EYPO
Eğitim Yönetimi & Politikaları Dergisi
Journal of Educational Administration and Policy
E-ISSN: 2717-8552
2024; 5(2); 65-79
https://dergipark.org.tr/en/pub/eypd

DATA CULTURE AT SCHOOL: A SCALE DEVELOPMENT STUDY

Ayhan DUYGULU[1] Kübra YENEL[2]

Article Information

Research Article

Article History:

Received 11.10.2024

Accepted 30.12.2024

Keywords:
Data culture
Data management
Data-based decision making

Abstract

The purpose of this study is to develop a valid and reliable scale to determine the different dimensions of and evaluate the current situation of data culture at school. The study is in the model of a quantitative descriptive survey. The sampling for exploratory factor analysis was formed of 274 and confirmatory factor analysis 308 teachers and school administrators who are on active duty in 2023-2024 educational year in Kastamonu. Data was collected through a five-item Likert scale. A four-dimension structure was formed as the result of the EFA and it was confirmed by CFA. The dimensions of data culture at school are; "data-based management", "data management and governance", "data-based decision making" and "data-based performance evaluation". Internal reliability and validity was verified through Cronbach Alpha (Cronbach's α=.780), split half method (r=.737), Spearman-Brown correlation coefficient (R=.849) and Guttman's lambda (λ=.846). The external reliability and validity was verified by test-retest technique (first implementation n=42, second implementation n=34, r=.884, p≤.05, R=.624, p≤.05, and Kendal's tau-b is τb=.508, p≤.05). The findings confirmed the validity and reliability of the scale.

OKULDA VERİ KÜLTÜRÜ: BİR ÖLÇEK GELİŞTİRME ÇALIŞMASI

Makale Bilgisi

Araştırma Makalesi

Makale Geçmişi:

Başvuru 11.10.2024

Kabul 30.12.2024

Anahtar Kelimeler:
Veri kültürü
Veri yönetimi
Veriye dayalı karar verme

Özet

Bu çalışmanın amacı, okulda veri kültürünün farklı boyutlarını belirlemek, değerlendirmek ve mevcut durumu ortaya koymak için geçerli ve güvenilir bir ölçek geliştirmektir. Çalışma nicel betimsel tarama modelindedir. Çalışmanın örneklemini Kastamonu'da 2023-2024 eğitim öğretim yılında aktif görevde olan, açımlayıcı faktör analizi için 274, doğrulayıcı faktör analizi için 308 öğretmen ve okul yöneticisi oluşturmuştur. Veriler beş maddeli Likert ölçeği ile toplanmıştır. AFA sonucunda dört boyutlu bir yapı oluşmuş ve bu yapı DFA ile doğrulanmıştır. Okulda veri kültürünün boyutları; "veriye dayalı yönetim", "veri yönetimi ve yönetişimi", "veriye dayalı karar verme" ve "veriye dayalı performans değerlendirme"dir. İç güvenilirlik ve geçerlilik Cronbach Alpha (Cronbach's α=.780), split half yöntemi (r=.737), Spearman-Brown korelasyon katsayısı (R=.849) ve Guttman's lambda (λ=.846) ile doğrulanmıştır. Dış güvenilirlik ve geçerlilik test-tekrar test tekniği ile doğrulanmıştır (ilk uygulama n=42, ikinci uygulama n=34, r=.884, p≤.05, R=.624, p≤.05 ve Kendal's tau-b τb=.508, p≤.05). Elde edilen bulgular ölçeğin geçerliliğini ve güvenilirliğini doğrulamıştır.

Kaynakça Gösterimi: Duygulu A. ve Yenel, K. (2024). Data culture at school: A scale development study. *Eğitim Yönetimi ve Politikaları Dergisi, 5*(2), 65-79.

