

Leadership Expectations across Strategic, Operational, and Tactical C2 Levels in a Hypothetical Military Operation: The Influence of Procedural Justice, Trust in Leaders, and Digitalization in Peacetime Settings

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Abstract— A two-layered analytical approach was applied to assess the influence of actual experience with the state and functioning of procedural justice, trust in leadership, and the level of digitalization of equipment in military formations in a peacetime context on service members' expectations regarding the performance of strategic, operational, and tactical levels of leadership in the command and control (C2) system during a hypothetical operational scenario. The adopted methodological framework allows for a parallel analysis of the substantive relationships among the included variables while simultaneously accounting for the mental transition between cognitive representations of actual experience and those constructed at the level of abstract hypothesizing.

In conditions of compressed timeframes and escalating complexity, dynamism, and multi-layered operational environments, modern C2 system are conceptualized around the principle of centralized command and decentralized execution, which functions as a system-forming mechanism for maintaining operational tempo and ensuring coordination coherence across different levels of command.

Procedural justice in peacetime and established trust in leadership are recognized as fundamental prerequisites for effective mission command, as they foster perceptions of legitimacy, commitment, and willingness to take initiative at lower levels of command.

Digitalization, including the development of artificial intelligence transforms command into the so-called “digital mission command” [1, p.162] emphasizing the achievement of decision superiority. This requires leaders at all levels to interpret and effectively act upon digitally provided information, thereby enabling closer and faster alignment between strategic objectives and tactical actions on the battlefield.

The empirical study was conducted on a representative sample of 1,257 service members and included analysis of

data collected through a battery of questionnaires covering psychological and organizational measures.

Correlation and mediation analyses demonstrate that procedural justice, trust in leadership, and digitalization exert systematic and multi-level effects on expectations of leadership effectiveness in C2 systems in the context of real operational scenario. The results indicate that digitalization and trust in leadership enhance command effectiveness through the mediating role of procedural justice, with digitalization exhibiting a stronger mediating effect than trust.

Keywords— procedural justice, C2 leadership, digitalization, trust in leader.

I. INTRODUCTION

The contemporary security environment is characterized by a high degree of dynamism, complexity, and uncertainty, thereby placing increasing demands on the effectiveness of Command and Control (C2) systems. Within this context, the principle of centralized command and decentralized execution has become a system-defining mechanism for ensuring operational coherence and sustaining the tempo of operations in multi-layered operational environments [2], [3], particularly in situations characterized by “unclear situational awareness, high dynamics, a high degree of uncertainty in evolving processes, and the presence of well-prepared response forces” [4, p. 49]. The practical realization of the benefits associated with effective management has generated sustained scholarly interest in governance methods and instruments [5, p. 9]. Under conditions of high uncertainty, command effectiveness is determined not only by formal structures but also by the capacity for adaptive allocation

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of authority and responsibilities across different levels of command [6].

Within the field of organizational psychology, it is well established that perceived leadership effectiveness is shaped by a constellation of interrelated factors, among which procedural justice plays a central role. Procedural justice refers to the perceived objectivity, consistency, and transparency of organizational procedures [7], [8]. Empirical research consistently shows that higher levels of procedural justice are associated with increased leadership legitimacy, stronger organizational commitment, and a greater propensity for proactive behavior [7], [8], [9], [10], [11]. In military organizations, these effects are further amplified by the need for decision-making under conditions of risk and time pressure, where clearly defined procedural frameworks reduce uncertainty and facilitate coordination [12].

Trust in leadership is regarded as a second key determinant of organizational effectiveness. In theoretical models of transformational leadership, trust is defined as a primary mechanism through which leaders influence the attitudes and behaviors of subordinates [13], [14]. Furthermore, Kramer (1999) conceptualizes trust as a mediating variable linking organizational practices to behavioral outcomes, thereby functioning as an intervening mechanism within complex social systems [15].

