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Measuring Organizational Learning Mechanisms in the Turkish Education System: Scale Adaptation and Validation Study

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Abstract

Organizational learning is widely acknowledged in educational research, yet a gap remains between theoretical understanding and practical application, particularly in centralized education systems. This study aimed to adapt and validate the Organizational Learning Mechanisms (OLM) scale for the Turkish cultural and educational context. The adaptation process included translation, back-translation, literature review, and item discussions. Validity was tested through exploratory and confirmatory factor analyses, while reliability was assessed using Cronbach's alpha. Additional psychometric properties such as composite reliability, average variance extracted, and discriminant validity were also examined. Findings confirmed that the original 27-item, four-factor structure of the OLM was preserved. The Turkish version demonstrated strong reliability and validity, supported by teacher input. Overall, the adapted OLM provides a robust tool for measuring organizational learning mechanisms in schools and is expected to support research and practice in centralized education systems similar to Türkiye.

Keywords: organizational learning, organizational learning mechanisms, school principal, teacher, scale adaptation

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Introduction

Organizational learning has been highlighted as a significant factor in numerous studies on school effectiveness and development (e.g., Collinson & Cook, 2007; Collinson et al., 2006; Leithwood et al., 1998; Silins et al., 2002). In this context, it is suggested that the school strength can be understood through their organizational learning capacities (Marks & Louis, 1999). This capacity depends on organizational learning, which enables school teachers to routinely learn both from one another and together in a collective manner (Qadach et al., 2020). Although many studies addressing this topic emphasize the role and importance of teachers—who directly influence the quality and effectiveness of instruction, which in turn improves school outcomes, including student achievement (Hallinger, 2011; Marks & Louis, 1999; Stoll & Kools, 2017)—school principals can also exert an indirect impact on student outcomes. They do so by creating a learning culture within the school through structures that shape the school climate (Bryk et al., 1999; Collinson et al., 2006; Heck & Hallinger, 2014; Supovitz et al., 2010).

For organizational learning to occur in schools, specific roles are assigned to school principals and teachers. School principals, through their leadership roles—particularly by supporting teacher learning (Hallinger, 2011)—can foster learning and build capacity for change through professional development (Kyriakides & Creemers, 2008). In this way, leaders can facilitate organizational learning by collaborating with teachers who approach teaching and learning with an open mindset (Schechter, 2008). By emphasizing the instructional leadership roles of school principals, Krüger and Scheerens (2012) stated that principals can strongly influence student learning by establishing organizational mechanisms for evaluating teachers' instructional performance, generating instructional data, and facilitating the circulation and analysis of these data. Teachers' roles are, in fact, embedded within these processes (Schechter, 2008). The existence and sustainability of structures and processes that support teachers' continuous collective learning are essential for them to seek, process, understand, and apply knowledge related to teaching and learning (Mulford & Silins, 2011).

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Although the concept of organizational learning has predominantly been studied within the context of Western cultures—particularly in countries such as the United States (USA) (Berends et al., 1998; Boyce & Bowers, 2018; Kruse, 2003), Canada (Giles & Hargreaves, 2006; Leithwood et al., 1998; Silins et al., 2002), and the Netherlands (Van Den Berg & Sleegers, 1996)—empirical research has also been conducted in countries such as Australia (Mulford & Silins, 2003), Israel (Qadach et al., 2020; Schechter, 2005, 2008), and Türkiye (Eren & Anik, 2021; Guzen & Kaya, 2021; Unal, 2014). This study aims to adapt and validate the Organizational Learning Mechanisms (OLM) scale, developed by Schechter (2008), for the Turkish cultural context. To achieve this aim, the study seeks to answer the following research questions:

- What is the factor structure revealed by the exploratory factor analysis of the Turkish version of the OLM Scale?
- Does the factor structure obtained from the Turkish version of the OLM Scale confirm the factor structure of the original instrument?
- What is the reliability level of the Turkish version of the OLM Scale?

The Rationale for Adaptation of the Scale to the Turkish Context

Türkiye has a centralized education system, and the structure of the Ministry of National Education (MoNE) is organized in a clear hierarchical order extending from the Ministry itself down to provincial and district directorates of education (Kilicoglu et al., 2020). This system is centralized across a wide range of areas, including policy decisions, curriculum design, approval of textbooks and other instructional materials, school administration, supervision, and teacher appointments (Yildirim, 2003). MoNE plays a decisive role in centrally planned in-service training activities for teachers. However, there is also a legal framework that encourages school administrators and teachers to increase local demands for professional development activities. Within this context, the Directorate General for Teacher Training and Development under MoNE published the "School-Based Professional Development Guide" in 2010. This guide adopts approaches such as collaborative and continuous learning, as well as the creation of learning organizations. It guides school administrators and teachers in planning their individual and professional development, encourages them to take responsibility for their own growth, demands that school development plans be prepared accordingly, and requires the monitoring and evaluation of these processes (MoNE, 2010). In 2022, this initiative was budgeted, and teachers' educational needs have since been met—within the quotas provided for in-service training activities organized either centrally or locally—upon the approval of provincial directorates of national education (MoNE, 2022). The professional development communities to be established within this framework aim to increase teachers' experiences in professional collaboration, encouraging participation in collaborative professional learning, engagement in joint activities across different classes and age groups, observation of other teachers' practices, and providing feedback.

