

Transformational Leadership In Maritime Cadet Development: An Integrative Review Of Motivation, Safety Culture And Professional Identity Formation

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Abstract: The maritime industry increasingly requires highly competent professionals capable of operating in technologically advanced, dynamic, and safety-critical environments. As future maritime officers, marine cadets must develop not only technical competencies but also leadership capabilities, safety awareness, professional commitment, and psychological resilience. Leadership within Maritime Education and Training (MET) institutions therefore plays a crucial role in shaping cadet development and readiness for professional practice. This study aims to examine the influence of transformational leadership on maritime cadet development, particularly regarding motivation, learning engagement, safety culture internalization, and professional identity formation. An Integrative Literature Review (ILR) methodology was employed following established review procedures and PRISMA guidelines. Relevant studies were collected from Scopus, Web of Science, ScienceDirect, SpringerLink, Emerald Insight, and Taylor & Francis databases, covering publications from 2000 to 2025. A total of 67 studies met the inclusion criteria and were analyzed through thematic synthesis. The findings indicate that transformational leadership contributes positively to cadet development through four key dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. These leadership dimensions enhance self-efficacy, intrinsic motivation, learning engagement, professional identity, safety awareness, and psychological resilience, which subsequently influence behavioral outcomes such as persistence, academic performance, teamwork, problem-solving ability, and safety behavior. The review further identifies organizational culture, instructor credibility, psychological safety, and training design as important moderating factors affecting leadership effectiveness. The study proposes a conceptual model linking transformational leadership to maritime professional readiness and offers practical implications for leadership development initiatives within maritime academies. The findings contribute to leadership theory and maritime education literature by providing a comprehensive understanding of leadership-driven cadet development processes.

Keywords: Transformational Leadership, Maritime Education, Marine Cadets, Safety Culture, Professional Identity, Leadership Development.

INTRODUCTION

The maritime industry constitutes one of the most critical sectors supporting the global economy, facilitating approximately 80–90% of international trade by volume through maritime transportation (United Nations Conference on Trade and Development [UNCTAD], 2024). As globalization intensifies and international supply chains become increasingly interconnected, maritime operations have grown more complex, technologically advanced, and highly regulated. Contemporary maritime professionals are expected not only to master technical competencies related to navigation, engineering, and cargo management but also to demonstrate leadership



capabilities, adaptability, safety consciousness, and ethical decision-making in dynamic and often high-risk operational environments (International Maritime Organization [IMO], 2021).

The increasing complexity of maritime operations has elevated the importance of Maritime Education and Training (MET) institutions in preparing future maritime professionals. Maritime academies and training centers serve as the primary environments where marine cadets acquire the knowledge, skills, attitudes, and professional values necessary for successful maritime careers. Unlike students in conventional higher education settings, marine cadets undergo a unique educational process characterized by a combination of academic instruction, practical simulation exercises, shipboard training, strict discipline, and professional socialization (Kitada et al., 2019). This comprehensive training framework aims to develop not only technical proficiency but also the professional identity and behavioral competencies required to operate safely and effectively within hierarchical maritime organizations.

One of the most significant challenges facing maritime education is ensuring that cadets develop the psychological readiness and professional commitment necessary to perform under conditions of uncertainty, operational pressure, and safety-critical responsibility. Research in maritime human resource development has highlighted that technical competence alone is insufficient for ensuring operational effectiveness and safety performance. Instead, factors such as motivation, self-efficacy, leadership development, teamwork, and organizational commitment play increasingly important roles in shaping professional success within maritime settings (Mallam et al., 2019). Consequently, educational institutions must create learning environments that foster not only competence but also resilience, engagement, and ethical responsibility among future maritime officers.

Leadership has long been recognized as one of the most influential determinants of individual and organizational performance. In educational contexts, leadership behaviors demonstrated by instructors, trainers, and academy administrators significantly affect students' learning experiences, motivation, and professional development (Leithwood & Jantzi, 2005). Within maritime academies, leadership assumes an even more critical function because instructors serve not only as educators but also as role models responsible for transmitting professional norms, safety values, and occupational expectations. Through daily interactions, mentoring relationships,



and training activities, instructors influence how cadets perceive their future profession, respond to challenges, and internalize organizational values.

Among the various leadership theories developed over the past decades, transformational leadership has emerged as one of the most extensively studied and influential approaches. Originally conceptualized by Burns (1978) and later operationalized by Bass (1985), transformational leadership refers to a leadership process through which leaders inspire followers to transcend personal interests and pursue collective goals by transforming their beliefs, motivations, and aspirations. Transformational leadership encompasses four core dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Riggio, 2006). Through these dimensions, leaders encourage followers to achieve higher levels of performance, commitment, and personal development.

Extensive empirical evidence has demonstrated the positive effects of transformational leadership across diverse organizational settings. Previous studies have linked transformational leadership to improved employee performance, organizational commitment, innovation, job satisfaction, and learning engagement (Judge & Piccolo, 2004; Wang et al., 2011). In educational environments, transformational leadership has been associated with enhanced student motivation, academic achievement, and institutional effectiveness (Leithwood & Sun, 2012). Similarly, studies conducted in military and high-reliability organizations have shown that transformational leadership contributes to resilience, cohesion, and mission readiness among personnel operating in demanding and safety-critical contexts (Hardy et al., 2010).

Despite the extensive body of literature on transformational leadership, relatively limited scholarly attention has been devoted to examining its role within maritime cadet development. Existing maritime leadership research has predominantly focused on shipboard leadership practices, maritime safety management, crew resource management, and officer performance in operational contexts (Hetherington et al., 2006; Bhattacharya, 2012). Consequently, there remains a significant knowledge gap regarding how transformational leadership influences cadets during the formative stages of professional development within maritime education institutions.

