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RESILIENCE OF SCHOOL PRINCIPALS IN CRISIS EDUCATION MANAGEMENT DURING WARTIME

Abstract

This study examines the mechanism linking strategic thinking, organizational culture, resilience, and management competencies of school principals under crisis conditions, with a particular focus on the mediating role of organizational culture and resilience.

The study is based on a quantitative survey conducted among school principals and administrators in Ukraine ($n = 125$). The data were analyzed using descriptive statistics, reliability analysis (Cronbach's α), Pearson correlation, multiple regression, and mediation analysis with bootstrapping procedures.

The results indicate that strategic thinking does not have a statistically significant direct effect on management competencies. Instead, its influence is realized indirectly through organizational culture and

resilience. Both mediators demonstrate significant positive effects on management competencies, with resilience emerging as the strongest predictor. The mediation analysis confirms a full mediation effect.

The findings suggest that management competencies under crisis conditions, particularly in the context of war in Ukraine, are shaped not only by cognitive capacities but also by organizational and adaptive mechanisms. The study contributes to literature by integrating cognitive, organizational, and resilience-based perspectives into a unified explanatory model of leadership effectiveness.

The results have important implications for leadership development and education policy, highlighting the need to strengthen organizational culture and resilience in addition to strategic thinking, particularly in contexts of war and post-crisis recovery.

Keywords: education management, crisis management, management competencies, strategic thinking, organizational culture, resilience, resilience of school principals, war.

Management competencies of school principals are critically important for ensuring the effective functioning of schools and achieving educational outcomes. They encompass a broad range of skills, including instructional leadership, human resource management, and operational effectiveness, which together contribute to the creation of a supportive educational environment. Well-developed management competencies enable school principals to effectively address organizational and strategic challenges, establish collaboration with stakeholders, and implement policies aimed at improving the quality of education.^{1,2}

At the same time, insufficient levels of management competencies may lead to significant problems in the functioning of educational institutions, including inefficient resource allocation, weak stakeholder communication, and difficulties in implementing educational reforms. Empirical evidence indicates that school principals often experience difficulties in implementing key leadership practices, including change management, teacher support, and the creation of a positive learning environment.³

In the Ukrainian context, these challenges become particularly acute. Educational reforms, including the implementation of the New Ukrainian School concept, require school principals not only to perform administrative functions but also to demonstrate strategic thinking, the ability to build effective teams, and to manage school development under conditions of uncertainty.^{4,5} The war has significantly disrupted the functioning of the education system in Ukraine, affecting access, infrastructure, and learning conditions.⁶ These challenges – ranging from internal displacement of students and teachers to the destruction of educational infrastructure – further increase the demands placed on school management competencies. In many communities, school principals perform not only administrative roles but also act as crisis managers and leaders of local communities, mobilizing resources to ensure safety and continuity of the educational process. In this regard, management competencies of school principals in Ukraine acquire strategic importance not only for the effectiveness

¹ Kenneth Leithwood, Alma Harris, and David Hopkins, “Seven Strong Claims about Successful School Leadership,” *School Leadership & Management* 28 (1) (2008): 27–42, <https://doi.org/10.1080/13632430701800060>.

² Tony Bush and Derek Glover, “School Leadership Models: What Do We Know?,” *School Leadership & Management* 34 (5) (2014): 553–71, <https://doi.org/10.1080/13632434.2014.928680>.

³ Mahmut Kalman and Mustafa Cüneyt Arslan, “School principals’ evaluations of their instructional leadership behaviours: Realities vs. ideals,” *School Leadership & Management* 36 (5) (2016): 508–530, <https://doi.org/10.1080/13632434.2016.1247049>.

⁴ Svitlana Sysoieva, “Osvitni reformy: osvitolohichniy kontekst” [“Educational reforms: An educological context”], Kyiv: Kyivskiy universytet imeni Borysa Hrinchenka, 2013, https://lib.iitta.gov.ua/id/eprint/711758/1/S_Sysoieva_2013_KUBG.pdf [in Ukrainian].

⁵ Olena Lokshyna, Oksana Hlushko, Alina Dzhurylo, Svitlana Kravchenko, Oksana Maksymenko, Nina Nikolska, and Oksana Shparyk, *Osvita v realiyakh viiny: oriientyry mizhnarodnoi spilnoty: Ohliadove vydannia [Education in the realities of war: Guidelines of the international community: Review edition]* (Pedahohichna dumka, 2022), <https://doi.org/10.32405/978-966-644-614-8-2022-55> [in Ukrainian].

⁶ World Bank, *Lifting Education Access and Resilience in times of Need in Ukraine (P504171): Program information document (PID), concept stage (Report No. PIDPC00063)* (World Bank, February 22, 2024), <https://documents1.worldbank.org/curated/en/099022724093-022671/pdf/P50417112fc5cf0d194f41e3af05c37ca2.pdf>.

of school management but also for ensuring the resilience of the educational system,⁷ particularly in the context of war and post-war recovery.

