

Transformational Leadership and Psychological Capital on Adaptive Performance: The Mediating Role of Dynamic Managerial Capability and the Moderating Effects of Emotional Intelligence and Cognitive Capability

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Abstract

The global security environment is defined by volatility, uncertainty, complexity, and ambiguity (VUCA), requiring military officers to exhibit adaptive performance to maintain strategic superiority. Despite institutional assumptions that exposure to military doctrine produces agile leaders, discrepancies in officer performance trajectories reveal a research gap regarding how leadership and psychological traits convert into adaptation under pressure. To address this gap, this study analyzes the influence of transformational leadership and psychological capital on adaptive performance among Student Officers in the Regular Education program at the Indonesian Naval Staff and Command College. Furthermore, the framework tests the mediating role of dynamic managerial capability and the moderating effects of emotional intelligence and cognitive capability. Using a quantitative survey design, the study sampled 270 respondents via proportional stratified sampling from 300 mid-level student officers. Subsequent analysis using Structural Equation Modeling with AMOS revealed that transformational leadership ($\beta = 1.315, p < 0.001$) and psychological capital ($\beta = -0.262, p = 0.001$) influence dynamic managerial capability. In contrast, transformational leadership ($\beta = 0.200, p = 0.108$), psychological capital ($\beta = 0.187, p = 0.053$), and dynamic managerial capability ($\beta = -0.135, p = 0.304$) do not directly affect adaptive performance. Moreover, dynamic managerial capability did not mediate the effect of transformational leadership ($\beta = -0.178, p = 0.413$) or psychological capital ($\beta = 0.035, p = 0.279$) on adaptive performance. Similarly, emotional intelligence did not moderate the relationship between dynamic managerial capability and adaptive performance ($\beta = 0.001, p = 0.237$), whereas cognitive capability significantly strengthened this relationship ($\beta = 0.005, p < 0.001$). Ultimately, this research refines the microfoundations of dynamic capabilities by positioning cognitive capacity, specifically fluid intelligence, as an interpretative filter that dictates how managerial potential converts into adaptive performance during crises.

1. INTRODUCTION

The global security environment is characterized by volatility, uncertainty, complexity, and ambiguity (Bennett & Lemoine, 2014). In the maritime domain, these volatile conditions manifest through rapid crisis escalations, unpredictable actions by state and non-state actors along crowded sea lanes, and interplay between international maritime law, economic interests, and military posturing (Teece et al., 1997). Furthermore, the proliferation of military technologies, encompassing cyber warfare systems and unmanned autonomous vessels, compounds this complexity and shortens the time available for strategic decision-making (Teece, 2009). These technological and environmental challenges are amplified for the Indonesian Navy (TNI AL) by Indonesia's geography as an archipelagic nation, holding the responsibility of securing maritime passages vital to national sovereignty and global trade (Wong et al., 2003). Consequently, naval superiority in this demanding environment is not determined solely by fleet volume, platform tonnage, or weapon sophistication; rather, it relies fundamentally on human capital. Therefore, strategic dominance requires leadership quality and the organizational capacity to adapt faster than potential adversaries (Simms, 2023).

Recognizing the critical role of human capital, the Indonesian Navy doctrinally recognizes the antecedents required for adaptive performance. First among these is transformational leadership, emphasizing a commander's ability to inspire a vision, motivate troops, and develop subordinates, which serves as a pillar in military leadership education (Bass, 1985; Bass & Riggio, 2006). In addition to external leadership, mental toughness and character strength are internal attributes for officers facing the demands of military service and deployments (Nissinen, 2022). These internal attributes are encapsulated within the psychological capital construct, which comprises hope, self-efficacy, resilience, and optimism (Luthans et al., 2007; Tang et al., 2024). Despite this doctrinal acknowledgment, an empirical research gap exists concerning the exact mechanisms that convert these personal attributes into tangible adaptive performance within rigid military hierarchies (Bonini et al., 2024).

This gap is particularly evident within formal military education. The educational curriculum at the Indonesian Naval Staff and Command College (Seskoal) operates on the pedagogical assumption that exposure to strategic theory, case studies, and crisis simulations automatically yields adaptive officers. However, this assumption remains untested, leaving the cognitive and psychological processes that transform knowledgeable officers into adaptive leaders underexplored (Fabrega et al., 2003). Historical performance data among student officers across multiple cohorts highlights this unexplored gap. Specifically, institutional records reveal discrepancies between entrance rankings and graduation rankings, demonstrating unpredictable shifts in individual performance trajectories during the educational process. Moreover, observational data indicate that officers with the highest entrance scores do not always graduate at the top of their class when subjected to dynamic tactical simulations and stress-testing. This discrepancy explicitly suggests that initial competencies, standard intelligence metrics, and prior operational experience do not linearly guarantee sustained adaptability under pressure.

To bridge the gap between innate qualities and observed field adaptability, dynamic managerial capability connects these foundational leadership qualities to future adaptive performance (Adner & Helfat, 2003; Teece, 2007). In a military context, this dynamic managerial capability is an officer's ability to sense shifts in the strategic environment, seize the initiative by developing innovative concepts of operations, and reconfigure existing forces and resources to execute those concepts under fire (Helfat & Martin, 2015). Despite its theoretical importance, the role of dynamic managerial capability as a mediating variable at the individual level has not been adequately measured within hierarchical military educational environments. Instead, most prior research on dynamic capabilities focuses on the macro-organizational level or top-tier executive management in corporate enterprises, neglecting how these vital capabilities develop at the individual officer level in the armed forces (Ambrosini & Altintas, 2019; Heubeck, 2023).

The Dynamic Capabilities View posits that such strategic adaptation relies on the deliberate renewal and reconfiguration of resources rather than their mere possession (Teece et al., 1997). Furthermore, the theoretical framework asserts that individual capacities such as emotional intelligence and cognitive capability act as regulatory filters, dictating how these accumulated managerial capabilities translate into field performance (Helfat & Peteraf, 2015; Salovey & Mayer, 1990). Specifically, analytical reasoning and emotional regulation theorize the optimal conversion of managerial potential into adaptive outcomes, preventing cognitive overload during acute crisis management (Goleman, 1995).