This gap is particularly important because maritime cadets operate within highly structured, hierarchical, and discipline-oriented environments where leadership behaviors may significantly shape motivation, learning engagement, safety attitudes, and professional identity formation.



Transformational leadership may offer a valuable framework for supporting cadet development by fostering intrinsic motivation, encouraging critical thinking, strengthening safety culture internalization, and promoting commitment to professional values. However, the mechanisms through which transformational leadership influences these outcomes, as well as the contextual factors that may enhance or constrain its effectiveness, remain insufficiently understood.

Therefore, this study aims to conduct an integrative literature review examining the role of transformational leadership in maritime cadet development. Specifically, the study seeks to address three research questions: (1) How does transformational leadership influence maritime cadets' motivation and learning engagement? (2) What role does transformational leadership play in developing safety culture and professional identity among cadets? and (3) Which contextual factors moderate the effectiveness of transformational leadership in maritime education settings? By synthesizing existing theoretical and empirical evidence, this study contributes to the advancement of leadership scholarship within maritime education and provides practical recommendations for leadership development programs in maritime academies. Ultimately, understanding the relationship between transformational leadership and cadet development may support the preparation of future maritime officers who are not only technically competent but also ethically responsible, safety-oriented, and professionally resilient.

Literature Review

Transformational Leadership Theory

Leadership has long been recognized as a critical determinant of organizational effectiveness, employee performance, and professional development. Among various leadership approaches, transformational leadership has emerged as one of the most influential and extensively researched theories in contemporary leadership studies. The concept was initially introduced by Burns (1978), who described transformational leadership as a process through which leaders and followers elevate one another to higher levels of motivation and morality. Subsequently, the theory was expanded by Bass and Avolio, who conceptualized transformational leadership as a leadership style that motivates followers to exceed expected performance by transforming their attitudes, beliefs, and values (Bass & Avolio, 1994).

Transformational leadership differs fundamentally from transactional leadership. While transactional leaders focus on exchanges involving rewards, punishments, and compliance with



established procedures, transformational leaders emphasize inspiration, empowerment, and personal development. This distinction is particularly relevant in educational and training environments where the objective extends beyond task completion to include the cultivation of professional competence, ethical responsibility, and lifelong learning attitudes (Antonakis et al., 2003).

The transformational leadership model consists of four primary dimensions. The first dimension, **idealized influence**, refers to the extent to which leaders act as role models who demonstrate integrity, competence, and ethical behavior. Leaders exhibiting idealized influence gain the respect and trust of followers, encouraging them to emulate desirable behaviors and internalize organizational values. Research indicates that role-modeling behaviors significantly influence follower commitment and organizational identification because individuals tend to adopt attitudes and behaviors demonstrated by respected leaders (Kark et al., 2003).

The second dimension, **inspirational motivation**, involves the leader's ability to communicate a compelling vision of the future, inspire enthusiasm, and encourage followers to pursue challenging goals. Inspirational leaders create a sense of purpose that transcends individual interests and fosters collective commitment. In educational settings, inspirational motivation has been associated with increased student engagement, persistence, and academic achievement because learners perceive their activities as meaningful and aligned with broader professional aspirations (Day et al., 2014).

The third dimension, **intellectual stimulation**, focuses on encouraging creativity, innovation, and critical thinking. Transformational leaders challenge existing assumptions, stimulate reflection, and support followers in exploring alternative solutions to complex problems. This dimension is particularly important in contemporary professional environments characterized by uncertainty, technological change, and increasing complexity. By promoting intellectual stimulation, leaders help followers develop adaptive expertise and problem-solving capabilities that are essential for professional success (García-Morales et al., 2012).

The fourth dimension, individualized consideration, refers to leaders' attention to individual needs, aspirations, and developmental goals. Through mentoring, coaching, and personalized support, transformational leaders facilitate follower growth and self-development. Studies have shown that individualized consideration contributes significantly to psychological well-being, self-



efficacy, and professional competence because individuals receive guidance tailored to their unique strengths and challenges (Breevaart et al., 2014).

Contemporary leadership research suggests that transformational leadership influences followers through several psychological mechanisms. These include increased intrinsic motivation, enhanced self-efficacy, stronger organizational identification, and greater emotional commitment. Such mechanisms ultimately contribute to improved performance, learning outcomes, and behavioral effectiveness (Ng, 2017). Consequently, transformational leadership has become increasingly relevant in educational institutions responsible for preparing future professionals in complex and safety-critical industries.