When examining the literature on organizational learning in Türkiye, it is observed that study findings vary. Guzen and Kaya (2021) reported that teachers have high perceptions of organizational learning mechanisms. In contrast, Unal (2014), as one of the earlier attempts to examine the OLM Scale within the Turkish educational context, provided valuable groundwork for understanding how these mechanisms function in Turkish schools. However, the study also acknowledged several methodological and psychometric limitations, including a limited and localized sample, relatively low subscale reliabilities, moderate inter-factor correlations, and borderline model fit indices. Moreover, the use of an orthogonal (varimax) rotation assumed that the factors were uncorrelated, which may not have fully reflected the theoretical interrelatedness of the OLM dimensions.

Building upon these limitations, the present study employs a larger and more diverse national sample, refines item translations to enhance conceptual clarity, and applies an oblique rotation method (promax) to better capture theoretically expected relationships among factors. In addition, the study incorporates composite reliability (CR), average variance extracted (AVE), and multi-group measurement invariance analyses to ensure a stronger psychometric foundation. This study aims to adapt and validate the OLM scale developed by Schechter (2008) for the Turkish cultural context. We believe that this study will contribute to the existing literature not merely through a straightforward translation but by capturing deeper meanings within the Turkish cultural framework. This is particularly important because the structures and systems of schools vary across cultural contexts (Miller, 2018), and paying attention to country- and/or school-level contingencies in scale adaptations is critical for maintaining research quality globally (Fromm et al., 2017). Since cultural context shapes organizational learning mechanisms through the complex values, norms, and informal expectations internalized by teachers and school leaders via socialization (Crow, 2007), this adaptation is expected to make a valuable contribution to the literature by providing a perspective grounded in Türkiye's unique cultural setting.

Method

Instrument and Adaptation Process

The cross-cultural scale adaptation process recommended by Hambleton and Patsula (1998) was followed for the adaptation of the instrument into Turkish: (i) Literature review: First, a comprehensive literature review was conducted, and the author of the original scale was contacted to obtain the necessary permissions for adaptation. (ii) Translation into the target language: The authorized scale was translated into Turkish by four academics with advanced language proficiency in both Turkish and English, who also have expertise in curriculum and instruction, educational administration, and assessment and evaluation. Detailed information about the dimensions was provided to ensure accurate translation. (iii) Item selection: The translated items were circulated again among the same academics for the selection of the most appropriate Turkish equivalents, and consensus was reached on the final wording of the items. (iv) Back-translation: The Turkish items were back-translated into the original language by language experts. (v) Comparison of back-translation with the original items: A linguistic review was conducted, examining semantic, idiomatic, experiential, and conceptual equivalence. Based on feedback, minor revisions were made to several items to maintain fidelity to the original scale. (vi) Discussion of items: To test the clarity and comprehensibility of the scale items, a focus group meeting was held with four school administrators and seven teachers. The scale form was distributed, and their feedback and suggestions on each item were collected. Necessary adjustments were made based on these recommendations. Following this session, the scale was finalized for pilot testing. (vii) Pilot testing: Exploratory and confirmatory factor analyses, as well as reliability analyses, were conducted. (viii) Main study: Confirmatory factor analysis and reliability analysis were performed on the main sample.

At the end of the adaptation process, it was determined that the original structure of the Organizational Learning Mechanisms (OLM) scale developed by Schechter (2008), consisting of four factors and 27 items, was preserved. The dimensions of the scale are as follows: Seeking Information (3 items), Receiving–Disseminating Information (5 items), Analyzing Information (9 items), and Storing–Retrieving–Putting to Use of Information (10 items). The OLM is a five-point Likert-type scale ranging from 1 (“doesn’t exist”) to 5 (“extensively exists”).

Rationale for Re-examining the OLM Scale

Although the OLM scale was previously examined by Unal (2014), several methodological limitations—particularly sampling constraints, factor correlations, and marginal model fit—indicated the need for a more comprehensive psychometric evaluation. To clarify how the present study improves upon prior work, a brief comparison is provided in Table 1.

Table 1

Comparison of Methodological and Psychometric Features between Unal (2014) and the Present Study

Aspect	Unal (2014)	Present Study
Context / Location	Konya Province (various primary and secondary schools).	Istanbul Province public secondary schools (multiple districts).
Sample (usable)	$N = 488$	Pilot: 762; Main: 1,726
Instrument Structure	OLM (adapted), 27 items, 4 factors (preserved).	OLM, 27 items, 4 factors (preserved).
EFA Rotation	Varimax (orthogonal).	Oblique (Promax) rotation, to better capture theoretical relationships among factors.
Explained Variance (EFA)	61.19%.	78.38% (main study).
Reliability (α by subscale)	SRPU: .84; RDI: .87; SI: .82; AI: .67; Overall not reported.	SRPU: .96; AI: .95; RDI: .92; SI: .87; Overall: .98
CFA Fit	$\chi^2 = 756.39$, $df = 306$, $\chi^2/df = 2.47$, RMSEA = .062, SRMR = .045, GFI = .87, AGFI = .84	$\chi^2 = 1606.69$, $df = 317$, $\chi^2/df = 5.07$, RMSEA = .07, SRMR = .05, CFI = .99, IFI = .99

Note. OLM = Organizational Learning Mechanisms; EFA = Exploratory Factor Analysis; CFA = Confirmatory Factor Analysis; SRPU = Storing–Retrieving–Putting to Use of Information; AI = Analyzing Information; RDI = Receiving–Disseminating Information; SI = Seeking Information; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index.