Building on this theoretical foundation, this study tests a model to clarify these relationships by addressing several questions: RQ1: whether transformational leadership influences adaptive performance; RQ2: whether psychological capital influences adaptive performance; RQ3: whether transformational leadership affects dynamic managerial capability; RQ4: whether psychological capital affects dynamic managerial capability; RQ5: whether dynamic managerial capability impacts adaptive performance; RQ6: whether dynamic managerial capability mediates the effect of transformational leadership on adaptive performance; RQ7: whether dynamic managerial capability mediates the effect of psychological capital on adaptive performance; RQ8: whether emotional intelligence strengthens the influence of dynamic managerial capability on adaptive performance; and RQ9: whether cognitive capability strengthens this relationship. The empirical approach uses a quantitative survey targeting Mid-level Student Officers of the Regular Education program at the Indonesian Naval Staff and Command College. This designated population represents the future strategic leadership of the military, offering a prime demographic for testing capability models in high-stress, non-commercial environments. Ultimately, the study contributes to strategic human resource management by providing empirical evidence concerning the microfoundations of dynamic capabilities (Chen et al., 2023). It clarifies exactly how leadership stimuli and psychological strength synergize to form strategic agility, thereby establishing a validated framework for military leadership adaptation to inform military education policies, talent management doctrines, and operational readiness metrics.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1 Dynamic Capabilities View

To understand this adaptation, the Dynamic Capabilities View extends the Resource-Based View by explaining how organizations and individuals sustain competitive advantages in rapidly changing environments (Teece et al., 1997). Specifically, the theory defines dynamic capabilities as the proficiency to integrate, build, and reconfigure internal and external competencies to address environmental shifts (Teece, 2009). This conceptual framework relies on three distinct activities: sensing opportunities and threats through environmental scanning, seizing these opportunities through resource mobilization, and reconfiguring asset bases to maintain alignment with external changes (Teece, 2007). Iterating continuously through these phases prevents strategic obsolescence and maintains operational relevance despite severe volatility.

At a micro level, dynamic managerial capabilities highlight individual managerial agency in driving strategic change (Aldhi et al., 2026). This individual-level capability rests on three core pillars: managerial human capital, managerial social capital, and managerial cognition (Adner & Helfat, 2003). First, managerial human capital encompasses knowledge, technical skills, and tactical experiences acquired through education, training, and deployment. Second, social capital involves resources embedded within interpersonal and professional networks, facilitating team mobilization, establishing trust, and securing institutional support. Finally, managerial cognition refers to the mental models and belief systems that shape how information is interpreted, how cognitive biases are mitigated, and how decisions are executed under pressure. Ultimately, adaptive performance is the behavioral manifestation of these underlying capabilities, reflecting an individual's operational flexibility, stress tolerance, and creativity in addressing unpredictable challenges (Charbonnier-Voirin & Roussel, 2012).

2.2 The Relationship Between Transformational Leadership and Adaptive Performance

In driving these adaptive behaviors, transformational leadership fosters technological innovation and drives adaptive performance by creating an organizational culture receptive to novel ideas and providing structural support for operational experimentation (Yang & Yang, 2019). Moreover, leaders who supply intellectual stimulation challenge traditional tactical assumptions, enhancing the motivation of followers to adapt to environmental turbulence (Putra et al., 2024). Transformational leadership operates on the core premise that followers perform beyond standard expectations when intellectually challenged rather than merely micro-managed. Under conditions of competitive intensity, technological shifts, and operational changes, transformational leadership ensures individuals remain adaptive and innovative rather than retreating into rigid operational postures (Avolio & Bass, 1991). Consequently, by articulating a compelling vision and providing individualized support, leaders construct psychological safety that encourages subordinates to step confidently outside established procedural boundaries to solve novel problems. **H1:** Transformational leadership has a positive influence on the adaptive performance of students at Seskoal.

2.3 The Relationship Between Psychological Capital and Adaptive Performance

Parallel to external leadership stimuli, psychological capital encompasses the states of hope, optimism, resilience, and self-efficacy, acting collectively as an internal determinant of adaptability during volatile conditions (Luthans et al., 2007). Consequently, employees with elevated psychological capital adjust to operational changes, acquire skills rapidly, and confront challenges without succumbing to burnout (Tan & Antonio, 2022). These internal psychological resources directly elevate the capacity for adaptive performance by mitigating stress responses and maintaining a goal-oriented focus during crises (Luo et al., 2022). For instance, resilience ensures a naval officer can recover from a

tactical miscalculation without descending into organizational paralysis. Similarly, optimism provides the drive to seek alternative operational solutions when primary plans are thwarted by adversary actions. Therefore, Conservation of Resources theory posits that individuals with such psychological capital are motivated to amass resources, displaying enhanced reactivity during emergencies. **H2:** Psychological capital has a positive influence on the adaptive performance of students at Seskoal.

2.4 The Relationship Between Transformational Leadership and Dynamic Managerial Capability

Beyond directly impacting performance, transformational leadership facilitates dynamic capabilities by articulating a vision that provides strategic direction for collaborative innovation efforts (Cera & Abbas, 2023). Furthermore, transformational leaders inspire subordinates to question the status quo and provide individualized competency development, actions that activate the sensing and seizing dimensions inherent in dynamic managerial capability (Dwapatesty et al., 2021). In addition, the role-modeling inherent in transformational leadership builds the interpersonal trust required to mobilize social capital and drive organizational reconfiguration (Grant et al., 2007). For example, when military instructors articulate clear strategic visions and employ intellectual stimulation, they prompt subordinates to challenge entrenched tactical doctrines and explore innovative operational solutions (Ramadhani et al., 2025). This instructional disruption of cognitive inertia subsequently enriches the managerial human capital and social capital of the officer corps. **H3:** Transformational leadership has a positive influence on the dynamic managerial capability of students at Seskoal.

2.5 The Relationship Between Psychological Capital and Dynamic Managerial Capability

Much like leadership, psychological capital fortifies a manager's proficiency in navigating operational goals and bolsters the development of dynamic managerial capabilities (Lin et al., 2023). As a result, managers with psychological capital recognize strategic opportunities and overcome operational barriers, enhancing their capability to respond to environmental shifts (Wowiling & Turang, 2023). Specifically, self-efficacy embedded within psychological capital encourages active participation in innovation, solidifying the cognitive and social capital pillars required for executing dynamic managerial action (Darvishmotevali & Ali, 2020). Moreover, individuals possessing hope and optimism are highly proactive in accumulating managerial resources to combat environmental uncertainty. By utilizing resilience to endure operational reconfiguration, managers effectively build denser professional networks and cognitive schema that serve as the bedrock of dynamic managerial capability. **H4:** Psychological capital has a positive influence on the dynamic managerial capability of students at Seskoal.