Alongside these organizational determinants, digitalization has emerged as a structurally defining factor in the transformation of C2 systems [16, 17]. The advancement of information and communication technologies, including artificial intelligence, has led to the development of the concept of “digital mission command”, aimed at achieving information superiority and decision advantage [1, p.162]. From the perspective of network society theory, it has been emphasized that digital technologies reconfigure structures of power and coordination, thereby enabling increased integration and adaptability [18]. In the context of military systems, it has been argued that command effectiveness depends on the extent to which information flows and technological solutions are integrated into decision-making processes [19]. The inclusion of diverse stakeholders in these debates can ensure that safety and ethical concerns are addressed without impeding progress [20, p. 17]. In this regard, “good governance is based on decisions made on the basis of thorough analyses and choices grounded in in-depth research.” [21, p.159, 160].

Despite the substantial body of theoretical and empirical research, the question of the combined effects of procedural justice, trust in leadership, and digitalization on perceptions of leadership effectiveness within hypothetical operational scenarios and reactive management through the implementation of the “Lessons Learned” process [22, p. 455] remains insufficiently explored. This issue is particularly salient in light of the cognitive limitations inherent in human evaluative processes. It has been argued that under hypothetical conditions, individuals rely on heuristic strategies and simplified mental models, which

may result in reduced differentiation between conceptually proximate categories [23]. Similarly, the theory of bounded rationality suggests that individuals tend to settle for “satisficing” decisions based on simplified cognitive schemas rather than pursuing optimal evaluations [24].

Within organizational systems, such cognitive mechanisms may give rise to holistic and weakly differentiated perceptions of leadership effectiveness across different levels. This perspective is consistent with the systems approach to organizations, which posits that organizational phenomena should be understood as the outcome of interactions among interdependent elements rather than as isolated cause-and-effect relationships [25].

The present study is situated within this integrative theoretical framework. Employing a two-layer analytical design, it investigates how military personnel’s real-world organizational experiences related to procedural justice, trust in leadership, and the level of digitalization shape their expectations regarding leadership effectiveness at the strategic, operational, and tactical levels within a hypothetical operational scenario. The methodological approach enables both the simultaneous modeling of empirical relationships among the examined variables and the analysis of the cognitive transition from experienced organizational contexts to abstract evaluative constructs.

As a result, the study advances the theoretical understanding of the multifactorial determinants of C2 leadership effectiveness by integrating organizational, psychological, and technological dimensions within a unified analytical framework. At the same time, it offers a more robust basis for interpreting empirical findings in light of the cognitive limitations inherent in evaluations grounded in hypothetical scenarios, thereby enhancing both their validity and practical applicability.

II. MATERIALS AND METHODS

A. Sample

The study sample comprises 1,257 military personnel, representing a refined subset of the initial pool of respondents (1,600 individuals). The selection was carried out by excluding respondents who provided identical ratings across all items of a questionnaire assessing military personnel’s perceptions of C2 leadership performance under conditions of potential real combat operations. This approach was adopted in order to enhance the reliability and validity of the data, ensuring that only participants who provided meaningful and differentiated responses were included in the analysis.

The sample was described according to the following parameters: gender, age, rank, and participation in overseas missions. The gender distribution is 79% male and 21% female, reflecting the traditional structure of the armed forces.

The age distribution indicates that the largest proportion of respondents falls within the 41–50 age group (39%), followed by those aged 31–40 (30%). Younger respondents (21–30 years) account for 22%, while those aged 51–60

represent 8%, and 1% are under the age of 20. These demographic data suggest that the sample is dominated by military personnel in active and mature age groups with accumulated professional experience.

In terms of rank, the percentage distribution is as follows: senior officers (41%), junior officers (36%), non-commissioned officers (15%), enlisted personnel (6%), and officer candidates (2%). This distribution demonstrates a clear predominance of the officer corps within the sample, which should be taken into account when interpreting the results, as it reflects a stronger representation of managerial-level perspectives within the military organization.

The relatively high proportion of senior officers (41%) in the sample [26] may have significantly influenced subjective assessments of procedural justice and other included construct, as this group occupies managerial and command positions and is directly involved in decision-making, resource allocation, control, and the evaluation of subordinate personnel. This suggests that their perceptions of procedural fairness may differ from those of military personnel at lower hierarchical levels.

The majority of respondents (76%) have not participated in overseas missions. This finding suggests that the study predominantly reflects perceptions of military personnel without direct operational experience in international or combat missions.

