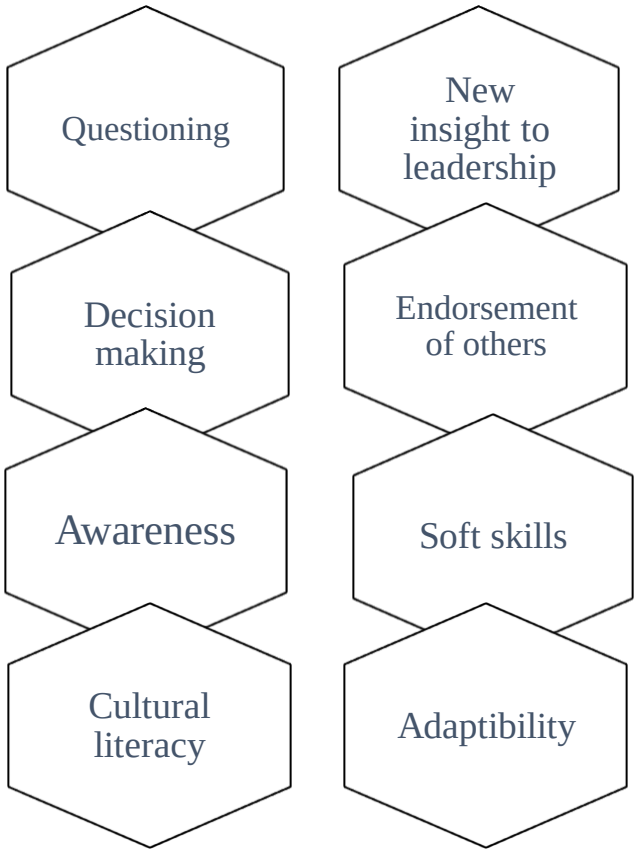


Figure 19. Categories of Emerging Leadership Skillset Categories in a VUCA environment

The test question here is: “Is the military culture ready to apply these changes?” The section on the cultural characteristics of the military reveals that some of these skills can be hard to implement given the culture of the military. It would be unrealistic to think that identified emerging leadership skills in this research are going to be enough and a perfect fit for the military; this is not the case. There is no one-size-fits-all rubric yet discovered for leadership. Similar to other organizations, the military has aforementioned unique characteristics and organizational culture that these skills must be tailored to, and significance

of these skills in different security environments, organizational levels need to be clarified, which is one of the purposes of this research. So, there will be some potential impediments waiting for the leaders who are willing to acquire and employ these skills in the military context.

Military organizations sometimes lack the idea of vertical development since they stifle vertical development and want power/ranks rule rather than the best and divergent thinking. This idea can be valid in situations where vertical development is not required. Nevertheless, new security challenges require more evolved mindsets (through vertical development) to solve the challenge we face now and will be facing in the future (Anderson and Anderson, 2013). Another problem is the military culture that is used to appreciating and valuing the tactical and technical expertise. It is very challenging and demotivating for today's officers to implement most of these applications since the reward and promotion system is set up for traditional authoritative command and control style, not a coaching style (Anderson and Anderson, 2013). So even though officers who studied, agreed, and are willing to implement these kinds of leadership skills will be hesitant to implement them, because the environment favors authoritative, command and control style and heroic leaders, not coaching style leaders.

In addition to those, the historical military leadership style will not be comfortable with these skills since they are most comfortable to have clear answers and directions, working within their stovepipe frame and seldom consulting staff for critical inputs (Anderson and Anderson, 2013). However, it is a fact that it is getting harder to disseminate clearly defined objectives and answers when things always evolve in complex environments as General Casey (2013) points out. Authority is paramount in the military environment since the result of what is done is usually a matter of "life or death." Anything diverging from this perspective and undermining the authority might be affecting the success of the mission. The shift mentioned above as focus from merely content to "Content-People and Processes" is also challenging in

the military since the military is expected to take concrete results fast, and most of the times there is no a rule of thumb to apply. Skills in the military are very specific, specialized and require a great deal of experience. The experience of the leaders plays a crucial role in the effectiveness of the military, and that is why the military wants to recruit from young individuals and prefers to use military experience in the long run with all the other experiences and individual has accumulated. In a company, it may be easy to contract or hire a person who has the skills mentioned above to lead the company through the uncertainty, but the military cannot hire combatant commanders. The only option is to educate and develop them with the appropriate skills to cope with the uncertain and complex security environment.

As an organization that coexisted with the history of the people, the military has many customs, traditions, and unwritten rules. That is why if any military intends to apply these skills, it has to change the culture of the military which takes a longer time than in other organizations. If results are needed in the short run, then strategic planners must be the first audience to be willing to change the culture, since it is easier to implement something quicker once the top authorities are convinced about the necessity. Daniels (2012) concludes in his work that as the work of engineers becomes more complex, more decisions are made at the individual level which makes the individual skills (judgment and motivation) increasingly important for the ability of the enterprise. The same conclusion also applies to leadership domain as the individual leadership skills are critically important in this VUCA environment especially considering the major changes in the operational environment.

As Cone (2103) puts it, the Army's future success rests on its ability to make talent management a core competency. The system requires the capability to provide some future Army leaders opportunities to acquire expert skills along paths that expose them to as many experiences as possible. By helping, leaders find where their unique talents best fit, every soldier is allowed to obtain the training, education, and experience necessary for them to

contribute best to the Army's total well-being. Moreover, soldiers deserve the best leadership the Army can deliver, and that requires investing in leader development not just money, but also time. As a result, it is a reality that the security environment is continuously evolving to getting more complex. To be ahead of the game, leaders need to understand and adapt what it demands in terms of leadership performance. Leading in the future security environment, which is full of complexity and uncertainty, needs some change and adaptation in the leadership skills as well. Existing leadership and skills and practices need for a regular review, learning, and anticipation of the large qualitative changes (Boulton, 2011). What this research does is to identify and categorize emerging leadership skills to be useful in a VUCA environment. It is not the intent of this research to apply these skills in each and every military spectrum (environments) and organizational level. In the long run, ignoring the reality about main changes in the environment and a need to revisit leadership skills will bring missed opportunities for developing far better military leaders. Unique organizational culture of the military should not be an excuse for ignoring such implementation. The way ahead for military leaders and organizations should be to try to understand and apply these applications to different levels and security environment of the military, monitor, and evaluate the results and tailor them as appropriate. Military institutions must generate experience before soldiers need it. The prospect of learning from mistakes on the battlefield is out of the question. Soldiers must have experience embedded in them before they arrive in the area of operations (Hirari, S, 2005, p.87).

One thing is for sure that "we cannot lead and solve the complex problems with the education, skills and behavioral mindset intended to lead and solve traditional (or known) problems,", and leadership is one of the most important skills. One solution to tackle the complex problems is tailoring leadership skills to be suitable to a complex environment, and this research is an effort to pave the way to this education.

4.2 Data Analysis and Findings

This section provides a detailed analysis of the data collected during the survey. It describes how the first hand-collected data was pre-screened for accuracy and completeness, gives details about overall response rates and descriptive statistics, and also presents the results of normality and skewness analysis. Following these parts, it shows how the statistical methods were employed to data using SPSS, reports the findings.

Pre-Analysis

Overall Response Rate

The survey is distributed via email to 123 total immediate respondents through Qualtrics survey software. Seventy-eight respondents submitted the survey in time; 9 of the submissions were not complete, and therefore these incomplete responses were left out of the data analysis. The useable response rate (over Qualtrics) turned out to be 63%. In addition to survey software, of 21 paper-based surveys distributed via email, 17 full responses were received. The useable response rate for paper-based was 81% since they all passed prescreening for accuracy and completeness. Eighty-six total useable responses identified for further analysis with a 72% response rate achievement. This is a sufficient sample population to allow useful and meaningful statistical analysis as mentioned in Chapter 3. Table 16 contains the numbers and percentages explained here.

Table 16. Survey Response Rates

Category	N	Percentage
Response Rate of Complete Data Sets	123	-
Total number of Officers attempting the survey	78	63%
Number of respondents who were left out	9	11%
Paper-based surveys distributed	21	-
Number of Paper Based Responses	17	81%
Total Number of Complete and Useable Submissions	86	72%

Coding of Emerging Leadership Skills Questions

This part explains how emerging leadership skills data and variables are coded. The detailed coding for data and descriptive statistics is presented in Appendix G. There are 34 Questions that are being asked in the survey. There are 34 survey questions that are related to one of the eight leadership skills categories. Table 17 shows the question number in the survey, related emerging leadership skill category and relevant coding. This is necessary to follow and understand the data analysis since the results are in relevant coding format.

There are four conditions that are the combinations of the security environment and organizational level created out of two security environment (War and Humanitarian assistance) and two organizational levels (tactical and strategical). The combination is War-Tactical, War Strategic, Humanitarian Assistance-Tactical, and Humanitarian Assistance-Strategical and coded as WT, WS, HT, and HS. Table 18 shows the coding of each condition.

Table 17. Relevant coding of skills categorization

Question Number	Related Emerging Leadership Skillset	Coding
1-5	New Insights into Leadership	NILS
6-9	Awareness	AWA
10-13	Soft Skills	SOFT
14-18	Questioning	QUEST
19-22	Adaptability	ADAPT
23-25	Cultural Literacy	CULT
26-31	Decision Making	DECMAK
32-34	Endorsement of Others	ENDOR

Table 18. Relevant coding of Security Environment and Organizational Level

Content	Coding	Explanation
War	W	If used alone
Humanitarian Assistance	H	If used alone
Tactical	T	If used alone
Strategical	S	If used alone
War-Tactical	WT	When used together
War-Strategical	WS	When used together
Humanitarian Assistance-Tactical	HT	When used together
Humanitarian Assistance-Strategical	HS	When used together

During the analysis of leadership skills, category and conditions are often used together to analyze the specific skill category at the specific condition. For example, the first question in the survey is about “New Insights to Leadership” skills category. When referring to this question with regards to security environment “War” at organizational level “Tactical”, the coding is assigned as “1WT_NILS”, whereas when referring to the single factor loadings of all

five questions related to NILS is assigned as “WT_NILS”.

Descriptive Statistics

Participants were asked to answer ten demographic questions regarding their age, gender, level of education, graduation, active years, rank, country and service branch.

AGE

Figure 20 shows the overall statistics of age, and Figure 21 shows the histogram for age. The mean age is 40.64 with mode 38 and median 39. The youngest respondent is 26 years old where the oldest respondent is 67 years old with a range of 41 years. The two age that is identified as the most frequent is 38 and 40 with percentages 19.8% and 9.3% respectively.

Statistics

		AGE
N	Valid	86
	Missing	0
Mean		40.64
Std. Error of Mean		.947
Median		39.00
Mode		38
Std. Deviation		8.781
Variance		77.104
Skewness		.827
Std. Error of Skewness		.260
Kurtosis		.651
Std. Error of Kurtosis		.514
Range		41
Minimum		26
Maximum		67
Sum		3495

Figure 20. Statistics (Age)

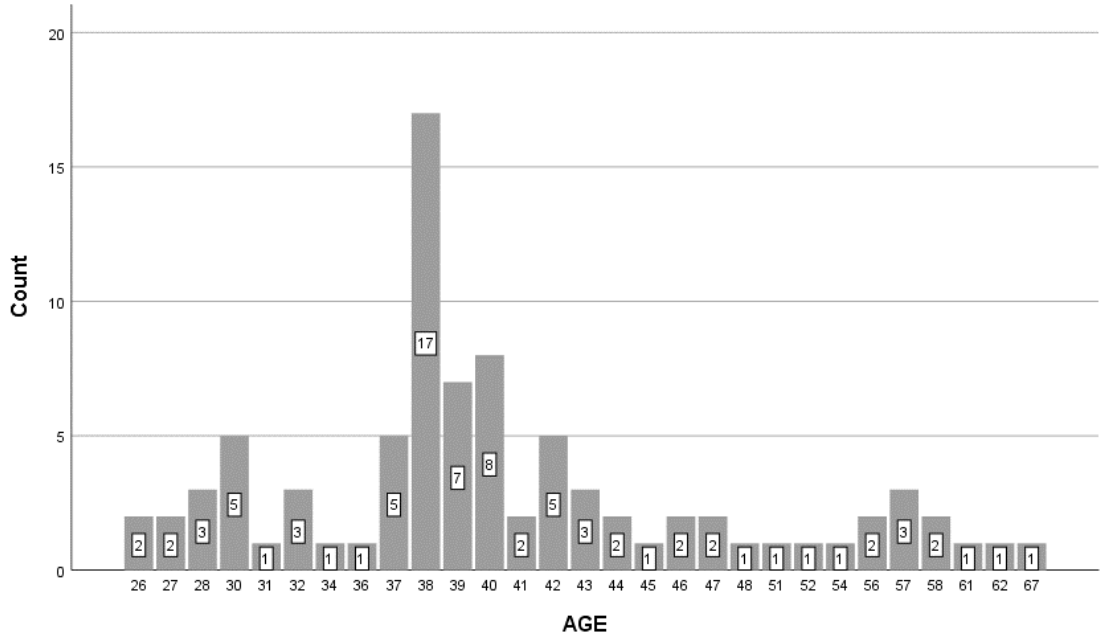


Figure 21. Histogram (Age)

The test of normality results is shown in Figure 22. Shapiro-Wilk statistics is 0.918 with at the significance level of 0.000, which indicates that the distribution of age is statistically significantly different from a normal distribution.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
AGE	.169	86	.000	.918	86	.000

a. Lilliefors Significance Correction

Figure 22. Results of Test of Normality (Age)

ACTV

Figure 23 shows the overall statistics of active years of service (ACTV), and Figure 24 shows the histogram for ACTV. Mean active year is 16.28 year with a maximum of 35 years

and a minimum of 2 years of active service with a range of 32 years. The two longest active years of service that is reported is 15, and 16 years with percentages 17.4% and 10.5% respectively.

Descriptive Data

			Statistic	Std. Error
ACTV	Mean		16.28	.766
	95% Confidence Interval for Mean	Lower Bound	14.76	
		Upper Bound	17.80	
	5% Trimmed Mean		16.21	
	Median		16.00	
	Variance		50.486	
	Std. Deviation		7.105	
	Minimum		2	
	Maximum		35	
	Range		33	
	Interquartile Range		7	
	Skewness		-.047	.260
	Kurtosis		-.096	.514

Figure 23. Statistics (ACTV)

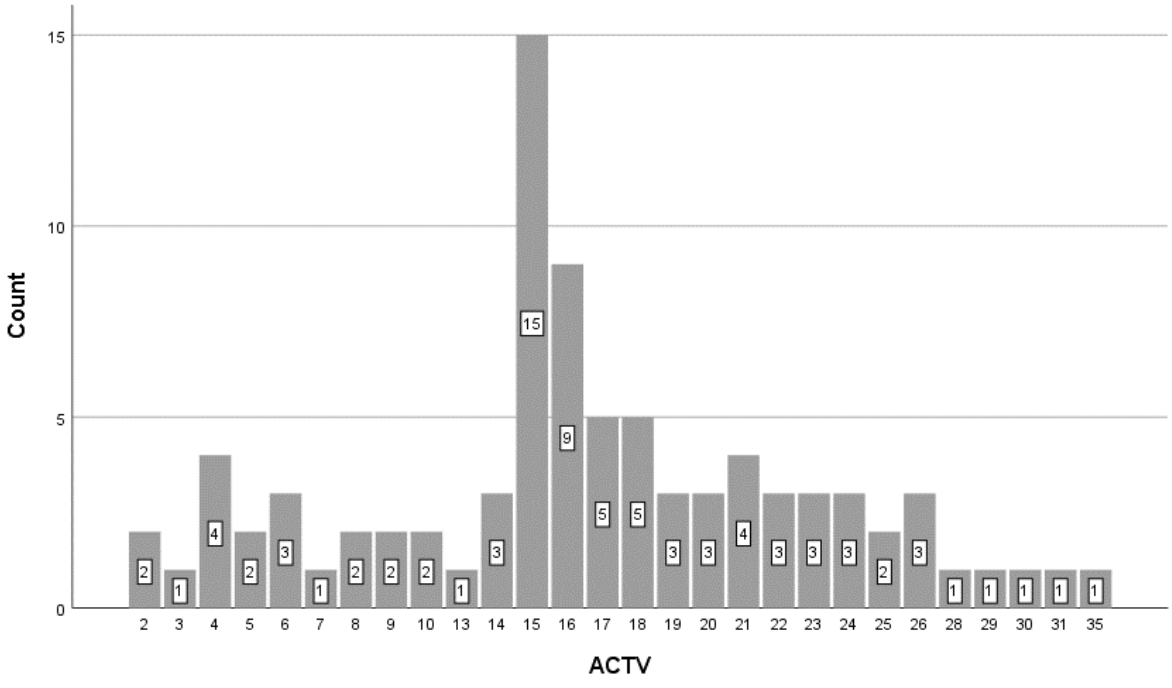


Figure 24. Histogram (ACTV)

The test of normality results is shown in Figure 25. Shapiro-Wilk statistics is 0.968 at the significance level of 0.032, which indicates that the distribution of age is statistically significantly different from a normal distribution. Nevertheless, after the examination of the Q-Q plot and box plots in Figure 26 and 27, it can be seen that the results are very close to normal distribution.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ACTV	.161	86	.000	.968	86	.032

a. Lilliefors Significance Correction

Figure 25. Results of Test of Normality (ACTV)

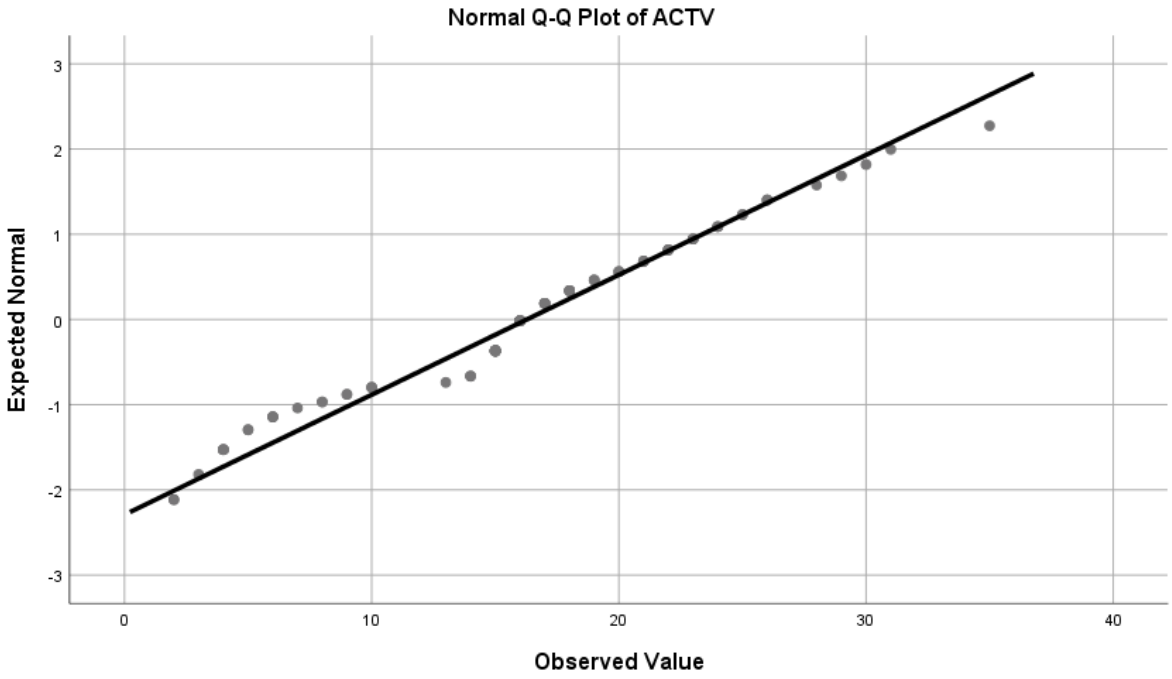


Figure 26. Normal Q-Q Plot (ACTV)

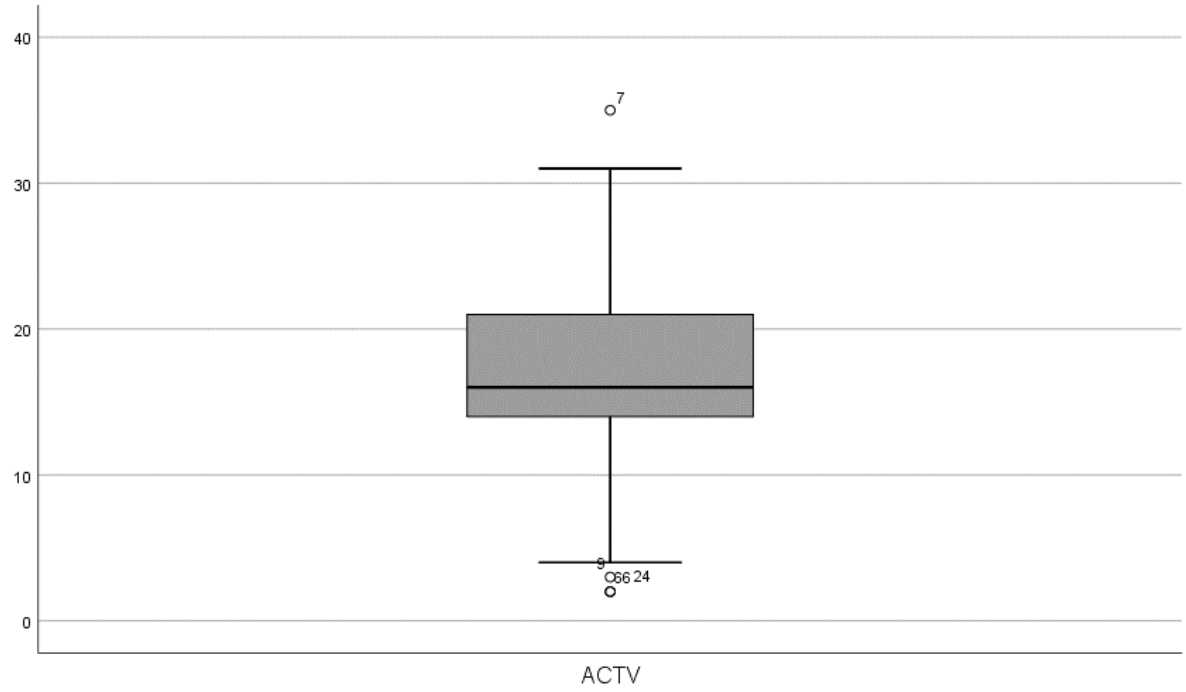


Figure 27. Box Plot (ACTV)

SVCNUM

The questionnaire was able to solicit the responses from Army, Air Force, Navy and DOD civilians. As seen in Figure 28, the most frequent two responses for service type (SVCNUM) was Army with 62 and Air Force with 12 responses. The percentages are 72.1 and 14.0 respectively. Figure 29 shows the histogram for service types captured.