2.6 The Relationship Between Dynamic Managerial Capability and Adaptive Performance

Bridging these internal capacities and external outcomes, dynamic managerial capability impacts performance by enabling leaders to react to external environmental shifts (Eikelenboom & de Jong, 2019). Consequently, managers exhibiting robust dynamic capabilities make rapid decisions that directly increase organizational adaptability and competitive survival (Johnson et al., 2017). This integrated foundation of managerial human, social, and cognitive capital provides the strategic flexibility necessary to translate operational threats into adaptive performance (Wheelen & Hunger, 2012). By sensing the environment, seizing initiatives, and reconfiguring assets, an officer translates this managerial capacity into observable tactical flexibility. Ultimately, possessing dynamic capabilities ensures an organization does not merely absorb environmental shocks but reorganizes its posture to actively exploit the tactical landscape. **H5:** Dynamic managerial capability has a positive influence on the adaptive performance of students at Seskoal.

2.7 The Mediating Role of Dynamic Managerial Capability

Functioning as a central conduit, dynamic managerial capability mediates the link between leadership stimuli, psychological resources, and performance outcomes (Zhou et al., 2019). Through this mediation, managers utilizing dynamic capabilities facilitate a culture of creativity, safely managing constrained resources while leading complex change processes (Parker et al., 2016). As a result, dynamic capabilities propel innovation, translating leadership guidance and psychological potential into adaptability and superior field performance (Hill et al., 2020). This mediation mechanism posits that transformational leadership and psychological capital build capacity, while dynamic managerial capability provides the processing framework strictly required to execute adaptive behaviors. Therefore, in an educational command environment, integrating transformational inputs and internal capital requires a specific processing domain; dynamic capability represents this exact functional area where doctrinal theory synthesizes with personal ingenuity. **H6:** Transformational leadership has a positive influence on adaptive performance through the dynamic managerial capability of students at Seskoal.

H7

Psychological capital has a positive influence on adaptive performance through the dynamic managerial capability of students at Seskoal.

2.8 The Moderating Role of Emotional Intelligence

Beyond these core mediation paths, emotional intelligence determines the ceiling of leadership effectiveness by moderating the application of technical skills and strategic capabilities within stressful environments (David Aimee, 2024). Specifically, leaders possessing high emotional intelligence utilize their managerial capabilities more efficiently to motivate teams and navigate high-pressure transformations without succumbing to emotional exhaustion or interpersonal conflict (Caputo et al., 2021). Theoretically, emotional intelligence strengthens the relationship between dynamic managerial strategies and adaptive outcomes by managing interpersonal dynamics, fostering empathy, and maintaining team cohesion during crises where cognitive overload might otherwise fracture group operations (O'Boyle et al., 2011). Together, the dimensions of self-awareness, self-regulation, empathy, motivation, and social skills operate as a buffer, ensuring the friction of rapid resource reconfiguration does not degrade into internal hostility. **H8:** Emotional intelligence strengthens the influence of dynamic managerial capability on the adaptive performance of students at the Seskoal Regular Education Program.

2.9 The Moderating Role of Cognitive Capability

Similarly acting as a regulatory filter, cognitive capability moderates the translation of foundational abilities into performance changes by dictating how rapidly and accurately individuals process shifting situational variables (Lim et al., 2024). By doing so, cognitive capacity allows individuals to discern ambiguous patterns and adjust physical or tactical execution efficiently (Zou & Goerge, 2003). Grounded extensively in the Cattell-Horn-Carroll theory of intelligence, cognitive capability differentiates the strength of the effect dynamic managerial capabilities exert on adaptive performance, acting as the definitive operational filter (Herreen & Zajac, 2017). Consequently, the critical alignment between control modes and cognitive resources ultimately determines performance under pressure (Kim et al., 2026). Ultimately, officers with elevated fluid reasoning, knowledge retention, and rapid visual processing speeds bridge the gap between latent managerial potential and immediate tactical reactivity, translating conceptual strategy into physical deployment without debilitating cognitive latency. **H9:** Cognitive capability strengthens the influence of dynamic managerial capability on the adaptive performance of students at the Seskoal Regular Education Program.

The Conceptual Framework of this research shown in Fig. 1.

[INSERT FIGURE 1]

Figure 1. **Conceptual Framework**

3. RESEARCH DESIGN AND EMPIRICAL PROCEDURES

3.1 Research Subjects and Sampling Techniques

This study used a quantitative exploratory design to thoroughly measure structural relationships among the theoretical variables (Creswell & Clark, 2017). Data collection targeted the entire population of 300 Student Officers enrolled in the Regular Education program at the Indonesian Naval Staff and Command College. This population encompassed the 2024 cohort (150 officers who had completed the program) and the 2025 cohort (150 officers currently undergoing the curriculum). The target population was defined by institutional criteria requiring a minimum rank of Major with at least two years in grade and a cumulative minimum of 12 years of active military service. These parameters ensured all respondents possessed tactical and managerial experience derived from assignments as commanders of naval vessels or marine battalions, thereby supporting the validity of responses regarding managerial constructs.

To draw the sample accurately, the study applied a proportional stratified sampling strategy to ensure equitable statistical representation across the two academic cohorts (Lohr, 2010). Furthermore, power analysis guided by structural equation modeling parameters necessitated a minimum sample size calculated as ten times the number of estimated parameters. With 26 parameters defining the model, structural equation modeling demanded a strict baseline of 260 respondents. Subsequently, the sampling strategy yielded 270 valid participant responses, comprising 135 respondents randomly selected from each cohort stratum. This robust sampling methodology effectively mirrored the population strata, mitigating representation bias within the military context. Finally, demographic statistics firmly confirm the suitability of the sample for assessing complex managerial constructs, with the mean age of respondents at 40.0 years and a mean active service length of 17.3 years (see Table 1 for a detailed description of the research subjects).

Table 1
Description of Research Subjects

Category	Statistic	Cohort I (Estimate)	Cohort II (Estimate)	Combined (Estimate)
Age (Years)	Minimum	36	35	35
	Maximum	44	45	45
	Mean	40.2	39.8	40.0
	Standard Deviation	2.1	2.3	2.2
Years of Service	Minimum	13	12	12
	Maximum	21	22	22
	Mean	17.5	17.1	17.3
	Standard Deviation	2.8	3.0	2.9
Note: Cohort I = 2024 Cohort; Cohort II = 2025 Cohort.				