B. Methods

The empirical study involves the analysis of data collected through a battery of questionnaires covering psychological and organizational dimensions [26, 27]. These instruments are designed to assess military personnel's perceptions of the effectiveness of strategic, operational, and tactical leadership within the C2 system under conditions of a real military operation. The analytical focus is placed on the relationships between these perceptions and evaluations of the levels of procedural justice, trust in leadership, and the degree of digitalization in the peacetime functioning of military units, also measured through the questionnaires included in the battery. The data were processed using statistical methods (factor analysis, correlation analysis, regression models, etc.).

TABLE I. DESCRIPTIVE STATISTICS AND INTERNAL CONSISTENCY

Descriptive Statistics	Descriptive Statistics and Internal Consistency					
	Variable	Number of Items	Cronbach's Alpha	Mean	SD	Mean / № of Items
Independent variables	1. Procedural Justice	7	0.858	22.66	5.18	3.24
	2. Digitalization	2	0.670	5.65	2.10	2.84
	3. Trust in the Leader	12	0.929	48.39	8.65	4.02
Dependent variables	4.C2 Leadership	3	0.910	9.17	2.70	3.06
	5. Strategic Command	1	–	3.00	0.975	3.00
	6. Operational Command	1	–	3.03	0.988	3.03
	7. Tactical Command	1	–	3.14	0.976	3.14

C. Research design of the empirical study

1) Research Objective

To examine the impact of procedural justice, trust in leadership, and digitalization on military personnel's perceptions of the effectiveness of C2 leadership (tactical, operational, strategic, and overall) in real combat operations.

2) Research Tasks

a) To investigate the *influence* of procedural justice, trust in leadership, and the level of digitalization in a peacetime context on military personnel's perceptions of the effectiveness of C2 leadership in real combat operations.

b) To analyze *differences* in military personnel's perceptions of the effectiveness of the three levels of C2 leadership (tactical, operational, and strategic) in real combat operations.

3) Hypotheses

a) H1. Procedural justice, trust in leadership, and the level of digitalization in a peacetime context exert a positive (directly proportional) effect on military personnel's perceptions of the effectiveness of C2 leadership in real combat operations.

b) H2. Trust in leadership and the level of digitalization mediate the relationship between procedural justice and military personnel's perceptions of the effectiveness of C2 leadership in real combat operations.

c) H3. Trust in leadership is more strongly associated with perceptions of effectiveness at the tactical level of leadership, whereas the level of digitalization and procedural justice are more strongly associated with effectiveness at the operational and strategic levels within the C2 system.

The hypotheses are based on the described research [9], [10], [11], [13], [14], [15].

III. RESULTS

A. Descriptive Statistics

The descriptive statistics are presented in „Tab. I“. The reported descriptive statistics allow for a comprehensive analysis of central tendencies and the reliability of the scales employed.

The leading variable in terms of mean value (Mean/number of items) is trust in leadership ($M = 4.03$), indicating a high level of trust in managerial governance. This result suggests that leadership is perceived as a stable and positive factor within the organizational context.

The mean value of procedural justice ($M = 3.24$) reflects a moderately positive perception of fairness in the functioning of normative and administrative processes within the organization. The lowest mean value is observed for digitalization ($M = 2.83$), which is associated with deficiencies in the technological environment and the implementation of digital solutions.

The coefficients of internal consistency (Cronbach's alpha) are acceptable. Trust in leadership ($\alpha = 0.929$), C2 leadership ($\alpha = 0.910$), and procedural justice ($\alpha = 0.858$) demonstrate excellent reliability, indicating that the items within these scales consistently measure the respective constructs. Digitalization does not reach the conventional threshold for reliability but may be considered acceptable as a compromise ($\alpha = 0.670$).

In summary, the results outline a clear pattern of high trust in leadership, combined with moderate evaluations of organizational processes and lower evaluations of digitalization. The reliability of most scales is high, providing a solid empirical and methodological foundation for the conclusions drawn. Digitalization emerges as a problematic aspect, standing out as a potential area for organizational development and improvement. This finding is consistent with previous research by Grozdanova, which identifies the deteriorating condition of

armament and equipment, clothing, and gear as key factors contributing to the decline in the status of military personnel [27]. The tactical level of C2 leadership demonstrates significant differences, albeit with small effect sizes compared to the other two levels, which calls for a more in-depth analysis of the influencing factors.