Recent research has increasingly focused on educational management, school leadership, and resilience in crisis and wartime settings, including a growing body of studies related to Ukraine. Existing work has examined educational management during wartime, principals' practices in Ukrainian schools, and the resilience of schools and educational systems under severe disruption.^{8,9} However, relatively limited attention has been devoted to the integrated empirical analysis of strategic thinking, organizational culture, resilience, and management competencies among Ukrainian school principals. Moreover, although empirical studies in this field do exist, only a small number employ a quantitative design capable of testing indirect relationships between these constructs. Against this background, the present study contributes by proposing and testing a mediation model of management competencies under crisis conditions in Ukraine.

Theoretical background. Previous literature indicates that school management challenges may also be shaped by structural constraints across different education systems. For example, in the Philippines, managerial capacities in areas such as budgeting, scheduling, facility maintenance, and regulatory compliance are discussed as important dimensions of school leadership.¹⁰ In addition, persistent staffing shortages may further weaken schools' organizational capacity: according to EDCOM II, 24,480 public schools were operating without principals, reflecting systemic staffing constraints in the school system.¹¹ Such constraints may limit schools' capacity to implement reforms, allocate resources effectively, and maintain safe learning environments.¹²

In the Ukrainian context, these challenges are significantly intensified by the combined effects of ongoing educational reforms and the impact of war. The New Ukrainian School reform and decentralization have expanded school autonomy and increased expectations regarding effective management, stakeholder engagement, and local decision-making.¹³ At the same time, the full-scale war has substantially increased the complexity of school leadership, requiring principals to combine administrative, educational, and crisis-management responsibilities, including ensuring safety, organizing remote learning, and coordinating displaced students and teachers.¹⁴ These conditions create a highly uncertain and dynamic environment in which traditional management approaches are often insufficient.

Strategic thinking is widely recognized as a key leadership capacity that enables school principals to anticipate challenges, define long-term goals, and allocate resources effectively. It reflects the ability to interpret complex environments and make informed decisions under conditions of uncertainty.¹⁵

⁷ Kremen V. H., ed., *Vyshcha osvita Ukrainy v umovakh voiennoho stanu ta pislivoiennoho vidnovlennia: vyklyky i vidpovidy* [Higher education of Ukraine under martial law and post-war recovery: Challenges and responses] (Kyiv: National Academy of Educational Sciences of Ukraine, 2023), <https://doi.org/10.37472/NAES-IHED-2023> [in Ukrainian].

⁸ Stanisława Nazaruk, Olena Budnyk, Tamara Tkachuk, Kateryna Fomin, Barbara Sokołowska, and Marzena Ruzskowska, "Pedagogical Discourse on Educational Management in Wartime: The Ukrainian Case," *Multidisciplinary Journal of School Education* 14 (1[27]) (2025): 13–32, <https://doi.org/10.35765/mjse.2025.1427.01>.

⁹ Lidia Londar and Marcus Pietsch, "Key Aspects of Managing Education Resilience During the War: The Case of Ukraine," *Financial and Credit Activity Problems of Theory and Practice* 4 (63) (2025): 626–43, <https://doi.org/10.55643/fcactp.4.63.2025.4676>.

¹⁰ Jeck Richard A. Mendoza and Leonora F. De Jesus, "School management and leadership in the contemporary state of education system in the Philippines," *Pantao: The International Journal of the Humanities and Social Sciences* 3 (3) (2024): 48–58, <https://doi.org/10.69651/PIJHSS030305>.

¹¹ Second Congressional Commission on Education (EDCOM II), *Fixing the foundations: A matter of national survival (EDCOM II Year Two Report)*, 2025, <https://edcom2.gov.ph/media/2025/01/EDCOM-2-Year-2-Report-Fixing-the-Foundations-2025.pdf>.

¹² Hero Jun B. Valendez, Raul C. Orogan, Virgencita B. Caro, and Gladys S. Escarlos, "Strategic Thinking, School Culture, and Resilience on Managerial Capabilities of School Leaders," *International Journal of Innovative Science and Research Technology* 10 (5) (2025): 1994–2004, <https://doi.org/10.38124/ijisrt/25may1283>.

¹³ Eurydice, *National reforms in general school education: Ukraine*, 2023, <https://eurydice.eacea.ec.europa.eu/eurypedia/ukraine/national-reforms-general-school-education>.

¹⁴ World Bank, *Education: Impact of the war in Ukraine* (World Bank, 2022), <https://documents1.worldbank.org/curated/en/099945306202211104/pdf/P1775870809f1d04d0844c0e7042abf0eb5.pdf>.

¹⁵ Brent Davies and Barbara J. Davies, "Strategic Leadership," *School Leadership & Management* 26 (1) (2006): 3–20, <https://doi.org/10.1080/1363243042000172804>.

However, strategic thinking alone does not guarantee effective management outcomes. Its impact depends on how it is translated into organizational practices and supported by internal school dynamics.