[1] Dr., MEB, duygulu.duygulu39@gmail.com, Orcid ID: 0000-0002-6986-6799
[2] Dr., MEB, kubrayenel@gmail.com, Orcid ID: 0000-0002-4237-9763

1. INTRODUCTION

Organizational health has been the focus of a lot of research (Charoghchian et al., 2020, Keller & Price, 2011, Korkmaz, 2007, Quick et al., 2007, Xenidis & Theocharous, 2014) and the indicators of and components adding to organizational health could be varied in view of the research results; involvement, team work, planning and organization (Tofighi et al., 2011, p. 176), organizational environment (Bevans et al., 2007, p. 295), leadership (Peiró & Rodríguez, 2008, p. 68) etc. Organizational health at schools is also affected positively by some factors such as a robust school vision (Licata & Harper, 2001, p. 5), an environment of trust (Smith et al., 2001, s. 135) and a positive learning environment (Mehta et al., 2013, p. 144). Data culture is one of the key elements of organizational health as it can contribute to supporting components of organizational health such as continuous improvement of the schools (Sutherland, 2004, p. 277), healthier organizational decisions and effective risk analyses (Díaz et al., 2018, p. 38) etc.

Data culture refers to the organizational scale understanding for collection, analysis, interpretation of data, sharing the results with the members and reflecting the results obtained in organizations on operations and processes (Leary, 2015, p. 10). Data culture plays a crucial role in data-based management processes such as who will have the right to access data, which data will be shared with the members and how much investment will be allocated to data science tools and human sources (Anderson, 2015, p. 203). Data-based management could solve confirmed educational management issues as it has functions such as diagnosing problem areas, putting forth the advantages and disadvantages of decision alternatives, justifying decisions and guiding the routine processes at school (Knapp et al., 2007, p. 77). Data culture in organizations could contribute to data use, accelerate data-based management processes, increase the impact of data use and keep organizations away from risks (Díaz et al., 2018, p. 37). Thus, institutionalizing data culture at schools could improve educational management practices. Revealing the current situation could lead to establishing data culture at school.

The schools are data-rich ecosystems in which such data as students' academic success and teachers' performance are collected and evaluated. Thus, data are an integral part of school context. Data culture plays a crucial role in fostering and encouraging data use at schools and keeps the school community away from subjective judgments. Data culture could improve academic guidance provided for students by basing the practices on data about real competence areas for students. Data culture improves communicative processes at school by paving the way for horizontal and vertical data flow. Furthermore, data culture can enhance data-based decision making, which can contribute to adoption and justification of the decisions made by the schools' administrative staffs. Data culture is the key to optimize data use at schools and it can enhance team building processes as well. Using data about teachers' educational backgrounds, skills and competences might help form effective operational teams at schools, leading to better cooperation and collaboration in teams based on objective and verifiable data about competencies. Data culture can also bring about the effective allocation of resources by shedding light on the priority areas through fostering data based needs analysis. All in all, data culture could help solve confirmed issues of educational and administrative processes of schools.

Data culture is an umbrella term which encompasses such components as data literacy, data use and data management. Data culture at schools could be improved through training and encouraging data-based practices. However, data culture at schools could vary depending on organizational and environmental factors. In this sense, the best practice is to start with a clear understanding and awareness towards the existing data culture features and elements. The scale in this sense could serve as an important tool to attain such an understanding and awareness.

To sum up, this study was carried out to develop a valid and reliable scale to figure out the current situation of data culture at schools. Determining the current situation of data culture at schools can be an important first step for practices to integrate data use into schools' routines and institutionalize data culture. As data are indispensable part of school context, fostering and encouraging data culture at schools should be regarded as a significant priority. Though the significance, there are no scales for data culture at school in literature. The scale developed could realize significant roles in designing a roadmap for practices at schools to develop data culture by depicting a reliable picture of the current situation.

2. METHOD

Ethical principles were adhered to during the research. Permission was obtained from schools where implementation was carried out. Moreover, ethical committee decision was obtained from Manisa University Ethics Committee with the date 04.03.2024 and with the decision number 21.