SVC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Air Force	12	14.0	14.0	14.0
	Army	62	72.1	72.1	86.0
	DOD civilians	3	3.5	3.5	89.5
	Navy	9	10.5	10.5	100.0
	Total	86	100.0	100.0	

Figure 28. Frequency Statistics (Service Types)

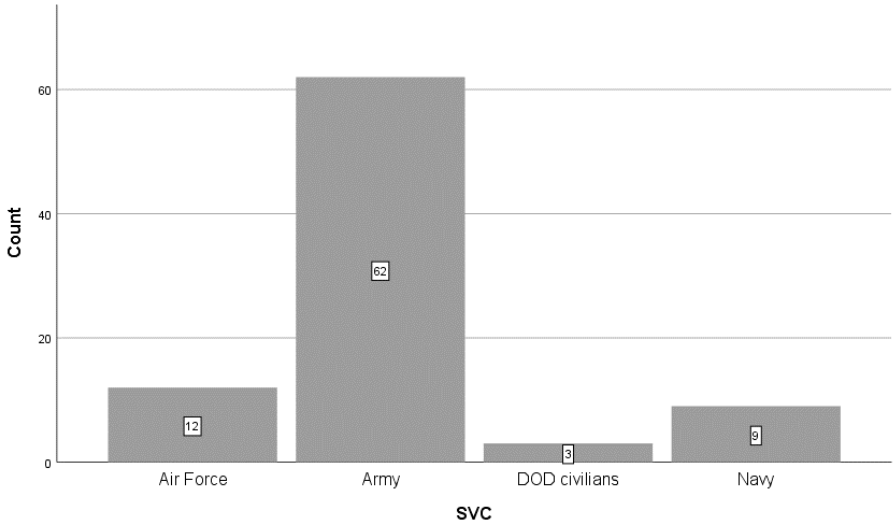


Figure 29. Histograms (Service Types)

RNKNUM

The distribution of the sample by rank and rank grouping (RNKNUM) is shown in the following figures. As seen in Figure 30, the most frequently reported rank was “retired” with 30 times which is 34.9 percent of all responses. Major follows the retired respondents with 16 times, which is 18.6 of overall responses. The histogram for Rank is presented in Figure 31.

The rank is grouped into four different categories to make the analysis easier as follows: Junior (JUN), Medium (MED), Senior (SEN) and Retired (R). 1st and 2nd Lt. are grouped as a "junior", Captain and Major are grouped as "medium", Lt. Col and Col are grouped as a "senior", and DOD Civilian and Retired are grouped as retired. These groups will be analyzed in the following section for correlations with leadership skills questions. Descriptive statistics and histogram for rank grouping are in Figure 32 and Figure 33.

RNK

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CAPTAIN	3	3.5	3.5	3.5
	COLONEL	5	5.8	5.8	9.3
	Commander	1	1.2	1.2	10.5
	DOD/NATO Civilian (Officer equivelant)	6	7.0	7.0	17.4
	First Lieutenant	11	12.8	12.8	30.2
	Lieutenant Colonel	11	12.8	12.8	43.0
	Lieutenant Commander	2	2.3	2.3	45.3
	MAJOR	16	18.6	18.6	64.0
	Retired	30	34.9	34.9	98.8
	Second Lieutenant	1	1.2	1.2	100.0
	Total	86	100.0	100.0	

Figure 30. Frequency Statistics (Rank)

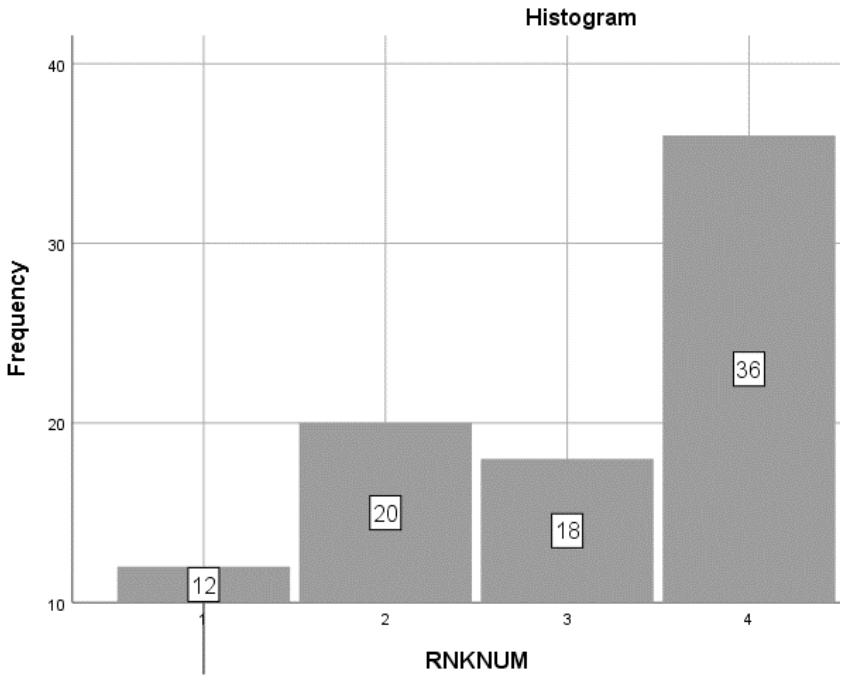


Figure 31 Histogram (Rank Grouping)

RNKCoded

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	JUN	12	14.0	14.0	14.0
	MED	20	23.3	23.3	37.2
	R	36	41.9	41.9	79.1
	SEN	18	20.9	20.9	100.0
	Total	86	100.0	100.0	

Figure 32. Frequency Statistics (Rank Grouping)

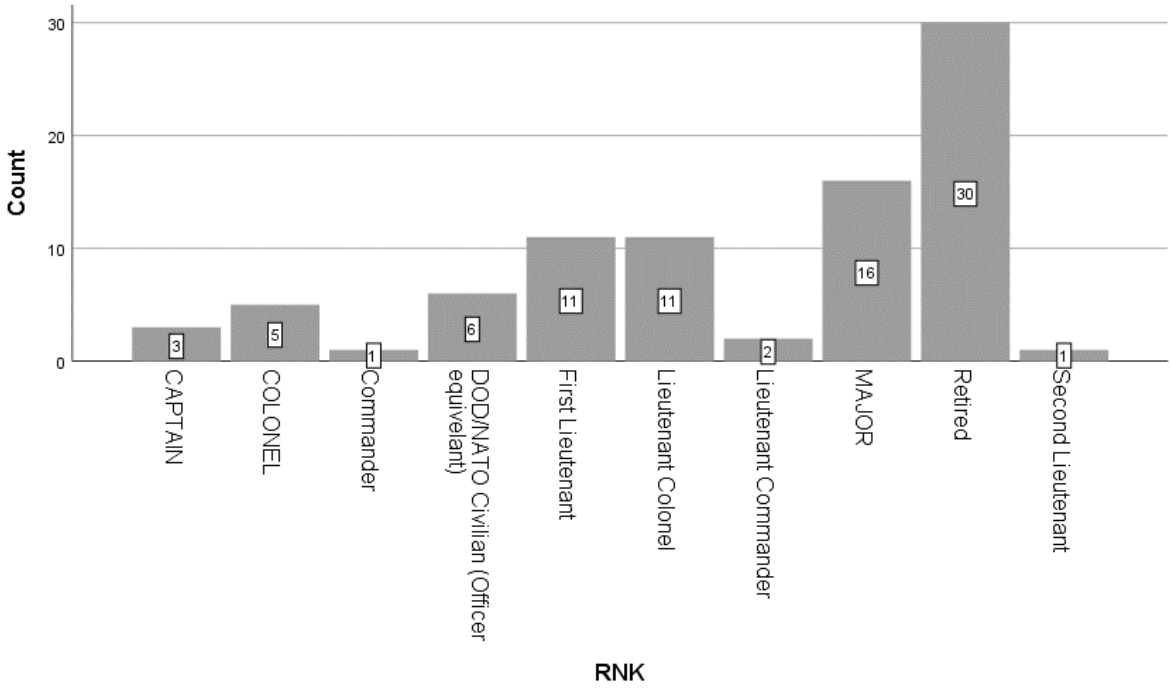


Figure 33 Histogram (Rank)

GRADNUM

Graduation level (GRADNUM) was captured in six categories: 1) High school graduate (GED), 2) College, 3) Military Academy (Non-US), 4) US Army Academy, 5) US Naval Academy, and 6) US Air Force Academy. The frequency of graduation levels is displayed in Figure 34. The lowest level of graduation was high school with 2 responses (2.3% of all responses), non-military college graduation is 18 (20.9% of all responses), non-US military academy graduation is 51 (59.3% of all responses), and US military academy is 15 (17.3% of all responses). Eighty-four out of 86 (98%) responded they have a bachelor's degree, and the remaining 2 graduated from high school. Figure 35 shows the histogram of graduation groupings, and Figure 36 shows the frequency distribution for graduation grouping. 1 is high school, 2 is non-military college, 3 is a non-US military academy, and 4 is US military academy.

GRAD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	College 2 or 4 years (non-military)	18	20.9	20.9	20.9
	High School	2	2.3	2.3	23.3
	Military Academy (Non US)	51	59.3	59.3	82.6
	US Air Force	7	8.1	8.1	90.7
	US Army Academy	7	8.1	8.1	98.8
	US Naval Academy	1	1.2	1.2	100.0
	Total	86	100.0	100.0	

Figure 34 Frequency (Graduation)

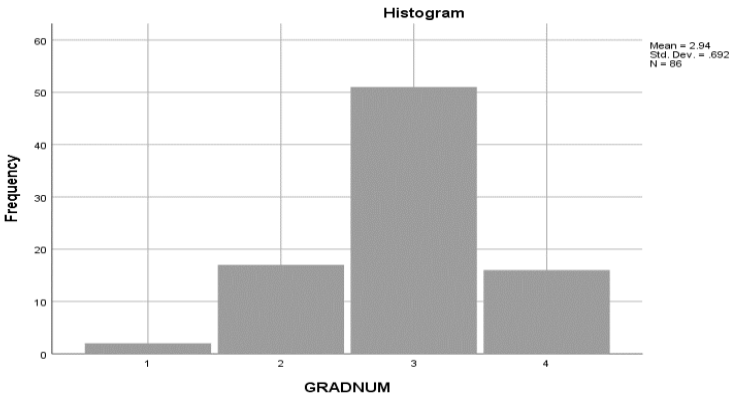


Figure 35 Histogram (Graduation groupings)

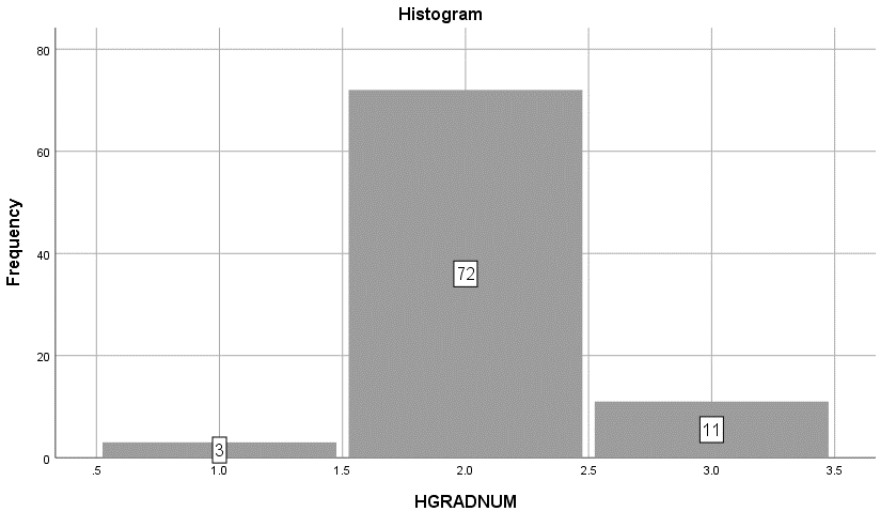
GRADNUM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.3	2.3	2.3
	2	17	19.8	19.8	22.1
	3	51	59.3	59.3	81.4
	4	16	18.6	18.6	100.0
	Total	86	100.0	100.0	

Figure 36 Histogram (Graduation groupings)

HGRADNUM

Highest Graduation level (HGRADNUM) was captured in six categories: 1. High school graduate (GED), 2. College, 3. Military Academy (Non-US), 4. US Army Academy, 5. US Naval Academy, 6. US Air Force Academy, 7. Master's, 8. Doctorate, and 9. Post-Doc. The frequency of responses on graduation levels is displayed in Figure 44. The sample contained 72 for a master's degree, 11 for doctoral degree, and 3 for a bachelor's degree for their highest level of education. This number is equivalent to 83.7%, 12.8%, and 3.4% of overall responses. Figure 37 shows the histogram of highest graduation captured.



HGRAD

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Doctorate degree	11	12.8	12.8	12.8
	Master's degree	72	83.7	83.7	96.5
	Military Academy (Non US)	2	2.3	2.3	98.8
	US Army Academy	1	1.2	1.2	100.0
	Total	86	100.0	100.0	

Figure 37 Histogram (Highest Graduation) and Frequency

CNTRYNUM

Figure 38 and Figure 39 shows the histogram and descriptive statistics for the country (CNTRYNUM). The highest frequency in the country is Turkey with 50 (58.1% of the sample), the US is following with 14 (16.3% of the sample). It is also worth noting that 14 respondents rejected to give an answer to the country question. This is 16.3 of overall responses.

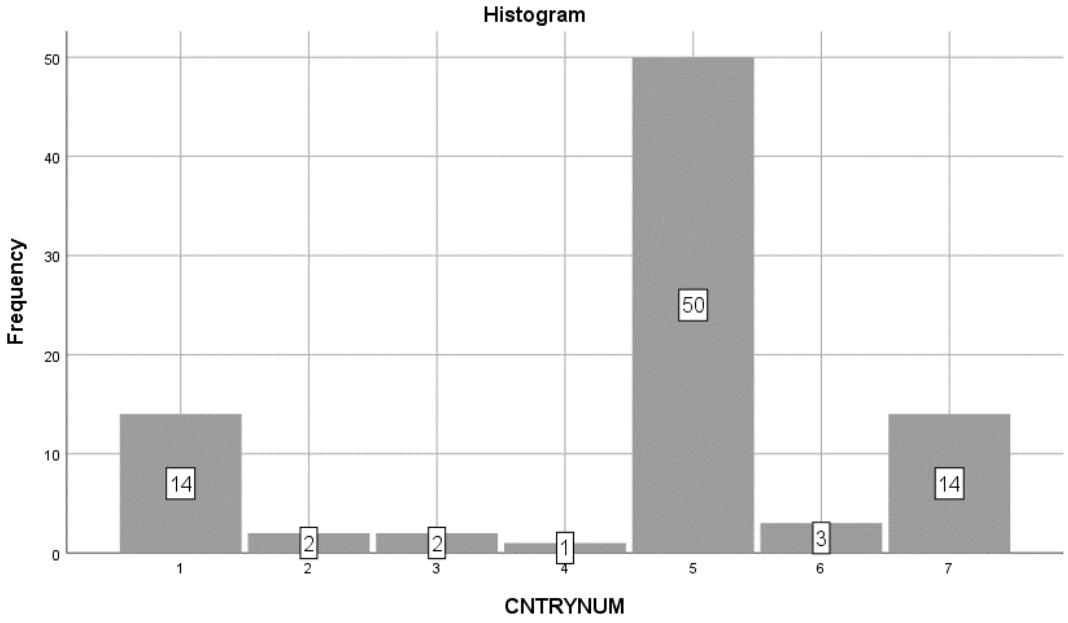


Figure 38 Histogram (Country)

CNTRYNUM

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	US	14	16.3	16.3	16.3
	CANADA(CA)	2	2.3	2.3	18.6
	GERMANY (GE)	2	2.3	2.3	20.9
	Greece(GR)	1	1.2	1.2	22.1
	Turkey (TU)	50	58.1	58.1	80.2
	UK	3	3.5	3.5	83.7
	Reject to answer (R2A)	14	16.3	16.3	100.0
	Total	86	100.0	100.0	

Figure 39 Frequency distribution (Country)

Normality and Skewness Analysis

Test of Normality for Demographic Questions and Survey Questions

Variables along with the demographic question are analyzed for Normality by employing Kolmogorov-Smirnov and Shapiro-Wilk tests. The *p*-value (also named as significance value) that is greater than 0.05 explains that the data is normally distributed. Shapiro-Wilk test results are examined to get more insight on Normality and Skewness of both demographic data, and emerging leadership skills response data. The skewness analysis was also conducted. Values ranging between 0 and 1 suggest a normal distribution. The results will result in either a parametric test (Pearson's correlation coefficient) or nonparametric test (Spearman's rho) for further analysis.

Test of Normality for Factor Scores

Factor analysis method (explained in the next section) is used to reduce the number of dependent variables. Variables are reduced to eights and factor scores are calculated and recorded for these eight factors. Considering every category has four independent variables (WT, WS, HT, and HS) resulted in 32 different factor scores. The test of normality is carried out for these factor scores.