Organizational culture provides the context in which management competencies are enacted. A strong school culture is characterized by shared values, trust, collaboration, and stakeholder engagement, and plays a critical role in shaping school effectiveness and improvement processes.¹⁶ Leaders who can foster a supportive and collaborative environment are more likely to sustain innovation and ensure the successful implementation of strategic initiatives, particularly in uncertain and rapidly changing conditions.

Resilience represents another essential dimension of leadership in crisis contexts. It is widely recognized as a key determinant of leadership effectiveness under conditions of stress, disruption, and rapid change.^{17, 18} In the Ukrainian context, resilience involves not only the ability to adapt to institutional changes but also to cope with war-related challenges, including displacement, infrastructure damage, and prolonged uncertainty. School leaders who demonstrate adaptability, emotional stability, and the ability to maintain collective functioning are more effective in ensuring continuity and stability of the educational process.

Taken together, these perspectives suggest that management competencies are shaped not only by cognitive capacities but also by organizational and adaptive mechanisms. Strategic thinking provides direction, organizational culture enables coordinated action, and resilience ensures adaptability under pressure. This integrated perspective forms the basis for the conceptual model of this study, in which organizational culture and resilience are expected to mediate the relationship between strategic thinking and management competencies.

To ensure conceptual clarity and alignment between the theoretical framework and the empirical model, the key constructs used in this study are defined and linked to the proposed hypotheses. Strategic thinking is conceptualized as a cognitive capacity that enables school leaders to analyze complex environments, anticipate future developments, and make long-term decisions under conditions of uncertainty. It reflects the ability to interpret dynamic contexts and formulate strategic responses. Within this framework, strategic thinking is expected to shape internal organizational processes and adaptive capacities within schools. Organizational culture refers to the system of shared values, norms, and practices that shape collaboration, trust, and collective action within educational institutions. A strong organizational culture facilitates coordination and supports the implementation of strategic decisions. Accordingly, higher levels of strategic thinking are expected to be associated with stronger organizational culture (H1), while organizational culture is assumed to positively contribute to management competencies (H3). Resilience is defined as the ability of school leaders to adapt to changing conditions, cope with stress, and maintain organizational functioning under crisis situations. It reflects both individual and organizational adaptive capacities, which are particularly important in contexts of uncertainty and disruption. In this regard, strategic thinking is expected to be positively associated with resilience (H2), while resilience is assumed to have a strong positive effect on management competencies (H4). Management competencies are understood as a set of practical skills and abilities that enable school principals to effectively manage organizational processes, communicate with stakeholders, and implement strategic and operational decisions. In this study, management competencies are treated as the key outcome variable reflecting leadership effectiveness in crisis conditions. Taken together, these relationships suggest that strategic thinking is associated with management competencies primarily through organizational and adaptive mechanisms. Accordingly, organizational culture and resilience are expected to mediate this relationship, forming the basis for the central research hypothesis (H5).

Based on this conceptual framework, **the study aims** to test whether organizational culture and resilience mediate the relationship between strategic thinking and management competencies of school principals in the context of war in Ukraine.

¹⁶ Leithwood, Harris, and Hopkins, "Seven Strong Claims about Successful School Leadership."

¹⁷ Christopher Day, "Resilient Principals in Challenging Schools: The Courage and Costs of Conviction," *Teachers and Teaching* 20 (5) (2014): 638–54, <https://doi.org/10.1080/13540602.2014.937959>.

¹⁸ Qing Gu and Christopher Day, "Teachers' Resilience: A Necessary Condition for Effectiveness," *Teaching and Teacher Education* 23 (8) (2007): 1302–16, <https://doi.org/10.1016/j.tate.2006.06.006>.

The main research hypothesis is that strategic thinking influences management competencies indirectly through organizational culture and resilience. The study tests the following hypotheses:

H1. Strategic thinking is positively associated with organizational culture in schools.

H2. Strategic thinking is positively associated with resilience of school principals.

H3. Organizational culture is positively associated with management competencies of school principals.

H4. Resilience is positively associated with management competencies of school principals.

H5. Organizational culture and resilience mediate the relationship between strategic thinking and management competencies.

To test these hypotheses, the study employs a quantitative research approach, with the empirical basis consisting of survey data collected from school principals and administrators in Ukraine. Four research instruments were utilized in this study to measure strategic thinking, organizational culture, resilience, and management competencies of school principals. The questionnaire was developed based on relevant theoretical approaches to educational leadership and adapted to the Ukrainian context, particularly considering the conditions of crisis, war, and educational reform.

The first part of the instrument focuses on strategic thinking and consists of 12 items grouped into three subscales: systems thinking, reflection, and scenario-based planning. These subscales capture key cognitive dimensions of strategic thinking, including the ability to perceive interconnections, reflect on managerial experience, and anticipate future developments. The interpretation of mean scores for strategic thinking is presented in Table 1.