A. Correlation Analyses

Correlation and mediation analyses were conducted, demonstrating that procedural justice, trust in leadership, and digitalization exert a systematic and multi-level influence on military personnel's perceptions of C2 leadership effectiveness in the context of real military situations. The correlation analyses of the variables included in the study are presented in "Tab. II".

The results indicate that all examined variables are positively and statistically significantly correlated. Procedural justice shows the strongest moderate associations with trust in leadership ($r = 0.45$, $p < 0.01$) and with digitalization ($r = 0.43$, $p < 0.01$). Significant moderate relationships are also observed with the different levels of C2 leadership ($r = 0.34$ – 0.40 , $p < 0.01$). This correlation pattern highlights the central role of procedural justice as a key organizational factor.

Digitalization exhibits low but significant correlations with all variables except itself, including trust in leadership ($r = .19$, $p < 0.01$) and the leadership dimensions ($r = 0.24$ – 0.29 , $p < 0.01$), suggesting a more indirect influence on organizational processes. Trust in leadership is weakly to moderately associated with all levels of leadership ($r = 0.27$ – 0.30 , $p < 0.01$), indicating its consistent role across different managerial contexts.

In summary, the results emphasize the importance of procedural justice as a leading factor associated both with trust and leadership effectiveness. Digitalization emerges as a component with a more limited yet consistent influence.

TABLE II. PEARSON CORRELATION ANALYSIS

Pearson Correlation Analysis Variables	Correlation Coefficients					
	Digitalization	Trust in the leader	C2 Leadership	Strategic Command	Operational Command	Tactical Command
1. Procedural justice	0.43**	0.45**	0.40**	0.37**	0.39**	0.34**
2. Digitalization	—	0.19**	0.29**	0.28**	0.29**	0.24**
3. Trust in the leader	—	—	0.30**	0.27**	0.27**	0.30**

TABLE III. MULTIPLE REGRESSION PREDICTING C2 LEADERSHIP

Predictor	Multiple regression coefficients				
	B	SE B	β	t	p
Constant	2.663	0.443	—	6.01	< 0.001
1. Procedural justice	0.135	0.017	0.26	7.96	< 0.001
2. Trust in the leader	0.049	0.009	0.16	5.22	< 0.001

Predictor	Multiple regression coefficients				
	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
3. Digitalization	0.190	0.038	0.15	5.01	< 0.001

Note. $N = 1122$. $R = 0.44$, $R^2 = 0.19$, Adjusted $R^2 = 0.19$, $F(3, 1118) = 88.64$, $p < 0.001$. Durbin-Watson = 1.96.

B. The influence of procedural justice, trust in leadership, and the level of digitalization in a peacetime context on military personnel's perceptions of the effectiveness of C2 leadership in real combat operations

The influence of procedural justice, trust in leadership, and the level of digitalization in a peacetime context on military personnel's perceptions of the effectiveness of C2 leadership in real combat operations was assessed using regression models.

A multiple regression analysis was conducted "Tab. III" to examine the extent to which procedural justice, trust in leadership, and digitalization predict C2 effectiveness in a potential combat situation. The model is statistically significant, $F(3, 1118) = 88.64$, $p < 0.001$, and explains 19% of the variance in C2 leadership effectiveness ($R^2 = 0.19$). All predictors are significant: procedural justice ($\beta = 0.26$, $p < .001$), trust in leadership ($\beta = 0.16$, $p < .001$), and the level of digitalization ($\beta = 0.15$, $p < 0.001$). The results indicate that higher values of these variables are associated with higher levels of perceived C2 leadership effectiveness.

In order to build and further detail the overall empirical picture, an additional stepwise multiple regression analysis was conducted "Tab. IV".