The comparison between Unal (2014) and the present study demonstrates substantial methodological and psychometric advances in adapting the OLM Scale to the Turkish educational context. While Unal's study provided a necessary foundation, it was limited by localized sampling, moderate inter-factor correlations, and marginal fit indices. The present study overcomes these limitations by employing a larger, more diverse national sample, refining item translations for conceptual clarity, and using more robust analytical procedures, such as oblique (Promax) rotation, composite reliability, and measurement invariance testing. These enhancements collectively strengthen the scale's validity, reliability, and applicability across different educational settings in Türkiye.

Participants

The population of the study consists of all teachers working in public secondary schools. The sample was purposively selected from among school administrators and teachers working in public secondary schools in Istanbul within the scope of the Scientific and Technological Research Council of Türkiye (TÜBİTAK) 1001 Project numbered 121K651, titled 'The Project of Increasing the Resilience of Schools against Earthquakes with Organizational Learning Approach.' Ethical approval for this study was obtained from the Aksaray University Human Research Ethics Committee (Protocol No: 2021/06-17, Date: 26.08.2021). Participation was voluntary, informed consent was obtained from all participants, and confidentiality was assured. The main criterion for selecting the districts for data collection was the risk level of being affected by any disaster within Istanbul (Istanbul Provincial Risk Reduction and Plan, 2022). This is because, within the scope of the project, organizational learning mechanisms in schools were activated and utilized to foster earthquake preparedness behaviors as part of the culture. First, the central districts with the highest risk distribution index were identified, and then schools were randomly selected from these districts. Teachers were initially informed about the purpose, benefits, and risks of the study and were provided with consent forms. Volunteers completed the scale after providing informed consent. They were assured that their identities would be kept confidential and that they could withdraw from the study at any time if they felt uncomfortable.

Pilot data were collected by sending 783 online survey forms to districts representing the target population of the project, with usable responses received from 762 participants, resulting in a response rate of *97.3 %*. Approximately half of the participants were female (n = 390, *51.2%*), and the other half male (n = 372, *48.8%*), with an average age of *34* years (ranging from *21 to 59*). The majority of participants were married (n = 471, *61.8%*). Slightly more than half of the participants worked in the *Esenler* district (n = 393, *51.6%*), while slightly less than half were from the *Fatih* district (n = 369, *48.4%*). About one-fifth of the participants specialized in science-mathematics fields (n = 123, *16.1%*). The average tenure at their current schools was *4* years (SD = *3.35*), while their total professional experience averaged *9* years (SD = *7.58*).

For the main application, the survey was conducted in the districts of Avcılar, Fatih, Zeytinburnu, Esenler, Küçükçekmece, Güngören, Tuzla, and Beylikdüzü in Istanbul Province, with *1,726* usable responses obtained. In this scope, data were collected through an online survey from *223* school administrators and *1,503* teachers. Slightly more than half of the participants were female (n = 911, *52.8%*), and slightly less than half were male (n = 816, *47.2%*), with an average age of *33* years (ranging from *22 to 63*). Most participants were married (n = 1,019, *59%*), and approximately nine out of ten were teachers (n = 1,503, *87%*). More than half of the participants specialized in Turkish-social sciences (n = 367, *21.3%*). The average tenure at their current schools was *4* years (SD = *3.67*), while their total professional experience averaged *19* years (SD = *3.95*).

Data Analysis

In both the pilot and main studies, exploratory factor analysis (EFA) was conducted to determine the underlying structure of the scale items. To ensure the validity of the factor analyses in the main study, the data collected from 1,726 teachers were randomly split into two subsamples (n_1 = *863,* n_2 = *863*). Exploratory factor analysis was applied to the first subsample (n_1), while confirmatory factor analysis (CFA) was conducted on the second subsample (n_2). Descriptive statistics, EFA, and reliability analyses were performed using SPSS 18 software; CFA was carried out using LISREL 8.80 (Jöreskog & Sörbom, 2006). A first-order CFA was first conducted to confirm the four-factor structure, and subsequently, a second-order CFA was performed to test whether these four correlated factors loaded on a higher-order OLM construct.

Before the analysis, for the EFA, correlations, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (> .60), Bartlett's Test of Sphericity (p < .001), outliers, and normality assumptions were tested (Field, 2005). Univariate normality was assessed by examining observed skewness and kurtosis values, the significance

of the Kolmogorov-Smirnov test, and histograms showing normal curves. Kline (2011) specifically suggested that skewness and kurtosis indices greater than 3 and 10, respectively, may indicate a violation of univariate normality. However, univariate normality does not guarantee multivariate normality. Therefore, Mardia's (1985) multivariate kurtosis coefficient was also examined: for the normality assumption to be acceptable, the critical ratio of the coefficient should not exceed 1.96.