Table 19 and Table 20 is shown below as ordered in the significance value and ordered by name respectively. Shapiro-Wilk test provides information on whether or not the data is normally distributed. When the "sig." is investigated, we can see that total of seven items (WT_DECMAK, WT_SOFT, WT_NILS, WS_DECMAK, HS_NILS, HT_NILS, and HS_DECMAK) have significance values (p-value) more than 0.05 so they are normally distributed (total 7 items), where all 24 other items with significant level less than 0.05 are non-normally distributed. If the statistical significance value is more than 0.05, then it is interpreted as the data is not statistically significant from a normal distribution, so assumed as normally distributed. The results for the test of Normality makes an impact on the decision for the type

of further analysis. The researcher has chosen to do Spearman's Rho for non-normally distributed data and Pearson's Coefficient for normally distributed data.

The Test of Normality results for Factor Scores is shown Table 20 as sorted descending by name.

Table 19. Shapiro-Wilk test Results for Each Leadership Factor Scores (descending Sig.)

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	Distribution Type
WT_DECMAK	.064	86	.200*	.987	86	**.552**	Normal
WT_SOFT	.093	86	.064	.980	86	**.202**	Normal
WT_NILS	.059	86	.200*	.978	86	**.145**	Normal
WS_DECMAK	.089	86	.086	.976	86	**.115**	Normal
HS_NILS	.071	86	.200*	.973	86	**.072**	Normal
HT_NILS	.073	86	.200*	.973	86	**.069**	Normal
HS_DECMAK	.125	86	.002	.971	86	**.053**	Normal
HT_DECMAK	.108	86	.015	.970	86	.046	Non-Normal
WT_ENDOR	.112	86	.010	.969	86	.037	Non-Normal
WS_NILS	.079	86	.200*	.967	86	.027	Non-Normal
WT_QUEST	.106	86	.019	.966	86	.025x	Non-Normal
HT_QUEST	.067	86	.200*	.966	86	.025	Non-Normal
WT_AWA	.070	86	.200*	.965	86	.019	Non-Normal
HT_SOFT	.077	86	.200*	.964	86	.016	Non-Normal
HT_ENDOR	.116	86	.006	.959	86	.009	Non-Normal
HS_ENDOR	.096	86	.048	.956	86	.005	Non-Normal
HT_AWA	.094	86	.056	.953	86	.003	Non-Normal
WS_ENDOR	.083	86	.200*	.951	86	.003	Non-Normal
WT_CULT	.099	86	.037	.940	86	.001	Non-Normal
WS_SOFT	.134	86	.001	.940	86	.001	Non-Normal
HT_ADAPT	.113	86	.008	.929	86	.000	Non-Normal
HS_ADAPT	.147	86	.000	.899	86	.000	Non-Normal
HT_CULT	.148	86	.000	.897	86	.000	Non-Normal
HS_SOFT	.138	86	.000	.897	86	.000	Non-Normal
HS_CULT	.221	86	.000	.853	86	.000	Non-Normal
WS_CULT	.177	86	.000	.847	86	.000	Non-Normal

Table 19. "Continued"

Test of Normality	Kolmogorov-Smirnov[a]			Shapiro-Wilk			
WT_ADAPT	Statistic	df	Sig.	Statistic	df	Sig.	Distribution Type
WS_QUEST	.172	86	.000	.817	86	.000	Non-Normal
HS_QUEST	.191	86	.000	.811	86	.000	Non-Normal
WS_ADAPT	.228	86	.000	.810	86	.000	Non-Normal
HS_AWA	.229	86	.000	.777	86	.000	Non-Normal
WS_AWA	.338	86	.000	.586	86	.000	Non-Normal

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 20. Shapiro-Wilk test Results for Each Leadership Factor Score (descending name)

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
WT_SOFT	.093	86	.064	.980	86	.202
WT_QUEST	.106	86	.019	.966	86	.025
WT_NILS	.059	86	.200*	.978	86	.145
WT_ENDOR	.112	86	.010	.969	86	.037
WT_DECMAK	.064	86	.200*	.987	86	.552
WT_CULT	.099	86	.037	.940	86	.001
WT_AWA	.070	86	.200*	.965	86	.019
WT_ADAPT	.191	86	.000	.822	86	.000
WS_SOFT	.134	86	.001	.940	86	.001
WS_QUEST	.172	86	.000	.817	86	.000
WS_NILS	.079	86	.200*	.967	86	.027
WS_ENDOR	.083	86	.200*	.951	86	.003
WS_DECMAK	.089	86	.086	.976	86	.115
WS_CULT	.177	86	.000	.847	86	.000
WS_AWA	.338	86	.000	.586	86	.000
WS_ADAPT	.228	86	.000	.810	86	.000
HT_SOFT	.077	86	.200*	.964	86	.016
HT_QUEST	.067	86	.200*	.966	86	.025
HT_NILS	.073	86	.200*	.973	86	.069
HT_ENDOR	.116	86	.006	.959	86	.009
HT_DECMAK	.108	86	.015	.970	86	.046
HT_CULT	.148	86	.000	.897	86	.000

Table 20. “Continued”

TEST of NORMALITY	Kolmogorov-Smirnova Statistic	Kolmogorov-Smirnova df	Shapiro-Wilk Sig.	Shapiro-Wilk Statistic	Shapiro-Wilk df	Shapiro-Wilk Sig.
HT_AWA	.094	86	.056	.953	86	.003
HT_ADAPT	.113	86	.008	.929	86	.000
HS_SOFT	.138	86	.000	.897	86	.000
HS_QUEST	.191	86	.000	.811	86	.000
HS_NILS	.071	86	.200*	.973	86	.072
HS_ENDOR	.096	86	.048	.956	86	.005
HS_DECMAK	.125	86	.002	.971	86	.053
HS_CULT	.221	86	.000	.853	86	.000
HS_AWA	.229	86	.000	.777	86	.000
HS_ADAPT	.147	86	.000	.899	86	.000

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Shapiro-Wilk test results for each leadership questions are in Appendix I. It shows that all the response categories were statistically significantly different from a normally distributed data set with sig.=0.000. Shapiro-Wilk test results for the demographic questions are in Table 21. It shows that all the response categories were statistically significantly different from a

normally distributed data set with sig.=0.000

Table 21. Shapiro-Wilk test Results for Demographic Questions

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
AGE	.169	86	.000	.918	86	.000
SVCNUM	.436	86	.000	.615	86	.000
RNKNUM	.258	86	.000	.818	86	.000
ACTV	.161	86	.000	.968	86	**.032**
GRADNUM	.313	86	.000	.813	86	.000
HGRADNUM	.465	86	.000	.534	86	.000
CNTRYNUM	.368	86	.000	.767	86	.000

a. Lilliefors Significance Correction

Factor Reduction

Factor Reduction method was used to reduce the number of units for analysis. Because the data were non-normally distributed, bootstrapping is utilized to be able to obtain more accurate results. Bootstrapping draws repeated samples (of the same size) from the data at hand a large number of times in order to create a large pool for samples. Then it uses these samples to make estimates through statistical analysis.

The responders' answers for each leadership skills question is considered as an element. The elements corresponding the same leadership skill category (NILS, AWA, SOFT, QUEST, ADAPT, and CULT) were forced to load on one construct and result is saved as a factor score. As a result of performing factor loadings, the following construct was created and used in further steps of analysis. All the questions in relevant leadership skillset are loaded on one factor for each combination of environment and levels; WT, WS, HT, and HS. Each factor is named after the relevant skillset with the specific environment-level combination. All these are saved in SPSS as factor scores. For instance, Question numbers 1 to 5 with the category of "New Insights to Leadership" (coded as NILS) yielded 4 factor scores as WT_NILS, WS_NILS, HT_NILS and HS_NILS, and Question numbers 19 to 22 with the category of "Adaptability" (coded as ADAPT) yielded four (4) factor scores as WT_ADAPT,

WS_ADAPT, HT_ADAPT, and HS_ADAPT. This example can be populated for all other categories. As a result, a total of 32 factors are created for the analysis. Table 22 shows the question number for the survey question and relevant coding used in the analysis in combination with variables.

Table 22. Factor Score Codes Created and Named After the Corresponding Leadership Skill

Question Number	Related Emerging Leadership Skillset	Coding Factor Loadings
1-5	New Insights into Leadership	WT_NILS WS_NILS HT_NILS HS_NILS
6-9	Awareness	WT_AWA WS_ AWA HT_ AWA HS_ AWA
10-13	Soft Skills	WT_ SOFT WS_ SOFT HT_ SOFT HS_ SOFT
14-18	Questioning	WT_ QUEST WS_ QUEST HT_ QUEST HS_ QUEST
19-22	Adaptability	WT_ ADAPT WS_ ADAPT HT_ ADAPT HS_ ADAPT
23-25	Cultural Literacy	WT_ CULT

		WS_ CULT HT_ CULT HS_ CULT
26-31	Decision Making	WT_ DECMAK WS_ DECMAK HT_ DECMAK HS_ DECMAK
32-34	Endorsement of Others	WT_ ENDOR WS_ ENDOR HT_ ENDOR HS_ ENDOR

Construct Testing; Validity, Reliability, Communality

Factor Loadings for Construct Validity- Survey Responses

Construct validity measures the extent to which a tool, for example, a survey, is actually measuring the underlying concept (Gliner & Morgan, 2000). Factor Analysis (FA) is a method that can serve several purposes, including assessing the "psychometric properties of new and existing measures," as well as examining "construct validation" (Harrington, 2009, p. 2). Factor Analysis (FA) was conducted with leadership skills questions and responses. Factor loading values of at least 0.4 are considered adequate for this research and may be used to measure construct validity (MacCallum, Widaman, Zhang, & Hong, 1999).

Factor Loadings for Construct Validity- Survey Responses Smallest 0.761 which is greater than 0.4 Confirms Construct validity as shown in Appendix J. Factor Loadings for Factor Scores has the smallest value of 0.600 which is greater than 0.4, so confirms construct validity as shown in Table 23.

Table 23. Communalities for Factor Loadings (descending)

Communalities

	Initial	Extraction
HS_DECMAK	1.000	.892
HS_NILS	1.000	.872
WT_DECMAK	1.000	.845
HS_QUEST	1.000	.833
HS_SOFT	1.000	.826
WT_NILS	1.000	.824
HT_DECMAK	1.000	.821
HT_QUEST	1.000	.817
WS_ADAPT	1.000	.806
HS_ADAPT	1.000	.803
WS_DECMAK	1.000	.801
WS_NILS	1.000	.795
HT_ENDOR	1.000	.788
WT_ENDOR	1.000	.787
WT_ADAPT	1.000	.784
HT_SOFT	1.000	.783
WS_ENDOR	1.000	.775
WS_SOFT	1.000	.772
WT_CULT	1.000	.767
WT_QUEST	1.000	.762
HT_ADAPT	1.000	.744
WT_SOFT	1.000	.742

HS_ENDOR	1.000	.741
HT_NILS	1.000	.734
HT_AWA	1.000	.722
HT_CULT	1.000	.707
WT_AWA	1.000	.707
HS_CULT	1.000	.701
WS_QUEST	1.000	.697
WS_CULT	1.000	.685
HS_AWA	1.000	.634
WS_AWA	1.000	.600

Extraction Method: Principal Component Analysis.

Reliability- Cronbach's Alpha

The overall Kaiser-Meyer-Olkin (KMO) measure was also examined for sampling adequacy and Bartlett's Test of Sphericity was used to identify the strength of the correlation. A KMO greater than 0.6 and a significant Bartlett Test determined a large correlation between variables (Garson, 2013).

Reliability describes the ability of an instrument to replicate responses over repeated trials using the same instrument (Bordens, 2008). In research related to human dynamics, survey instruments are often employed, as they were in this research project. Cronbach's Alpha is a statistical methodology primarily used to determine the "internal consistency" of a survey instrument (Cortina, 1993, p. 100). Alpha scores greater than 0.5 are considered acceptable for this research (Ahire & Devaraj, 2001). The technique was applied to both the individual survey questions and Factor scores. A Chronbach's Alpha value of 0.645 meets the threshold test. When Chronbach's Alpha was applied to the factor scores set, a value of 0.913 was calculated. The value demonstrates strong internal reliability (Ahire & Devaraj, 2001). As the value of alpha approaches one, the strength of the internal reliability increases (Gliem, 2003).

In this research, Cronbach's Alpha which is one of the most common measures of internal consistency is used to test the reliability of the scales. Cronbach's Alpha can take values between 0 and 1. A high Cronbach's alpha indicates a high level of internal consistency for the

scale. This value indicates a strong internal consistency. Validity and reliability are among the strengths of research. In research, reliability refers to the level of internal consistency or stability of the measuring devices over time. Reliability is the consistency with which a measuring instrument yields a certain, consistent result when the entity being measured hasn't changed. If a measurement tool consistently assigns the same score with equal values, the measurement tool is considered reliable (Thanasegaran, 2009). The quality of research is necessarily dependent on the consistency with which the observations are made. Reliability is concerned with the consistency with which an instrument measures whatever it measures.

Validity KMO (sampling adequacy) and Barlett's Test of Sphericity (strength of correlation) KMO sampling adequacy is greater than 0.5 (KMO 0.645), and Bartlett's Test was less than 0.05 (*p*-value = 0.000) as seen in Figure 40.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.645
Bartlett's Test of Sphericity	Approx. Chi-Square	2046.260
	df	496
	Sig.	.000

Figure 40 KMO and Barlett's Test for Factor Loadings.

Nunnally (1978) considers an alpha value of 0.8 and above acceptable for ability tests. Kline (1999) argues that a cut-off point of 0.7 is more suitable, and further suggest that, for psychological constructs, values even below 0.7 can be realistically expected because of the diversity of construct being measured. George and Mallery (2003) provide the following rules of thumb: "_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 –Poor, and _ < .5 – Unacceptable."

Cronbach's Alpha value of 0.948 was calculated for the Factor Scores (136 items),

which shows strong internal reliability since it is close to 1. Cronbach's Alpha is close to 1 indicated that the questionnaire had an internal consistency with strong internal reliability as seen in Figure 41. The value demonstrates strong internal reliability (Ahire & Devaraj, 2001). As the value of alpha approaches one, the strength of the internal reliability increases (Gliem, 2003).

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.941	.948	136

Figure 41 Cronbach's Alpha Value for Each Leadership Questions

A reliability test is also conducted to factor scores and Cronbach's Alpha value of 0.913 was calculated for the Factor Scores (32 items). This also shows strong internal reliability and internal consistency because the value is close to 1 as seen in Figure 42. The value also demonstrates strong internal reliability (Ahire & Devaraj, 2001) for the factor scores. As the value of alpha approaches one, the strength of the internal reliability increases (Gliem, 2003).

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.913	.913	32

Figure 42 Cronbach's Alpha value for Factor Scores

ANOVA Analysis

Rank was organized in four categories [1(Junior-JUN), 2(Medium-MED), 3(Senior-SEN), and 4(Retired-R)] to see if there is any statistical significance in the variances. The name of these categories is coded as RNKNUM.

Test of Homogeneity of Variances RNKNUM

When the test of homogeneity of variances is investigated, six leadership skill factor (in a varying combination of organizational level and security environment) score made the cut for the further investigation as presented in Table 24. The significance value was below 0.05 for all the items. This result means that at least one of the groups (in RNKNUM) is statistically different from others, however, we need to do a further evaluation to decide which one.

Table 24. Test of Homogeneity of Variances results by RNKNUM

Skill-Factor Score *based on Means*	**Levene's Stats**	**df1**	**df2**	**sig**
WS_NILS	2.840	3	83	0.043
HT_CULT	9.947	3	83	0.000
HS_CULT	**1.424**	**3**	**83**	**0.006**
WS_DECMAK	9.681	3	83	0.000
HS_DECMAK	2.825	3	83	0.044
WS_ENDOR	0.928	3	83	0.037

ANOVA RNKNUM

WT_NILS, WT_AWA, WT_SOFT, and HS_CULT is statistically significant in terms of the between groups (significance is less than 0.05). The only element that showed up in both Test of Homogeneity of Variances and ANOVA test is HS_CULT in the bold. Table 25 shows the ANOVA analysis results.

Table 25. ANOVA Results

Skills		Sum of squares	Df	Mean square	F	sig
WT_NILS	Between Groups	18.679	3	6.226	7.698	0.000
WT_AWA	Between Groups	8.212	3	2.737	2.923	0.039
WT_SOFT	Between Groups	9.816	3	3.272	3.569	0.018
HS_CULT	**Between Groups**	**7.848**	**3**	**2.616**	**2.781**	**0.046**

ANOVA RNKNUM Robust test of Equality of Means -RNKNUM

The results of Robust test of equality of means are shown in Table 26. WT_NILS, WT_AWA, WT_SOFT, HS_CULT, WS_DECMAK has a significance value that is less than 0.05. All skills except WS_DECMAK are also shown in ANOVA analysis.

Table 26. Robust test of equality of means (by RNKNUM)

Skills		statistic	Df1	Df2	sig
WT_NILS	Welch	7.967	3	33.814	0.000
	Brown-Forsythe	7.396	3	60.664	0.000
WT_AWA	Welch	6.022	3	37.575	0.002
	Brown-Forsythe	3.169	3	56.940	0.031
WT_SOFT	Welch	3.707	3	34.432	0.021
	Brown-Forsythe	3.544	3	61.609	0.020
HS_CULT	Welch	3.396	3	36.325	0.028
	Brown-Forsythe	2.805	3	58.127	0.048
WS_DECMAK	Welch	3.174	3	41.580	0.034
	Brown-Forsythe	1.788	3	76.383	0.157

ANOVA Post Hoc Test (Multiple Comparison-TUKEY HSD, LSD)

The post-hoc test is conducted, and TUKEY HSD and LSD results are investigated to see if the variances between any groups were statistically significant. Table 27 shows the

results.

Table 27. Multiple Comparisons Table (by RNKNUM)

		(i) RNKNUM	**(j) RNKNUM**	**Sig.**
WT_NILS	TUKEY HSD	1	4	0.001
		3	4	0.002
	LSD	1	2	0.034
		1	4	0.000
		3	4	0.000
WS_NILS	LSD	1	4	0.018
HT_NILS	LSD	1	3	0.029
	LSD	1	4	0.042
HS_NILS	LSD	1	2	0.019
	LSD	1	3	0.019
	LSD	1	4	0.047
WT_AWA	TUKEY HSD	1	2	0.030
	LSD	1	2	0.006
	LSD	1	4	0.012
WT_SOFT	TUKEY HSD	1	2	0.026
	TUKEY HSD	1	4	0.028
	LSD	1	2	0.005
	LSD	1	4	0.006
HT_ADAPT	LSD	2	3	0.027
	LSD	2	4	0.021
HT_CULT	LSD	2	4	0.011
HS_CULT	TUKEY HSD	3	1	0.038

	LSD	3	1	0.008
	LSD	3	4	0.039
HT_ENDOR	LSD	1	4	0.040

When these results are investigated, it clearly shows that there is a statistical difference the way the retired military members think about leadership skills different than the ones who are still serving. They differ, from the active military members especially WT_NILS, WT_AWA, WT_SOFT, and HS_CULT that are bolded in the table. This is a very interesting finding in a way that it shows the positive support and endorsement of the retired personnel even in war environment at a tactical level. The war-tactical environment is the most difficult environment one a leader can be in regard to the nature of warfare, but retired personnel thinks that these skills must even be employed in such conditions. On the other hand, it is understandable that active duty personnel can be reluctant on these skills due the fact that they have a task to achieve in one of the toughest environment one leader might have to lead. There is no trial and error space for new ideas to test, so they are more likely to go with the traditional ways. They are also under the influence of culture, and regulations.

Pearson's Coefficient

The seven items (WT_DECMAK, WS_DECMAK, HS_DECMAK, WT_NILS, HT_NILS, HS_NILS, WT_SOFT) that were identified as being "normally distributed" were tested against Pearson's Coefficients. The correlation table for these items are shown in Appendix K. In the table, the Correlation that is significant at the 0.01 level (2-tailed) is denoted with **, and the Correlation that is significant at the 0.05 level (2-tailed) is denoted with *. The correlations that are significant are presented in Table 28.