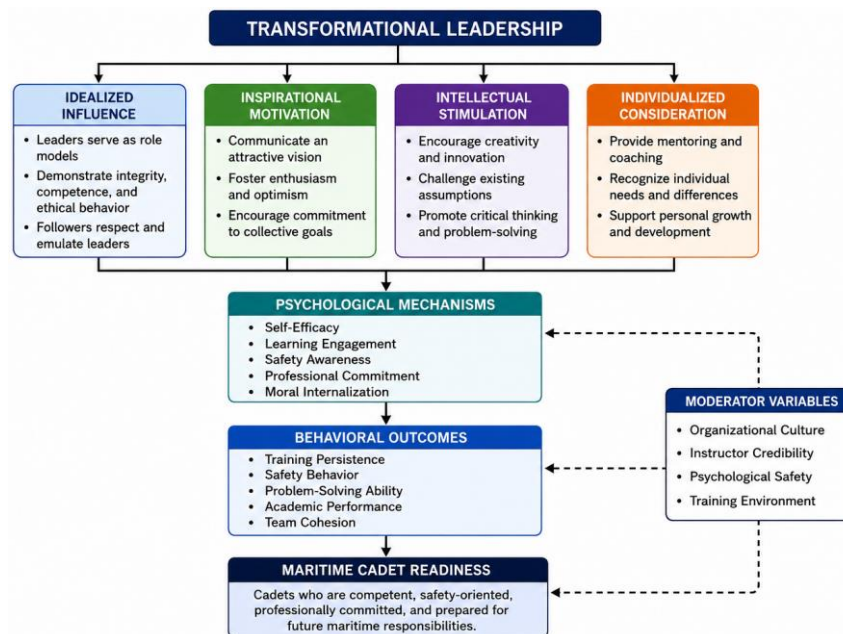


Figure 1. Proposed Conceptual Framework of Transformational Leadership Influence on Maritime Cadet Development

The conceptual framework proposed in this study suggests that transformational leadership dimensions influence maritime cadet development through several psychological mechanisms, including self-efficacy, learning engagement, safety awareness, professional commitment, and moral internalization. These mechanisms subsequently affect behavioral outcomes such as training persistence, safety behavior, problem-solving ability, academic performance, and team cohesion. Furthermore, organizational culture, instructor credibility, psychological safety, and training environments are proposed as moderating variables that may strengthen or weaken leadership effectiveness.



Maritime Cadet Development

Maritime cadet development represents a multifaceted process involving technical education, professional socialization, leadership formation, and identity construction. Unlike many professional education programs, maritime training combines classroom instruction with practical exercises, simulator-based learning, and onboard training experiences designed to prepare cadets for operational responsibilities at sea (Manuel, 2017).

Professional socialization theory suggests that individuals entering specialized occupations gradually acquire the knowledge, values, norms, and behaviors associated with their chosen profession (Trede et al., 2012). In maritime education, this socialization process is particularly significant because future officers are expected to function within highly structured, hierarchical, and safety-sensitive environments. Therefore, maritime academies must facilitate not only technical competence development but also the formation of professional identities consistent with maritime traditions and responsibilities.

The Standards of Training, Certification and Watchkeeping for Seafarers (STCW) Convention emphasizes the importance of competence-based training that integrates technical, operational, managerial, and leadership competencies (IMO, 2017). As a result, maritime cadets are required to develop a broad range of capabilities, including navigational skills, engineering knowledge, communication competence, teamwork, decision-making ability, and crisis management expertise.

Recent studies suggest that leadership development should be considered an integral component of maritime education because future officers are expected to lead multicultural crews, manage operational risks, and make critical decisions under pressure (Pauksztat et al., 2020). Leadership competencies contribute significantly to operational effectiveness, crew performance, and safety outcomes in maritime organizations.

Maritime academies can be classified as high-reliability educational environments because they prepare students for occupations where human errors may have severe consequences. High-reliability organizations emphasize continuous learning, situational awareness, teamwork, and safety-oriented behavior (Roberts & Bea, 2001). Within such environments, instructors play a central role in shaping cadets' perceptions of professionalism, responsibility, and organizational expectations.



The educational experiences of cadets are influenced not only by curriculum content but also by interpersonal interactions with instructors, mentors, and peers. Consequently, leadership behaviors demonstrated by instructors may significantly affect cadet motivation, learning engagement, psychological resilience, and professional identity development. Transformational leadership appears particularly relevant because it promotes developmental relationships that extend beyond technical instruction and facilitate holistic professional growth.

Dimension	Description	Application in Maritime Cadet Training
Idealized Influence	Leader serves as role model	Demonstrating discipline, integrity, and safety compliance
Inspirational Motivation	Creating meaningful vision	Encouraging commitment to maritime professions
Intellectual Stimulation	Encouraging critical thinking	Supporting problem-solving in simulations
Individualized Consideration	Personalized coaching	Mentoring cadets with diverse needs

Table 1. *Transformational Leadership Dimensions and Their Application in Maritime Education*

The application of transformational leadership within maritime education provides a practical framework for enhancing cadet development. Through role-modeling, vision communication, critical-thinking facilitation, and personalized mentoring, instructors can support both academic achievement and professional formation.

Safety Culture in Maritime Education

Safety culture has become a central concept in maritime management due to the industry's inherently hazardous nature. Maritime accidents often result from complex interactions between technical failures, environmental conditions, organizational deficiencies, and human factors (Reason, 1997). Consequently, developing strong safety cultures has become a strategic priority for maritime organizations and educational institutions alike.

Safety culture refers to the shared values, beliefs, norms, and practices that influence how individuals perceive, prioritize, and manage safety within organizations (Cooper, 2000). A positive safety culture encourages proactive hazard identification, continuous learning, open communication, and collective responsibility for safety outcomes.

Within maritime education, safety culture development begins long before cadets assume operational responsibilities at sea. Training institutions play a crucial role in shaping safety



attitudes, risk perceptions, and behavioral expectations. Research indicates that safety-related beliefs developed during educational experiences often persist throughout professional careers, influencing future operational decisions and safety performance (Guldenmund, 2010).

Leadership represents one of the most influential determinants of safety culture. Leaders establish priorities, allocate resources, communicate expectations, and model desired behaviors. Studies consistently demonstrate that employees are more likely to engage in safe behaviors when leaders visibly prioritize safety and demonstrate commitment to safety-related values (Clarke, 2013).