Additionally, box plots were examined to identify any outliers. It was found that there were no serious outliers in the data. Considering the sample size criteria of $N/p > 5$, $N/p > 10$, or a sample size greater than 250, the sample size of this study was deemed acceptable (Everitt, 2001; Gorsuch, 1983). In the pilot study, an oblique (Promax) rotation was employed to allow for correlated but distinct factors. In the main study, since the confirmatory factor analysis indicated moderate correlations among the latent variables ($r = .65–.79$), the EFA was also conducted using an oblique (Promax) rotation to ensure conceptual and statistical consistency between EFA and CFA. This rotation type is recommended when the factors are theoretically related but not identical (Tabachnick & Fidell, 2007). For determining the number of factors, the criterion of an eigenvalue of at least 1.00 was used, and for item selection, a minimum factor loading of .40 was adopted.

The factor structure obtained through EFA was tested using CFA. To assess the model fit, the chi-square value was calculated and adjusted considering the degree of kurtosis in the data (Finney & DiStefano, 2013). Other fit indices used in this study include the following criteria: RMSEA ≤ .06, SRMR ≤ .08, CFI > .95 (Hu & Bentler, 1999), and IFI > .90 (Byrne, 1998). Cronbach's alpha internal consistency coefficient was used to determine the reliability of the entire scale and its subscales. Additionally, composite reliability (CR), average variance extracted (AVE), convergent validity, discriminant validity, and measurement invariance were also examined.

Results

Pilot Study

EFA was conducted to examine the factor structure of the scale. Before the analysis, the assumptions were tested. When correlations among variables were examined, no very low correlation coefficients ($r < .30$) were found, indicating that the data were suitable for factor analysis. Additionally, since the correlations among sub-dimensions were observed ($r = .40–.60$), the factors were considered conceptually related, and thus the oblique (Promax) rotation method was preferred.

In the analyses conducted, Bartlett's test of sphericity was found to be significant ($p < .001$), and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy exceeded .60 (= .98), indicating that the dataset was suitable for factor analysis. The skewness and kurtosis values of the variables were within the range of -3 to +3, suggesting that the univariate normality assumption was met. The *Kolmogorov-Smirnov test* was non-significant ($p > .05$), and histograms supported this finding by showing a distribution close to the normal curve, confirming that univariate normality was not violated. Mahalanobis distance values were examined to detect multivariate outliers, and observations exceeding the critical value were excluded from the analysis. All these results indicated that the data were appropriate for factor analysis.

As a result of the EFA, it was determined that the scale items grouped under four distinct dimensions. Since the differences in factor loadings were above .10 and each factor included at least three items, no items were removed. According to the EFA results, the original scale structure with four factors and 27 items was preserved, explaining 68.17% of the variance. The Cronbach's alpha values for the scale factors ranged between .82 and .96, while the overall scale reliability was calculated as .98. Based on the EFA findings and reliability evidence, the main study was conducted.

Main Study EFA Results

Before the analysis, the assumptions for EFA in the main study were tested using the split-half method ($n_1 = 863$). Similar to the pilot study, the data met the assumptions required for factor analysis, and the four-factor structure of the scale was confirmed through an oblique (Promax) rotation.

Table 2

Factor Loadings, Means, and Standard Deviations of the OLM Scale.

Items	Four-factor structure				*M*	*SD*
	Storing–Retrieving–Putting to Use of Information	Analyzing Information	Receiving–Disseminating Information	Seeking Information		
21. Our school's educational activities are assessed through control, evaluation, improvement, and development processes.	.91				3.74	1.03
22. The experiences gained during educational activities at our school are used in planning future organizational activities.	.88				3.69	1.02
23. When making adjustments to the teaching methods and techniques at our school, the evaluation results of the educational services based on previously applied methods and techniques are utilized.	.87				3.66	1.04
19. The educational activities of our school are evaluated together with the monitoring reports.	.86				3.59	1.09
20. In the meetings held at our school, new decisions are made by considering previously taken decisions.	.85				3.86	1.02
24. Reports of school activities/projects are prepared and presented.	.84				3.65	1.08
18. In meetings held at our school, the effectiveness of decisions made in previous meetings is discussed.	.83				3.68	1.10
25. Teachers' activities are archived and made accessible in publicly available locations such as the school website, social media accounts, and school bulletin boards.	.80				3.76	1.04
27. All types of activities at our school are kept updatable, improvable, and accessible.	.79				3.67	1.12
26. Teachers can easily access all kinds of information, documents, tools, and materials related to educational services.	.78				3.70	1.11
10. Our teachers collaborate in the development of educational processes.		.85			3.76	1.07
11. Collaboration meetings are held with our teachers to improve educational processes.		.84			3.80	1.14
13. Our teachers discuss and develop professional matters together by forming discussion groups (such as subject teams and department meetings).		.83			3.89	1.02
12. Teachers collaborate to adapt the curriculum to students' readiness levels.		.81			3.74	1.05