Table 28. Pearson's Coefficient for Normally Distributed Data

Pearson Correlations

		WT_DECMAK	WS_DECMAK	HS_DECMAK	WT_NILS	HT_NILS	HS_NILS	WT_SOFT	AGE	ACTV
WT_DECMAK	Pearson Correlation	1	**.322****	**.328****				**.388****		
	Sig. (2-tailed)		**.002**	**.002**				**.000**		
WS_DECMAK	Pearson Correlation	**.322****	1	**.766****						
	Sig. (2-tailed)	**.002**		**.000**						
HS_DECMAK	Pearson Correlation	**.328****	**.766****	1		**.225***				
	Sig. (2-tailed)	**.002**	**.000**			.038				
WT_NILS	Pearson Correlation				1	**.444****	**.307****	**.290****	**-.433****	**-.271***
	Sig. (2-tailed)					**.000**	**.004**	**.007**	**.000**	**.012**
HT_NILS	Pearson Correlation			**.225***	**.444****	1	**.665****	**.371****	**-.248***	**-.220***
	Sig. (2-tailed)			**.038**	**.000**		**.000**	**.000**	**.021**	**.042**
HS_NILS	Pearson Correlation				**.307****	**.665****	1			
	Sig. (2-tailed)				**.004**	**.000**				
WT_SOFT	Pearson Correlation	**.388****			**.290****	**.371****		1		
	Sig. (2-tailed)	**.000**			**.007**	**.000**				
AGE	Pearson Correlation				**-.433****	**-.248***		**-.259***	1	**.794****
	Sig. (2-tailed)				**.000**	**.021**		**.016**		**.000**
ACTV	Pearson Correlation				-.271*	-.220*			.794**	1
	Sig. (2-tailed)				**.012**	**.042**			**.000**	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The table shows that there is a correlation between leadership skills application in different environments. The results are presented in the above matrix are interpreted as in the following. The highest correlations are found in DECMAK leadership skillset in WAR environment between strategical and tactical level and SOFT leadership skillset between AGE and ACTV.

WT_DECMAK

There is a low correlation (r=0,322, p=0.002) between the two variables T and S in WAR

WS DECMAK

There is a high correlation (r=0,766, p=0.000) between the two variables W and H in STR

HS DECMAK

There is a low correlation (r=0,225, p=0.038) between the two variables S and T in HUM

WT_NILS

There is a med correlation (r=0,444, p=0.000) between the two variables W and H in TAC

HT_NILS

There is a high correlation (r=0,665, p=0.000) between the two variables S and T in HUM

AGE

There is a negative med correlation (r= - 0, 433, p=0.000) between the two variables Age and WT_NILS

There is a negative low correlation (r= -0, 248, p=0.021) between the two variables Age and HT_NILS

There is a negative low correlation (r= -0, 259, p= 0.016) between the two variables Age and WT_SOFT

There is a high correlation (r=0, 794, p=0.000) between the two variables Age and ACTV

Spearman's Rho

The Spearman correlation measures the degree to which the relationship between two variables is generally one-directional or monotonic" - this is a suitable definition for the technique and fits the needs of this research (Gravetter & Wallnau, 1985). Another attraction of this method is that it does not require a specific data distribution to create correlations.

Finally, Spearman works well with large and small samples (Gravetter & Wallnau, 1985). The questions that are constructed to measure the perception of emerging leadership skills by military officers require a ranked response (Likert scale 1-5) to indicate the respondent's preference. Since the numbers are ordinal numbers and also, they are non-normally distributed, the best method to determine the correlation among the responses decided to be Spearman's Rho. Figure 43 shows the correlations between the factor scores and demographic questions with ordinal responses (ACTV and AGE) Number of significant correlations with Sig(2-tailed) > 0.05 and Number of significant correlations with Sig(2-tailed) > 0.01 are shown.

Correlations

			WT_SOFT	WS_NILS	WT_AWA	WS_AWA	HT_AWA	HS_AWA	WS_SOFT	HT_SOFT	HS_SOFT	WT_QUEST	WS_QUEST	HT_QUEST	HS_QUEST	WT_ADAPT	WS_ADAPT	HT_ADAPT	HS_ADAPT	WT_CULT	WS_CULT	HT_CULT	HS_CULT	HT_DECMAK	WT_ENDOR	WS_ENDOR	HT_ENDOR	HS_ENDOR	AGE	ACTV
Spearmans rho	WT_SOFT	Correlation Coefficient	1.000	0.209	.598**	.298**	.484**	0.208	.356**	.462**	0.093	.553**	0.132	.486**	0.086	.333**	.306**	.400**	0.208	.576**	.342**	.327**	.268*	.258*	.341**	0.078	.372**	0.209	-0.132	-0.034
		Sig. (2-tailed)		0.054	0.000	0.005	0.000	0.055	0.001	0.000	0.396	0.000	0.224	0.000	0.431	0.002	0.004	0.000	0.055	0.000	0.001	0.002	0.013	0.016	0.001	0.474	0.000	0.054	0.227	0.759
	WS_NILS	Correlation Coefficient	0.209	1.000	0.175	0.160	0.161	-0.032	0.167	.232*	0.021	0.021	0.048	.277**	0.188	0.095	-0.003	0.151	-0.015	0.016	0.090	0.046	0.024	0.085	0.029	.301**	0.050	0.197	-0.117	-0.011
		Sig. (2-tailed)	0.054		0.107	0.140	0.138	0.772	0.125	0.031	0.844	0.848	0.658	0.010	0.083	0.384	0.976	0.165	0.892	0.881	0.412	0.674	0.824	0.439	0.794	0.005	0.646	0.068	0.283	0.921
	WT_AWA	Correlation Coefficient	.598**	0.175	1.000	.284**	.661**	0.157	.226*	.364**	0.189	.486**	0.061	.437**	0.124	.333**	.278**	.266**	0.189	.485**	.322**	.442**	.352**	.251*	0.161	0.077	.292**	0.147	-.235*	-0.209
		Sig. (2-tailed)	0.000	0.107		0.008	0.000	0.150	0.036	0.001	0.082	0.000	0.580	0.000	0.257	0.002	0.010	0.013	0.081	0.000	0.002	0.000	0.001	0.020	0.139	0.481	0.006	0.176	0.029	0.054
	WS_AWA	Correlation Coefficient	.298**	0.160	.284**	1.000	.368**	.689**	.349**	.244*	.516**	.270**	.323**	.272**	.288**	0.197	.457**	.316**	.468**	.433**	.457**	.381**	.330**	0.184	0.184	.250*	0.158	.262*	-.224*	0.016
		Sig. (2-tailed)	0.005	0.140	0.008		0.000	0.000	0.001	0.024	0.000	0.012	0.002	0.011	0.007	0.069	0.000	0.003	0.000	0.000	0.000	0.000	0.002	0.089	0.089	0.020	0.147	0.015	0.038	0.885
	HT_AWA	Correlation Coefficient	.484**	0.161	.661**	.368**	1.000	.432**	0.153	.450**	.259*	.467**	0.154	.605**	.268*	.397**	.264*	.515**	.286**	.494**	.374**	.573**	.343**	.409**	.275*	.222*	.341**	.219*	0.069	0.109
		Sig. (2-tailed)	0.000	0.138	0.000	0.000		0.000	0.160	0.000	0.016	0.000	0.157	0.000	0.013	0.000	0.014	0.000	0.008	0.000	0.000	0.000	0.001	0.000	0.010	0.040	0.001	0.043	0.528	0.318
	HS_AWA	Correlation Coefficient	0.208	-0.032	0.157	.689**	.432**	1.000	.308**	0.170	.547**	.299**	.353**	.282**	.401**	0.138	.525**	.417**	.636**	.418**	.444**	.455**	.478**	0.211	.222*	.258*	0.204	.233*	-0.086	0.121
		Sig. (2-tailed)	0.055	0.772	0.150	0.000	0.000		0.004	0.118	0.000	0.005	0.001	0.008	0.000	0.205	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.051	0.040	0.017	0.059	0.031	0.431	0.267
	WS_SOFT	Correlation Coefficient	.356**	0.167	.226*	.349**	0.153	.308**	1.000	0.190	.600**	.228*	.434**	0.051	.245*	0.167	.340**	0.172	.316**	.262*	.409**	0.192	.381**	0.065	0.130	.276**	-0.001	.267*	-0.141	0.049
		Sig. (2-tailed)	0.001	0.125	0.036	0.001	0.160	0.004		0.080	0.000	0.035	0.000	0.644	0.023	0.125	0.001	0.112	0.003	0.015	0.000	0.076	0.000	0.554	0.231	0.010	0.989	0.013	0.197	0.653
	HT_SOFT	Correlation Coefficient	.462**	.232*	.364**	.244*	.450**	0.170	0.190	1.000	.368**	.333**	0.117	.550**	0.212	.321**	0.069	.357**	0.077	.259*	.250*	.434**	.282**	.438**	0.182	0.139	.392**	0.163	0.009	0.044
		Sig. (2-tailed)	0.000	0.031	0.001	0.024	0.000	0.118	0.080		0.000	0.002	0.282	0.000	0.050	0.003	0.527	0.001	0.479	0.016	0.020	0.000	0.009	0.000	0.093	0.203	0.000	0.133	0.935	0.690
	HS_SOFT	Correlation Coefficient	0.093	0.021	0.189	.516**	.259*	.547**	.600**	.368**	1.000	.248*	.348**	0.186	.300**	0.173	.328**	.241*	.388**	.329**	.492**	.420**	.456**	0.156	0.115	.287**	0.057	.238*	-0.127	0.007
		Sig. (2-tailed)	0.396	0.844	0.082	0.000	0.016	0.000	0.000	0.000		0.021	0.001	0.087	0.005	0.112	0.002	0.026	0.000	0.002	0.000	0.000	0.000	0.150	0.290	0.007	0.601	0.028	0.242	0.952
	WT_QUEST	Correlation Coefficient	.553**	0.021	.486**	.270**	.467**	.299**	.228*	.333**	.248*	1.000	.336**	.625**	0.159	.462**	.396**	.467**	.281**	.500**	.267**	.351**	.230**	.400**	.519**	0.197	.366**	0.177	-0.186	-0.085
		Sig. (2-tailed)	0.000	0.848	0.000	0.012	0.000	0.005	0.035	0.002	0.021		0.002	0.000	0.142	0.000	0.000	0.000	0.009	0.000	0.013	0.001	0.034	0.000	0.000	0.070	0.001	0.103	0.086	0.437
	WS_QUEST	Correlation Coefficient	0.132	0.048	0.061	.323**	0.154	.353**	.434**	0.117	.348**	.336**	1.000	.258*	.688**	0.086	.444**	0.156	.415**	0.089	.278**	0.068	.295**	.270**	.269**	.254*	0.188	0.171	-.214*	-0.132
		Sig. (2-tailed)	0.224	0.658	0.580	0.002	0.157	0.001	0.000	0.282	0.001	0.002		0.017	0.000	0.429	0.000	0.153	0.000	0.416	0.009	0.534	0.006	0.012	0.012	0.018	0.083	0.115	0.047	0.227
	HT_QUEST	Correlation Coefficient	.486**	.277**	.437**	.272**	.605**	.282**	0.051	.550**	0.186	.625**	.258*	1.000	.494**	.442**	.294**	.643**	.305**	.375**	0.159	.496**	.318**	.542**	.461**	.235*	.622**	.278**	0.002	0.050
		Sig. (2-tailed)	0.000	0.010	0.000	0.011	0.000	0.008	0.644	0.000	0.087	0.000	0.017		0.000	0.000	0.006	0.000	0.004	0.000	0.145	0.000	0.003	0.000	0.000	0.029	0.000	0.010	0.987	0.651
	HS_QUEST	Correlation Coefficient	0.086	0.188	0.124	.288*	.268*	.401**	.245*	0.212	.300**	0.159	.688**	.494**	1.000	0.084	.313**	.300**	.410**	0.046	0.163	.218*	.377**	.336**	.216*	.244*	.388**	.299**	-0.142	-0.067
		Sig. (2-tailed)	0.431	0.083	0.257	0.007	0.013	0.000	0.023	0.050	0.005	0.142	0.000	0.000		0.441	0.003	0.005	0.000	0.673	0.135	0.043	0.000	0.002	0.046	0.023	0.000	0.005	0.192	0.540
	WT_ADAPT	Correlation Coefficient	.333**	0.095	.333**	0.197	.397**	0.138	0.167	.321**	0.173	.462**	0.086	.442**	0.084	1.000	0.170	.659**	0.177	.423**	0.135	.215*	0.072	.288**	.390**	0.056	.230*	0.106	-0.012	0.013
		Sig. (2-tailed)	0.002	0.384	0.002	0.069	0.000	0.205	0.125	0.003	0.112	0.000	0.429	0.000	0.441		0.117	0.000	0.103	0.000	0.215	0.047	0.508	0.007	0.000	0.610	0.033	0.332	0.915	0.902
	WS_ADAPT	Correlation Coefficient	.306**	-0.003	.278**	.457**	.264*	.525**	.340**	0.069	.328**	.396**	.444**	.294**	.313**	0.170	1.000	.302**	.800**	.425**	.576**	.281**	.489**	.308**	.321**	.333**	.241*	.357**	-0.106	0.002
		Sig. (2-tailed)	0.004	0.976	0.010	0.000	0.014	0.000	0.001	0.527	0.002	0.000	0.000	0.006	0.003	0.117		0.005	0.000	0.000	0.000	0.009	0.000	0.004	0.003	0.002	0.026	0.001	0.333	0.984
	HT_ADAPT	Correlation Coefficient	.400**	0.151	.266**	.316**	.515**	.417**	0.172	.357**	.241*	.467**	0.156	.643**	.300**	.659**	.302**	1.000	.498**	.512**	0.130	.477**	.253*	.553**	.407**	0.160	.416**	.241*	0.082	0.155
		Sig. (2-tailed)	0.000	0.165	0.013	0.003	0.000	0.000	0.112	0.001	0.026	0.000	0.153	0.000	0.005	0.000	0.005		0.000	0.000	0.234	0.000	0.019	0.000	0.000	0.142	0.000	0.025	0.454	0.154
	HS_ADAPT	Correlation Coefficient	0.208	-0.015	0.189	.468**	.286**	.636**	.316**	0.077	.388**	.281**	.415**	.305**	.410**	0.177	.800**	.498**	1.000	.376**	.469**	.358**	.518**	.285**	.217*	.335**	.229*	.341**	-0.052	0.067
		Sig. (2-tailed)	0.055	0.892	0.081	0.000	0.008	0.000	0.003	0.479	0.000	0.009	0.000	0.004	0.000	0.103	0.000	0.000		0.000	0.000	0.001	0.000	0.008	0.045	0.002	0.034	0.001	0.637	0.540
	WT_CULT	Correlation Coefficient	.576**	0.016	.485**	.433**	.494**	.418**	.262*	.259*	.329**	.500**	0.089	.375**	0.046	.423**	.425**	.512**	.376**	1.000	.509**	.525**	0.189	0.211	.371**	0.189	.375**	.221*	-0.150	-0.029
		Sig. (2-tailed)	0.000	0.881	0.000	0.000	0.000	0.000	0.015	0.016	0.002	0.000	0.416	0.000	0.673	0.000	0.000	0.000	0.000		0.000	0.000	0.081	0.052	0.000	0.082	0.000	0.041	0.169	0.790
	WS_CULT	Correlation Coefficient	.342**	0.090	.322**	.457**	.374**	.444**	.409**	.250*	.492**	.267**	.278**	0.159	0.163	0.135	.576**	0.130	.469**	.509**	1.000	.288**	.611**	0.104	0.194	.241*	0.150	.262*	-0.162	0.056
		Sig. (2-tailed)	0.001	0.412	0.002	0.000	0.000	0.000	0.000	0.020	0.000	0.013	0.009	0.145	0.135	0.215	0.000	0.234	0.000	0.000		0.007	0.000	0.340	0.074	0.026	0.169	0.015	0.137	0.607
	HT_CULT	Correlation Coefficient	.327**	0.046	.442**	.381**	.573**	.455**	0.192	.434**	.420**	.351**	0.068	.496**	.218*	.215*	.281**	.477**	.358**	.525**	.288**	1.000	.559**	.467**	0.127	0.191	.329**	.237*	0.050	0.066
		Sig. (2-tailed)	0.002	0.674	0.000	0.000	0.000	0.000	0.076	0.000	0.000	0.001	0.534	0.000	0.043	0.047	0.009	0.000	0.001	0.000	0.007		0.000	0.000	0.243	0.078	0.002	0.028	0.650	0.548
	HS_CULT	Correlation Coefficient	.268*	0.024	.352**	.330**	.343**	.478**	.381**	.282**	.456**	.230**	.295**	.318**	.377**	0.072	.489**	.253*	.518**	0.189	.611**	.559**	1.000	.279**	0.042	0.114	0.211	.245*	-0.140	-0.019
		Sig. (2-tailed)	0.013	0.824	0.001	0.002	0.001	0.000	0.000	0.009	0.000	0.034	0.006	0.003	0.000	0.508	0.000	0.019	0.000	0.081	0.000	0.000		0.009	0.703	0.296	0.052	0.023	0.199	0.863
	HT_DECMAK	Correlation Coefficient	.258*	0.085	.251*	0.184	.409**	0.211	0.065	.438**	0.156	.400**	.270**	.542**	.336**	.288**	.308**	.553**	.285**	0.211	0.104	.467**	.279**	1.000	.270**	.230**	.413**	.327**	0.028	-0.010
		Sig. (2-tailed)	0.016	0.439	0.020	0.089	0.000	0.051	0.554	0.000	0.150	0.000	0.012	0.000	0.002	0.007	0.004	0.000	0.008	0.052	0.340	0.000	0.009		0.012	0.033	0.000	0.002	0.797	0.926
	WT_ENDOR	Correlation Coefficient	.341**	0.029	0.161	0.184	.275*	.222*	0.130	0.182	0.115	.519**	.269**	.461**	.216*	.390**	.321**	.407**	.217*	.371**	0.194	0.127	0.042	.270**	1.000	.354**	.662**	.270**	-0.078	0.101
		Sig. (2-tailed)	0.001	0.794	0.139	0.089	0.010	0.040	0.231	0.093	0.290	0.000	0.012	0.000	0.046	0.000	0.003	0.000	0.045	0.000	0.074	0.243	0.703	0.012		0.001	0.000	0.012	0.477	0.357
	WS_ENDOR	Correlation Coefficient	0.078	.301**	0.077	.250*	.222*	.258*	.276**	0.139	.287**	0.197	.254*	.235*	.244*	0.056	.333**	0.160	.335**	0.189	.241*	0.191	0.114	.230*	.354**	1.000	.256*	.717**	-0.085	0.009
		Sig. (2-tailed)	0.474	0.005	0.481	0.020	0.040	0.017	0.010	0.203	0.007	0.070	0.018	0.029	0.023	0.610	0.002	0.142	0.002	0.082	0.026	0.078	0.296	0.033	0.001		0.017	0.000	0.435	0.931
	HT_ENDOR	Correlation Coefficient	.372**	0.050	.292**	0.158	.341**	0.204	-0.001	.392**	0.057	.366**	0.188	.622**	.388**	.230*	.241*	.416**	.229*	.375**	0.150	.329**	0.211	.413**	.662**	.256*	1.000	.414**	-0.130	-0.027
		Sig. (2-tailed)	0.000	0.646	0.006	0.147	0.001	0.059	0.989	0.000	0.601	0.001	0.083	0.000	0.000	0.033	0.026	0.000	0.034	0.000	0.169	0.002	0.052	0.000	0.000	0.017		0.000	0.233	0.803
	HS_ENDOR	Correlation Coefficient	0.209	0.197	0.147	.262*	.219*	.233*	.267*	0.163	.238*	0.177	0.171	.278**	.299**	0.106	.357**	.241*	.341**	.221*	.262*	.237*	.245*	.327**	.270**	.717**	.414**	1.000	-0.172	-0.087
		Sig. (2-tailed)	0.054	0.068	0.176	0.015	0.043	0.031	0.013	0.133	0.028	0.103	0.115	0.010	0.005	0.332	0.001	0.025	0.001	0.041	0.015	0.028	0.023	0.002	0.012	0.000	0.000		0.114	0.427
	AGE	Correlation Coefficient	-0.132	-0.117	-.235*	-.224*	0.069	-0.086	-0.141	0.009	-0.127	-0.186	-.214*	0.002	-0.142	-0.012	-0.106	0.082	-0.052	-0.150	-0.162	0.050	-0.140	0.028	-0.078	-0.085	-0.130	-0.172	1.000	.849**
		Sig. (2-tailed)	0.227	0.283	0.029	0.038	0.528	0.431	0.197	0.935	0.242	0.086	0.047	0.987	0.192	0.915	0.333	0.454	0.637	0.169	0.137	0.650	0.199	0.797	0.477	0.435	0.233	0.114		0.000
	ACTV	Correlation Coefficient	-0.034	-0.011	-0.209	0.016	0.109	0.121	0.049	0.044	0.007	-0.085	-0.132	0.050	-0.067	0.013	0.002	0.155	0.067	-0.029	0.056	0.066	-0.019	-0.010	0.101	0.009	-0.027	-0.087	.849**	1.000
		Sig. (2-tailed)	0.759	0.921	0.054	0.885	0.318	0.267	0.653	0.690	0.952	0.437	0.227	0.651	0.540	0.902	0.984	0.154	0.540	0.790	0.607	0.548	0.863	0.926	0.357	0.931	0.803	0.427	0.000	

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Figure 43. Spearman's Rho Correlations

SPEARMAN Findings

The statistically significant correlation extracted from the table are presented here.