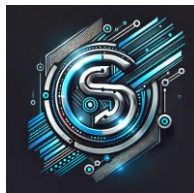
Transformational leadership may contribute significantly to safety culture development through several mechanisms. Idealized influence enables leaders to model safety-conscious behavior and ethical responsibility. Inspirational motivation helps communicate the importance of safety as a core professional value rather than a regulatory requirement. Intellectual stimulation encourages critical analysis of hazards, near misses, and operational risks. Individualized consideration supports the psychological well-being of learners, enabling them to discuss safety concerns and learn from mistakes without fear of excessive punishment.

In maritime education settings, these leadership behaviors may facilitate the transition from compliance-based safety behavior to internalized safety responsibility. Cadets who understand the underlying rationale for safety procedures are more likely to adopt proactive safety attitudes and engage in safety citizenship behaviors, such as hazard reporting, peer support, and continuous improvement initiatives. Integrating transformational leadership principles into maritime education may contribute not only to improved learning outcomes but also to the development of safety-oriented professionals capable of supporting sustainable maritime operations in increasingly complex global environments.

METHOD

Research Design

This study employed an **Integrative Literature Review (ILR)** approach to synthesize and critically evaluate existing knowledge concerning the role of transformational leadership in maritime cadet development. The integrative review method was selected because it enables the inclusion of empirical, theoretical, qualitative, quantitative, and mixed-method studies, thereby



providing a comprehensive understanding of a research topic (Snyder, 2019). Unlike traditional narrative reviews, integrative reviews facilitate systematic knowledge synthesis while identifying theoretical gaps and future research directions (Torraco, 2016).

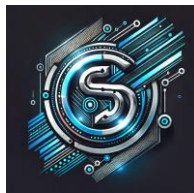
The review process followed the five-stage framework proposed by Whitemore and Knafl (2005), consisting of problem identification, literature search, data evaluation, data analysis, and presentation of findings. Additionally, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were adopted to improve transparency and replicability during the article selection process (Page et al., 2021).

Literature Search Strategy

A systematic literature search was conducted between January and March 2025 to identify relevant studies examining transformational leadership and its implications for maritime cadet development. The search process utilized six major academic databases, namely Scopus, Web of Science, ScienceDirect, SpringerLink, Emerald Insight, and Taylor & Francis Online. These databases were selected due to their extensive coverage of high-quality peer-reviewed publications in the fields of leadership studies, organizational behavior, maritime education, human resource development, and safety management. By incorporating multiple databases, the review aimed to maximize the comprehensiveness of the search and minimize the risk of omitting relevant studies.

To ensure a systematic and reproducible search process, combinations of keywords and Boolean operators were employed. The primary search string consisted of the terms “transformational leadership” AND (“marine cadet” OR “maritime cadet” OR “maritime education”) AND (“motivation” OR “learning engagement” OR “safety culture” OR “professional identity” OR “leadership development”). This search strategy was designed to capture studies that explicitly examined transformational leadership within maritime education contexts as well as studies addressing leadership-related outcomes relevant to cadet development.

To further enhance the breadth of the review, additional searches were conducted using related keywords such as *maritime training*, *leadership effectiveness*, *high-reliability organizations*, and *safety behavior*. These supplementary search terms were included to identify potentially relevant studies from adjacent fields that could provide theoretical or empirical insights into leadership processes within safety-critical and training-oriented environments. Such an approach is consistent with recommendations for integrative literature reviews, which emphasize



the importance of capturing interdisciplinary evidence to develop a comprehensive understanding of the phenomenon under investigation.

The search was restricted to publications published between 2000 and 2025. This time frame was selected to capture contemporary developments in transformational leadership theory and research while ensuring relevance to current maritime education practices and organizational challenges. Following the retrieval of search results, all identified records were exported and screened for relevance according to the predetermined inclusion and exclusion criteria. This systematic search strategy provided a robust foundation for the subsequent stages of study selection, quality assessment, and thematic synthesis.

Inclusion and Exclusion Criteria

To ensure the relevance, quality, and rigor of the literature included in this review, a set of predefined inclusion and exclusion criteria was established prior to the screening process. The criteria were developed based on the study objectives and were applied consistently throughout the article selection procedure. Establishing clear eligibility criteria is essential in integrative literature reviews to reduce selection bias and ensure that the synthesized evidence directly addresses the research questions.

Studies were included in the review if they met several requirements. First, publications had to be published between 2000 and 2025 to ensure that the review captured contemporary developments in transformational leadership theory and maritime education research. Second, only studies published in peer-reviewed academic journals were considered, as peer review serves as an important indicator of scientific quality and methodological rigor. Third, publications had to be written in English to ensure consistency in data extraction and analysis. Fourth, studies were required to examine transformational leadership or closely related leadership constructs relevant to follower development, motivation, or organizational outcomes. Fifth, the reviewed studies had to investigate educational, military, maritime, training, or other safety-critical organizational contexts where leadership plays a significant role in shaping individual and collective performance. Finally, studies were included if they reported findings related to at least one of the following themes: motivation, learning engagement, safety behavior, professional identity, organizational commitment, leadership effectiveness, or leadership development.



Conversely, studies were excluded if they did not meet the established eligibility criteria. Publications consisting solely of conference abstracts were excluded because they typically provide limited methodological and empirical information. Unpublished dissertations, working papers, and non-peer-reviewed reports were also excluded to maintain the overall quality and reliability of the evidence base. Furthermore, studies focusing exclusively on transactional leadership without addressing transformational leadership dimensions were omitted, as they fell outside the scope of the present review. Articles lacking sufficient methodological information, such as unclear research designs, data collection procedures, or analytical methods, were also excluded to ensure the credibility of the synthesized findings. Finally, duplicate records identified across multiple databases were removed during the screening process to prevent redundancy and avoid potential bias in the analysis.