The second part assesses organizational culture and includes 13 items structured into four dimensions: shared values, digital culture, inclusion, and community engagement. These dimensions reflect contemporary transformations in school environments, including digitalization, inclusivity, and stakeholder collaboration. The interpretation of mean scores for organizational culture is presented in Table 2.

The third component measures resilience of school principals and includes 8 items grouped into three dimensions: crisis readiness, resourcefulness, and involvement. The scale captures the ability of school principals to adapt to stress, mobilize resources, and sustain collective action in crisis conditions. The interpretation of mean scores for resilience is presented in Table 3.

The final part evaluates management competencies of school principals and includes 12 items covering three domains: communication, crisis management, and project management. These domains reflect the practical competencies required for effective school management under conditions of uncertainty and transformation. The interpretation of mean scores for management competencies is presented in Table 4.

Table 1

Scale for interpreting the level of strategic thinking of school principals

Scale	Range	Descriptive Rating	Qualitative Interpretation
5	4.51–5.00	Strongly Agree	Very highly developed strategic thinking
4	3.51–4.50	Agree	Highly developed strategic thinking
3	2.51–3.50	Neutral	Moderately developed strategic thinking
2	1.51–2.50	Disagree	Low level of strategic thinking
1	1.00–1.50	Strongly Disagree	Very low level of strategic thinking

Note. Developed by the author based on the survey instrument.

Table 2

Scale for interpreting the level of organizational culture

Scale	Range	Descriptive Rating	Qualitative Interpretation
5	4.51–5.00	Strongly Agree	Very strong organizational culture
4	3.51–4.50	Agree	Strong organizational culture
3	2.51–3.50	Neutral	Moderately developed organizational culture
2	1.51–2.50	Disagree	Weak organizational culture
1	1.00–1.50	Strongly Disagree	Very weak organizational culture

Note. Developed by the author based on the survey instrument.

Table 3

Scale for interpreting the level of resilience of school principals

Scale	Range	Descriptive Rating	Qualitative Interpretation
5	4.51–5.00	Strongly Agree	Very high resilience
4	3.51–4.50	Agree	High resilience
3	2.51–3.50	Neutral	Moderate resilience
2	1.51–2.50	Disagree	Low resilience
1	1.00–1.50	Strongly Disagree	Very low resilience

Note. Developed by the author based on the survey instrument.

Table 4

Scale for interpreting the level of management competencies of school principals

Scale	Range	Descriptive Rating	Qualitative Interpretation
5	4.51–5.00	Strongly Agree	Very high level of management competencies
4	3.51–4.50	Agree	High level of management competencies
3	2.51–3.50	Neutral	Moderate level of management competencies
2	1.51–2.50	Disagree	Low level of management competencies
1	1.00–1.50	Strongly Disagree	Very low level of management competencies

Note. Developed by the author based on the survey instrument.

All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The interpretation of mean scores was standardized across all constructs to ensure consistency and comparability of results.

The empirical sample consisted of 125 respondents representing educational institutions across Ukraine. The sample is strongly dominated by school principals (approximately 84%), ensuring that the data reflects the perspectives of key decision-makers in school management. In terms of institutional type, most respondents represent public schools, which constitute over 70% of the sample. Other types of institutions are represented to a lesser extent. The geographical distribution of the sample demonstrates broad national coverage, including respondents from Eastern, Southern, Western, and Central regions of Ukraine. A substantial proportion of respondents (41.5%) reported working in frontline or war-affected communities, which allows for the analysis of management competencies under conditions of crisis and uncertainty. The sample is characterized by a predominance of rural schools (47.2%), followed by medium-sized cities and small towns, while large urban areas are less represented. The distribution of managerial experience is relatively balanced, including both early-career leaders and highly experienced school principals. At the same time, the sample is predominantly composed of female respondents and older age groups, which reflects the typical structure of educational leadership in Ukraine.

The sample size ($n = 125$) is sufficient for the application of correlation and multiple regression analysis. According to the recommendations of Green¹⁹ and Tabachnick and Fidell²⁰, the minimum required sample size for multiple regression analysis is determined by the formula $N \geq 50 + 8m$, when m is the number of independent variables in the model. In the present study, three independent variables were included (strategic thinking, organizational culture, and resilience), resulting in a minimum required sample size of $N \geq 74$. Thus, the actual sample size ($n = 125$) exceeds the recommended threshold and supports the adequacy of the regression estimates. Mediation analysis was subsequently employed to examine the indirect relationships among the variables.

Descriptive statistics were used to summarize the data and provide an initial overview of the variables. Pearson correlation analysis was used to assess the strength and direction of relationships between variables. Multiple regression was conducted to determine the contribution of each factor and identify the most significant predictors of management competencies. Mediation analysis was used to examine

¹⁹ Samuel B. Green, *How many subjects does it take to do a regression analysis?* Multivariate Behavioral Research, 1991, <https://ru.scribd.com/document/504497572/Green-1991>.