AWA

There is high correlation (0,689) between W and H in STR

There is a high correlation (0,661) between H and W in TAC

There is a medium correlation (0,432) between S and T in HUM

There is a low correlation (0,284) between T and S in WAR

SOFT

There is a high correlation (0,600) between W and H in STR

There is a low correlation (0,368) between T and S in HUM

There is a low correlation (0,356) between T and S in WAR

QUEST

There is high Correlation (0,688) between W and H in STR

There is a high correlation (0,625) between W and H in TAC

There is a high correlation (0,625) between W and H in TAC

There is a medium correlation (0,498) between S and T in HUM

There is a low correlation (0,336) between T and S in WAR

ADAPT

There is a high correlation (0,800) between W and H in STR

There is a high correlation (0,659) between W and H in TAC

There is a medium correlation (0,498) between S and T in HUM

No Correlation between S and T in WAR

CULT

There is a high correlation (0,611) between W and H in STR

There is a high correlation (0,559) between S and T in HUM

There is a high correlation (0,525) between W and H in TAC

There is a medium correlation (0,525) between S and T in WAR

There is a medium correlation (0,509) between H and W in TAC

ENDOR

There is a high correlation (0,717) between W and H in STR

There is a high correlation (0,662) between H and W in TAC

There is a medium correlation (0,414) between S and T in HUM

There is a low correlation (0,354) between S and T in WAR

Hypothesis Testing

The examination of the previous section for correlations and ANOVA analysis led the following Hypothesis test results.

H_1: No significant relationship exists between military officers' perception of leadership skills in ***War*** *environment and organization levels*

This hypothesis is rejected. The following relationships are the identified correlations (Pearson's Correlations) between strategic and tactical levels in War environment

DECMAK skill shows a significant correlation (rho=0.332, p=0.002) at the 0.01 level (2-tailed) between WT_DECMAK and WS_DECMAK [Pearson]

AWA shows a significant correlation (rho=0.284, p=0.008) at the 0.01 level (2-tailed) between WT_AWA and WS_AWA [Spearman]

SOFT shows a significant correlation (rho=0.356, p=0.001) at the 0.01 level (2-tailed) between WT_SOFT and WS_SOFT [Spearman]

QUEST shows a significant correlation (rho=0.336, p=0.002) at the 0.01 level (2-tailed) between WT_QUEST and WS_QUEST [Spearman]

CULT shows a significant correlation (rho=0.611, p=0.000) at the 0.01 level (2-tailed) between WT_CULT and WS_CULT [Spearman]

ENDOR shows a significant correlation (rho=0.354, p=0.001) at the 0.01 level (2-tailed) between WT_ENDOR and WS_ENDOR [Spearman]

H_2: No significant relationship exists between military officers' perception of leadership skills in ***Humanitarian*** *environment and organization levels*

This hypothesis is rejected. The following relationships are the identified correlations (Pearson's Correlations) between war and humanitarian environment in strategic level

NILS shows a significant correlation (r_s=0.665, p=0.000) at the 0.01 level (2-tailed) between HS_NILS and HT_NILS [Pearson]

AWA shows a significant correlation (rho=0.432, p=0.000) at the 0.01 level (2-tailed) between HT_AWA and HS_AWA [Spearman]

SOFT shows a significant correlation (rho=0.368, p=0.000) at the 0.01 level (2-tailed) between HT_SOFT and HS_SOFT [Spearman]

QUEST shows a significant correlation (rho=0.494, p=0.000) at the 0.01 level (2-tailed) between HT_QUEST and HS_QUEST [Spearman]

ADAPT shows a significant correlation (rho=0.498, p=0.000) at the 0.01 level (2-tailed) between HT_ADAPT and HS_ADAPT [Spearman]

CULT shows a significant correlation (rho=0.559, p=0.000) at the 0.01 level (2-tailed) between HT_CULT and HS_CULT [Spearman]

ENDOR shows a significant correlation (rho=0.414, p=0.000) at the 0.01 level (2-tailed) between HT_ENDOR and HS_ENDOR [Spearman]

H_3: No significant relationship exists between military officers' perception of leadership skills in ***Tactical*** *level and different security environments*

This hypothesis is rejected. The following relationships are the identified correlations (Pearson's Correlations) between war and humanitarian environment in strategic level

DECMAK shows a significant correlation (r_s =0.225, p=0.038) at the 0.05 level (2-tailed) between HS_DECMAK and HT_DECMAK [Pearson]

NILS shows a significant correlation (rho=0.444, p=0.000) at the 0.01 level (2-tailed) between WT_NILS and HT_NILS [Pearson]

AWA shows a significant correlation (rho=0.661, p=0.000) at the 0.01 level (2-tailed) between HT_AWA and WT_AWA [Spearman]

QUEST shows a significant correlation (rho=0.625, p=0.000) at the 0.01 level (2-tailed) between WT_QUEST and HT_QUEST [Spearman]

ADAPT shows a significant correlation (rho=0.659, p=0.000) at the 0.01 level (2-tailed) between WT_ADAPT and HT_ADAPT [Spearman]

CULT shows a significant correlation (rho=0.525, p=0.000) at the 0.01 level (2-tailed) between WT_CULT and HT_CULT [Spearman]

ENDOR shows a significant correlation (rho=0.662, p=0.000) at the 0.01 level (2-tailed) between WT_ENDOR and HT_ENDOR [Spearman]

H_4: No significant relationship exists between military officers' perception of leadership skills in ***Strategic*** *level and different security environments*

This hypothesis is rejected. The following relationships are the identified correlations (Pearson's Correlations) between war and the humanitarian environment in strategic level

DECMAK shows a significant correlation (r_s =0.766, p=0.000) at the 0.01 level (2-tailed) between WS_DECMAK and HS_DECMAK [Pearson]

AWA shows a significant correlation (rho=0.689, p=0.000) at the 0.01 level (2-tailed) between WS_AWA and HS_AWA [Spearman]

SOFT shows a significant correlation (rho=0.600, p=0.000) at the 0.01 level (2-tailed) between WS_SOFT and HS_SOFT [Spearman]

QUEST shows a significant correlation (rho=0.688, p=0.000) at the 0.01 level (2-tailed) between WS_QUEST and HS_QUEST [Spearman]

ADAPT shows a significant correlation (rho=0.800, p=0.000) at the 0.01 level (2-tailed) between WS_ADAPT and HS_ADAPT [Spearman]

CULT shows a significant correlation (rho=0.611, p=0.000) at the 0.01 level (2-tailed) between WS_CULT and HS_CULT [Spearman]

ENDOR shows a significant correlation (rho=0.717, p=0.000) at the 0.01 level (2-tailed) between WS_ENDOR and HS_ENDOR [Spearman]

H_5: No significant relationship exists between military officers' **rank** and their leadership skills perception in *different levels and different security environments*

This hypothesis is rejected. ANOVA results show that relationships exist between ranks of respondents and their perception of skills in a specified environment and level. The perception of retired military members in regard to application of these skills statistically significantly differ from those in active duty. Table 29 summaries the all five Hypothesis, analysis method employed, and the result of Hypothesis testing.

Table 29. Summary of Hypothesis Test Results

Hypothesis	Analysis	Result
H_1: No significant relationship exists between military officers' perception of leadership skills in ***War*** *environment and organization levels*	Correlation (Pearson /Spearman)	Rejected
H_2: No significant relationship exists between military officers' perception of leadership skills in ***Humanitarian assistance*** *environment and organization levels*	Correlation (Pearson /Spearman)	Rejected
H_3: No significant relationship exists between military officers' perception of leadership skills in ***Tactical*** *level and different security environments*	Correlation (Pearson /Spearman)	Rejected
H_4: No significant relationship exists between military officers' perception of leadership skills in ***Strategic*** *level and different security environments*	Correlation (Pearson /Spearman)	Rejected
H_5: No significant relationship exists between military officers' **rank** and their leadership skills perception in *different levels and different security environments*	ANOVA	Rejected

External Validation of Results

Face validity is defined as a test to determine whether an instrument "appears to be appropriate" for its intended use. As a stand-alone measure, face validity is insufficient; however, in combination with other measures, it can reinforce the overall validity of the instrument (Gliner & Morgan, 2000, p. 320). The research findings were shared with a group of experts (ex-military and engineers) who are expert in leadership and organizational culture. Their inputs about the organizational level and security environment effect on how to apply the leadership skills are in parallel with the research findings. The participants believe that although the leadership skills identified in this research make sense and very important, the list can definitely be extended to include more skills. They also pointed out the difficulty of

implementing some of these skills in the military environment due to its unique culture, but they believe that it is the organizational responsibility to create the necessary environment and organizational functions to flourish such skills. They agree that it makes perfect sense that different combination of organizational levels and security environment requires the different implementation of these skills in term of frequency and intensity.

CHAPTER 5

CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS

5.1 Comprehensive Summary

Here is the summary of the dissertation chapters up to Chapter 5 Conclusion, recommendations and implications.

Chapter 1 is an introduction to the dissertation as a whole entity for the reader. It outlines the fundamentals and origins of this research though problem statement, the purpose of the research, research questions, and significance of the study along with the operational definition of key terms.

Chapter 2 is the literature review part delivering the results for the qualitative part of this research. It contains an extensive literature review (and content analysis) on many topics including; leadership definitions, leadership approaches, major shifts in a military operational environment, leadership skills, the researcher names as “emerging leadership skills”. The chapter also explores the literature on unique cultural aspects of the military. At the end of this chapter, the literature gap ensues along with the delimitations.

Chapter 3 explains the details of the research methodology. This includes theoretical framework, sample selection method, data collection, and analysis, as well as hypothesis testing.

Chapter 4 contains the main body of the literature review on emerging leadership skills in a VUCA environment, which also feeds into the structure and questions of the survey instrument. It also analyzes the primary data collected through the survey instrument is analyzed and documented.

5.2 Discussions of Findings

The findings of this research are specific to the military context; nevertheless, it is obvious that many of the identified leadership skills are related to VUCA environment which is naturally embedded in a non-military domain like business and finance. More research is needed in other domain, as well as the military domain, to validate the findings of this study and extend the research to other fields and a variety of domains. It is harder to generalize when the beliefs, perceptions, and feelings are subject to the research.

This research has demonstrated the need to create a better understanding of the VUCA dynamics and related leadership skills in a military context as well as their application in various organizational level and security environment.

One of the research conclusions is that senior military leadership must reframe leadership development activities to accommodate the faster-paced VUCA environment, and the eight categories of leadership skills should be their focus. It is imperative that the military find a way to incorporate these skills into individual leadership development roadmaps and have their military personnel acquire them through education, training, self-improvement, and experience.

The study presented empirical evidence that organizational levels and security environment plays a significant on the successful leadership applications in a military context. The research related to leadership and culture tends to reinforce the idea that leadership is significantly impacted by organizational level and security environment that it is applied. However, it is outside of the scope of this research whether the background and the experience make any difference in how the military officers perceive the leadership skills.

The identification and categorization of leadership skills is a promising leap into investigating leadership skills in a VUCA environment. This list is not exhaustive of all skills,

so this skills category can be expanded and tailored according to organizational and individual need.

It would suggest that active duty officers think of the application of leadership skills different than retired officers. Active duty members are still within the organization, they are surrounded by the unique culture, and they must fulfill the task and can have expectations of promotions. Retired personnel are not affected by organizational management, culture and career expectations so they can think about leadership skills more objectively free of organizational effects.

This study signals senior military leadership and HR professionals to modify the leadership development roadmap, promotion criteria, deployment, and recruitment under the light of findings of this research and VUCA dynamics. Additionally, organizations should identify, implement, and continuously facilitate how to tailor and package the emerging leadership skills as to needs of the specific needs of the organization. This might even include creating organizational climates that will embrace and promote soft skills and competencies not only technical and tactical competencies. Individuals who have resources and support from the senior leadership and system functions (i.e. promotion and award system) will be more willing to implement the emerging leadership skills that they possess or will acquire.

It is very interesting that all the leadership skills identified by this research are related to soft skills of leaders. This implies that the need for soft skills and appropriate application of these are on demand. Only having the technical and tactical competencies is not enough to survive as a leader in a VUCA environment.

Hypothesis test results of all hypothesis concluded the rejection of the hypothesis. The rejection of all hypothesis except the last one indicates that some of the leadership skills are more salient than others in terms of how they related to a specific condition. The last hypothesis rejection indicates that there is a relationship between rank (which is also related to the duration

of professional service) and being retired. The results show that when military members are in the service, they are more in favor of the organizations in terms of rules, culture, and traditions, but once they are retired, they can see some of they can see the application of skills differently than when they are serving.

The military operational domain has become highly complex and the ability to deliver successful leadership is getting tougher. Nevertheless, increasing the awareness of military leaders and senior management on the emerging leadership skills and incorporating them into leadership development plans and organizations culture and functions can make it possible. In this complex environment, leaders must take more decisions, so their individual leadership skills become an increasingly important constituent in the ability of the organization to march forward in harmony and meet its targets.

5.3 Limitations of the Research

The study has a limitation as discussed below, therefore the findings should be considered under these limitations.

The identification and categorization of leadership skills provide insight into leadership at the individual level; therefore, results can be far-reaching for NCO, enlisted, and civilian personnel. As leaders who operate in a VUCA environment, they will also need these skills in varying intensity and extent depending on what kind of environment and what level of organization they are leading. However, the data analysis section of the study is only using military officers as the target audience, so the results of that part are not generalizable to the non-officer population of the military.

The quantitative part of the research was limited to a specific body of subjects: self-identified military officers in various countries and services. Their biases based on their experience, education, and perceptions about leadership skills are an important factor in their

responses to survey questions. The unit of analysis is the response by military officers by grading the leadership skills how they perceive it, therefore responses are prone to subjectivity.

The sample size was technically acceptable, but a larger sample size would contribute to the generalizability of the findings. The results can be more generalizable, and the study can be reinforced by increasing the sample size as the findings and results may differ significantly when the sample size is increased.

While the variables used to capture military officers' perceptions were useful, various additional variables (like experience, organizational level worked) might be added to determine other significant relationships. It is worth noting here that the population was very close to being homogenous in terms of graduation, highest graduation, and sex. Since the distribution of rank allowed meaning statistical analysis, it is used for ANOVA analysis.

The quantitative part of this research provides insights into the perception of military officers about the effects of the security environment and organizational level on the application of emerging leadership skills. The survey developed in this research is not intended for civilians. In addition to that, employing this survey to non-commissioned officers (NCO) and enlisted personnel may also be misleading. Nevertheless, similar research that will solicit the perception of leaders at the lower levels of the organizations would contribute and complement the scope of this study by understanding the topic from their perspective.

Results can be influenced by the accuracy of the informant interpretations of organizational reality. Thus, this must be taken into consideration while interpreting the findings based on the individual's perception, as method variance might inflate the relationship between variables. However, self-report instruments used in this study have good construct validity and internal consistency. Possibly, the use of self-report measures, as good measures, can be partly justified, considering that the sample population is from military officers and NATO member countries they have a common understanding of leadership due to their

experience to work together, education level, and shared culture.

5.4 Suggestions for Future Research Opportunities

The researcher specifically chooses to not employ the leadership skills to on specific military entity (i.e. a single Command, a single nation, or a single Headquarter) to make it more generalizable. Future research could be administered to military officers in more homogenized military entities such as national headquarters, Commands- using the researcher developed survey.

Additional research can be carried out to two or more Service and/or one Service Branch officers, and results can be compared to provide additional insight whether or not the military officers in different services interpret the application of emerging leadership skills similarly.

As stated in limitations of the research, additional variables may be investigated to capture the degree of application of leadership skills, such as gender, education level, and professional experience can enlighten the degree of leadership perception.

Future research is definitely needed to compare the skills identified in this study and what the military already has in the leadership development plans regarding individual skills. This will require more work on how to incorporate the missing skills into the leadership development plans to prepare the VUCA ready military leaders.

This research does not provide any insight into why a certain leadership application is salient in the specified environment-level structure. The research provided the perception of leadership preferences in the specified environment-level structure. Further analysis of “why” is much needed and urgent. Studies that use an exploratory qualitative methodology (such as semi-structured, face-to-face in-depth interview or expert panel) would contribute (by enhancing, validating or contradicting) to interpret the results of this research further.

Future institutional research is much needed on the organizational culture and functions (i.e. promotion, award system) to be modified so that a comfortable and welcoming environment is created for individuals to apply these leadership skills. Since the traditional leadership evaluation promotes technical and tactical skills more than soft skills, leaders can be hesitant to benefit these skills due to possible negative consequences. Senior leadership find ways to how to embrace this new perspective into a leadership evaluation system, this is critical to foster self-confident and able leaders who are willing to make a difference in this domain.

This research did not establish cause and effect. The correlations and data analysis reported in this research demonstrated a relationship in the perception of different context. There is a need for further research to develop a more robust understanding of the role of organization levels and security environment and may lead to a much greater understanding of the emerging leadership skills phenomenon.

5.5 Implications

The literature review part identifies the gap in the body of knowledge regarding leadership skills that are necessary for VUCA environment military operates, and also the relationship between those skills and various security environment and organizational levels. This research is a contribution to this gap. This research has implications to academia are to expand the current body of knowledge in the area of VUCA environment in military domain regarding leadership skills. The researcher wants to emphasize that the qualitative part of the study can easily be expanded to the civilian domain since the identified skills that will benefit leaders in the non-military domain.

First, this research is among the first empirical work using a hybrid methodology that is making identification and categorization of emerging leadership skills (qualitative) and also investigating the saliency of those skills in various environments with data analysis (quantitative). This categorization of leadership skills both increases the understanding of how

to apply successful leadership in a VUCA environment and also provides a framework that can be used as a starting point in future research.

Second, this research established the correlations regarding leadership skills in four different conditions, which are combinations of two organizational levels and two security environments. These correlations increase the understanding of how environmental influences make an impact on different leadership skills.

Third, this research also emphasizes the fact that identifying a set of leadership skills is not enough to have effective leaders in such an environment. Individual and organizational culture should be modified such that it empowers and support the leaders to be courageous to apply this skillset without negative consequences.

This research has implications for engineering managers and senior military management with practical benefits.

By providing a broad perspective to identification and categorization of leadership skills, the findings can help military management to better design their leadership development plans to incorporate the skillsets. A better understanding of the necessary skills will finally force the military senior management to work on how to design and deliver those skills in an individual leader's career path in a timely manner so that he or she already acquire and internalize skills before needed. Findings will help them to better direct resources on leadership program and what is thought in them.