2.1. The Model of the Research

The study is a quantitative descriptive survey model research. Descriptive research aims at describing the characteristics and features of the subject matter in detail (Howitt & Cramer, 2017, p. 29). Descriptive surveys are utilized to figure out the opinions, attitudes and skills of participants with a view to a specific topic (Büyüköztürk et al., 2008, p. 226). As the main goal of this research is to develop a scale by means of the opinions of school administrators and teachers, the descriptive survey model was preferred to comply with the nature of scale development study. The research was carried out in four main phases each including various steps; the creation of the draft scale based on the literature, first implementation to carry out exploratory factor analysis, the second implementation to fulfill confirmatory factor analysis and test-retest phase to test validity and reliability (Carpenter, 2018, p. 32).

2.2. Development of the Draft Scale

During the development of the draft scale, firstly an item pool has been formed through a detailed literature review. The item pool consisted of 63 items. To provide content validity, the item pool was revised by the researchers and then sent to the specialists for revision. The draft was reviewed again after revisions by specialists. In this phase, some of the items have been omitted, and in some others necessary changes have been made. The final draft scale was formed of 30 items. The draft has been revised by the researchers for a last time. To provide content validity, it has been sent to six participants from different levels of schools for pilot implementation. In view of the data gathered and feedback obtained, some exploratory expressions were added to some items to make them clearer for the participants of the main implementation. A five item Likert type scale was prepared for the first implementation. The final draft item pool before the exploratory factor analysis is presented in Table 1;

Table 1: *The Draft Item Pool*

No	Item
1	Performance data is taken into consideration while determining meeting agendas at school
2	The discussion on meeting agendas are based on data-based assessment
3	Teachers attend meetings with data about items in meeting agendas (observation forms, risk maps).
4	The school members avoid evaluations which are not based on data
5	School management collects and analyses data on the needs of the school
6	Data is included in teacher performance evaluation reports
7	Opinion data on administrative processes at school are regularly and perpetually collected
8	Members of the school have competence for data analysis
9	Before a decision is taken at school, data on the subject is tried to be obtained
10	Decisions taken at school are justified on the basis of data
11	The allocation of the resources at school are carried out based on data
12	Mission statement of the school includes measurable goals
13	The vision of the school was determined with a data-based approach
14	Targets for academic achievement at the school are measurable
15	Performance data of other schools is taken into account for performance evaluation of the school
16	The school has an understanding towards the importance of data for accountability
17	Evaluations at class teacher meetings are based on data
18	Student performance evaluations at school are based on data
19	Rewarding at school is carried out based on data
20	Data are important in the evaluation of teacher performance
21	Socio-economic grants for students at school are allocated based on data
22	Gathering demographic data (age, economic situation etc.) about students is attached importance
23	The school has a data archive for competency areas of teachers
24	Teacher competence data is considered while setting up project and working groups
25	Satisfaction surveys for practices are attached importance at school

26	Data are collected to evaluate the effectiveness of student club activities at school
27	Opinion data from students are collected to decide on activities of students' social clubs
28	Social activities at school are planned by referring to opinions of the members
29	The school has a data archive on student performance
30	School administration regularly and perpetually collects performance data of similar schools

3. FINDINGS

3.1 The First Implementation: Exploratory Factor Analysis

The first implementation was carried for principal component analysis. The teachers and school administrators in Kastamonu city center and its three different districts (Taşköprü, Devrekani and Seydiler) constituted the population of this research. The first implementation in city center was carried out with the teachers and school administrators who work at schools in the first educational area determined by Kastamanu Directorate of National Education. Sample size of the first implementation is 274 teachers and administrators. Hair et al. (2014, p. 100) put forward that for factor analysis, sample size should be 100 or over. They also suggest that the observations should be at least five times more than the items to be analyzed, which equals to 150 observations. In either case, the ideal number for sample size was reached. For sampling, different sampling methods were applied. Stratified sampling was utilized to represent participants from different subgroups such as the different districts and school levels. In the similar way, quota sampling was applied to represent the participants from different sub groups in correlation with their ratio in the population. The demographic data about the participants of the first implementation are presented in Table 2;