²⁰ Barbara G. Tabachnick and Linda S. Fidell, *Using Multivariate Statistics* (Pearson, 2019), <https://www.pearsonhighered.com/assets/preface/0/1/3/4/0134790545.pdf>.

indirect effects and to test whether organizational culture and resilience mediate the relationship between strategic thinking and management competencies. All statistical analyses were performed using standard statistical software, ensuring the reliability and reproducibility of the results. The level of statistical significance was set at $p \leq 0.05$.

The internal consistency of the measurement scales was assessed using Cronbach's alpha coefficients. The results indicate satisfactory to high reliability across all constructs. The highest reliability is observed for management competencies ($\alpha = 0.904$), indicating a high level of internal consistency of this construct. Cronbach's alpha values were 0.871 for strategic thinking, 0.840 for organizational culture, 0.884 for resilience, and 0.904 for management competencies. All values exceed the recommended threshold of 0.70, indicating good internal consistency of the scales and confirming the reliability of the measurement instrument (Table 5).

Table 5

Reliability analysis of the measurement scales

Construct	Number of items	Cronbach's α
Strategic thinking	12	0.871
Organizational culture	13	0.840
Resilience	8	0.884
Management competencies	12	0.904

Note. Developed by the author based on survey data.

Empirical results. Descriptive statistics were calculated to assess the levels of strategic thinking, organizational culture, resilience, and management competencies of school principals. The results indicate consistently high mean values across all constructs. Strategic thinking demonstrates a high level ($M = 4.12$, $SD = 0.47$), suggesting that school principals possess well-developed cognitive capacities for analyzing complex situations and planning future actions. Organizational culture also shows a high level ($M = 4.07$, $SD = 0.41$), indicating the presence of supportive and collaborative environments within schools. Resilience has the highest mean score ($M = 4.20$, $SD = 0.45$), reflecting a strong ability of school leaders to adapt to crisis conditions. Management competencies are likewise highly developed ($M = 4.18$, $SD = 0.43$). Overall, the descriptive results suggest that school principals demonstrate strong cognitive, organizational, and adaptive capacities, which provide a solid foundation for effective school management under crisis conditions. The descriptive statistics and correlations are presented in Table 6.

Table 6

Descriptive statistics and correlations of the study variables

Variables	ST	OC	RES	MC	Mean	SD
Strategic Thinking (ST)	1.00	0.55	0.52	0.52	4.12	0.47
Organizational Culture (OC)	0.55	1.00	0.66	0.72	4.07	0.41
Resilience (RES)	0.52	0.66	1.00	0.86	4.20	0.45
Management Competencies (MC)	0.52	0.72	0.86	1.00	4.18	0.43

Note. Developed by the author based on the survey data. All correlations are statistically significant at $p < 0.001$.

Pearson correlation analysis was conducted to examine the relationships between the study variables (Table 6). The results reveal statistically significant positive correlations among all variables. Strategic thinking is positively associated with organizational culture ($r = 0.55$, $p < 0.001$) and resilience ($r = 0.52$, $p < 0.001$), supporting hypotheses H1 and H2. Organizational culture shows a strong positive correlation with management competencies ($r = 0.72$, $p < 0.001$), while resilience demonstrates the strongest relationship with management competencies ($r = 0.86$, $p < 0.001$), supporting H3 and H4. These findings indicate that higher levels of strategic thinking are associated with stronger organizational environments and higher resilience, which in turn are linked to higher levels of management competencies.

Table 7

Multiple regression results (dependent variable: MC)

Predictor	B	SE	β	t	p
Strategic Thinking (ST)	0.026	0.048	0.028	0.54	0.588
Organizational Culture (OC)	0.277	0.061	0.266	4.51	<0.001
Resilience (RES)	0.645	0.055	0.673	11.71	<0.001
Model fit: $R^2 = 0.787$, $F = 148.7$, $p < 0.001$					

Note. VIF values were below the recommended threshold, indicating no evidence of problematic multicollinearity.

Table 8

Mediation analysis results

Path	Effect	B	p
Strategic Thinking (ST) → Management Competencies (MC)	Direct (c')	0.026	0.588
Strategic Thinking (ST) → Organizational Culture (OC)	Path a1	0.489	<0.001
Strategic Thinking (ST) → Resilience (RES)	Path a2	0.500	<0.001
Organizational Culture → Management Competencies (MC)	Path b1	0.277	<0.001
Resilience (RES) → Management Competencies (MC)	Path b2	0.645	<0.001
Strategic Thinking (ST) → Management Competencies (MC)	Total effect (c)	0.484	<0.001
Indirect effects (bootstrapping, 5000 samples)			
Indirect path	Effect	95% CI	
ST → OC → MC	0.136	[0.072; 0.237]	
ST → RES → MC	0.323	[0.159; 0.601]	
Total indirect effect	0.458	[0.269; 0.749]	

Note. Confidence intervals do not include zero, indicating statistically significant indirect effects.