From an individual perspective, this research increases the personal awareness of individual leaders on how to lead. As the work military leaders become more complex, they have to make more decisions at the individual level, so this becomes critical for the organization as well. They are the spearheads of leading and they have to be successful leaders regardless of organizational culture and conditions. They will increase their understanding of what kind of skills they need to acquire to be a successful leader so that they can look for ways and

conditions to acquire them, invest time and effort both from within the organization or outside of the organization. Doing this, they can be pro-active to develop skills instead of expecting the management to deliver them. Solid emerging leadership skills construct is operationalized, and the relationship organizational level and security environment are examined statistically.

The finding of this research will help better direct resources on developing military leaders in terms of leadership development. It is clear that soft skills are increasingly in demand.

This research study produced results that inform the practice of both management professionals and scholars. Findings provide information to the managers in engineering professions and other forms of management. From a practical perspective, managers should be aware of these skills and support their subordinates foster their individual leadership skills.
As organizations are faced with more complex and novel challenges, leadership solutions should be formalized to meet the needs of a VUCA environment. Existing organizational knowledge may not apply to the volatile, uncertain, complex and ambiguous aspects of the environment.

This study marks the importance of fostering individual leadership skills of leaders, creating an organizational culture and environment that foster leaders equipped with emerging leadership skillset which the organization will benefit in return. The result of this research may assist managers and organizations to better understand the importance of leadership dynamics by encouraging subordinates through recognition, socialization, mentoring, and development.

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APPENDICES

A: Introduction and Background Information to Leadership Survey

Dear Respondent;

This research aims to explore the differences in the opinions of military officers about the importance of emerging leadership skills identified in the research, and how their perception varies in different security environments and organizational levels.

Thank you for accepting participating in this research to develop our understanding of leadership phenomenon. This survey is part of a Ph.D. research to examine how salient certain leadership skills can be in various security environments and organizational levels compared to others.

In this web-based survey, you will be asked to identify your level of agreement for each statement. There is no right or wrong answer; therefore, do not attempt to find a logical (or most accurate) answer. Please respond to the question based on your personal experience, service culture, and education, no additional training needed. You need to be a military OFFICER to be a part of this completely voluntary research. A progress bar will give you feedback about your progress to completion.

The survey is completely ANONYMOUS. Analysis of the results will be based on the combined input of survey participants and CANNOT be traced back to any one individual. No email addresses or other personally identifiable information will be collected or stored. All data obtained from participants will be kept confidential and will only be reported only in an "aggregate format" (by reporting only combined results and never reporting individual ones). Data gathered through this survey will be treated as confidential and will NOT be linked to you or your organization in any way. NO risk or exposure of any kind is involved in participating in the survey.

This survey can be completed in approximately 20 minutes. You are allowed to

navigate backward or forwards within the survey and are permitted to make changes to your responses as appropriate. The questions are not logical sequential where it will require an order of reading to make sense. Your answers will not be saved until you submit the survey at the completion.

You have the right to withdraw at any time or refuse to participate in the survey. Nevertheless, your participation is vital in terms of adding value to this research. Science is always one step further and farther, and this survey is another step.

Please read the background information carefully before you start as it gives necessary details to be able to respond to each question. Answer the questions to indicate your preference. You can return to these instructions at any time during the survey.

If you have any questions regarding this research or are interested in receiving updates related to future research, please send an email to cbdaniel@odu.edu.

Thanks in advance for volunteering to participate and thanks for your contributions to leadership science!

Q1.1 By checking or circling the YES below, you agree to participate in this study. We appreciate your time!

☐Yes

☐No

Q1.2 Are you an **Officer** (including Active Duty, Reservist, Retired) or Officer Equivalent **DOD/NATO civilian**? Please check or circle.

☐Yes

☐No

Background Knowledge

The Operational Environment and Organizational Levels referred to in the survey are detailed to standardize comprehension of definitions among the respondents. 5 (five) operational environment and 3 (three) organizational levels are explained below. You can refer to this page during the survey.

Security Environment

5 - ***War (W)*** **Explanation**.

This is an environment that can be associated with traditional/conventional warfighting, where strategic and tactical weapons are widely used. Planning, supporting, and executing engagements with the enemy is the prime concern. This level includes the use of a nation`s total resources with extreme aggression and destruction, resulting in non-combatant/civilian losses and suffering. There might be more than one front where two or more states are in open conflict.

Threat: The threat to forces is always HIGH and PREVALENT, regardless of organizational levels (tactical-operational or strategic) and branch, function or job title.

Decision: There is almost always URGENCY for planning, supporting and execution of plans and actions. Results of decisions are FATAL and VITAL to forces.

Example: The most classic example would be WWI and WWII.

Security Environment 4 - ***Limited Conflict (LC)***

Explanation. Includes, but is not limited to counterterrorism, limited objective attacks or strikes, or counterinsurgency. The types of weapons used in this environment can vary and are limited to a specific time, space, and intention. This environment may exist within your country or in another country.

Threat: The enemy threat is HIGH but LIMITED in time, location, and specific to engaged units and locales under attack

Decision: There is URGENCY in decisions, and the results of decisions are FATAL and VITAL to forces but this is true only for specific times and locations.

Example: Security environment in Afghanistan and Operation Allied Force over Kosovo.

*Security Environment **3 – PEACE OPERATIONS (PO)***

Explanation. Includes peacekeeping/peacemaking, domestic relief, and national support. It is framed as happening outside of your home country where the focus is to deliver security and relief to a country torn by conflict. Generally, there is no need to employ heavy arms and no use of force except for self-defense and defense of the mandate. Air power can support peace operations mostly through intelligence, surveillance, and reconnaissance (ISR), or air transport missions. Peace operations necessitate MULTI-NATIONAL and MULTI-AGENCY planning and execution, which are likely to include military, police, and civilian personnel from other nations.

Threat: NO IMMEDIATE THREAT to forces exist, and the threat is not PREVALENT.

Decision: Decisions are mostly NOT FATAL, and they don't necessitate URGENCY.

Example: UN Interim Administration Mission in Kosovo (UNMIK) starting in 1999 is one of the many examples of Peace Operations.

*Security Environment **2 – Humanitarian Assistance and Disaster Relief (HA/DR)***

Explanation.

Security environment where short-term assistance is provided until the long-term support is established by governmental or other agencies (usually a few weeks), i.e. natural disasters like flooding, hurricane, or earthquake. This might occur in your home country or in a foreign country where the aim is to save lives and reduce suffering. Although the primary responsibility for disaster relief lies within the civilian realm, the military provides short term support to deliver relief effort during the catastrophic incident recovery (such as air transport, logistics, urgent communications) and provides security for relief forces. This necessitates

MULTI-NATIONAL and MULTI-AGENCY planning and execution, which might include military and civilian personnel, local authorities, and other nations.

Threat: There is NO ORGANIZED ENEMY THREAT to forces, although, in nations with active insurgencies or disenfranchised segments of the population, a limited threat may emerge.

Decision: Decisions are URGENT, but NOT FATAL to forces.

Example: Operation Tomodachi is an example of military assistance operation to support Japan after the 2011 earthquake and tsunami.

*Security Environment **1 - Education, Training, and Exercises (ETE)***

Explanation: This includes education, training, and exercises where the only focus is providing and improving training for individuals and units

Decision: There are NO URGENCY and FATALITY concerns, there is always a chance to correct a decision as a part of education.

Threat: There is NO THREAT to forces beyond training accidents. **Example**: Any kind of exercises from teams, squadrons, individual ships, up to and including large scale single service or joint exercises can be considered in this environment.

The security level is summarized in Table 30.

Table 30. Security Environment Features

LEVEL	EXPLANATION	THREAT LEVEL	TASK FOCUS	INVOLVEMENT
Education-Training and Exercises (**ETE)**	Includes • routine (daily) education, • training and exercises	**NO THREAT**	Deliver the best training "Train as you fight"	**Military Personnel**
Humanitarian Assistance **(HA)**	Includes • a natural disaster like flooding, hurricane or earthquake. • might occur inside or outside of your country	**NO THREAT**	Provide disaster relief	Includes many civil authorities and entities
Peace Operations **(PO)**	includes • peacemaking/peacekeeping • domestic relief and nation support • arms control, security assistance.	**LOW** Not likely to occur (not usual)	Deliver security	Includes civil authorities and entities, local leaders besides military
Limited Conflict **(LC)**	Includes: • counterterrorism • raids/strikes • insurgency and counterinsurgency • There can be the use of tactical weapons, but the threat is specific to a location or area.	**MEDIUM** (might occur Limited in time and location)	Kill/ Capture	**Military personnel**
War and Battle **(WB)**	includes • use of strategic and tactical weapons, widely use of hard power and refers to traditional warfighting	**HIGH** (Widespread/ common)	Kill/ Capture	**Military personnel**

3 (three) Organizational Levels (OL) can be defined as follows:

Tactical Level (TL): Tactics is the employment and ordered arrangement of forces in relation to each other. Planning and execution of battles, engagements, and achievements of military objectives that are assigned to forces. Includes platoon, company, battalions, brigades, divisions, and corps; squadrons and wings, ships, flotillas, and battle groups, and units assigned to support a joint task force.

Operational Level (OL): The operational level links the tactical employment of forces

to national/military strategic objectives. Includes major task force under a joint commander, a Marine Air Ground Task Force (MAGTF), or similar sized and organized military organizations. Sub-unified commands under a geographic combatant commander would be considered operational level, such as US Forces Korea (USFK). Joint Force Air Component (JFAC) and Combined Air Operation Center (CAOC) would be at an operational level as well.

Strategic Level (SL): The strategic level develops an idea (or set of ideas) for employing the instruments of national power. Also achieves theater, national, and multi-national objectives in a synchronized and integrated fashion. Includes the geographic combatant commands, the Joint Chiefs of Staff and DOD. Single Service Commands would also be at this level in some countries. The organizational levels are explained here summarized in Table 31. Please refer back to this information and tables presented as needed in the course of the survey.

Table 31. Organizational Levels

LEVEL	EXPLANATION	ACTIVITIES
Tactical Level **(TL)**	Platoon, company and battalion and brigade (one star) levels	Use of Hard power, use of forces
Operational Level **(OL)**	Division, Corps levels (2 and 3 stars)	Links tactical and strategical level
Strategic Level **(SL)**	Headquarters of Services and Army Level	Generates ideas produce plans of using forces

B: Demographic Questions (Before Pilot Study)

1	What is your service? Please choose one	Army Navy Marin es Air Force
2	What is your rank? Please choose one	1 LT (or Eq.) 2 LT (or Eq.) CAPTAIN (or Eq.) MAJOR (or Eq.) LTC (or Eq.) COLONEL (or Eq.) FOGO
3	What is your age? Please choose one	21-25 26-30 31-35 36-40 41-45 46-50 51-55 56 +
4	Which of the following security environments has been deployed (experienced)? Please choose more than one if necessary.	Education/Training/Exercise (ETE) Humanitarian Assistance (HA) Peace Operations (PO) War and Battle (WB) Limited Conflict (LC)
5	Which of the following organizational levels have you worked so far? Please choose more than one when necessary.	Tactical Operational Strategic

6	How many years of service do you have in the military? Please choose one	1-5 6-10 11-15 16-20 21-25 26-30 31-35 36 +
7	What is the average number of official leadership training you receive every year?	None 1 2-4 5-9 9-12 12+
8	Please indicate your sex.	Male Female
9	What is the highest level of education you have completed? please choose one	High School 2-year college 4-year college West Point Master`s degree Doctorate

General Questions: for the following questions, please indicate your opinion about the statement

No.	Question	Opinion
1	Leadership skills can be different from one service to another? (army, navy, etc.)	I strongly agree I agree I am not sure I disagree I strongly disagree
2	Leadership skills required in different security environments (war, crises, peacemaking, etc.) can be different from each other?	I strongly agree I agree I am not sure I disagree I strongly disagree
3	Different levels of the military (tactical-operational-strategic) requires different leadership skills.	I strongly agree I agree I am not sure I disagree I strongly disagree

C: Finalized Demographic Questions (After the Pilot Study)

Check the questions if they are still correct and also

Check the answers since some might have been changed

Q3.1 What Branch of The Military Do You Serve (Have You Served)? Please chose one option

☐Army ☐Marine Corps ☐Navy ☐Coast Guard ☐DOD Civilian ☐NATO Civilian

Q3.2 What is your current RANK? Please choose one option (Army-Marines-Air Force)

☐2nd Lt ☐ 1st Lt ☐ Captain ☐ Major ☐ Lt Colonel ☐ Colonel ☐ Retired ☐ DOD/NATO Civilian

Q3.3 What is your current RANK? Please choose one option (Navy and CG)

☐ Lt Jr Grade ☐ Lt ☐ Lt Commander ☐ Commander ☐ Captain ☐ Retired ☐ DOD/NATO Civilian

Q3.4 Which of the following OPERATIONAL ENVIRONMENTS have you been deployed (experienced)? Please choose ALL that apply

☐ War ☐ Limited Conflict ☐ Peace Ops ☐ Humanitarian Relief and Disaster recovery

☐Education/Training/Exercise

Q3.5 Which of the following ORGANIZATIONAL LEVELS have you worked so far? Please choose and check ALL that apply

☐Tactical –Platoon, Company, Battalion; Squadron/Wing; Ship/Flotilla/Task Unit and equivalent

☐ Operational – Operational-Brigade/Corps; JFAC/CAOC; Fleet/Task Group and equivalent

☐ Strategical- Strategic-Service Commands, Joint Commands, DOD, NATO Strategic HQ

Q3.6 How many YEARS of ACTIVE SERVICE have you completed in the military? Please choose from the list in the box or write in the box provided.

Q3.7Please choose from the list in the box or specify your AGE by writing it down next to the box

Q3.8 Please indicate your SEX

☐F ☐M ☐Not willing to specify

Q3.9 What is your GRADUATION?

☐High School ☐ College ☐ Military Academy ☐ US Army Academy ☐ US Naval Academy ☐ US Air Force Academy

Q3.10 What is the highest level of school you have completed and/or the highest degree you have received?

☐ High School ☐ High School ☐ College without degree ☐ Associate degree (2 years) ☐ Bachelor's Degree (4 years) ☐ Military Academy ☐ US Army Academy ☐ US Naval Academy ☐ US Air Force Academy ☐ Master ☐ Doctorate (Ph.D. and/or equivalent) ☐ Post Doctorate

Q3.11 Please include your country (you do not have to include if you are not willing to) by writing it down next to the box

D: Leadership Questions (Before the Pilot Study)

No.	Questions	Choices
1	Being an effective leader means knowing how to be a `**follower**` when needed.	I strongly agree I agree I am not sure I disagree I strongly disagree
2	In some specific situations, leaders should **let others** (can be even subordinates) lead.	I strongly agree I agree I am not sure I disagree I strongly disagree
3	Leaders must be capable of understanding that maybe sometimes where "**no one in charge**" including him/her.	I strongly agree I agree I am not sure I disagree I strongly disagree
4	Emerging security environment necessitates more "**host leaders**" that "heroic leaders'	I strongly agree I agree I am not sure I disagree I strongly disagree
5	There might be times when **a leader is ineffective** due to a very complicated environment.	I strongly agree I agree I am not sure I disagree I strongly disagree
6	Problems today are **tougher than one person** (a heroic one) can handle even with effective leadership.	I strongly agree I agree I am not sure I disagree I strongly disagree
7	"**Leading a unit/entity** is more than one leader can handle".	I strongly agree I agree I am not sure I disagree I strongly disagree
8	Playing more of a **`coaching` role** for a leader can prove a more effective leadership than directive or authoritarian leadership.	I strongly agree I agree I am not sure I disagree I strongly disagree
9	Leaders should be more concerned with **developing and fostering other`s capacity**.	I strongly agree I agree I am not sure I disagree

		I strongly disagree
10	A leader must spend energy to **empower subordinates** and units.	I strongly agree I agree I am not sure I disagree I strongly disagree
11	Leaders need to have **high individual communication capability**	I strongly agree I agree I am not sure I disagree I strongly disagree
12	**Foreign language proficiency** is an integral skill for modern leaders.	I strongly agree I agree I am not sure I disagree I strongly disagree
13	**Cultural literacy** skills are crucial for a leader	I strongly agree I agree I am not sure I disagree I strongly disagree
14	It is necessary that leaders **find consensus** in conflicting situations, rather than imposing what they think.	I strongly agree I agree I am not sure I disagree I strongly disagree
15	Leaders should be capable of leading the `**out-group members**` (those who leaders does not have legal command and control authority i.e. NGO reps, locals, etc.)` as well as ordinary staff members	I strongly agree I agree I am not sure I disagree I strongly disagree
16	**Self-awareness** is a crucial skill for leaders	I strongly agree I agree I am not sure I disagree I strongly disagree
17	The **second and third order (indirect) effects** of the actions/decisions should be taken into account by the leader, not only the immediate effects.	I strongly agree I agree I am not sure I disagree I strongly disagree
18	A leader must be **aware of the environment** that is outside of the organization	I strongly agree I agree I am not sure I disagree I strongly disagree

19	A leader must provide staff and subordinates **involvement in the decision-making process** before the decision is reached.	I strongly agree I agree I am not sure I disagree I strongly disagree
20	leaders must be trained to be able to **make decisions by themselves**	I strongly agree I agree I am not sure I disagree I strongly disagree
21	Leaders face more situations that they need to use **decentralized decision-making** abilities.	I strongly agree I agree I am not sure I disagree I strongly disagree
22	Leaders must be **open to feedback** from all levels and functional areas of the organization	I strongly agree I agree I am not sure I disagree I strongly disagree
23	Leaders must always **seek feedback** from all levels and functions of the unit/organization	I strongly agree I agree I am not sure I disagree I strongly disagree
24	Traditionally, leaders are focused on mostly to content (result, delivery). Nevertheless, leading **people and process** is also essential in today`s leadership	I strongly agree I agree I am not sure I disagree I strongly disagree
25	A leader must **leverage questioning** in his/her team/units	I strongly agree I agree I am not sure I disagree I strongly disagree
26	Leaders should consider the importance of weighing both **positive and negative feedback** from subordinates before deciding on a course of action.	I strongly agree I agree I am not sure I disagree I strongly disagree
27	Leaders must be courageous enough to let others **challenge/criticize the plan**	I strongly agree I agree I am not sure I disagree I strongly disagree

28	Leaders must **welcome other`s thoughts**	I strongly agree I agree I am not sure I disagree I strongly disagree
29	In his actions/decisions, leaders must consider that followers are **humans with emotions**	I strongly agree I agree I am not sure I disagree I strongly disagree
30	Leaders must **recognize cultural competencies**	I strongly agree I agree I am not sure I disagree I strongly disagree
31	It is important for a leader to find ways to **value cultural competencies**	I strongly agree I agree I am not sure I disagree I strongly disagree
32	**Adapting to changes** (environment, process, etc.) is a fundamental skill for today`s leader.	I strongly agree I agree I am not sure I disagree I strongly disagree
33	If a leader is **able to adapt**, he/she can be a better leader	I strongly agree I agree I am not sure I disagree I strongly disagree
34	**Seeking weak signals** of change helps leaders to lead more efficiently since it helps adaptation to the slowly changing situation	I strongly agree I agree I am not sure I disagree I strongly disagree

E: Finalized Leadership Questions (After the Pilot Study)

Q2.1How much do you think it is appropriate for the leader to be a "**follower**" when the situation necessitates?

Q2.2 Leaders must be willing to **let others (maybe even subordinates) take the lead** if need be.

Q2.3 Leaders must realize that there might be times when literally "**no one is in charge**" including them.

Q2.4 Today "**host leaders**" (more facilitating role) are more needed than "heroic (more of a symbolic and charismatic) leaders."

Q2.5 A leader must be skillful to accept that the problems today are **tougher than one person** (even a heroic leader) can handle.

Q2.6 **Self-awareness** is a critical skill for leaders.

Q2.7 Leaders must take into account not only the immediate effects but also the second and third order (**indirect) effects**, such as diplomatic or political, of their actions/decisions.

Q2.8 A leader must be **aware of the environment** that is outside of the span of his/her unit/organization.

Q2.9 It is imperative for leaders to comprehend **short and long term (strategic, economic and political aspects) of the mission.**

Q2.10 In addition to mastering technical and tactical warfighting skills, leaders must have **high individual communication skills.**

Q2.11 **Foreign language proficiency** plays an important role to achieve effective leadership.