Table 2: *Demographic Data about the Participants of the First Implementation*

		n	**%**
Gender	Male	170	%62
	Female	104	%38
Seniority	1-10 Years	46	%16,8
	11-20 Years	114	%41,6
	21-30 Years	107	%39,1
	31 years and over	7	%2,6
School Level	High School	128	%46,7
	Secondary School	86	%31,4
	Primary School	60	%21,9
Region	Kastamonu City Center	163	%59,5
	Taşköprü	57	%20,8
	Devrekâni	33	%12
	Seydiler	21	%7,7

Data was collected through a google survey shared with e-mails and WhatsApp groups of the schools. There are some limitations of collecting data through Google Survey, such as repetition and not being able to determine the location of the data collection. To prevent these limitations, some precautions were taken. The surveys were shared with schools only in Kastamonu and to prevent repetition, mailing system was applied. Before sharing, principals of the schools were informed about the survey and informed consent for the survey questionnaire was added to the online survey. The survey is in the form of a five Likert scale, extending alternatives from "totally agree" to "totally disagree". After the implementation, data sets were transferred to SPSS program. The data sets were reviewed for any mistaken entry before the analysis.

All analyses for the first implementation were carried out on SPSS 20.0. First of all, missing value analysis was carried out. As the result of the missing value analysis, it was found out that in none of the data sets, the missing values are more than %5 (Tabachnick & Fidell, 2013, p. 63). The highest percentage of the missing values was calculated to be %3.6. The EM statistics value is $p=.151$ and $p\geq.05$. This result denotes that missing data show a random distribution and averaging (series means) can be applied to replace missing data, which is an effective way to replace missing values in data sets (Çokluk & Kayrı, 2011, p. 308). As a result, series means method was used to replace missing values.

Outlier analysis was carried out with various tools. First of all, Z scores were reviewed. Andrade (2021, p. 556) denotes that any value higher than +3 and -3 signifies the existence of outliers in the data sets. When Z scores were examined, it was observed that two[1] of the cases exceeded the threshold values (3,03808 and -3,55829). They were excluded from the data set and the final Z score values changed between the values of 2,17518 and -2,96432, signifying that there are no outliers in the data sets. As another tool for outlier analysis, Mahalanobis distance (Cohen et al., 2018, p. 820) was calculated. Tabachnik and Fidel (2013, p. 75) denote that for a case to be an outlier in view of Mahalanobis distance, p value should be less than .001 for χ^2 value. In the analysis, it was found out that p<.000. The outliers were also tested trough Cook's distance. Cook's distance is one of the ways of evaluating the effect of a case on a model (Cohen et al., 2018, p. 820) and the value should not be higher than *1* (Field, 2009, p. 217). The highest Cook distance value was calculated to be .05297and this signified that there are no outliers exceeding the threshold value.

Normality of distribution tests were also carried out before the principal component analysis. Skewness and kurtosis values did not exceed the threshold values, which vary between +3 and -3 (Bai & Ng, 2005, p. 49) and +1 and -1 (Cohen et al., 2018, p. 736). For none of the variables, skewness and curtosis values exceeded the threshold values of +1 and -1. The highest value was for the group of 1-10 years of seniority, -.797. Normality was also tested through Kolmogorov-Smirnov and Shapiro-Wilk tests. For groups of 1-10 and 31+ years of seniority, Shapiro-Wilk test indicated normal distribution (p=.414 for 1-10 years, and p=.975 for 31+ years of seniority). Kolmogorov-Smirnov test indicated abnormal distribution for two groups (secondary school group, p=.033 and 21-30 years of seniority p=.026). The test denoted a normal distribution for all other groups p≥.05 (Martin & Bridgmon, 2012, p. 114). Kolmogorov Smirnov test is influenced by sample size and might not put forth reliable results with small sample sizes (Engmann & Cousineau, 2011, p. 3). The homogeneity of the variances was tested by Levene test. In gender group, the score was calculated to be p=.338, institution group to be p=.137 and p=.351 for seniority, p≥.05, which can be regarded as the indication of the homogeneity of the variances (Stockemer, 2019, p. 104). As the result of these analyses, the data set was regarded to be ready for the principal component analysis.