Multiple regression analysis was conducted to determine the predictive power of strategic thinking, organizational culture, and resilience on management competencies. The model is statistically significant ($F = 148.7$, $p < 0.001$) and explains a substantial proportion of variance in management competencies ($R^2 = 0.787$), indicating a high explanatory power. The results show that organizational culture has a significant positive effect on management competencies ($B = 0.277$, $\beta = 0.266$, $p < 0.001$), resilience is the strongest predictor ($B = 0.645$, $\beta = 0.673$, $p < 0.001$), whereas strategic thinking does not have a statistically significant direct effect ($B = 0.026$, $\beta = 0.028$, $p = 0.588$). These findings indicate that strategic thinking does not directly influence management competencies, but its effect is likely mediated by other variables.

To test hypothesis H5, mediation analysis was conducted to examine whether organizational culture and resilience mediate the relationship between strategic thinking and management competencies. Bootstrapping procedures (5000 resamples) were used to estimate indirect effects. The results indicate that the indirect effect of strategic thinking on management competencies through organizational culture and resilience is statistically significant. At the same time, the direct effect of strategic thinking becomes non-significant when mediators are included in the model. This pattern indicates full mediation, suggesting that strategic thinking influences management competencies only indirectly through organizational culture and resilience.

The empirical results support the proposed research model. Strategic thinking is positively associated with organizational culture and resilience (H1–H2 supported). Both organizational culture and resilience significantly predict management competencies (H3–H4 supported). The mediation analysis confirms that organizational culture and resilience fully mediate the relationship between strategic thinking and management competencies (H5 supported).

The findings of this study provide important insights into the mechanisms through which management competencies of school principals are formed under crisis conditions. The results confirm that strategic thinking, while conceptually important, does not directly translate into effective management competencies. Instead, its influence is realized through organizational culture and resilience, which act as key mediating mechanisms. This result contributes to the existing literature by suggesting that cognitive capacities alone are not sufficient for effective leadership. While previous studies emphasize the importance of strategic thinking as a core leadership competency,²¹ the findings of this study

²¹ Brent Davies and Barbara J. Davies, "Strategic Leadership."

demonstrate that its impact depends on its institutional and behavioral embeddedness. In other words, strategic thinking becomes effective only when it is translated into shared organizational practices and supported by adaptive capacities.

The strong role of organizational culture identified in this study confirms prior research highlighting its importance for school effectiveness and improvement.²² A supportive organizational culture fosters trust, collaboration, and collective action, which are essential for implementing strategic decisions. In this sense, organizational culture functions as a mechanism that transforms individual cognitive capacities into coordinated organizational behavior. At the same time, resilience emerges as the most powerful predictor of management competencies. This finding is particularly significant in the context of crisis and aligns with previous research emphasizing resilience as a key leadership capacity under conditions of uncertainty and disruption.^{23, 24} The results suggest that the ability to adapt, maintain stability, and mobilize resources under pressure is more critical for effective management than strategic planning alone. In war-affected school settings, this finding suggests that adaptive continuity may be more decisive for day-to-day institutional functioning than strategic cognition alone. Importantly, the combination of these findings allows for a more integrated understanding of leadership under crisis conditions. The results indicate that effective school management is not determined by a single factor but by the interaction of cognitive, organizational, and adaptive dimensions. Strategic thinking provides direction, organizational culture enables coordination, and resilience ensures continuity and adaptability. Together, these elements form a coherent system that supports management effectiveness in complex environments.

The Ukrainian context adds an important dimension to these findings. School principals operate under conditions of war, institutional transformation, and high uncertainty, where traditional management approaches are often insufficient. In such environments, the ability to maintain organizational stability, support teachers and students, and respond to rapidly changing conditions becomes critical. The results of this study suggest that resilience and organizational culture play a central role in enabling school leaders to navigate these challenges, thereby contributing not only to school effectiveness but also to the broader resilience of the educational system. From a theoretical perspective, this study contributes to the literature by integrating cognitive, organizational, and adaptive approaches to leadership into a unified explanatory model. It extends existing research by empirically demonstrating the mediating role of organizational culture and resilience in the relationship between strategic thinking and management competencies. This contributes to a more nuanced understanding of how leadership capacities are operationalized in practice, particularly in crisis contexts. From a practical perspective, the findings have important implications for leadership development and education policy. First, training programs for school principals should move beyond a narrow focus on strategic thinking and incorporate components aimed at developing organizational culture and resilience. This includes fostering collaborative practices, strengthening team cohesion, and developing emotional and adaptive capacities. Second, policy interventions should focus on creating institutional conditions that support resilience, including professional support networks, peer-learning platforms, and psychological support mechanisms for school leaders. Third, the findings highlight the importance of context-sensitive leadership models that account for crisis conditions and uncertainty, particularly in post-war recovery settings.