Table 1. **Description of Research Subjects**

[INSERT Table 1]

3.2 Research Instruments

Regarding measurement, transformational leadership was operationalized using the Transformational Leadership Inventory (Podsakoff et al., 1990). The comprehensive scale consists of 23 items distributed across six dimensions: articulating a vision, providing an appropriate model, fostering the acceptance of group goals, high-performance expectations, providing individualized support, and intellectual stimulation. Similarly, psychological capital was meticulously measured using a 24-item questionnaire established by Luthans et al. (2007), encompassing the four psychological dimensions of hope, optimism, resilience, and self-efficacy. Next, dynamic managerial capability was assessed using an 11-item instrument adapted from Widiyanto et al. (2021), rigorously evaluating managerial human capital, managerial social capital, and managerial cognition. Furthermore, emotional intelligence was quantified via a 15-item scale based on Goleman (1995), precisely measuring self-awareness, self-regulation, motivation, empathy, and social skills. Additionally, cognitive capability was captured using the Self-Report Measure of Cognitive Abilities (Herreen & Zajac, 2017), utilizing 19 items mapped to the Cattell-Horn-Carroll theory encompassing fluid reasoning, comprehension-knowledge, and visual processing. Lastly, adaptive performance was operationalized using a 19-item scale developed by Charbonnier-Voirin and Roussel (2012), assessing behavioral outcomes such as creativity, reactivity in emergencies, interpersonal adaptability, training and learning effort, and managing work stress (Pulakos et al., 2000).

To ensure consistency, selected constructs used a five-point Likert response format ranging from strongly disagree to strongly agree (Bishop & Herron, 2015). The instrument adaptation process strictly adhered to International Test Commission guidelines, actively incorporating forward translation by two independent translators, backward translation to verify conceptual stability, cognitive debriefing with target populations, and comprehensive expert validity reviews. As a result, expert panel evaluations successfully yielded Content Validity Ratios and Content Validity Indices of exactly 1.00 for all retained items, verifying that the linguistic nuances of complex constructs were accurately captured. Consequently, structural mathematical estimates specify reflective latent variable structures.

3.3 Data Analysis Technique

Following rigorous data collection, the empirical data were analyzed using Structural Equation Modeling operating on the AMOS 22 analytical platform. The Maximum Likelihood estimation method was initially applied, which inherently requires evaluation against assumptions of multivariate normality. However, preliminary diagnostic checks revealed a critical ratio of 6.712, explicitly violating the multivariate normality assumption by exceeding the acceptable threshold of ± 2.58 . To adequately address this violation without discarding critical data outliers or heavily reducing the required sample size, the study formally employed the Bootstrap Bias-Corrected Confidence Interval technique utilizing 95 percent intervals and rigorous resampling protocols to securely establish accurate standard errors (Bollen & Stine, 1993; Byrne, 2010). Once normality issues were strategically mitigated, measurement model evaluation relied on standard statistical benchmarks: factor loadings > 0.40 , Comparative Fit Index > 0.90 , Tucker-Lewis Index > 0.90 , and Root Mean Square Error of Approximation < 0.08 . For the final analysis, structural model reporting details corresponding beta coefficients, standard errors, and probability values. Additionally, moderation interaction effects were systematically estimated using Ping's two-step single indicant technique, parsimoniously creating interaction variables without artificially inflating model complexity or inducing multicollinearity (Ping, 1995). It should be noted that all reported structural path estimates inherently represent statistical associations within a cross-sectional analytical framework rather than absolute causal determinants measured over time.

4. RESULTS

4.1 Common Method Bias Test Results

Before evaluating the structural paths, Common Method Bias and multicollinearity were systematically evaluated using Variance Inflation Factor threshold criteria (Podsakoff et al., 2012). The diagnostic values revealed that all construct interrelationships maintained Variance Inflation Factor scores safely below the conservative threshold of 3.3, with the solitary exception being the correlation directly between transformational leadership and dynamic managerial capability. This specific relationship recorded a Variance Inflation Factor value of 3.918, which still safely remains below the 5.0 upper boundary. Consequently, the analytical diagnostic results strongly indicate that neither common method bias nor severe multicollinearity fundamentally distorts the dataset.

4.2 Measurement Model Test Results

Moving to the measurement model (Fig. 2), convergent validity was robustly confirmed across all systematically evaluated constructs (see Table 2 for Indicator Loadings, Composite Reliability, and Average Variance Extracted). First, transformational leadership reported strong factor loadings between 0.694 and 0.913, yielding an excellent Composite Reliability of 0.930 and an Average Variance Extracted of 0.677. Second, psychological capital demonstrated high individual item loadings ranging from 0.769 to 0.944, a Composite Reliability of 0.946, and a strong Average Variance Extracted of 0.813. Third, dynamic managerial capability recorded robust loadings between 0.834 and 0.941, securing a Composite Reliability of 0.957, and an Average Variance Extracted of 0.881. Fourth, emotional intelligence exhibited solid loadings from 0.689 to 0.922, generating a Composite Reliability of 0.939, and an Average Variance Extracted of 0.756. Fifth, cognitive capability presented highly reliable loadings between 0.758 and 0.899, attaining a Composite Reliability of 0.888, and an Average Variance Extracted of 0.727. Finally, adaptive performance showed consistent loadings ranging from 0.587 to 0.958, appropriately reaching a Composite Reliability of 0.927, and an Average Variance Extracted of 0.718.

Table 2
Indicator Loadings, Composite Reliability (CR), and Average Variance Extracted.

Variable	Indicator	Indicator Loading	CR	AVE
Transformational Leadership	Articulating a Vision	0.901	0.930	0.677
	Providing an Appropriate Model	0.896		
	Fostering Acceptance of Group Goals	0.867		
	High Performance Expectations	0.758		
	Providing Individualized Support	0.846		
	Intellectual Stimulation	0.840		
Psychological Capital	Hope	0.868	0.946	0.813
	Optimism	0.865		
	Resilience	0.930		
	Self-Efficacy	0.941		
Dynamic Managerial Capability	Managerial Human Capital	0.965	0.957	0.881
	Managerial Social Capital	0.911		
	Managerial Cognition	0.940		
Emotional Intelligence	Self-Awareness	0.898	0.939	0.756
	Self-Regulation	0.924		
	Motivation	0.915		
	Empathy	0.850		
	Social Skills	0.748		
Cognitive Capability	Fluid Reasoning	0.872	0.888	0.727
	Comprehension-Knowledge	0.828		
	Visual Processing	0.857		
Adaptive Performance	Creativity	0.713	0.927	0.718
	Reactivity in Emergencies	0.873		
	Interpersonal Adaptability	0.869		
	Training and Learning Effort	0.876		
	Managing Work Stress	0.894		
Note: CR = Composite Reliability; AVE = Average Variance Extracted.				