Items	Four-factor structure				*M*	*SD*
	Storing–Retrieving–Putting to Use of Information	Analyzing Information	Receiving–Disseminating Information	Seeking Information		
15. Teachers jointly assess students' academic achievement.		.79			3.88	.98
14. Collaboration is carried out (among teachers, school administration, parent-teacher association, etc.) to evaluate students' behavior.		.78			3.84	1.07
16. At school, teachers collaboratively determine the criteria to be used for student achievement.		.77			3.61	1.07
17. Joint activities/initiatives/projects are conducted in collaboration with the school-family partnership.		.77			3.24	1.21
9. Educational processes in our school are planned collaboratively with our teachers.		.76			3.75	1.12
8. Current studies in educational sciences are monitored and shared in our school.			.80		3.38	1.19
5. Our teachers are informed about school programs and projects.			.78		3.98	1.01
6. Teachers at our school are informed about the implementation of the curriculum.			.77		3.86	1.08
7. Professionally and pedagogically specific criteria are developed for our school.			.75		3.23	1.16
4. Our teachers are informed about professional developments.			.74		3.80	1.06
2. Teachers at our school benefit from each other's experiences to enhance their professional development.				.82	3.72	1.04
1. Decisions made at our school are thoroughly reviewed together with the teachers.				.78	3.66	1.12
3. Our teachers benefit from the experiences of their colleagues working in other schools.				.76	3.15	1.11
M	3.70	3.73	3.67	3.51		
SD	1.07	1.08	1.11	1.09		
Explained variance (%)	31.2	21.4	14.1	11.7		

Note. Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization.

As a result of the EFA conducted in the main study, the scale was found to consist of four factors. This structure explains 78.38% of the variance. Based on the opinions of field experts, the dimension names were retained as *Storing–Retrieving–Putting to Use of Information, Analyzing Information, Receiving–Disseminating Information,* and *Seeking Information*. The factor loadings, arithmetic means, and standard deviation values of the measurement tool are presented in Table 2, which also indicates that factor loadings ranged from .74 to .91 and inter-factor correlations ranged between .65 and .79, confirming moderately related yet distinct dimensions.