Q2.12 How often do you think that leader resort to **consensus building and seeking alliance** skills for better leadership?

Q2.13 A leader must be capable of **leading/influencing 'out-group members'** (those who the leader does not have legal command and control authority i.e. NGO reps, locals, etc) as well

as staff members.

Q2.14 Is it a necessary skill for leaders to encourage and welcome their team`s ability to **think out-of-the-box?**

Q2.15 A leader must **leverage questioning/inquisitiveness** in his/her team/units to capture different ideas.

Q2.16 How often must leaders **develop/support different perspectives** (both negative and positive)?

Q2.17 How comfortable must a leader be with letting others **challenge/criticize his/her plan**?

Q2.18 How important is it for leaders to be skilled to **welcome others' thoughts**?

Q2.19 Leaders must know how to **make decisions in the absence of superior's directions** (i.e. autonomous decision making) even when the facts are still evolving.

Q2.20 Leaders must welcome feedback from all levels and/or functional areas of the **organization (360 degrees feedback loop)** to facilitate rapid correction.

Q2.21 How likely is that the leaders need to use their skills on **adapting to changes** (environment, processes, etc)?

Q2.22 Leaders must develop the **ability to seek and capture subtle signals** of any change (in the organization and/or environment) to help them adapt to vague situations.

Q2.23 How much would the leaders use **cultural literacy** skills to increase their effectiveness in leadership?

Q2.24 **recognizing different cultural competencies** makes better leaders.

Q2.25 Is it important that leaders must find ways to **value cultural competencies**?

Q2.26 Leaders must recognize that leading (a unit/entity/team) will likely **exceed one leader's ability** at times.

Q2.27 Leaders should always think and **act within the hierarchical requirements** regardless

of the situation.

Q2.28 How likely is it that leaders would perform a better leadership If they prefer involving staff and subordinates in the **decision making the process?**

Q2.29 How frequent does the leaders face situations in which they need their **decentralized decision**-making skills?

Q2.30 Leaders must focus on **leading people & processes** not only the result/delivery.

How much would you think this is an important skill?

Q2.31 Do you agree that a leader should just **require his/her staff to follow pre-decided**, pre-approved contents?

Q2.32 How often do you think playing more of a "**coaching, team building" role** instead of a directing/authoritative role for a leader becomes a necessary skill for a leader?

Q2.33 How often must a leader be concerned with **developing and fostering others` capacity/ability** in the job?

Q2.34 Leaders must **expand their energy to empower subordinates/units** to act without guidance from them.

F: Institutional Review Board (IRB) Approval Letter

OLD DOMINION UNIVERSITY

OFFICE OF THE VICE PRESIDENT FOR RESEARCH

Physical Address
4111 Monarch Way, Suite 203
Norfolk, Virginia 23508
Mailing Address
Office of Research
1 Old Dominion University
Norfolk, Virginia 23529
Phone(757) 683-3460
Fax(757) 683-5902

DATE:	June 8, 2017
TO:	Charles Daniels, PHD
FROM:	Old Dominion University Engineering Human Subjects Review Committee
PROJECT TITLE:	[949906-4] A QUEST TO IDENTIFY THE PERCEPTION OF EMERGING LEADERSHIP SKILLS BY THE MILITARY OFFICERS IN VARIOUS SECURITY ENVIRONMENTS AND ORGANIZATIONAL LEVELS
REFERENCE #:	ENGN 17-02
SUBMISSION TYPE:	Amendment/Modification
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	
REVIEW CATEGORY:	Exemption category # 6.2

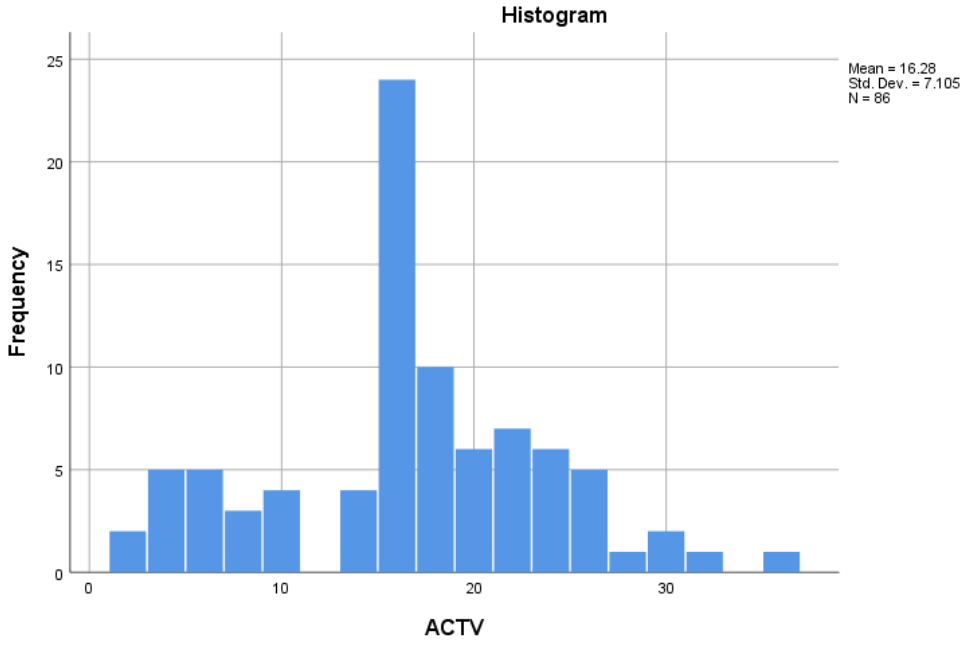
Thank you for your submission of Amendment/Modification materials for this project. The Old Dominion University Engineering Human Subjects Review Committee has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

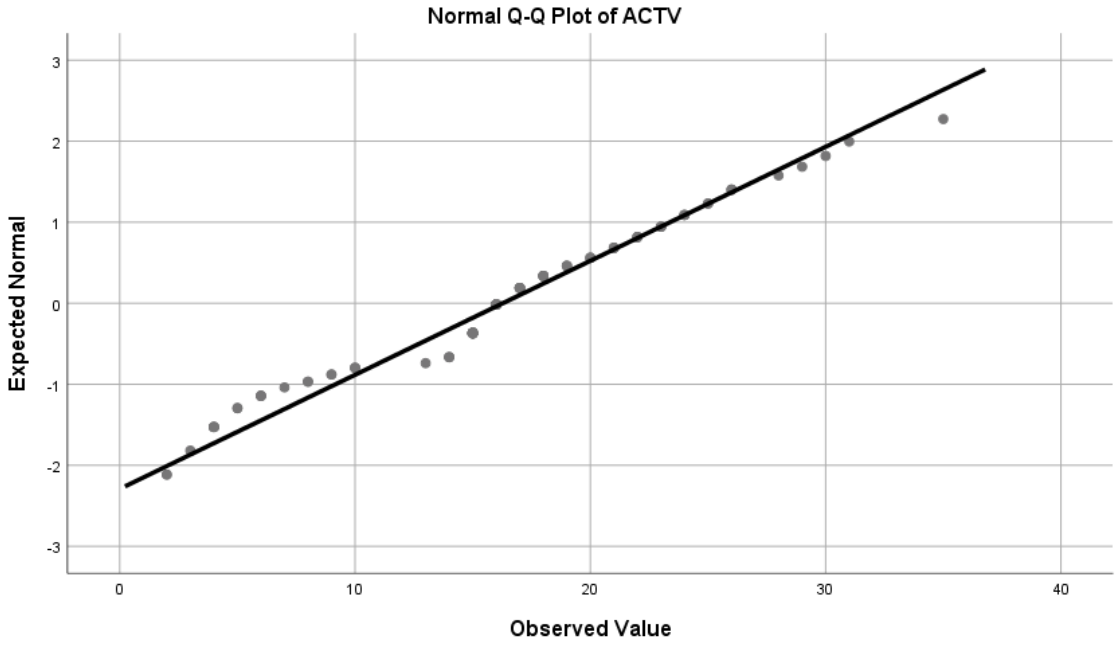
We will retain a copy of this correspondence within our records.

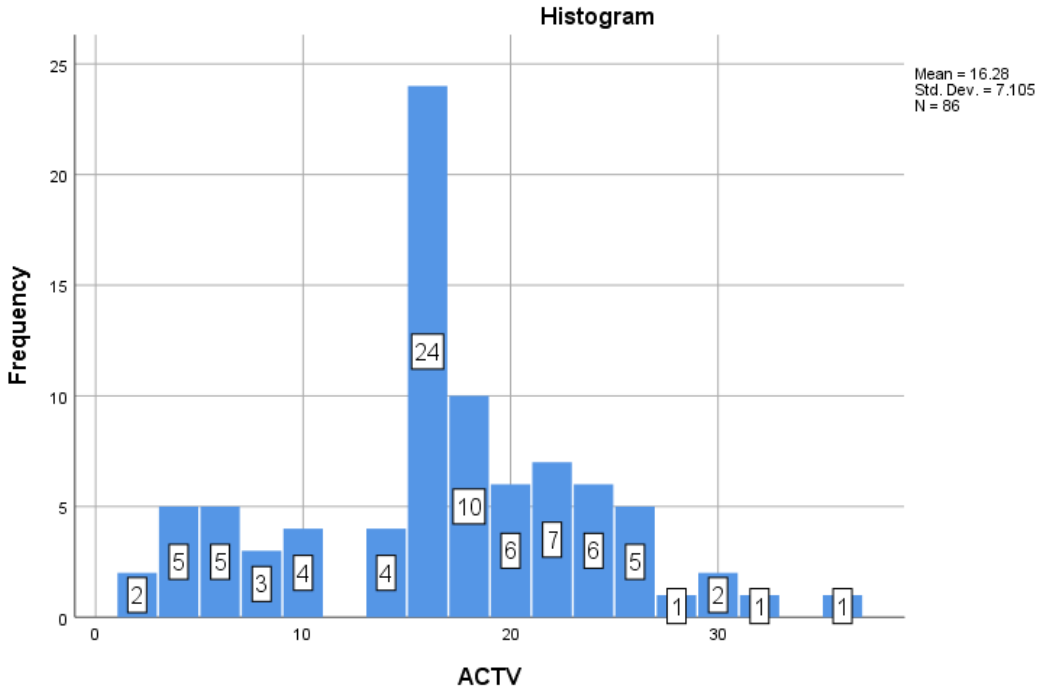
If you have any questions, please contact Stacie Ringleb at 757-683-6363 or sringleb@odu.edu. Please include your project title and reference number in all correspondence with this committee.

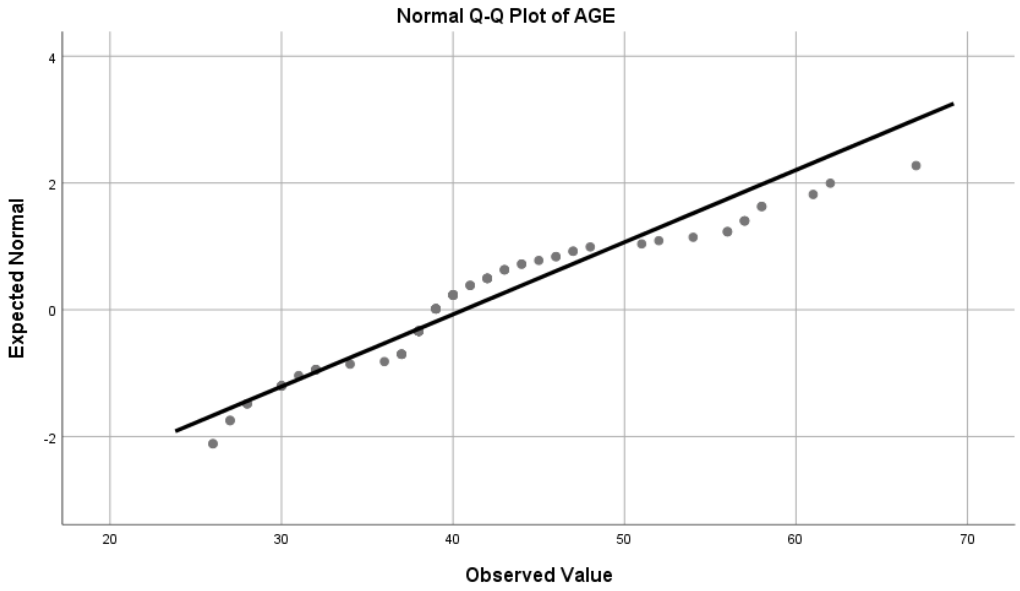
This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Old Dominion University Engineering Human Subjects Review Committee's records.

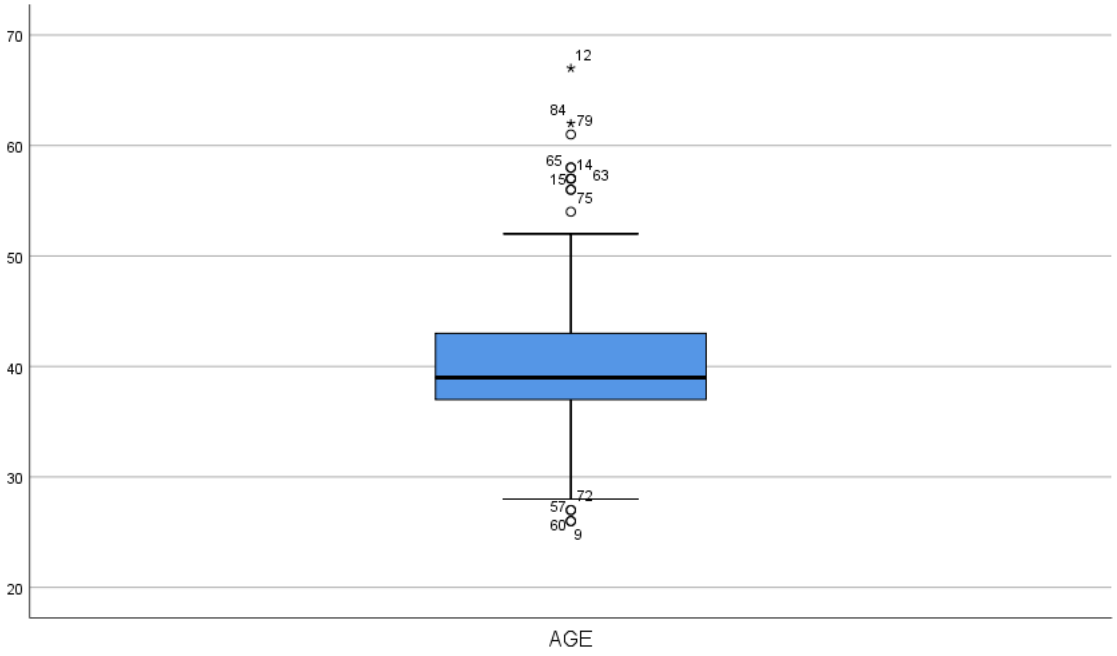
G: Descriptive Statistics & Normality Plots

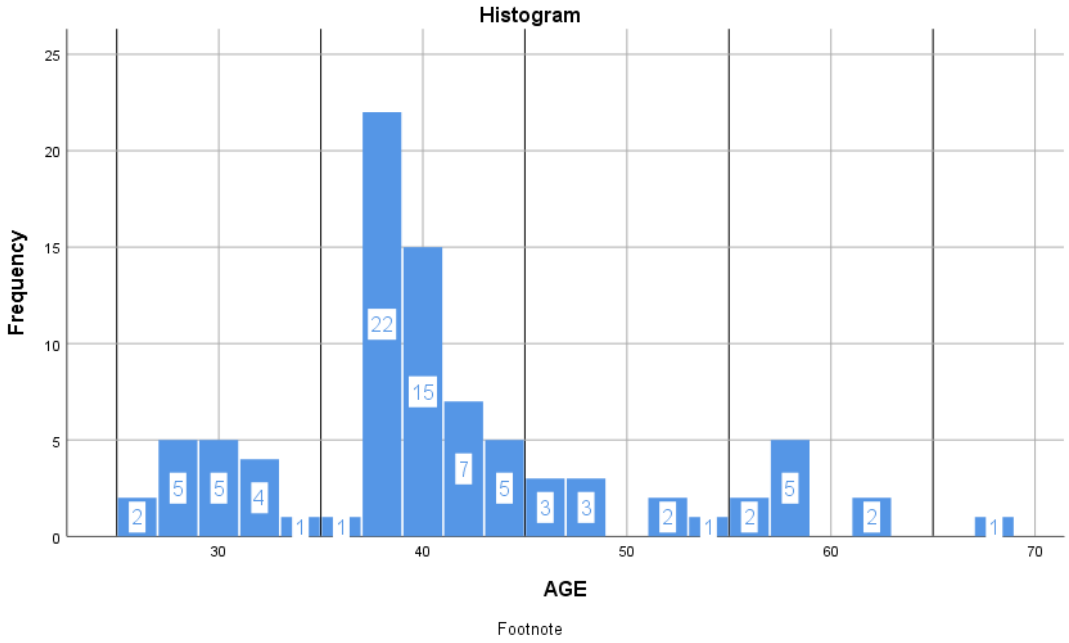





Histogram
Mean = 16.28
Std. Dev. = 7.105
N = 86
Frequency
ACTV
0
5
10
15
20
25
0
10
20
30
2
5
5
3
4
4
24
10
6
7
6
5
1
2
1
1


Normal Q-Q Plot of AGE
Expected Normal
Observed Value
4
2
0
-2
20
30
40
50
60
70





Descriptives

			Statistic	Std. Error
AGE	Mean		40.64	.947
	95% Confidence Interval for Mean	Lower Bound	38.76	
		Upper Bound	42.52	
	5% Trimmed Mean		40.25	
	Median		39.00	
	Variance		77.104	
	Std. Deviation		8.781	
	Minimum		26	

	Maximum	67	
	Range	41	
	Interquartile Range	6	
	Skewness	.827	.260
	Kurtosis	.651	.514

AGE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	26	2	2.3	2.3	2.3
	27	2	2.3	2.3	4.7
	28	3	3.5	3.5	8.1
	30	5	5.8	5.8	14.0
	31	1	1.2	1.2	15.1
	32	3	3.5	3.5	18.6
	34	1	1.2	1.2	19.8
	36	1	1.2	1.2	20.9
	37	5	5.8	5.8	26.7
	38	17	19.8	19.8	46.5
	39	7	8.1	8.1	54.7
	40	8	9.3	9.3	64.0
	41	2	2.3	2.3	66.3
	42	5	5.8	5.8	72.1
	43	3	3.5	3.5	75.6
	44	2	2.3	2.3	77.9
	45	1	1.2	1.2	79.1
	46	2	2.3	2.3	81.4
	47	2	2.3	2.3	83.7
	48	1	1.2	1.2	84.9
	51	1	1.2	1.2	86.0
	52	1	1.2	1.2	87.2
	54	1	1.2	1.2	88.4
	56	2	2.3	2.3	90.7
	57	3	3.5	3.5	94.2
	58	2	2.3	2.3	96.5
	61	1	1.2	1.2	97.7
	62	1	1.2	1.2	98.8
	67	1	1.2	1.2	100.0
	Total	86	100.0	100.0	

H: Coding of Data and Variables

Coding of Demographic Questions

This section explains how the data coding of the demographic questions is performed.