In addition to convergent validity, discriminant validity was completely satisfied across the entire model architecture. For every single construct, the square root of its specific Average Variance Extracted significantly exceeded its corresponding inter-construct correlations (Table 3. Inter-Variable Correlations), thereby passing the strict Fornell-Larcker criteria. With validities robustly established, modified measurement model fit statistics met all established

thresholds: CMIN/DF = 2.649, GFI = 0.911, AGFI = 0.865, NFI = 0.952, TLI = 0.959, CFI = 0.969, RMSEA = 0.078, and RMR = 0.011, collectively demonstrating exceptional structural adequacy.

Table 3 Inter-Variable Correlations.						
Variable	Transformational Leadership	Psychological Capital	Dynamic Managerial Capability	Emotional Intelligence	Cognitive Capability	Adaptive Performance
Transformational Leadership	0.870					
Psychological Capital	0.715	0.814				
Dynamic Managerial Capability	0.863	0.760	0.879			
Emotional Intelligence	0.770	0.780	0.771	0.798		
Cognitive Capability	0.440	0.489	0.477	0.667	0.859	
Adaptive Performance	0.443	0.443	0.423	0.579	0.822	0.838
Note: Bold values on the diagonal represent the AVE square root.						
variance in adaptive performance ($R^2 = 0.690$).						

[INSERT FIGURE 2]

Figure 2. **Measurement Model**

Note

CFA structural paths for the measurement model.

Table 2. **Indicator Loadings, Composite Reliability (CR), and Average Variance Extracted.**

[INSERT Table 2]

Table 3. **Inter-Variable Correlations.**

[INSERT Table 3]

4.3 Structural Equation Test Results

With a valid measurement model established, comprehensive structural path analysis (illustrated in Fig. 3 and detailed in Table 4) revealed that transformational leadership does not have a direct effect on adaptive performance ($\beta = 0.200$, $p = 0.108$), directly rejecting H1. Similarly, psychological capital demonstrated a statistically non-significant direct effect on adaptive performance ($\beta = 0.187$, $p = 0.053$), thus rejecting H2. In contrast, transformational leadership had a highly significant positive effect on dynamic managerial capability ($\beta = 1.315$, $p < 0.001$), strongly supporting H3. Conversely, psychological capital presented a significant negative influence on dynamic managerial capability ($\beta = -0.262$, $p = 0.001$), prompting the acceptance of H4 under an inverse trajectory. Furthermore, dynamic managerial capability did not exert a significant direct effect on adaptive performance ($\beta = -0.135$, $p = 0.304$), conclusively rejecting H5.

Table 4
Path Coefficients between Aspects and Research Variables.

Independent Variable / Predictor	Direction	Dependent Variable / Criterion	β	Sig
Transformational Leadership	→	Dynamic Managerial Capability	1.315	0.000
Psychological Capital	→	Dynamic Managerial Capability	-0.262	0.001
Transformational Leadership	→	Adaptive Performance	0.200	0.108
Psychological Capital	→	Adaptive Performance	0.187	0.053
Emotional Intelligence	→	Adaptive Performance	-0.392	0.007
Cognitive Capability	→	Adaptive Performance	1.060	0.000
Inter DMC/Emotional Intell	→	Adaptive Performance	0.003	0.237
Inter DMC/Cognitive Cap	→	Adaptive Performance	0.013	0.000
Dynamic Managerial Capability	→	Adaptive Performance	-0.135	0.304
Transformational Leadership	→	Articulating a Vision	0.878	0.000
Transformational Leadership	→	Providing an Appropriate Model	0.885	0.000
Transformational Leadership	→	Fostering Acceptance of Group Goals	0.867	0.000
Transformational Leadership	→	High Performance Expectations	0.765	0.000
Transformational Leadership	→	Providing Individualized Support	0.850	0.000
Transformational Leadership	→	Intellectual Stimulation	0.841	0.000
Psychological Capital	→	Hope	0.861	0.000
Psychological Capital	→	Optimism	0.864	0.000
Psychological Capital	→	Resilience	0.929	0.000
Psychological Capital	→	Self-Efficacy	0.943	0.000
Dynamic Managerial Capability	→	Managerial Human Capital	0.958	0.000
Dynamic Managerial Capability	→	Managerial Social Capital	0.921	0.000
Dynamic Managerial Capability	→	Managerial Cognition	0.941	0.000
Cognitive Capability	→	Self-Awareness	0.861	0.000
Cognitive Capability	→	Self-Regulation	0.836	0.000
Cognitive Capability	→	Motivation	0.860	0.000
Emotional Intelligence	→	Empathy	0.760	0.000
Emotional Intelligence	→	Social Skills	0.861	0.000
Emotional Intelligence	→	Fluid Reasoning	0.910	0.000
Emotional Intelligence	→	Comprehension-Knowledge	0.919	0.000
Emotional Intelligence	→	Visual Processing	0.895	0.000
Adaptive Performance	→	Creativity	0.715	0.000

Independent Variable / Predictor	Direction	Dependent Variable / Criterion	β	Sig
Adaptive Performance	→	Reactivity in Emergencies	0.874	0.000
Adaptive Performance	→	Interpersonal Adaptability	0.870	0.000
Adaptive Performance	→	Training and Learning Effort	0.876	0.000
Adaptive Performance	→	Managing Work Stress	0.895	0.000

Table 4. **Path Coefficients between Aspects and Research Variables.**

[INSERT Table 4]

[INSERT FIGURE 3]

Figure 3. **Structural Model of Adaptive Performance after Index Modification**

Note

= path coefficient; p = probability value; R^2 = coefficient of determination.

Regarding the suspected mediation mechanisms, extensive bootstrapping analysis (Table 5. Mediation Effects on Adaptive Performance Model) formally confirmed the absence of indirect mediation effects. Specifically, dynamic managerial capability did not mediate the relationship between transformational leadership and adaptive performance ($\beta = -0.178$, $p = 0.413$, CI: $[-0.679; 0.262]$), resulting directly in the rejection of H6. Likewise, dynamic managerial capability did not mediate the relationship between psychological capital and adaptive performance ($\beta = 0.035$, $p = 0.279$, CI: $[-0.024; 0.169]$), actively rejecting H7.

Table 5
Mediation Effects on Adaptive Performance Model.