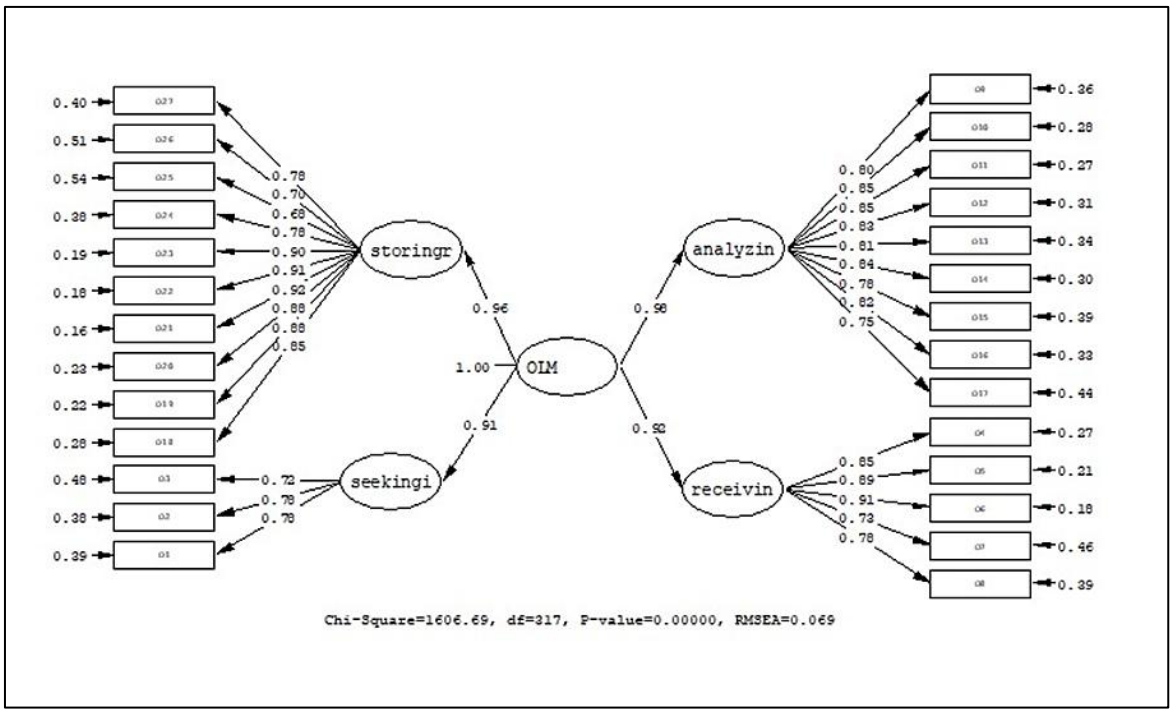
Main Study CFA Results

Based on the *EFA* results, the factor structure obtained was tested with *CFA* on the second split-half sample (n_2 = 863) (Figure 1). Before testing the second-order structure, a first-order CFA was performed to confirm the four-factor model, which showed acceptable fit indices: $\chi^2 = 2154.22$ ($df = 318$, $p < .001$), $\chi^2/df = 6.78$, RMSEA = .082 (90% CI [.079, .085]), SRMR = .042, CFI = .98, and NNFI = .98. Inter-factor correlations ranged from .85 to .94. The calculated goodness-of-fit indices for the four-factor model consisting of 27 items are as follows: $\chi^2 = 1606.69$ ($df = 317$, $p < .000$), $\chi^2/df = 5.07$, RMSEA = .069 (90% CI [.065, .072], acceptable but borderline), SRMR = .045, CFI = .99, and IFI = .99. The χ^2 statistic is the classical fit measure that tests how well the original covariance matrix fits the hypothesized model; however, it is susceptible to sample size and non-normal data distributions (Jöreskog & Sörbom, 2006; Kline, 2011). Similarly, RMSEA tends to increase in large samples or under excess kurtosis, which can slightly inflate the index value (Byrne, 1998). Considering these factors, the obtained RMSEA value was interpreted as acceptable but borderline, and the high CFI, IFI, and low SRMR values were taken as supporting evidence of good model fit. Although there is no clear consensus in the literature on an acceptable χ^2/df ratio, it is recommended to be between 5.0 and 2.0 (Tabachnick & Fidell, 2007; Wheaton et al., 1977). The goodness-of-fit values obtained in this study are at a highly acceptable level and support the four-factor structure of *OLM*. The findings also align with the scale's total explained variance and item means. The standardized factor loadings of the confirmed structure were calculated as .96 for *Storing–Retrieving–Putting to Use of Information*, .98 for *Analyzing Information*, .92 for *Receiving–Disseminating Information*, and .91 for *Seeking Information*.

To further examine model stability and guard against overfitting, the same four-factor model was additionally tested with the initial *EFA* subsample (n_1 = 863). This cross-validation analysis produced a comparable level of fit ($\chi^2 = 1725.19$, $df = 317$, $\chi^2/df = 5.44$, RMSEA = .072 (90% CI [.068, .075]), SRMR = .032, CFI = .99, IFI = .99, NNFI = .99), confirming that the model replicated well across independent subsamples. These findings indicate that the obtained structure is stable and not sample-specific.

Figure 1

Standardized Loadings of the 27-item, Four-factor Structure of OLM.



Then, for the second subsample (n_2 = 863), the relationships among the sub-dimensions within the confirmed structure of organizational learning mechanisms were examined. The five-point Likert-type scale was interpreted as follows: a mean score between 5.00 and 4.21 indicated that the item extensively exists, 4.20 to 3.41 indicated it considerably exists, 3.40 to 2.61 indicated it moderately exists, 2.60 to 1.81 indicated it slightly exists, and 1.80 to 1.00 indicated it doesn't exist (Alkharusi, 2022). Accordingly, the overall level of organizational learning

mechanisms was found to be at the "considerably exists" level ($M = 3.68$, $SD = .83$). When examined in detail, the highest level of occurrence was in the *Analyzing Information* dimension ($M = 3.77$, $SD = .88$), followed by *Retrieving–Putting to Use of Information* ($M = 3.71$, $SD = .88$), *Receiving–Disseminating Information* ($M = 3.67$, $SD = .93$), and *Seeking Information* ($M = 3.53$, $SD = .91$) dimensions, respectively.

Table 3

OLM's Measurement Invariance Statistics.

	Invariance	$\chi 2(df)$	p	*CFI*	*RMSEA* [*90% CI*]
Gender	Configural	1927.02 (228)	<.01	.98	.050 [0.048; 0.052]
	Metric	1971.81 (246)	<.01	.96	.050 [0.048; 0.052]
	Scalar	2001.27 (268)	<.01	.96	.049 [0.047; 0.051]
Age	Configural	2639.33 (494)	<.01	.96	.033 [0.031; 0.034]
	Metric	2703.61 (512)	<.01	.96	.033 [0.031; 0.034]
	Scalar	2751.76 (537)	<.01	.97	.033 [0.031; 0.034]

Note. $\chi 2(df)$: chi-square test (degrees of freedom), *CFI*: comparative fit index, RMSEA: root mean square error of approximation, *CI*: confidence interval.

To assess measurement invariance in the four-factor model, findings from both exploratory and confirmatory factor analyses were examined. The model demonstrated acceptable fit indices across gender and age groups based on CFI and RMSEA values. For gender, the configural model yielded good fit (CFI = .98; RMSEA = .050). Relative to this baseline, the metric model showed a decline in CFI to .96 (ΔCFI = .02) with RMSEA unchanged (ΔRMSEA = .000), exceeding the conventional .01 guideline for CFI. Therefore, we refrain from claiming full metric invariance and qualify the result as indicating *potential partial invariance* at the metric level. The scalar model retained a CFI of .96 with a slight decrease in RMSEA to .049 (relative to metric: ΔCFI = .00, ΔRMSEA = −.001), suggesting that the overall structure remained stable. In the analysis by age, configural, metric, and scalar models consistently produced similar fit indices (CFI = .96–.97; RMSEA = .033), with ΔCFI ≤ .01 and ΔRMSEA = .000 across levels, supporting full measurement invariance across age groups. Taken together, these findings indicate that the four-factor structure of the OLM scale is both stable and largely invariant across key demographic groups.