The results presented in the table indicate that in Model 1, procedural justice is a significant predictor and explains 15.5% of the variance. In Model 2, the variable trust in leadership was added, which is associated with a small but statistically significant increase in explained variance ($\Delta R^2 = 0.02$, $p < 0.001$). In Model 3, the level of digitalization further improves the model ($\Delta R^2 = 0.02$, $p < 0.001$). The final model explains 19.2% of the variance in C2 leadership effectiveness, $F(3, 1118) = 88.64$, $p < 0.001$. Overall, the results indicate that procedural justice is the key factor, while trust and digitalization have a complementary effect. Trust in leadership and digitalization contribute a small but statistically significant incremental effect. The findings suggest that rather than dominant effects, cumulative effects are observed.

The obtained results support Hypothesis 1, namely that procedural justice, trust in leadership, and the level of digitalization in a peacetime context exert a positive (directly proportional) influence on military personnel's perceptions of the effectiveness of C2 leadership in real combat operations.

Hypothesis 2, according to which trust in leadership and the level of digitalization mediate the relationship between procedural justice and military personnel's perceptions of the effectiveness of C2 leadership in real combat

operations, is examined through the Baron & Kenny (1986) model [29], which postulates the application of three regression models to extract the effects: $X \rightarrow M$, $X \rightarrow Y$, and $M \rightarrow Y$, where the effect in the second equation must be greater than that established in the third equation. This final condition was satisfied only in the model in which procedural justice serves as the predictor (X), and trust in leadership and the level of digitalization function as mediators (M). In "Tab. V" are presented the independent and joint mediating effects of the two variables on C2 leadership effectiveness in a potential combat situation (Y).

The results of the mediation analyses indicate a consistent and statistically significant indirect effect of procedural justice on perceptions of C2 leadership effectiveness in a real combat situation through two mediators—trust in leadership and digitalization.

In Model 1, procedural justice has a strong effect on trust in leadership ($B = 0.749$, $p < 0.001$), which in turn significantly predicts perceptions of C2 leadership effectiveness in a real combat situation ($B = 0.049$, $p < 0.001$). The indirect effect is small but statistically significant ($a \times b = 0.037$, 95% CI [0.020; 0.059]), accounting for approximately 17.9% of the total effect. The presence of a significant direct effect ($B = 0.170$, $p < 0.001$) indicates partial mediation.

In Model 2, procedural justice also significantly predicts digitalization ($B = 0.176$, $p < 0.001$), which in turn has a stronger effect on the dependent variable ($B = 0.188$, $p < 0.001$). The indirect effect (0.033, 95% CI [0.018; 0.054]) is comparable in magnitude to that in Model 1 and accounts for approximately 15.9% of the total effect, again indicating partial mediation.

The full model, which includes both mediators simultaneously, shows a larger total indirect effect (0.070, 95% CI [0.040; 0.100]), explaining approximately 33.8% of the relationship between procedural justice and perceptions of C2 leadership effectiveness in a real combat situation. This result indicates a cumulative mediating effect, where the two mechanisms operate in a complementary manner. Despite this, the direct effect remains significant, confirming partial mediation.

Overall, the results partially support Hypothesis 2, namely that procedural justice influences perceptions of C2 leadership effectiveness in a real combat situation both directly and indirectly through increased trust in leadership and perceived level of digitalization, with both mediators contributing similarly to the explanation of the effect.

C. Differences in military personnel's perceptions of the effectiveness of the three levels of C2 leadership (tactical, operational, and strategic) in real combat operations

The empirical evidence testing the third formulated hypothesis is presented in "Tab. VI". The assumption summarizes that trust in leadership is more strongly associated with perceptions of the effectiveness of tactical-level leadership in a real combat situation, whereas the level of digitalization and procedural justice are more strongly associated with perceptions of the effectiveness of operational and strategic-level leadership.

The analysis of the results indicates that the empirical findings do not provide conclusive statistical support for the third hypothesis, but rather partially support it at a descriptive level. The correlation coefficients demonstrate

values in the predicted direction: trust in leadership shows the highest association with perceptions of tactical-level C2 leadership effectiveness ($r = 0.30$), which is consistent with the hypothesis. The relationships of digitalization ($r = 0.29$) and procedural justice ($r = 0.39$) show slightly higher values at the operational and strategic levels, which also aligns with the theoretical assumption.