Effect	Endogenous Variable	Exogenous Variable	Estimates	Lower	Upper	P
Direct (a)	TL	DMC	1.420	1.232	1.914	0.000
Direct (a)	PC	DMC	-0.300	-0.803	-0.117	0.001
Direct (b)	DMC	AP	-0.098	-0.403	0.134	0.304
Direct (c')	TL	AP	0.156	-0.057	0.479	0.233
Direct (c')	PC	AP	0.155	-0.005	0.446	0.124
Indirect (ab)	TL → DMC	AP	-0.178	-0.679	0.262	0.413
Indirect (ab)	PC → DMC	AP	0.035	-0.024	0.169	0.279
Note: TL = Transformational Leadership; PC = Psychological Capital; DMC = Dynamic Managerial Capability; AP = Adaptive Performance.						

Finally, examining moderation interaction tests (Table 6. Path Analysis for Moderation) revealed that emotional intelligence does not significantly strengthen the critical relationship between dynamic managerial capability and adaptive performance ($\beta = 0.001$, C.R. = 1.183, $p = 0.237$), rejecting H8. However, cognitive capability significantly moderated and robustly strengthened the core relationship between dynamic managerial capability and adaptive performance ($\beta = 0.005$, C.R. = 4.222, $p < 0.001$), strongly supporting H9. Overall, the highly integrated structural model

successfully explained 78.6% of the variance in dynamic managerial capability ($R^2 = 0.786$) and an impressive 69.0% of the variance in adaptive performance ($R^2 = 0.690$).

Table 6
Path Analysis for Moderation.

Path Analysis	Estimate	C.R	P
AP <- EI	-0.346	-2.697	0.007
AP <- CC	1.088	11.346	0.000
AP <- InterDE	0.001	1.183	0.237
AP <- InterDC	0.005	4.222	0.000
AP <- DMC	-0.098	-1.028	0.304
<i>Note: AP = Adaptive Performance; EI = Emotional Intelligence; CC = Cognitive Capability; DMC = Dynamic Managerial Capability; InterDE = Interaction DMC and EI; InterDC = Interaction DMC and CC.</i>			

Table 5. Mediation Effects on Adaptive Performance Model.

[INSERT Table 5]

Table 6. Path Analysis for Moderation.

[INSERT Table 6]

5. DISCUSSION

5.1 Transformational Leadership, Psychological Capital, and Dynamic Managerial Capability

Structural testing reveals the precise mechanisms governing strategic agility in organizational hierarchies. Initially, the positive impact of transformational leadership on dynamic managerial capability empirically validates the role of external catalytic forces operating heavily in hierarchical contexts (Saadah, 2024). When military instructors and commanding officers systematically articulate clear strategic visions and employ intense intellectual stimulation, they effectively drive subordinates to vigorously challenge entrenched tactical doctrines and explore innovative operational solutions. These structured leadership interactions subsequently enrich managerial human capital through efficient knowledge transfer and actively fortify managerial social capital via the collaborative team dynamics necessary for rapid maneuvering. Although the cross-sectional design captures these capability accumulations merely as a snapshot of ongoing professional building, it effectively highlights the profound continuous impact of intensive mentorship.

On the other hand, the statistical finding that psychological capital exerts a significant negative influence on the formation of dynamic managerial capability poses a profound theoretical paradox that explicitly challenges traditional positive psychology paradigms applied in the military. According to standard Conservation of Resources Theory, individuals fortified with high hope, optimism, and self-efficacy are typically highly proactive in amassing new managerial resources (Luo et al., 2022). Yet, in the strictly controlled, high-stakes military training environment, hyper-elevated optimism and unyielding self-efficacy inadvertently foster cognitive rigidity or overconfidence, potentially causing officers to underestimate critical environmental shifts (Sutrisno et al., 2024). This fundamentally suggests that an over-reliance on internal psychological fortitude, without the structural vulnerability required to accurately sense emerging threats, stunts the crucial acquisition of dynamic managerial capabilities. Therefore, while counterintuitive,

exceptional resilience in this specific context might unfortunately equip officers with the endurance to stubbornly sustain failing operations rather than the agility to strategically reconfigure their assets.

5.2 The Moderating Role of Cognitive Capability and Emotional Intelligence

In understanding how these capabilities ultimately translate to action, identifying cognitive capability as a pivotal moderating variable reveals the strict operational limits of managerial capabilities when they are isolated from foundational cognitive processing frameworks (Schmitt, 2014). Crucially, the findings definitively clarify that merely possessing a sophisticated toolkit of managerial knowledge and extensive social networks does not automatically guarantee responsive action under severe duress. Indeed, the complete lack of significant direct and mediated paths linking managerial capability to adaptive performance empirically demonstrates a profound latency phenomenon: a significant delay exists between conceptually formulating a strategic response and executing a physical tactical pivot. Cognitive capability functions specifically as the primary processing engine that eliminates this operational latency, dictating the exact speed and accuracy with which accumulated managerial potential converts directly into tangible adaptive performance on the battlefield or in simulated crises. Specifically, officers demonstrating advanced fluid intelligence and superior visual processing identify complex threat patterns swiftly, actively extracting tactical knowledge from complex managerial cognition schemas to dictate immediate emergency reactivity (Adna & Sukoco, 2020; Kim et al., 2026). Conversely, operational execution severely lags for individuals hindered by lower cognitive capabilities, entirely regardless of their deep dynamic managerial capabilities, strictly because the requisite analytical translation mechanism remains fatally constrained. This explicit reliance on cognitive processing speed empirically confirms the fundamental micro-foundational necessity of rapid intelligence processing in chaotic environments. Furthermore, this finding indicates that sheer mental agility takes clear precedence over emotional regulation, which did not significantly moderate the relationship, during acute operational shocks (Wright et al., 1995). Emotional intelligence did not actively alter the relationship between managerial capability and adaptability simply because emotional regulation cannot substitute for the high-speed spatial and logical processing required to rapidly recalculate operational variables under direct threat.

5.3 Integrative Interpretation and Contextual Boundaries

Taking a broader systemic view, adaptive performance within the high-stakes military context relies entirely on an integrated mechanism rather than isolated behavioral traits or static knowledge pools. The comprehensive structural model powerfully demonstrates that while transformational leadership effectively constructs dynamic managerial capabilities, this capability foundation remains functionally latent and largely inert unless firmly catalyzed by formidable cognitive capacity. Consequently, overarching strategic adaptability fundamentally requires an exact, synchronized alignment of external leadership guidance, balanced psychological endurance, structured capability acquisition, and high-speed cognitive execution. By accurately capturing these complex elements, the model maps the rigid constraints of capability utilization, precisely showing that inherent mental processing limits directly throttle the output of adaptive behaviors, which logically renders direct and mediating capability paths statistically non-significant when assessed broadly without explicitly accounting for cognitive variance.