Table 32. Coding of Service Branches

Service Name	**Code**	**Explanation**
Service	SVC	
Army	A	1
Marine Corps	M	2
Air Force	AF	3
Navy	N	4
NATO	NATO	5
Department of Defense Civilian	DOD	6

The **ranks** were coded as:

Table 33. Coding of Ranks

Ranks	**Code**	**Explanation**
Rank	RNK	
1LT, 2LT	JUN	1- Junior Leaders
Captain- Major	MED	2- Med-level Leaders
Lieutenant Colonel, Colonel	SEN	3- Senior Leaders
Department of Defense, NATO	R	4- Retired Leaders

The **years of active** service is coded as;

Table 34. Coding of Active Years

Years	**Code**	**Explanation**
Active years	ACTV	
1-8 Years	S	Short
9-15	M	Medium
16-25	L	Very Long
25 +	VL	Very Long

The **college education** is coded as;

Table 355. Coding of College Education

Education	**Code**	**Explanation**
Graduation	GRAD	
High School	1	HS
College	2	COL
Military Academy	3	MA
US Army Academy	4	USMA
US Naval Academy	5	USMA
US Air Force Academy	6	USMA

The **highest education** is coded as;

Table 36. Coding of Highest Graduation

Education	**Code**	**Explanation**
Highest Graduation	HGRAD	
Below High School	1	BHS
High School	2	HS
College without degree	3	CWD
Associate degree	4	AD
Bachelor's degree	5	BD
Military Academy	6	MAC (non-US)
US Army Academy	7	USMAC
US Naval Academy	8	USMAC
US Air Force Academy	9	USMAC
Master	10	M
Doctorate	11	D
Post-doctorate		POST

The **country** is coded as;

Table 37. Coding of Country

Country	**Code**	**Explanation**
Country	CNTRY	
Turkey	TR	5
Greece	GR	4
United States of America	USA	7
United Kingdom	UK	6
Canada	CA	2
Germany	GER	3
Not specified	NS	1

I: Test of Normality Results for Leadership Questions

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
@1TW_NILS	.273	86	.000	.787	86	.000
@1TH_NILS	.273	86	.000	.856	86	.000
@1SW_NILS	.230	86	.000	.816	86	.000
@1SH_NILS	.272	86	.000	.861	86	.000
@2TW_NILS	.266	86	.000	.775	86	.000
@2TH_NILS	.213	86	.000	.864	86	.000
@2SW_NILS	.231	86	.000	.830	86	.000
@2SH_NILS	.222	86	.000	.881	86	.000
@3TW_NILS	.257	86	.000	.764	86	.000
@3TH_NILS	.202	86	.000	.893	86	.000
@3SW_NILS	.262	86	.000	.794	86	.000
@3SH_NILS	.200	86	.000	.856	86	.000
@4TW_NILS	.283	86	.000	.812	86	.000
@4TH_NILS	.269	86	.000	.853	86	.000
@4SW_NILS	.233	86	.000	.826	86	.000
@4SH_NILS	.245	86	.000	.802	86	.000
@5TW_NILS	.304	86	.000	.741	86	.000
@5TH_NILS	.239	86	.000	.814	86	.000
@5SW_NILS	.462	86	.000	.504	86	.000
@5SH_NILS	.400	86	.000	.645	86	.000
@6TW_AWA	.479	86	.000	.451	86	.000
@6TH_AWA	.338	86	.000	.744	86	.000
@6SW_AWA	.458	86	.000	.555	86	.000
@6SH_AWA	.338	86	.000	.730	86	.000
@7TW_AWA	.194	86	.000	.879	86	.000
@7TH_AWA	.208	86	.000	.875	86	.000
@7SW_AWA	.484	86	.000	.458	86	.000
@7SH_AWA	.396	86	.000	.658	86	.000
@8TW_AWA	.237	86	.000	.810	86	.000
@8TH_AWA	.231	86	.000	.837	86	.000
@8SW_AWA	.532	86	.000	.329	86	.000
@8SH_AWA	.457	86	.000	.566	86	.000
@9TW_AWA	.218	86	.000	.895	86	.000
@9TH_AWA	.173	86	.000	.904	86	.000
@9SW_AWA	.525	86	.000	.373	86	.000
@9SH_AWA	.438	86	.000	.584	86	.000

@10TW_SOFT	.437	86	.000	.572	86	.000
@10TH_SOFT	.374	86	.000	.700	86	.000
@10SW_SOFT	.431	86	.000	.610	86	.000
@10SH_SOFT	.390	86	.000	.683	86	.000
@11TW_SOFT	.186	86	.000	.885	86	.000
@11TH_SOFT	.241	86	.000	.793	86	.000
@11SW_SOFT	.265	86	.000	.799	86	.000
@11SH_SOFT	.392	86	.000	.657	86	.000
@12TW_SOFT	.257	86	.000	.886	86	.000
@12TH_SOFT	.192	86	.000	.899	86	.000
@12SW_SOFT	.253	86	.000	.835	86	.000
@12SH_SOFT	.237	86	.000	.806	86	.000
@13TW_SOFT	.178	86	.000	.897	86	.000
@13TH_SOFT	.237	86	.000	.848	86	.000
@13SW_SOFT	.361	86	.000	.714	86	.000
@13SH_SOFT	.407	86	.000	.654	86	.000
@14TW_QUES	.231	86	.000	.837	86	.000
@14TH_QUES	.244	86	.000	.829	86	.000
@14SW_QUES	.457	86	.000	.560	86	.000
@14SH_QUES	.381	86	.000	.645	86	.000
@15TW_QUES	.188	86	.000	.869	86	.000
@15TH_QUES	.242	86	.000	.828	86	.000
@15SW_QUES	.394	86	.000	.640	86	.000
@15SH_QUES	.374	86	.000	.696	86	.000
@16TW_QUES	.266	86	.000	.862	86	.000
@16TH_QUES	.237	86	.000	.874	86	.000
@16SW_QUES	.325	86	.000	.717	86	.000
@16SH_QUES	.315	86	.000	.734	86	.000
@17TW_QUES	.285	86	.000	.851	86	.000
@17TH_QUES	.230	86	.000	.874	86	.000
@17SW_QUES	.309	86	.000	.673	86	.000
@17SH_QUES	.354	86	.000	.597	86	.000
@18TW_QUES	.207	86	.000	.851	86	.000
@18TH_QUES	.214	86	.000	.854	86	.000
@18SW_QUES	.380	86	.000	.642	86	.000
@18SH_QUES	.410	86	.000	.641	86	.000
@19TW_ADAPT	.446	86	.000	.515	86	.000
@19TH_ADAPT	.297	86	.000	.773	86	.000
@19SW_ADAPT	.400	86	.000	.645	86	.000

@19SH_ADAPT	.291	86	.000	.780	86	.000
@20TW_ADAPT	.289	86	.000	.744	86	.000
@20TH_ADAPT	.289	86	.000	.792	86	.000
@20SW_ADAPT	.456	86	.000	.508	86	.000
@20SH_ADAPT	.445	86	.000	.566	86	.000
@21TW_ADAPT	.410	86	.000	.611	86	.000
@21TH_ADAPT	.238	86	.000	.828	86	.000
@21SW_ADAPT	.386	86	.000	.683	86	.000
@21SH_ADAPT	.298	86	.000	.766	86	.000
@22TW_ADAPT	.374	86	.000	.669	86	.000
@22TH_ADAPT	.260	86	.000	.822	86	.000
@22SW_ADAPT	.404	86	.000	.651	86	.000
@22SH_ADAPT	.321	86	.000	.760	86	.000
@23TW_CULT	.168	86	.000	.885	86	.000
@23TH_CULT	.265	86	.000	.813	86	.000
@23SW_CULT	.242	86	.000	.810	86	.000
@23SH_CULT	.356	86	.000	.693	86	.000
@24TW_CULT	.209	86	.000	.856	86	.000
@24TH_CULT	.295	86	.000	.759	86	.000
@24SW_CULT	.364	86	.000	.689	86	.000
@24SH_CULT	.393	86	.000	.674	86	.000
@25TW_CULT	.174	86	.000	.889	86	.000
@25TH_CULT	.236	86	.000	.803	86	.000
@25SW_CULT	.310	86	.000	.737	86	.000
@25SH_CULT	.332	86	.000	.723	86	.000
@26TW_DECMAK	.231	86	.000	.828	86	.000
@26TH_DECMAK	.244	86	.000	.833	86	.000
@26SW_DECMAK	.287	86	.000	.716	86	.000
@26SH_DECMAK	.240	86	.000	.809	86	.000
@27TW_DECMAK	.227	86	.000	.859	86	.000
@27TH_DECMAK	.239	86	.000	.891	86	.000
@27SW_DECMAK	.265	86	.000	.856	86	.000
@27SH_DECMAK	.234	86	.000	.863	86	.000
@28TW_DECMAK	.267	86	.000	.836	86	.000
@28TH_DECMAK	.270	86	.000	.800	86	.000
@28SW_DECMAK	.456	86	.000	.546	86	.000
@28SH_DECMAK	.441	86	.000	.573	86	.000
@29TW_DECMAK	.189	86	.000	.861	86	.000
@29TH_DECMAK	.207	86	.000	.899	86	.000
@29SW_DECMAK	.263	86	.000	.848	86	.000

@29SH_DECMAK	.272	86	.000	.867	86	.000
@30TW_DECMAK	.189	86	.000	.863	86	.000
@30TH_DECMAK	.219	86	.000	.865	86	.000
@30SW_DECMAK	.266	86	.000	.812	86	.000
@30SH_DECMAK	.252	86	.000	.831	86	.000
@31TW_DECMAK	.250	86	.000	.843	86	.000
@31TH_DECMAK	.265	86	.000	.878	86	.000
@31SW_DECMAK	.196	86	.000	.877	86	.000
@31SH_DECMAK	.160	86	.000	.907	86	.000
@32TW_ENDOR	.225	86	.000	.890	86	.000
@32TH_ENDOR	.258	86	.000	.880	86	.000
@32SW_ENDOR	.283	86	.000	.862	86	.000
@32SH_ENDOR	.249	86	.000	.855	86	.000
@33TW_ENDOR	.190	86	.000	.877	86	.000
@33TH_ENDOR	.257	86	.000	.859	86	.000
@33SW_ENDOR	.219	86	.000	.861	86	.000
@33SH_ENDOR	.244	86	.000	.839	86	.000
@34TW_ENDOR	.276	86	.000	.821	86	.000
@34TH_ENDOR	.230	86	.000	.827	86	.000
@34SW_ENDOR	.263	86	.000	.783	86	.000
@34SH_ENDOR	.227	86	.000	.830	86	.000

a. Lilliefors Significance Correction

Figure 44: Shapiro-Wilk test Results for Each Leadership Questions

J: Factor Loadings for Construct Validity for Leadership Questions

Communalities

	Initial	Extraction
@25TW_CULT	1.000	.941
@8SH_AWA	1.000	.939
@22TH_ADAPT	1.000	.932
@9SW_AWA	1.000	.931
@24SW_CULT	1.000	.929
@27SH_DECMAK	1.000	.928
@7SH_AWA	1.000	.928
@11SH_SOFT	1.000	.924
@22SW_ADAPT	1.000	.923
@34TW_ENDOR	1.000	.923
@20TH_ADAPT	1.000	.923
@33SW_ENDOR	1.000	.922
@34TH_ENDOR	1.000	.922
@30SH_DECMAK	1.000	.921
@18TW_QUES	1.000	.919
@4SH_NILS	1.000	.918
@25TH_CULT	1.000	.915
@11TW_SOFT	1.000	.914
@27TW_DECMAK	1.000	.911
@3TW_NILS	1.000	.910
@31TW_DECMAK	1.000	.909
@24TW_CULT	1.000	.908
@20SW_ADAPT	1.000	.907
@30TW_DECMAK	1.000	.907
@21SH_ADAPT	1.000	.906
@14TW_QUES	1.000	.905
@10SH_SOFT	1.000	.903
@6SH_AWA	1.000	.903
@11SW_SOFT	1.000	.903
@14SH_QUES	1.000	.903
@1SH_NILS	1.000	.902
@29SH_DECMAK	1.000	.900
@19SH_ADAPT	1.000	.900
@17SH_QUES	1.000	.899
@16TW_QUES	1.000	.898

@16SH_QUES	1.000	.897
@2SH_NILS	1.000	.897
@18TH_QUES	1.000	.896
@5SH_NILS	1.000	.896
@3TH_NILS	1.000	.896
@9TH_AWA	1.000	.896
@3SW_NILS	1.000	.895
@18SH_QUES	1.000	.895
@30TH_DECMAK	1.000	.894
@26SH_DECMAK	1.000	.894
@33SH_ENDOR	1.000	.893
@9TW_AWA	1.000	.893
@26TW_DECMAK	1.000	.893
@30SW_DECMAK	1.000	.893
@34SH_ENDOR	1.000	.892
@22TW_ADAPT	1.000	.892
@20SH_ADAPT	1.000	.892
@24TH_CULT	1.000	.891
@24SH_CULT	1.000	.891
@29TH_DECMAK	1.000	.890
@23TW_CULT	1.000	.890
@32SW_ENDOR	1.000	.888
@21SW_ADAPT	1.000	.887
@2TW_NILS	1.000	.886
@19TH_ADAPT	1.000	.885
@32SH_ENDOR	1.000	.885
@25SW_CULT	1.000	.885
@19TW_ADAPT	1.000	.883
@31SW_DECMAK	1.000	.883
@28TH_DECMAK	1.000	.882
@6TW_AWA	1.000	.882
@12SW_SOFT	1.000	.881
@23SW_CULT	1.000	.880
@26SW_DECMAK	1.000	.880
@5TH_NILS	1.000	.880
@13TH_SOFT	1.000	.879
@5TW_NILS	1.000	.879
@8TW_AWA	1.000	.879
@33TH_ENDOR	1.000	.879

@15TW_QUES	1.000	.879
@6TH_AWA	1.000	.878
@13TW_SOFT	1.000	.878
@1TH_NILS	1.000	.875
@26TH_DECMAK	1.000	.875
@16TH_QUES	1.000	.874
@6SW_AWA	1.000	.874
@32TW_ENDOR	1.000	.873
@7SW_AWA	1.000	.871
@21TW_ADAPT	1.000	.871
@25SH_CULT	1.000	.870
@17TH_QUES	1.000	.869
@10SW_SOFT	1.000	.869
@31TH_DECMAK	1.000	.869
@5SW_NILS	1.000	.868
@27SW_DECMAK	1.000	.868
@23TH_CULT	1.000	.868
@1TW_NILS	1.000	.868
@15TH_QUES	1.000	.866
@7TW_AWA	1.000	.866
@22SH_ADAPT	1.000	.866
@34SW_ENDOR	1.000	.865
@28SH_DECMAK	1.000	.865
@15SH_QUES	1.000	.865
@29TW_DECMAK	1.000	.863
@12SH_SOFT	1.000	.863
@1SW_NILS	1.000	.861
@28TW_DECMAK	1.000	.861
@19SW_ADAPT	1.000	.859
@14TH_QUES	1.000	.859
@8TH_AWA	1.000	.857
@10TW_SOFT	1.000	.856
@15SW_QUES	1.000	.856
@20TW_ADAPT	1.000	.856
@27TH_DECMAK	1.000	.854
@9SH_AWA	1.000	.854
@10TH_SOFT	1.000	.853
@13SH_SOFT	1.000	.852
@21TH_ADAPT	1.000	.852
@4TW_NILS	1.000	.852

@31SH_DECMAK	1.000	.851
@12TW_SOFT	1.000	.849
@29SW_DECMAK	1.000	.849
@7TH_AWA	1.000	.849
@17TW_QUES	1.000	.848
@33TW_ENDOR	1.000	.846
@23SH_CULT	1.000	.845
@16SW_QUES	1.000	.843
@17SW_QUES	1.000	.841
@2SW_NILS	1.000	.840
@32TH_ENDOR	1.000	.840
@28SW_DECMAK	1.000	.837
@8SW_AWA	1.000	.836
@3SH_NILS	1.000	.836
@13SW_SOFT	1.000	.829
@14SW_QUES	1.000	.826
@2TH_NILS	1.000	.822
@18SW_QUES	1.000	.819
@4SW_NILS	1.000	.810
@4TH_NILS	1.000	.808
@11TH_SOFT	1.000	.793
@12TH_SOFT	1.000	.761

Extraction Method: Principal Component Analysis.

Figure 45. Shapiro-Wilk test Results for Each Leadership Questions (ascending)

K: Pearson Correlations for Seven Items

Pearson Correlations

		WT_DECMAK	WS_DECMAK	HS_DECMAK	WT_NILS	HT_NILS	HS_NILS	WT_SOFT	AGE	ACTV
WT_DECMAK	Pearson Correlation	1	**.322****	**.328****	.150	.132	-.155	**.388****	.014	-.022
	Sig. (2-tailed)		**.002**	**.002**	.167	.227	.155	**.000**	.901	.843
	N	86	86	86	86	86	86	86	86	86
WS_DECMAK	Pearson Correlation	**.322****	1	**.766****	.117	.091	-.022	-.038	.149	.099
	Sig. (2-tailed)	**.002**		**.000**	.282	.403	.844	.729	.169	.366
	N	86	86	86	86	86	86	86	86	86
HS_DECMAK	Pearson Correlation	**.328****	**.766****	1	.146	**.225***	.038	.114	.022	-.021
	Sig. (2-tailed)	**.002**	**.000**		.179	.038	.729	.297	.843	.848
	N	86	86	86	86	86	86	86	86	86
WT_NILS	Pearson Correlation	.150	.117	.146	1	**.444****	**.307****	**.290****	**-.433****	**-.271***
	Sig. (2-tailed)	.167	.282	.179		**.000**	**.004**	**.007**	**.000**	**.012**
	N	86	86	86	86	86	86	86	86	86
HT_NILS	Pearson Correlation	.132	.091	**.225***	**.444****	1	**.665****	**.371****	**-.248***	**-.220***
	Sig. (2-tailed)	.227	.403	**.038**	**.000**		**.000**	**.000**	**.021**	**.042**
	N	86	86	86	86	86	86	86	86	86
HS_NILS	Pearson Correlation	-.155	-.022	.038	**.307****	**.665****	1	.165	-.143	-.152
	Sig. (2-tailed)	.155	.844	.729	**.004**	**.000**		.129	.190	.162
	N	86	86	86	86	86	86	86	86	86
WT_SOFT	Pearson Correlation	**.388****	-.038	.114	**.290****	**.371****	.165	1	**-.259***	-.105
	Sig. (2-tailed)	**.000**	.729	.297	**.007**	**.000**	.129		.016	.334
	N	86	86	86	86	86	86	86	86	86

AGE	Pearson Correlation	.014	.149	.022	**-.433****	**-.248***	-.143	**-.259***	1	**.794****
	Sig. (2-tailed)	.901	.169	.843	**.000**	**.021**	.190	**.016**		**.000**
	N	86	86	86	86	86	86	86	86	86
ACTV	Pearson Correlation	-.022	.099	-.021	-.**271***	-.**220***	-.152	-.105	.**794****	1
	Sig. (2-tailed)	.843	.366	.848	**.012**	**.042**	.162	.334	**.000**	
	N	86	86	86	86	86	86	86	86	86

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 46. Pearson Correlations for seven items

VITA

Ali Can Kucukozyigit

Engineering Management and Systems Engineering Department
Batten College of Engineering and Technology
Old Dominion University

2101 Engineering Systems Building
Norfolk, Virginia 23529
757.683.4558

akucu001@odu.edu

Education:

Ph.D. Engineering Management & Systems Engineering, August 2020, Old Dominion University, Norfolk, VA

Dissertation: *A Quest to Identify the Emerging Leadership Skills in VUCA World and Investigation of Their Applications in Various Organizational Levels and Security Environments*

M.A. in National and International Security Strategies Management & Leadership, Turkish Army War College, Istanbul, Turkey, July 2011

Thesis: *How to Better Protect the Privacy in Printer Administrative Offices: An Information Security (INFOSEC) Perspective*

M.S. in Systems Engineering, Naval Postgraduate School, Monterey, CA, September 2006

Thesis: *Electronic Warfare (EW) Historical Perspectives and its Relationship to Information Operations (IO)—Considerations for Turkey*

B.S. in System Engineering, Turkish Military Academy, Ankara, Turkey, August 2001

Academia:

Faculty, Arizona State University, AZ, joined August 2019

Teaching (Sole Instructor at ODU)

Introduction to Engineering Management (Fall 2018)
Engineering Economics (Spring 2019, Summer 2019)

Professional Career:

Allied Command Transformation (ACT) Headquarters, Norfolk/VA, Information Workflow Manager in Directorate of Staff Tasking, 2013-2016

Turkish Armed Forces, Army Staff (Comms.) Officer (last rank Major), 2001-2016