At the same time, the results of the Fisher r-to-z analysis show that all comparisons between levels are $p > 0.05$, indicating that the differences between correlations are not statistically significant. The conclusion is that the observed differences between command levels are too small to claim that a given factor is a significantly stronger predictor for one level compared to another.

TABLE IV. STEPWISE MULTIPLE REGRESSION PREDICTING C2 LEADERSHIP

Predictor	Multiple regression coefficients								
	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	R	R ²	ΔR^2	F	df	p
Constant	4.512 (0.333)***	2.987 (0.443)***	2.663 (0.443)***	—	—	—	—	—	—
1. Procedural justice	0.205 (0.014)***	0.169 (0.016)***	0.135 (0.017)***	0.39	0.16	0.16	204.71	(1, 1120)	< 0.001
2. Trust in the leader	—	0.048 (0.009)***	0.049 (0.009)***	0.42	0.17	0.02	117.87	(2, 1119)	< 0.001
3. Digitalization	—	—	0.190 (0.038)***	0.44	0.19	0.02	88.64	(3, 1118)	< 0.001

Note. $N = 1122$. $\Delta R^2 = \text{change in } R^2$. *** $p < 0.001$.

In conclusion, Hypothesis 3 receives partial support at a descriptive level (the trends are in the expected direction), but is not statistically confirmed, as no significant differences between correlations are found. It is reasonable

to conclude that, in military personnel's perceptions, the examined predictors do not demonstrate statistically significant differentiation in relation to the effectiveness of the three command levels in real combat situations.

TABLE V. MEDIATION MODELS

Mediation Models	Mediation Analysis Coefficients									
	Independent Variable (X)	Mediator (M)	Dependent Variable (Y)	$X \rightarrow M$ (B, SE, p)	$M \rightarrow Y$ (B, SE, p)	$X \rightarrow Y$ Direct Effect (B, SE, p)	Indirect Effect (a×b)	95% CI (Bootstrap)	Total Effect (c)	% Mediation
Model 1	Procedural justice	Trust in the leader	Expectations of leadership in the C2 system	B = 0.749, SE = 0.048, p < 0.001	B = 0.049, SE = 0.011, p < 0.001	B = 0.170, SE = 0.017, p < 0.001	0.037	~[0.020; 0.059]*	B = 0.207, SE = 0.015, p < 0.001	~17.9%
Model 2	Procedural justice	Digitalization	Expectations of leadership in the C2 system	B = 0.176, SE = 0.011, p < 0.001	B = 0.188, SE = 0.043, p < 0.001	B = 0.170, SE = 0.017, p < 0.001	0.033	~[0.018; 0.054]*	B = 0.207, SE = 0.015, p < 0.001	~15.9%
Complex Model	Procedural justice	Trust in the leader Digitalization	Expectations of leadership in the C2 system	Overall indirect effect	—	—	0.070	~[0.040; 0.100]*	B = 0.207, SE = 0.015, p < 0.001	~33.8%

TABLE VI. CORRELATION COEFFICIENTS AND FISHER R-TO-Z ANALYSIS

Predictor	Correlation Coefficients and Fisher r-to-z Analysis						
	<i>Strategic Command</i> r	<i>Operational Command</i> r	<i>Tactical Command</i> r	Strongest association	Fisher r-to-z (key comparisons)	Significance of differences	Conclusion
1. Procedural justice	0.37**	0.39**	0.34**	<i>Strategic Command</i>	$z \approx 0.58-1.45$	$p > 0.05$	No significant differences between levels
2. Digitalization	0.28**	0.29**	0.24**	<i>Operational Command</i>	$z \approx 1.15-1.45$	$p > 0.05$	No significant differences between levels
3. Trust in the leader	0.27**	0.27**	0.30**	<i>Tactical Command</i>	$z \approx 0.98$	$p > 0.05$	Descriptive but not statistically significant trend

IV. DISCUSSION

The interpretation of the obtained results should be considered in the context of the nature of the measured data. The present study is based on military personnel's perceptions of a hypothetical or projected combat situation rather than actual operational conditions; therefore, the obtained assessments reflect cognitive and perceptual models rather than behavioral responses in a real environment. This circumstance represents a significant methodological factor, as human judgments under conditions of hypotheticality are formed through cognitive heuristics and simplified mental models, which may reduce sensitivity to subtle differences between alternative scenarios [23]. In such conditions, individuals tend to generalize their evaluations and attribute similar significance to different but conceptually close categories. Under bounded rationality individuals do not process the full amount of available information but rely on simplified cognitive schemas, which may lead to a potential "smoothing" of differences between strategic, operational, and tactical perceptions, especially when assessments are made without real operational experience in the specific context [24].