Reliability Results

The Cronbach's alpha values for the sub-dimensions of OLM were found to be .96 for *Storing–Retrieving–Putting to Use of Information*, .95 for *Analyzing Information*, .92 for *Receiving–Disseminating Information*, and .87 for *Seeking Information*. Pearson correlation coefficients indicated positive, strong, and significant relationships among all sub-dimensions ($.67 \leq r \leq .78$, $p < .01$).

Table 4

Psychometric Properties of OLM Sub-dimensions.

	CR	AVE	MSV	CA	1	2	3
1. Storing–Retrieving–Putting to Use of Information	.97	.74	.61	.96			
2. Analyzing Information	.95	.66	.61	.95	.78**		
3. Receiving–Disseminating Information	.89	.61	.52	.92	.69**	.72**	
4. Seeking Information	.79	.55	.50	.87	.71**	.70**	.67**
Overall				.98			

** Correlation is significant at the .01 level.

Note. CR: Composite reliability, AVE: Average variance extracted, MSV: Maximum shared variance, CA: Cronbach's alpha.

The scale demonstrated strong reliability with composite reliability (CR) values between .79 and .97 (Hair, 1997). Convergent validity was confirmed as all AVE values exceeded the .50 threshold, and item loadings were significant (Fornell & Larcker, 1981). Discriminant validity was supported since the square root of AVE for each factor was greater than its inter-construct correlations, and MSV values were lower than AVE values. These results indicate that the overall scale possesses a high level of reliability, and each of the four dimensions demonstrates strong reliability.

Discussion and Conclusion

In terms of school development and effectiveness, school leaders are expected to initiate and sustain learning mechanisms within a school culture that promotes a learning-oriented environment (Schechter, 2008; Shengnan & Hallinger, 2021). In this context, teachers—who play an active role in directly improving and enhancing instruction—constitute an integral part of the process as actors in organizational learning mechanisms that involve individual, collaborative, and collective learning (Hallinger, 2011; Qadach et al., 2020). Accordingly, the aim of the present study is to adapt and validate the Organizational Learning Mechanisms (OLM) scale developed by Schechter (2008) into the Turkish context. This study contributes to the growing body of literature by providing a psychometrically sound instrument to empirically support research on organizational learning in non-Western contexts. The findings indicate that the Turkish version of the OLM is a valid and reliable measurement tool and that the original four-factor, 27-item structure is confirmed. These four factors—*Storing–Retrieving–Putting to Use of Information*, *Analyzing Information*, *Receiving–Disseminating Information*, and *Seeking Information*—account for 78.38% of the variance and align well with the theoretical framework. Relative to Unal (2014), which provided an early, localized examination using orthogonal rotation and reported marginal fit, our study advances the evidence with a larger, multi-district sample, oblique modeling, and stronger psychometric evaluations (including CR/AVE and multi-group invariance). These enhancements indicate that the OLM structure generalizes more robustly across Türkiye's centralized system and yields higher subscale reliability. Accordingly, the present validation both corroborates and substantively strengthens Unal's initial insights for contemporary research and practice.

The adaptation process of the measurement tool followed the cross-cultural scale adaptation steps proposed by Hambleton and Patsula (1998), ensuring conceptual, semantic, and contextual equivalence. The results of the EFA and CFA indicated that the model demonstrated a good fit with the data. In the reliability analyses of the scale, Cronbach's alpha coefficients ranged from .87 to .96 for the sub-dimensions, and was calculated as .98 for the entire scale. Additionally, CR and AVE values supported the convergent validity of the measurement. Discriminant validity was also confirmed, as the square root of AVE for each factor was greater than its correlations with other factors, and the MSV values remained below the AVE values.

Measurement invariance analyses indicated full configural, metric, and scalar invariance across age (see Table 3). For gender, configural invariance held; however, at the metric level $\Delta CFI = .02$ exceeded the recommended .01 threshold, indicating possible partial metric invariance rather than full invariance. The scalar model for gender also showed acceptable absolute fit (CFI = .96; RMSEA = .049), but given the metric-step decrease in CFI, we refrain from claiming full invariance across all levels for gender. In line with the criteria suggested by Chen (2007), RMSEA values for all models remained within acceptable limits.

The findings indicate that organizational learning levels in schools can be measured validly and reliably within a centralized and hierarchical context such as the Turkish education system. While previous studies conducted in Türkiye have reported that mechanisms for acquiring and disseminating information are not sufficiently effective (e.g., Unal, 2014), others—consistent with our findings—have noted that teachers hold high perceptions across the sub-dimensions (e.g., Ay-Isik, 2017; Guzen & Kaya, 2021). However, most of these studies were conducted without employing rigorous psychometric analyses. Therefore, this study makes a significant contribution to the literature by providing a contextually adapted and psychometrically validated measurement tool.

According to the descriptive results, teachers reported that the *Analyzing Information* mechanism was the most frequently realized in their schools, followed by *Storing–Retrieving–Putting to Use of Information* and *Receiving–Disseminating Information*. The lowest mean score was observed in the *Seeking Information* dimension. This suggests that teachers tend to engage more in passive processes rather than proactively seeking out information. This finding aligns with the literature indicating that in systems dominated by hierarchical structures, professional learning often occurs through more implicit means (Schechter, 2008; Crow, 2007). In a

study conducted in Türkiye, Yumusak and Yildiz (2011) found that teachers in private schools were more active in utilizing organizational learning mechanisms, whereas those in public schools faced more frequent barriers to organizational learning. In this context, for organizational learning mechanisms to be established within schools, school leaders must raise their awareness and take an active role. They need to understand their roles in these processes, possess the necessary skills to fulfill them, and continuously work on their professional development (Okumus et al., 2007). Senge (2014) suggests that in order to foster a culture of continuous learning, all stakeholders in an organization should adopt a system thinking approach and work towards developing a shared vision.