However, these systemic interpretations remain stringently bound to the highly structured, hierarchical, and strategically demanding environment of the Indonesian Naval Staff and Command College. The observed mechanisms of adaptation operate precisely within an institution where operational errors natively carry severe national security implications, thereby naturally suppressing baseline innovation firmly in favor of strict doctrinal adherence unless actively mitigated by superior cognitive speed and transformational coaching. Finally, the cross-sectional research design frames these behavioral snapshots distinctly within a specific operational timeline, formally acknowledging that

actual military adaptation constitutes a continuously evolving professional trajectory rather than a static, permanent outcome (Spector, 2019).

6. CONCLUSIONS

Evaluation of the adaptive performance model conclusively reveals that neither transformational leadership nor psychological capital directly impacts overall adaptive performance. Furthermore, dynamic managerial capability does not directly influence adaptive performance and entirely fails to mediate the link between foundational leadership or psychological traits and final adaptive outcomes. Nevertheless, transformational leadership actively drives the positive formation of dynamic managerial capabilities, whereas psychological capital paradoxically demonstrates a significant inverse relationship with capability formation within this specialized hierarchy. When testing moderation interactions, emotional intelligence did not meaningfully moderate the relationship between managerial capability and adaptability; conversely, cognitive capability emerged as a profound moderator that decisively strengthened this crucial relationship. Ultimately, managerial capability acquisition is wholly insufficient for tactical adaptation unless it is strictly governed by high-order cognitive processing speeds, thereby fundamentally shifting the entire approach to military leadership development.

THEORETICAL IMPLICATION

Regarding academic contributions, this research structurally refines the microfoundations of dynamic capabilities theory by empirically demonstrating that individual dynamic managerial capabilities are not autonomous traits but strictly require explicit exogenous antecedents, such as transformational leadership, to successfully develop (Chen et al., 2023; Helfat & Peteraf, 2015). Moreover, the tested model fundamentally challenges prevailing linear capability-to-performance assumptions by conclusively showing that accumulated managerial knowledge, social capital, and psychological fortitude function merely as latent potential rather than guaranteed drivers of action. The study also significantly advances conceptual precision as it integrates cognitive psychology firmly into strategic management, establishing cognitive capability, particularly fluid intelligence, as an essential, non-negotiable interpretative filter (Bontis, 1998; Schmitt, 2014). As a result, the non-significant direct and mediating paths theoretically illustrate that adaptive performance in volatile environments demands instantaneous processing faculties that dramatically transcend standard managerial preparations, thus requiring highly multi-dimensional theoretical frameworks to assess field adaptability accurately and strictly avoiding over-reliance on purely emotional constructs (Tucker & Gunther, 2009).

PRACTICAL IMPLICATION

In terms of practical application, military training frameworks must fundamentally restructure current pedagogical priorities by emphasizing specific educational interventions that aggressively prioritize cognitive capability enhancement over traditional rote doctrinal memorization. To effectively achieve this, institutions should heavily deploy complex war gaming, multi-dimensional tactical case studies, and rapid-fire crisis simulations specifically designed to intensely stimulate fluid intelligence and simultaneously accelerate visual processing accuracy under operational duress. Concurrently, the unexpected findings on psychological capital suggest an urgent pedagogical shift; since excessive optimism or rigid self-efficacy may actively hinder capability formation, resilience-building exercises must strategically use tactical failure safely within simulations to develop a calibrated mental fortitude that does not blindly blind officers to critical environmental shifts. Finally, to effectively apply transformational leadership, instructional cadres require dedicated mentoring programs that carefully guide them to provide highly customized intellectual stimulation targeted to diverse cognitive profiles, thereby fostering the specific psychological climate necessary for productive managerial capability experimentation and open innovation (Pamai et al., 2025; Yukl, 2013).

POLICY IMPLICATIONS

At a structural governance level, managing military human resources necessitates an immediate, comprehensive policy shift explicitly regarding officer selection, placement, and promotion metrics. Specifically, the national recruitment architecture and entrance examinations for advanced staff colleges must actively integrate rigorous, standardized cognitive capability diagnostics strictly alongside traditional academic, psychological, and physical assessments to optimally optimize placements. Following successful selection, career management policies should officially codify capability-based talent management doctrines, ensuring aspiring officers undergo highly diverse tours of duty deliberately engineered to comprehensively test and hone dynamic managerial capabilities across drastically varying operational sectors. Because of broader regional relevance, defense ministries actively facing rapid technological or geopolitical shifts directly in the maritime domain should broadly adapt these integrated assessment frameworks to securely anchor leadership agility and rigorously support overarching strategic defense readiness.

LIMITATION AND FUTURE RESEARCH DIRECTIONS

Despite its contributions, the study exhibits methodological constraints, primarily as the cross-sectional design effectively restricts absolute statistical proofs of long-term causality strictly regarding evolving capabilities repeatedly over an officer's career lifecycle (Spector, 2019). To appropriately remedy this, future research should implement longitudinal time-series designs to accurately capture the dynamic trajectory of psychological capital and managerial capacity as officers transition smoothly from educational environments directly into live operational theaters (Ployhart & Vandenberg, 2010). Additionally, a severe reliance on simple self-report questionnaires introduces critical social desirability biases deeply within strict hierarchical military structures, where officers may inadvertently inflate their own psychological resilience or leadership ratings (Podsakoff et al., 2012). Therefore, future methodological approaches would benefit immensely from robust multi-rater, 360-degree feedback assessments independently from peers, subordinates, and superiors to fully secure objective performance validation. Furthermore, the exclusive empirical focus deeply on the naval context restricts broader general applicability; thus, comparative studies spanning the Army, Air Force, and national police organizations are completely necessary to test the overarching robustness of the model across differing doctrinal cultures. Finally, the deliberate exclusion of broad macro-level variables limits the model's comprehensive scope; consequently, future models should formally evaluate encompassing organizational climate and psychological safety as macro-moderators exactly determining how institutional culture either actively accelerates or severely suppresses individual adaptive behavior (Frazier et al., 2017).

Declarations

INFORMED CONSENT

Informed consent was obtained offline through a written consent form prior to participation. All potential respondents were provided with a detailed explanation of the study's purpose, procedures, expected questionnaire completion time, confidentiality and anonymity assurances, voluntary nature of participation, and their right to refuse or withdraw from the study at any stage without any negative consequences or penalties. After reading and fully understanding the information provided, participants voluntarily signed the informed consent forms, thereby agreeing to participate in the study. The study involved 270 Student Officers enrolled in the Regular Education Program at the Indonesian Naval Staff and Command College (Seskoal). Upon providing informed consent, participants proceeded to complete the closed-ended questionnaire measuring the research variables.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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This research received no external funding.