Despite its contributions, this study has several limitations. First, the use of self-reported data may introduce common method bias, since all core constructs were measured from the same respondents at a single point in time, which could inflate the observed relationships between variables. Although procedural steps were taken to reduce this risk, future research should incorporate multiple data sources to enhance validity. Second, cross-sectional design limits the ability to draw causal conclusions. Accordingly, the mediation model should be interpreted as a statistical explanatory model rather than as definitive evidence of causal ordering. Longitudinal studies would provide a more robust understanding

²² Leithwood, Harris, and Hopkins, "Seven Strong Claims about Successful School Leadership."

²³ Day, "Resilient principals in challenging schools: The courage and costs of conviction."

²⁴ Gu and Day, "Teachers' Resilience: A Necessary Condition for Effectiveness."

of how management competencies develop over time. Third, the study focuses on the Ukrainian context, which may limit the generalizability of the findings to other educational systems. Future research may expand the analysis to include comparative studies across countries and educational contexts.

Overall, the study demonstrates that effective school management under crisis conditions depends not only on strategic thinking but also on the ability to build strong organizational environments and sustain resilience. These findings provide a foundation for rethinking leadership development in education and for designing policies that support school leaders in complex and uncertain environments.

Conclusions

The study examined the relationships among strategic thinking, organizational culture, resilience, and management competencies of school principals under crisis conditions. The findings show that strategic thinking does not exert a significant direct effect on management competencies; instead, its influence is realized indirectly through organizational culture and resilience. Both mediators demonstrate significant positive effects, with resilience emerging as the strongest predictor.

The study provides evidence that effective school management under crisis conditions cannot be explained by cognitive factors alone. Management competencies are shaped by the interaction of strategic thinking, organizational context, and adaptive capacity. This suggests that leadership effectiveness under crisis conditions depends on the ability to translate strategic intentions into organizational practices and to sustain resilience in the face of prolonged uncertainty. From a practical perspective, the findings indicate that leadership development in education should focus not only on strategic thinking but also on strengthening organizational culture and resilience. This requires the integration of collaborative practices, adaptive decision-making, and crisis management skills into training programs for school principals. At the policy level, it is important to create institutional conditions that support school leaders, particularly in contexts of war and post-crisis recovery.

Overall, the study contributes to a more comprehensive understanding of leadership under crisis conditions by demonstrating that management competencies are formed through the interaction of cognitive, organizational, and adaptive mechanisms. These findings provide a basis for further research and for the development of more effective leadership models in education.

Bibliography

- Bush, Tony, and Derek Glover. "School Leadership Models: What Do We Know?" *School Leadership & Management* 34 (5) (2014): 553–71. <https://doi.org/10.1080/13632434.2014.928680>.
- Davies, Brent, and Barbara J. Davies. "Strategic Leadership." *School Leadership & Management* 26 (1) (2006): 3–20. <https://doi.org/10.1080/1363243042000172804>.
- Day, Christopher. "Resilient principals in challenging schools: The courage and costs of conviction." *Teachers and Teaching* 20 (5) (2014): 638–54. <https://doi.org/10.1080/13540602.2014.937959>.
- Eurydice. National reforms in general school education: Ukraine. 2023. <https://eurydice.eacea.ec.europa.eu/eurydedia/ukraine/national-reforms-general-school-education>.
- Green, Samuel B. *How many subjects does it take to do a regression analysis?* Multivariate Behavioral Research, 1991. <https://ru.scribd.com/document/504497572/Green-1991>.
- Gu, Qing, and Christopher Day. "Teachers' Resilience: A Necessary Condition for Effectiveness." *Teaching and Teacher Education* 23 (8) (2007): 1302–16. <https://doi.org/10.1016/j.tate.2006.06.006>.
- Kalman, Mahmut, and Mustafa Cüneyt Arslan. "School principals' evaluations of their instructional leadership behaviours: Realities vs. ideals." *School Leadership & Management* 36 (5) (2016): 508–530. <https://doi.org/10.1080/13632434.2016.1247049>.
- Kremen, V. H., ed. *Vyšcha osvita Ukrainy v umovakh voiennoho stanu ta pisliavoiennoho vidnovlennia: vyklyky i vidpovidy* [Higher education of Ukraine under martial law and post-war recovery: Challenges and responses]. Kyiv: National Academy of Educational Sciences of Ukraine, 2023. <https://doi.org/10.37472/NAES-IHED-2023> [in Ukrainian].