Before principal component analysis, Bartlett's test of sphericity was carried out and it was found out that p=.000 and p<.05 and this displayed the sufficient correlation between the variables (Bartlett, 1950, p. 112). To test the adequacy of the sampling, KMO test was made use of. Field (2009, p. 647) denotes that the value of KMO test varies between the measurements of 0 and 1, and when a value close to 1 is obtained, it should be regarded that the sampling is adequate for factor analysis. KMO test result is p=.732, signifying the adequacy of the sampling. As the rotation method, direct oblimin was applied, which is more suitable for social sciences as it accepts that the variables are correlated with each other to an extent.

In the first step of the principal component analysis, communalities were checked. Hair et al. (2014, p. 117) denote that communalities over .50 signify the eligibility of an item. The communalities of three items were calculated to be lower than .50, item 5=.480, item 10=.412 and item 13=.446. These three items were excluded from the draft scale and analysis was repeated. In the second step, KMO was calculated to be .707 and Bartlett's test of sphericity to be p=.000. In this stage, the communalities of two items were calculated to be lower than .50, item 3=.378 and item 20=.486. The analysis was repeated after excluding those two items. In the third step (KMO, p=.699, Bartlett's test of sphericity, p=.000), the communality value for only one item was lower than the threshold value, item 16=.494. The item was omitted and the analysis was repeated (KMO, p=.699, Bartlett's test of sphericity, p=.000). In this phase, none of the communalities were below .50 for any items. The lowest value was .515 for item 15.

In this phase, a ten-factorial structure was formed. The total variance explained by the factors which have eigen values greater than 1 is %60.484. In this stage, factor loadings of items under different factors were examined. It was found out that, item 1 has close factor loading values under factor 1 and 9 (.432 and .456), item 25 has close factor loading under factor 5 and 6 (-.386 and -.364), item 26 under factor 1 and 5 (.363 and .302). These items were regarded to be overlapping items and were omitted from the draft scale and the analysis was repeated. In this stage, eight factors with eigen values over 1 explained %55.632 of the total variance. The following items had close factor loadings under different factors and thus were excluded from the draft scale, item 17 under factors 2 and 8 (-.455 and -.385), item 29 under factors 5 and 8 (.397 and .330), item 9 under factors 2 and 3 (-.365 and -.333). The analysis was repeated after omitting the items.

The seven factorial structure was formed with eigen values over 1 and they explained %55.684 of the total variance. In this phase, item 14 had close factor loadings under factors 4 and 5 (.329 and .422). Item was omitted and the analysis was repeated. A seven factorial structure was formed and the factors with eigen values over 1 explained %57.605 of the total variance. Item 18 had factor close factor loadings under factor 1 (.425) and factor

[1] Demographic data about the cases excluded, case 1; male, secondary school, 21-30 years seniority, case 2; female, primary school, 11-20 years seniority.

7 (.423) and it was omitted from the draft scale to repeat the analysis. In this phase, item 4 had close factor loadings under three different factors (factor 1=.319, factor 5=.340 and factor 6=.337) and was excluded from the draft scale. When the analysis was repeated, it was observed that the seven factorial structure with eigen values over 1 was kept. The total variance explained by each of the factor were as follows; factor 1=%16.043, factor 2=%8.472, factor 3=%8.211, factor 4=%7.943, factor 5=%7.182, factor 6=%7.002 and factor 7=%6.801. The total variance explained by the seven factors is %61.653. It was observed that factors 3 and 4 had three items, factors 1, 2, 6 and 7 had two items and factor 5 had only one item. Analysis was repeated with a four-factor structure. The four factorial structure was decided depending on the eigen values. Component correlation matrix was also examined and though being under the threshold values, some factors were found out to be correlated (for example r=.-142 for factor 3 and 7). The literature for data culture also played a role for determining a four-factorial structure as explained in detail during denomination of factors. The number of items were also taken into consideration. In the light of these, a four factorial structure was dictated to the SPSS program.