The application of these inclusion and exclusion criteria resulted in a collection of studies that were both methodologically sound and directly relevant to understanding the role of transformational leadership in maritime cadet development. This systematic selection process enhanced the validity and reliability of the review findings and provided a robust foundation for the subsequent stages of thematic analysis and conceptual framework development.

Study Selection Process

The study selection process followed PRISMA procedures. Initially, 742 records were identified across the selected databases. After removing duplicate records, 615 articles remained for title and abstract screening. Subsequently, 138 articles were selected for full-text assessment.

Following the application of inclusion and exclusion criteria, 67 studies were retained for final analysis.

The selection process is summarized in Figure 2.

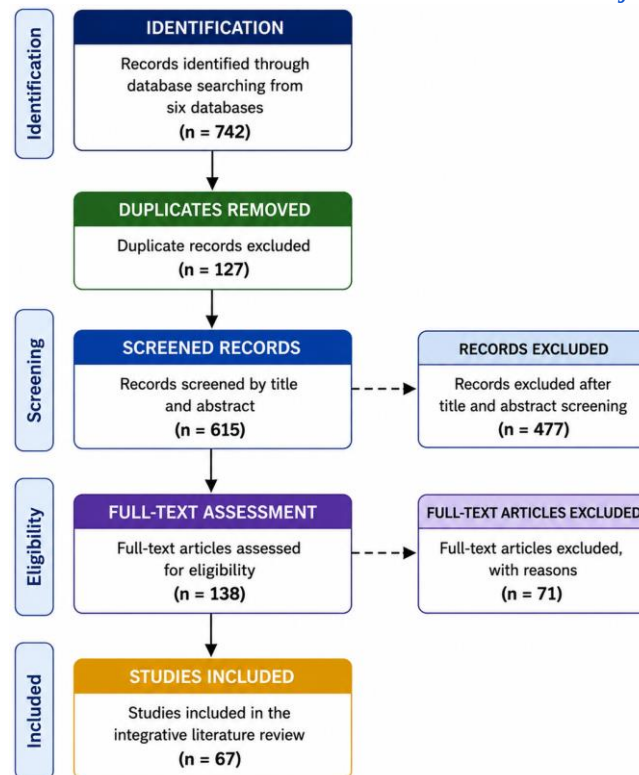


Figure 2. PRISMA Flow Diagram

Quality Assessment

To ensure methodological rigor, each study was evaluated based on:

1. Clarity of research objectives.
2. Appropriateness of research design.
3. Data collection procedures.
4. Analytical rigor.
5. Theoretical contribution.
6. Relevance to maritime cadet development.

Studies meeting at least four of the six quality criteria were included in the final synthesis. Preference was given to studies published in high-impact journals indexed by Scopus and Web of Science, particularly within the fields of leadership, education, organizational behavior, maritime management, and safety science.

Data Extraction and Analysis

A structured data extraction form was developed to collect relevant information from each study, including:



Category	Description
Author(s)	Publication authors
Year	Year of publication
Context	Educational, military, maritime, or organizational setting
Research Design	Qualitative, quantitative, mixed methods
Leadership Dimension	Transformational leadership components examined
Key Findings	Main outcomes and conclusions

Table 2. *Data Extraction and Analysis*

The extracted data were analyzed using thematic synthesis procedures (Thomas & Harden, 2008).

The analysis was conducted in three stages:

Stage 1: Coding Leadership Dimensions

Studies were coded according to the four transformational leadership dimensions:

1. Idealized Influence
2. Inspirational Motivation
3. Intellectual Stimulation
4. Individualized Consideration

Stage 2: Mapping Leadership Mechanisms

The coded dimensions were mapped onto psychological mechanisms affecting cadets, including:

1. Self-efficacy
2. Learning engagement
3. Safety awareness
4. Professional commitment
5. Moral internalization

Stage 3: Identifying Outcomes and Moderators

Leadership outcomes and contextual moderators were identified and categorized into:

Behavioral Outcomes

1. Training persistence
2. Academic performance
3. Safety behavior



4. Problem-solving capability
5. Team cohesion

Moderating Factors

1. Organizational culture
2. Instructor credibility
3. Psychological safety
4. Training environment

The final synthesis enabled the development of a conceptual framework explaining how transformational leadership contributes to maritime cadet readiness.

RESULTS AND DISCUSSION

Transformational Leadership and Cadet Motivation

The findings of this integrative literature review indicate that transformational leadership plays a significant role in enhancing maritime cadets' motivation and commitment throughout their educational and training experiences. Motivation is a critical factor in maritime education because cadets are required to operate within highly structured learning environments characterized by strict discipline, demanding academic requirements, and intensive practical training. Under such conditions, maintaining sustained motivation is essential for successful learning and professional development.

Transformational leaders influence motivation primarily through inspirational motivation and idealized influence. Inspirational motivation enables leaders to communicate a compelling vision that helps cadets understand the broader significance of their training and future professional responsibilities. When instructors effectively connect daily learning activities with the mission of ensuring maritime safety and supporting global trade, cadets are more likely to perceive their educational experiences as meaningful rather than merely obligatory (Shamir et al., 1993). This sense of purpose contributes to stronger intrinsic motivation and greater persistence in overcoming academic and operational challenges.