- Leithwood, Kenneth, Alma Harris, and David Hopkins. "Seven Strong Claims about Successful School Leadership." *School Leadership & Management* 28 (1) (2008): 27–42. <https://doi.org/10.1080/13632430701800060>.
- Lokshyna, Olena, Oksana Hlushko, Alina Dzhurylo, Svitlana Kravchenko, Oksana Maksymenko, Nina Nikolska, and Oksana Shparyk. *Osvita v realiiakh viiny: oriientyry mizhnarodnoi spilnoty: Ohliadove vydannia [Education in the realities of war: Guidelines of the international community: Review edition]*. Pedahohichna dumka, 2022. <https://doi.org/10.32405/978-966-644-614-8-2022-55> [in Ukrainian].
- Londar, Lidia, and Marcus Pietsch. "Key Aspects of Managing Education Resilience During the War: The Case of Ukraine." *Financial and Credit Activity Problems of Theory and Practice* 4 (63) (2025): 626–43. <https://doi.org/10.55643/fcapter.4.63.2025.4676>.
- Mendoza, Jeck Richard A., and Leonora F. De Jesus. "School management and leadership in the contemporary state of education system in the Philippines." *Pantao: The International Journal of the Humanities and Social Sciences* 3 (3) (2024): 48–58. <https://doi.org/10.69651/PIJHSS030305>.
- Nazaruk, Stanisława, Olena Budnyk, Tamara Tkachuk, Kateryna Fomin, Barbara Sokołowska, and Marzena Ruszkowska. "Pedagogical Discourse on Educational Management in Wartime: The Ukrainian Case." *Multidisciplinary Journal of School Education* 14 (1[27]) (2025): 13–32. <https://doi.org/10.35765/mjse.2025.1427.01>.
- Second Congressional Commission on Education (EDCOM II). Fixing the foundations: A matter of national survival (EDCOM II Year Two Report). Second Congressional Commission on Education. 2025. <https://edcom2.gov.ph/media/2025/01/EDCOM-2-Year-2-Report-Fixing-the-Foundations-2025.pdf>.
- Sysoieva, Svitlana. "Osvitni reformy: osvitolohichnyi kontekst" ["Educational reforms: An educological context"]. Kyiv: Kyivskyi universytet imeni Borysa Hrinchenka, 2013. https://lib.iitta.gov.ua/id/eprint/711758/1/S_Sysoieva_2013_KUBG.pdf [in Ukrainian].
- Tabachnick, Barbara G., and Linda S. Fidell. *Using Multivariate Statistics*. Pearson, 2019. <https://www.pearsonhighered.com/assets/preface/0/1/3/4/0134790545.pdf>.
- Valendez, Hero Jun B., Raul C. Orogan, Virgencita B. Caro, and Gladys S. Escarlos. "Strategic Thinking, School Culture, and Resilience on Managerial Capabilities of School Leaders." *International Journal of Innovative Science and Research Technology* 10 (5) (2025): 1994–2004. <https://doi.org/10.38124/ijisrt/25may1283>.
- World Bank. *Education: Impact of the war in Ukraine*. World Bank, 2022. <https://documents1.worldbank.org/curated/en/099945306202211104/pdf/P1775870809f1d04d0844c0e7042abf0eb5.pdf> [in Ukrainian].
- World Bank. *Lifting Education Access and Resilience in times of Need in Ukraine (P504171): Program information document (PID), concept stage* (Report No. PIDPC00063). World Bank, February 22, 2024. <https://documents1.worldbank.org/curated/en/099022724093-022671/pdf/P50417112fc5cf0d194f41e3af05c37ca2.pdf>.

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СТІЙКІСТЬ ДИРЕКТОРІВ ШКІЛ В УМОВАХ КРИЗОВОГО УПРАВЛІННЯ ОСВІТОЮ ПІД ЧАС ВІЙНИ

У статті досліджено механізм взаємозв'язку стратегічного мислення, організаційної культури, стійкості та управлінських компетентностей керівників шкіл в умовах війни та високого рівня невизначеності. Особливу увагу приділено аналізу опосередкованого впливу організаційної культури та стійкості як ключових медіаторів.

Емпіричною основою дослідження є результати кількісного опитування керівників шкіл та адміністраторів закладів загальної середньої освіти в Україні ($n = 125$). Для аналізу даних використано методи описової статистики, аналізу надійності (коефіцієнт α Кронбаха), кореляційного аналізу Пірсона, множинної регресії та медіаційного аналізу із застосуванням бутстрепінгу.

Результати дослідження показали, що стратегічне мислення не має статистично значущого прямого впливу на управлінські компетентності. Цей вплив є опосередкованим через організаційну культуру та стійкість. Обидві змінні демонструють значущий позитивний вплив на управлінські компетентності, причому стійкість є найсильнішим предиктором. Медіаційний аналіз підтверджує наявність повної медіації.

Отримані результати свідчать про те, що управлінські компетентності керівників шкіл в умовах війни формуються завдяки не лише когнітивним здібностям, але й організаційним та адаптивним механізмам. Дослідження є важливим для розвитку теорії управління освітою, оскільки поєднує когнітивний, організаційний та адаптивний підходи в єдину пояснювальну модель ефективності лідерства.

Практична значущість результатів полягає у визначенні напрямів розвитку управлінських компетентностей керівників шкіл, зокрема необхідності посилення організаційної культури та стійкості поряд зі стратегічним мисленням, особливо в умовах війни та післякризового відновлення.

Ключові слова: управління освітою, кризове управління, управлінські компетентності, стратегічне мислення, організаційна культура, стійкість, стійкість директорів шкіл, війна.

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