As the result of the analysis, a four-factorial structure was formed. The total variance explained by the first factor is %16.043, the second factor %8.472, the third factor %8.211 and the fourth factor %7.943. Hair et al. (2014, p. 107) allege that the percentage of variance explained by a factor should be over %5 of the total variance explained and this verifies that all factors could be independent factors. The total variance explained by the four factors is %40.668. Çokluk et al. (2018, p. 197) denote that in social sciences, the total variance explained could be %30. The KMO value of the four factorial structure is p=.643, p≥.05 and Barttlett's test of sphericity value is p=.000, p≤.05. The results of the principal component analysis are presented in Table 3;

Table 3: *The Findings of the Principal Component Analysis for Data Culture at School Scale*

Item	Factor 1	Factor 2	Factor 3	Factor 4
2	.677			
6	.624			
7	.594			
27		.721		
8		.678	-.302	
28		.500		
30		.453		
12			.718	
11			.544	
24			.503	
23			.393	
22				.713
21				.581
15				.420
19				.420
Eigen value	2.406	1.271	1.232	1.191
Variance explained by each %	16.043	8.472	8.211	7.943
Cumulative variance explained %		40.668		

As findings indicate, none of the items had close factor loadings under different factors (Factor loading values should be higher than .10 (Çokluk et al., 2018, p. 233)). Then, the factors were denominated in compatible with the literature. Oliver et al. (2023a, p. 1) define the dimensions of data culture as "data-related skills and attitudes", "data sharing", "data use/reuse", "data ethics and governance", and "providing insights to discourse of data culture/s". Olaleye and Adusei (2023, p. 241) denote that data culture encompasses components such as data literacy, data-driven decision-making, data collection, quality, sharing, leadership support, governance, performance measurement, continuous learning, transparency and ethics. Bates (2017, p. 191) regards data culture as data practices and data management. Lasater et al. (2020, p. 536) regard data use as an integral part of data culture at schools. In the light of the literature, the factors were denominated as follows; factor 1, data-based management, factor 2, data management and use, factor 3, data-based decision making and factor 4, data- based performance evaluation.

The component correlation matrix was also checked to find out if there are high values of correlation among the factors. The highest correlation was calculated to be r=.136 between factors 1 and 2. The results put forward that the correlation among the factors is lower than threshold values. In literature, the shared notion is that

correlation coefficient lower than .30 denote weak correlation, values between .30 and .70 signify intermediate correlation and values higher that .71 signal high correlations (Büyüköztürk et al., 2013, p. 92).

As the final stage of principal component analysis, Cronbach Alpha coefficient was tested. Cronbach's Alpha reliability coefficient was calculated to be .795. A value over .60 denote the reliability of a scale according to Cronbach Alpha coefficient (DeVellis, 1991, Hair et al., 2014, p. 90, Kline, 1986 as cited in McNeish, 2018, p. 423). Kline 1999 (as cited in Field, 2009, p. 675) denotes that for ability tests .7 could be regarded as a cut-off point. In the light of the findings, the four factorial scale was regarded to be reliable.

3.2. The Second Implementation: Confirmatory Factor Analysis

To confirm the structure, second implementation was carried out with different participants in Kastamonu for confirmatory factor analysis. The sampling is composed of 308 teachers and school administrators from four different educational areas in Kastamonu; Kastamonu city center (schools in the second educational area, Tosya, Daday and İhsangazi). Stratified and quota sampling methods have been utilized. The demographic data about the participants of the second implementation are presented in Table 4;

Table 4: *Demographic Data about the Participants of the Second Implementation*

		n	**%**
Gender	Male	176	%57.1
	Female	132	%42.9
Seniority	1-10 Years	67	%21.8
	11-20 Years	122	%39.6
	21-30 Years	112	%36.4
	31 years and over	7	%2.3
School Level	High School	155	%50.3
	Secondary School	88	%28.6
	Primary School	65	%21,1
Region	Kastamonu City Center	171	%55.5
	Tosya	68	%22.1
	Daday	50	%16.2
	İhsangazi	19	%6.2

Data was collected through a google survey questionnaire. Before the implementation, principals of the schools were informed and asked for permission. Informed consent was also added to the questionnaire. Then, questionnaire was shared through WhatsApp groups. Data was transferred to SPSS 20.0 program for data preliminary analyses.