In conclusion, this study presents a scale that reliably measures organizational learning mechanisms within the context of Türkiye. By developing a culturally sensitive and theoretically grounded measurement tool, the research contributes to both national and international studies and highlights the significance of organizational learning in relation to school development.

Implications

The findings of this study indicate that the Organizational Learning Mechanisms Scale can be used reliably and validly within the context of the Turkish education system. This result has important practical implications for evaluating leadership approaches aimed at supporting school development and professional learning processes. With the adaptation of the scale into Turkish, a multidimensional and systematic tool has been provided for educational leaders and researchers to monitor in-school learning processes. In this context, school administrators can utilize this scale to identify, monitor, and enhance teachers' individual and collective learning practices. Particularly, the scale can provide valuable insights for developing school-based professional development plans, assessing whether a school functions as a learning organization, and determining which learning mechanisms are operating effectively. Moreover, policymakers can use this tool to evaluate the field-level impact of in-service training policies supported by the Ministry of National Education and to assess the current level of teacher collaboration culture.

The findings also provide in-depth insights into how organizational learning operates at the local level in centralized education systems such as Türkiye's. In doing so, the study offers empirical evidence to reveal the influence of cultural context on organizational learning processes and to highlight the importance of contextual sensitivity in cross-cultural scale adaptations. It is believed that this research will contribute to evidence-based decision-making processes aimed at strengthening organizational learning, both for practitioners and researchers.

Limitations and Future Recommendations

Although this study's findings demonstrate that the Turkish version of the OLM is valid and reliable, it has some limitations. First, the sample selection was not random and focused on teachers and administrators working in districts with high disaster risk. This may limit the generalizability of the results. Moreover, the scale was primarily tested in urban settings; therefore, validity and reliability analyses should be conducted again in rural schools to ensure broader applicability.

Secondly, the scale was developed solely on the basis of teachers' perceptions. Future studies should include diverse stakeholder groups (e.g., administrators and inspectors). Additionally, given that contextual and cultural factors may influence organizational learning mechanisms, the scale's content validity can be strengthened through comparative studies across different types of schools and regions. Studies with larger, more representative samples will yield more robust findings about the scale's functioning across various contexts.

Third, criterion validity could not be examined in this study because external variables theoretically related to organizational learning (e.g., school effectiveness, school climate, or student achievement) were not collected concurrently. Future research should address this limitation by investigating the correlations between OLM scores and these external constructs to provide more substantial evidence of criterion validity.

Finally, test–retest reliability could not be evaluated because the data were collected at a single time point. Future research should examine the temporal stability of the Turkish OLM by administering the scale to the same participants over a 2–4-week interval to further assess its reliability.

Code of Ethics

Ethical approval for this study was obtained from the Aksaray University Human Research Ethics Committee (Protocol No: 2021/06-17, Date: 26.08.2021)

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Türk Eğitim Sisteminde Örgütsel Öğrenme Mekanizmalarının Ölçülmesi: Ölçek Uyarlama ve Geçerlilik Çalışması

Öz

Örgütsel öğrenme eğitim araştırmalarında önemli bir kavram olarak kabul edilmekle birlikte, özellikle merkezi eğitim sistemlerinde kuramsal bilgi ile uygulama arasında belirgin bir boşluk bulunmaktadır. Bu çalışma, Örgütsel Öğrenme Mekanizmaları (ÖÖM) ölçeğini Türkiye'nin kültürel ve eğitimsel bağlamına uyarlamak ve geçerliğini sınamak amacıyla yürütülmüştür. Uyarlama sürecinde çeviri, geri çeviri, alan yazın taraması ve madde tartışmaları gerçekleştirilmiştir. Ölçeğin geçerliği açımlayıcı ve doğrulayıcı faktör analizleriyle, güvenirliği ise Cronbach alfa katsayısı ile incelenmiştir. Ayrıca bileşik güvenirlik, ortalama açıklanan varyans ve ayırt edici geçerlik gibi psikometrik özellikler de değerlendirilmiştir. Bulgular, ölçeğin özgün 27 madde ve dört faktörlü yapısının korunduğunu göstermiştir. Öğretmen görüşleriyle desteklenen Türkçe versiyon, yüksek düzeyde güvenirlik ve geçerlik sergilemiştir. Sonuç olarak, ÖÖM'nin Türkçe uyarlaması, okullarda örgütsel öğrenme mekanizmalarını ölçmek için geçerli bir araç sunmakta ve Türkiye gibi merkezi eğitim sistemlerinde araştırma ve uygulamalara katkı sağlaması beklenmektedir.

Anahtar kelimeler: örgütsel öğrenme, örgütsel öğrenme mekanizmaları, okul müdürü, öğretmen, ölçek uyarlama