Furthermore, idealized influence strengthens motivation by providing positive role models who demonstrate professional competence, ethical behavior, and commitment to maritime values. Social learning theory suggests that individuals tend to emulate respected authority figures whose



behaviors are perceived as credible and desirable (Bandura, 1986). Within maritime academies, instructors who consistently model professionalism and integrity can inspire cadets to internalize similar values and maintain long-term commitment to their career goals.

Research conducted by Bono and Judge (2003) demonstrated that transformational leadership positively influences followers' self-concordance, resulting in greater effort and persistence toward goal attainment. In maritime education contexts, this mechanism may explain why cadets under transformational leadership exhibit stronger engagement with training activities and greater resilience when facing operational and academic pressures. Consequently, transformational leadership contributes not only to immediate motivation but also to the development of enduring professional commitment.

Intellectual Stimulation and Learning Engagement

Another important finding emerging from the literature concerns the role of intellectual stimulation in promoting learning engagement and cognitive development among maritime cadets. Modern maritime operations increasingly require adaptive expertise, critical thinking, and effective decision-making due to technological advancements, automation, and rapidly changing operational environments. Therefore, maritime education must extend beyond procedural instruction and foster higher-order cognitive skills.

Intellectual stimulation encourages followers to question assumptions, explore alternative perspectives, and engage actively in problem-solving processes. Rather than simply transmitting information, transformational leaders challenge cadets to think critically about operational scenarios, evaluate risks, and develop evidence-based solutions. Such leadership behaviors are particularly relevant in maritime training environments where decision-making errors may have serious safety consequences.

Several studies have reported positive relationships between transformational leadership and learning engagement. For example, Piccolo and Colquitt (2006) found that transformational leadership enhances task motivation and learning orientation by stimulating followers' intellectual curiosity. Similarly, Chiaburu et al. (2014) reported that intellectually stimulating leadership behaviors promote knowledge acquisition and adaptive learning among trainees. These findings suggest that transformational leadership creates a learning climate in which cadets are encouraged to participate actively in educational activities rather than passively receiving information.



The review identified several learning-related outcomes associated with intellectual stimulation. Cadets exposed to transformational leadership demonstrated higher levels of cognitive engagement, reflective learning, problem-solving competence, and decision-making confidence. Cognitive engagement refers to the willingness of learners to invest mental effort in understanding complex concepts and solving challenging problems. Reflective learning involves critically evaluating experiences and integrating lessons into future behavior. Both competencies are essential for maritime professionals who must operate effectively under uncertain and dynamic conditions.

Moreover, intellectual stimulation supports the development of adaptive expertise. Unlike routine expertise, which relies primarily on established procedures, adaptive expertise enables individuals to respond effectively to novel situations and unexpected challenges (Hatano & Inagaki, 1986). This capability is increasingly important within the maritime sector as technological innovation continues to transform ship operations and navigation systems.



Figure 2. Psychological Mechanisms Linking Transformational Leadership and Cadet Readiness

The framework presented in Figure 2 illustrates how transformational leadership contributes to maritime cadet readiness through several psychological mechanisms. Leadership behaviors influence motivation, self-efficacy, learning engagement, and professional identity formation, which subsequently affect behavioral outcomes such as persistence, teamwork, academic



achievement, and safety behavior. Ultimately, these outcomes contribute to the development of competent and resilient maritime professionals.

Leadership and Safety Culture Development

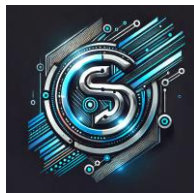
One of the most significant themes emerging from the literature concerns the relationship between transformational leadership and safety culture development. Safety culture is particularly important within maritime organizations because operational failures can result in severe human, environmental, and economic consequences. Consequently, maritime education institutions must cultivate safety-oriented attitudes and behaviors long before cadets enter professional practice.

The review findings suggest that transformational leadership contributes to safety culture through both direct and indirect mechanisms. Directly, leaders communicate the importance of safety and model appropriate safety-related behaviors. Indirectly, transformational leadership influences psychological factors such as trust, commitment, and moral responsibility that encourage individuals to prioritize safety in their daily activities.

Idealized influence appears particularly important in shaping safety culture because leaders serve as visible examples of desired behavior. When instructors consistently demonstrate adherence to safety procedures and ethical standards, cadets are more likely to internalize safety as a core professional value rather than viewing it merely as a regulatory requirement. This process of safety internalization is critical because sustainable safety performance depends on personal commitment rather than external enforcement alone (Neal & Griffin, 2006).

Inspirational motivation also contributes significantly to safety culture by helping cadets understand the broader purpose of safety practices. Rather than perceiving safety procedures as bureaucratic constraints, cadets exposed to transformational leadership are encouraged to view safety as an integral component of professional responsibility and operational excellence. This perspective aligns with contemporary safety management approaches that emphasize proactive risk management and collective responsibility.

Empirical evidence supports these relationships. Barling et al. (2002) found that transformational leadership positively predicts occupational safety outcomes by influencing employees' safety consciousness and safety-related behaviors. Similarly, Mullen and Kelloway (2009) reported that transformational leadership enhances safety participation and encourages employees to engage proactively in safety improvement initiatives. These findings are particularly



relevant to maritime education because they suggest that leadership interventions during training may have long-term implications for future safety performance.

Another important finding concerns the relationship between transformational leadership and psychological safety. Psychological safety refers to individuals' perceptions that they can express concerns, ask questions, and admit mistakes without fear of negative consequences (Newman et al., 2017). In maritime training environments, psychological safety facilitates learning from errors and encourages open communication regarding operational risks. Transformational leaders contribute to psychological safety by fostering supportive relationships and encouraging constructive dialogue, thereby creating conditions conducive to continuous learning and safety improvement.