Author Contribution

Conceptualization, S.S., B.T. and F.S.; methodology, S.S., B.T., I.F.A. and E.R.; software, S.S. and I.F.A.; validation, B.T., F.S., N.F.A.R. and E.R.; formal analysis, S.S., I.F.A. and E.R.; investigation, S.S.; resources, S.S., B.T. and F.S.; data curation, S.S. and E.R.; writing—original draft preparation, S.S. and I.F.A.; writing—review and editing, B.T., F.S., N.F.A.R. and E.R.; visualization, S.S. and E.R.; supervision, B.T. and F.S.; project administration, S.S. and E.R.; funding acquisition, not applicable. All authors have read and agreed to the published version of the manuscript.

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Data Availability

The authors will make the original data supporting the conclusions of this article available upon reasonable request and without undue reservation, while ensuring the confidentiality and anonymity of the participants.

ETHIC APPROVAL

The study involving human participants was conducted in accordance with the principles of the Declaration of Helsinki and relevant ethical guidelines and regulations for research involving human respondents. Ethical approval was granted by the Postgraduate School, Universitas Airlangga, under the Ethical Approval Involving Human Respondents No. 1974/B/UN3.SPS/I/PT.01.05/2025 on June 9th, 2025. Permission to conduct the research at the Indonesian Naval Staff and Command College, Sekolah Staf dan Komando TNI Angkatan Laut (Seskoal), was also granted through Letter No. B/441/VI/2025 on June 10th, 2025.

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Figures

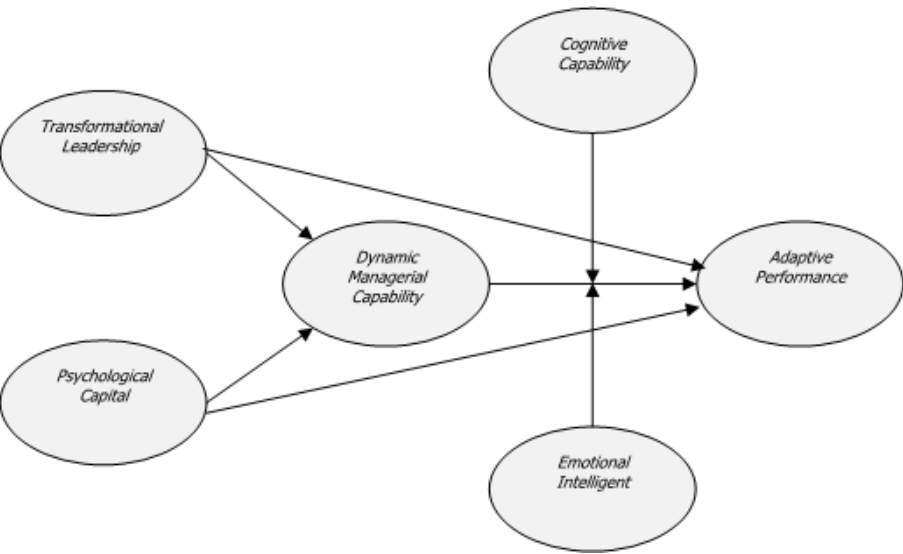


Figure 1

Conceptual Framework

Note: TL = Transformational Leadership; PsyCap = Psychological Capital; DMC = Dynamic Managerial Capability; AP = Adaptive Performance; EI = Emotional Intelligence; CC = Cognitive Capability.

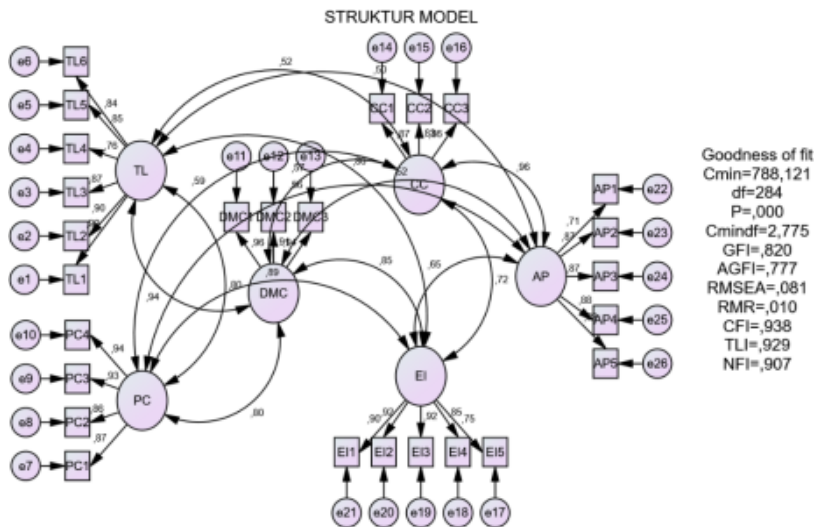


Figure 2

Measurement Model

Note: CFA structural paths for the measurement model.

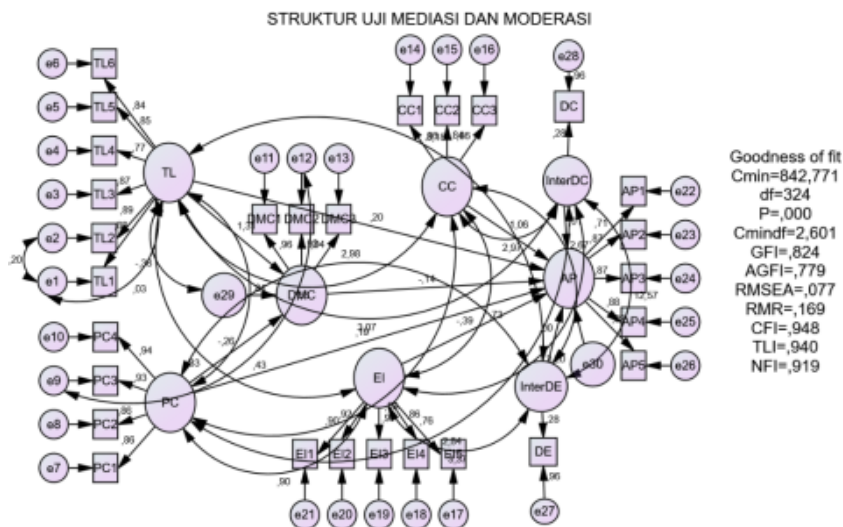


Figure 3

Structural Model of Adaptive Performance after Index Modification

Note: beta = path coefficient; p = probability value; R² = coefficient of determination.

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