The present study provides empirical evidence for the complex nature of the factors shaping perceptions of C2 leadership effectiveness in conditions approximating real combat situations. The obtained results confirm that organizational and technological determinants do not operate in isolation but form an interconnected system of influences, which is consistent with the systems approach to leadership [30]. The central role of procedural justice in the models aligns with established theoretical assumptions in organizational psychology. Perceived justice is identified as a key factor in building trust and leadership legitimacy [7], [31]. The results of the present study support these assumptions, showing that procedural justice has the strongest relationship with perceptions of C2 leadership effectiveness in a real combat situation. In the context of military organizations, this is particularly important, as clear and consistent procedures reduce uncertainty and support decision-making under conditions of risk [12].

The role of trust in leadership as a mediator confirms classical leadership models that regard trust as a core mechanism of effectiveness. Trust is identified as a core

element of transformational leadership and a key factor for engagement and effectiveness [13], [14]. The present results indicate that although the direct effect of trust is more moderate, its mediating role is substantial, which corresponds to the understanding of trust as a "switching mechanism" between organizational practices and behavioral outcomes [15].

Digitalization also demonstrates a significant, albeit more moderate, role, which is consistent with contemporary concepts of digital and networked governance. It is stated that information technologies transform organizational structures and processes by creating conditions for higher coordination and efficiency [18]. In addition, it is emphasized that the effectiveness of C2 systems depends on the ability to integrate information and technology into the decision-making process [19]. The present study confirms this logic by showing that digitalization has an indirect effect through the improvement of organizational processes.

A particularly important contribution of the study is the identification of a cumulative mediating effect. It is argued that multiple mediation models can operate simultaneously and mutually reinforce each other's effects, as proposed in [29]. The results indicate that trust and digitalization function as complementary mechanisms, supporting the idea of synergy between human and technological factors.

Regarding the differences between the levels of C2 leadership, the results show statistically significant but weak effects. The higher evaluations of the tactical level can be interpreted through its immediate proximity to real actions and the greater visibility of leadership behavior. This is consistent with the concept of "proximal leadership," according to which perceptions of leadership are stronger at lower hierarchical levels. The absence of substantial differences between the strategic and operational levels suggests that military personnel's perceptions are formed in a similar way at higher levels, where the distance from execution is greater [32].

It is emphasized that, from the perspective of decision-making theory under uncertainty, real differences in cognitive evaluations across management levels become most pronounced under conditions of actual stress, time pressure, and high responsibility. In the absence of such conditions (as is the case in projected scenarios),

differentiation between levels of perception is often reduced.

In this context, the lack of statistically significant differences between correlation coefficients may be interpreted not as an absence of theoretical differentiation, but as a result of contextual “smoothing” of perceptions. Military personnel are likely to perceive procedural justice, trust, and digitalization as general systemic factors influencing all levels of C2 leadership in a similar manner, without clearly distinguishing between them in a hypothetical situation.

This observation is consistent with the systems approach to organizations, according to which cognitive evaluations in complex systems are often formed as holistic representations rather than strictly differentiated structures [12]. In this sense, perceived effectiveness of different levels of C2 leadership may be understood as part of a unified mental schema rather than as separate and independently evaluated constructs.

V. CONCLUSIONS

In conclusion, the results of the study confirm that C2 leadership effectiveness is shaped by a complex interaction between procedural justice, trust in leadership, and the level of digitalization. The effects are cumulative rather than competitive. In line with theoretical models of organizational justice, transformational leadership, and the network society, the study demonstrates that sustainable leadership in contemporary military systems requires the integration of human and technological factors within a fair and trust-based organizational environment [33]. From a practical perspective, the results point to the need for the simultaneous development of organizational justice, trust, and the digital environment as interrelated elements for enhancing the effectiveness of C2 leadership.

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