The literature indicates that transformational leadership supports the development of safety culture by promoting safety awareness, ethical responsibility, proactive behavior, and continuous learning. These outcomes are particularly valuable within maritime education because they prepare cadets to operate safely and effectively in complex operational environments. Consequently, integrating transformational leadership principles into instructor development programs may represent an effective strategy for strengthening both educational quality and maritime safety outcomes.

The synthesis of findings across motivation, learning engagement, and safety culture demonstrates that transformational leadership provides a comprehensive framework for supporting maritime cadet development. Through its influence on psychological mechanisms and behavioral outcomes, transformational leadership contributes to the formation of competent, resilient, and safety-oriented maritime professionals capable of meeting the challenges of contemporary maritime operations.

Professional Identity Formation

Professional identity formation represents one of the most important developmental outcomes of maritime education and training. Beyond acquiring technical competencies, maritime cadets must develop a strong sense of professional identity that aligns with the values, responsibilities, and expectations associated with maritime occupations. Professional identity refers to an individual's understanding of themselves as a member of a particular profession and encompasses professional values, beliefs, attitudes, and behavioral standards (Ibarra, 1999).



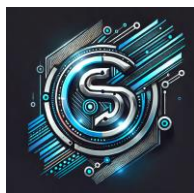
Within maritime education, professional identity development is essential because future officers are expected to perform leadership functions, manage operational risks, and uphold safety standards in highly complex and multicultural environments.

The findings of this review suggest that transformational leadership significantly contributes to professional identity formation through mentoring, role modeling, and value-based communication. Transformational leaders provide cadets with opportunities to observe professional behaviors and internalize occupational values through direct interaction and experiential learning. According to identity-based leadership perspectives, leaders influence followers not only by directing behavior but also by shaping how individuals perceive themselves and their roles within organizations (Lord & Hall, 2005). Consequently, instructors who demonstrate professionalism, ethical responsibility, and commitment to safety can positively influence cadets' perceptions of the maritime profession.

Idealized influence plays a particularly important role in professional identity development because cadets often view instructors and senior officers as prototypes of the professionals they aspire to become. Through consistent demonstrations of competence, integrity, and accountability, transformational leaders provide behavioral models that reinforce professional norms and expectations. Research conducted by Pratt et al. (2006) suggests that role models significantly influence professional identity construction by helping individuals develop coherent understandings of professional behavior and occupational purpose. Within maritime academies, instructors who consistently embody maritime values contribute to stronger identification with the profession and greater commitment to future career aspirations.

Inspirational motivation also contributes to identity formation by helping cadets understand the broader significance of their future roles. Maritime professions involve responsibilities that extend beyond technical operations to include environmental stewardship, crew welfare, and public safety. Leaders who communicate a compelling vision of professional service and responsibility encourage cadets to view themselves as future contributors to global maritime operations rather than merely technical specialists. This process strengthens professional commitment and reinforces occupational meaning.

Another important mechanism involves individualized consideration. Cadets enter maritime education with diverse backgrounds, experiences, and career aspirations. Through mentoring and



personalized support, transformational leaders help cadets navigate developmental challenges and construct professional identities that align with both personal values and occupational expectations. Day and Harrison (2007) argue that leadership development and identity development are closely interconnected processes because leadership experiences influence how individuals conceptualize themselves within professional communities.

The literature further indicates that professional identity formation contributes directly to confidence, responsibility, and career commitment. Cadets who develop strong professional identities demonstrate greater motivation to achieve competence, adhere to professional standards, and pursue continuous learning opportunities. Moreover, strong professional identification has been associated with increased resilience and adaptability when individuals encounter workplace challenges or organizational changes (Trede et al., 2012). These findings suggest that transformational leadership contributes not only to short-term educational outcomes but also to long-term professional development.

Leadership Dimension	Psychological Outcome	Behavioral Outcome
Idealized Influence	Trust and commitment	Safety compliance
Inspirational Motivation	Increased motivation	Persistence
Intellectual Stimulation	Critical thinking	Problem-solving
Individualized Consideration	Self-confidence	Academic performance

Table 3. *Effects of Transformational Leadership on Maritime Cadet Outcomes*

The relationships summarized in Table 3 indicate that each transformational leadership dimension contributes to specific psychological and behavioral outcomes. Collectively, these outcomes support the holistic development of maritime cadets and facilitate their transition into competent maritime professionals.

Moderating Factors

Although transformational leadership demonstrates significant potential for enhancing cadet development, the literature suggests that its effectiveness is influenced by several contextual and organizational factors. These moderating variables determine the extent to which transformational leadership behaviors translate into positive psychological and behavioral outcomes.

Organizational Culture

Organizational culture emerged as one of the most frequently cited moderators in the literature. Organizational culture refers to shared assumptions, values, beliefs, and norms that



guide behavior within institutions (Schein & Schein, 2021). Transformational leadership is more likely to produce positive outcomes when leadership messages are aligned with organizational practices and institutional values. If leaders promote safety, learning, and professional development while organizational systems reward contrary behaviors, followers may experience inconsistency that undermines leadership effectiveness.

Within maritime academies, organizational culture influences how cadets interpret leadership behaviors and institutional expectations. A culture emphasizing professionalism, collaboration, and continuous improvement reinforces transformational leadership processes, whereas highly bureaucratic or punitive cultures may limit their effectiveness. Therefore, leadership development initiatives should be integrated with broader organizational efforts to cultivate supportive learning environments.

Instructor Credibility

Instructor credibility constitutes another critical moderator affecting transformational leadership outcomes. Credibility reflects the extent to which followers perceive leaders as competent, trustworthy, and authentic. Research consistently demonstrates that leadership influence depends largely on followers' perceptions of leader legitimacy and expertise (Hannah et al., 2014).

In maritime education settings, cadets are more likely to accept guidance and internalize values when instructors demonstrate both technical competence and practical experience. Leaders who communicate inspiring visions but lack professional credibility may struggle to gain follower commitment. Conversely, instructors who combine transformational behaviors with demonstrated expertise are more likely to foster trust, motivation, and professional identification among cadets.

Psychological Safety

Psychological safety also plays a crucial role in determining leadership effectiveness. Psychological safety refers to a shared belief that individuals can express ideas, ask questions, and admit mistakes without fear of humiliation or punishment (Edmondson & Lei, 2014). Educational environments characterized by psychological safety encourage experimentation, reflection, and learning from failure.

Transformational leadership contributes to psychological safety by fostering supportive interpersonal relationships and encouraging open communication. However, the benefits of



transformational leadership may be reduced when organizational climates discourage questioning, feedback, or error reporting. In maritime education, where learning often involves simulations and practical exercises, psychologically safe environments facilitate deeper learning and improve decision-making capabilities.

Training Design

Training design represents another important moderating factor. Effective maritime training programs incorporate structured reflection, mentoring, debriefing sessions, and experiential learning opportunities. These elements provide mechanisms through which transformational leadership behaviors can influence learning outcomes and professional development.

Research on experiential learning suggests that reflection and feedback are essential for converting experiences into meaningful learning (Kolb, 2015). Consequently, transformational leadership is likely to be more effective when supported by training designs that encourage reflection, critical thinking, and personal development. Maritime academies that integrate leadership development into curriculum design may therefore achieve stronger educational and professional outcomes.

Proposed Research Propositions

Based on the findings of this review, several propositions are proposed for future empirical investigation. First, transformational leadership is expected to positively influence cadet persistence through increased self-efficacy and professional commitment. Second, intellectual stimulation is likely to enhance learning engagement and problem-solving competence. Third, idealized influence may strengthen safety culture internalization through value-based role modeling. Fourth, individualized consideration is expected to improve academic and technical performance through mentoring and developmental support. Finally, organizational culture and instructor credibility are proposed as critical moderators influencing the effectiveness of transformational leadership in maritime education contexts.

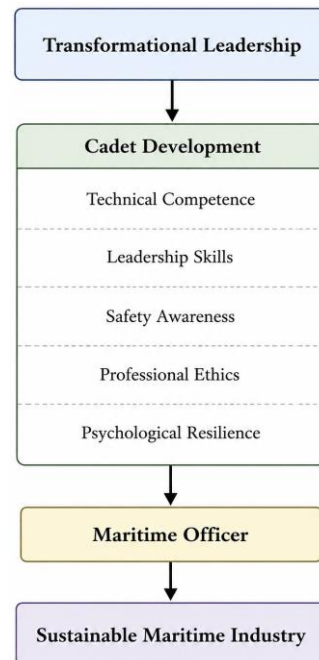
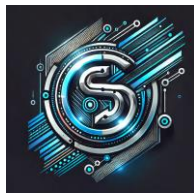


Figure 3. *Maritime Leadership Development Model*

The model presented in Figure 3 illustrates the proposed pathway through which transformational leadership contributes to maritime cadet development. By enhancing technical competence, leadership capability, safety awareness, professional ethics, and psychological resilience, transformational leadership facilitates the preparation of competent maritime officers who can contribute to sustainable and safe maritime operations.

CONCLUSION

This integrative literature review demonstrates that transformational leadership represents a highly relevant and effective leadership framework for supporting maritime cadet development within contemporary Maritime Education and Training (MET) institutions. The synthesis of evidence indicates that transformational leadership positively influences multiple dimensions of cadet development, including motivation, learning engagement, safety culture internalization, and professional identity formation. Through idealized influence, instructors serve as credible role models who promote ethical conduct, professionalism, and safety-oriented behavior. Inspirational motivation strengthens cadets' commitment by connecting educational experiences with meaningful professional goals, while intellectual stimulation encourages critical thinking, adaptive expertise, and effective decision-making. Furthermore, individualized consideration supports



personalized learning and professional growth by addressing cadets' unique developmental needs. Collectively, these leadership dimensions foster important psychological mechanisms such as self-efficacy, professional commitment, learning engagement, and psychological resilience, which contribute to improved academic and behavioral outcomes.

The review further reveals that the effectiveness of transformational leadership is not solely determined by leadership behaviors but is also influenced by contextual factors including organizational culture, instructor credibility, psychological safety, and training design. These factors shape the extent to which leadership practices translate into meaningful developmental outcomes. Based on the synthesized findings, a conceptual model is proposed in which transformational leadership enhances cadet readiness through the development of technical competence, leadership capability, safety awareness, professional ethics, and resilience. The study therefore suggests that maritime academies should integrate transformational leadership principles into instructor training, mentoring systems, curriculum design, and organizational development initiatives. Such efforts may strengthen both educational quality and long-term professional preparedness among future maritime officers. Future research should empirically test the proposed conceptual framework using quantitative and mixed-method approaches in diverse maritime education contexts to further validate the relationships identified in this review and to advance leadership scholarship within maritime education and training.

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