First of all, missing value analysis was carried out. It was found out that in none of the data sets, the missing values are more than %5. The highest percentage of the missing values was calculated to be %1.3 for the data set of item 1 and 2. The EM statistics is $p=.51$ and $p\geq.05$. The result signifies that missing data show a random distribution and averaging (series means) can be applied to replace missing data. Series means (averaging) method has been used to replace the missing data. For outlier analysis, first of all Z scores were calculated. As the result of the analysis, it was observed that one of the cases exceeded threshold value (-3,03992, female, 21-30, secondary school and Tosya). It was regarded as an outlier and omitted from the data set. Then, Mahalanobis distances were also checked. Field (2009, p. 789) denotes that with large samples (N=500), a value over +25 and -25 and with smaller samples a value +15 and -15 should be regarded as problematic. Two cases (male, high school, 31+, İhsangazi and male, primary school, +31, Kastamonu) had values exceeding +15 and -15 (16,31-15,74) and were excluded from the data set. As the last step for outlier and residual analysis, Cook's distance was tested. According to Field (2009, p. 217), a value over +1 should be granted as the existence of outliers. As the result of the analysis, none of the cases exceeded these threshold values (highest=.03615). In the light of the analyses, it was assumed that there are no outliers and residuals in the data set. The final data set has 305 participants; 174 male, 131 female, high school level 154, secondary school level 87, primary school level 64, seniority 1-10 years, 67 participants, 11-20 years, 122 participants, 21-30 years, 111 participants and 31 years and over, 5 participants, Kastamonu city center, 170, Tosya, 67, Daday 50 and İhsangazi 18.

Normality tests were also carried out for the data set. Skewness and kurtosis values were checked. Field (2009, p. 139) denotes that values over 1.96 are significant at $p < .05$, and values above 2.58 are significant at $p <$

.01. He alleges that with large samples, the threshold value could be risen to 2.58. For kurtosis, the range can be between the values of +3 and -3 (Singh, 2007, p. 141). For skewness, the highest value is in female group with -753. For kurtosis, the values over +1 and -1 are 31+ seniority=-1.599 and İhsangazi=1.707. As the seniority group has only five participants, it was assumed that the kurtosis value could have been affected by *n.* For groups with 50 and less participants Shapiro-Wilk and for groups with 51 and over participants, Kolmogorov-Smirnov tests were checked. The tests were significant for the group of seniority with 31+ years, p=.007, 11-20 years, p=.046, Kastamonu, p=.003 and female p=.001, ($p \leq .05$). Tests of normality did not meet the normality assumption though they can be affected by the number of participants in each group. As the final stage, the homogeneity of the variances was tested by Levene test in each group. Levene test statistics are for gender, p=.899, for institution, p=.827, for seniority, p=.160 and for district, p=.286, for each group, $p \geq .05$, which signifies the homogeneity of the variances (Stockemer, 2019, p. 104). In view of the findings, the data set was supposed to be suitable for confirmatory factor analysis.

Path diagram was utilized to test the model. First of all, to test the adequacy of the sampling, critical N was calculated and it was found out to be CN=399.66. Sample size increases the power of statistical tests (Coolican, 2009, p. 47). In view of CN, the sampling size assumption was not met. However, Kline (2011, p. 12) denotes that for confirmatory factor analysis, the ideal n is 20/1 for the items (variables) in the scale. As the draft scale has 15 items, then 15x20=300 could meet the sampling adequacy. As n=305, n was assumed to be appropriate for analysis. As the estimation method, maximum likelihood method was applied as it is a robust estimation method especially when normality of distribution assumption cannot be met (Hair et al., 2014). Asymptotic covariance matrix was applied in the analysis. The results of the analysis were presented in the Table 5;

Table 5: *The CFA Results of the Data Culture at School Scale*

Factor 1: Data-based management				
Item	t-scores	Error Variance	Standardized Loadings	R^2
1	11.68	.69	.70	.42
2	15.13	.51	.92	.62
3	15.29	.46	.89	.63
Factor 2: Data management and use				
Item	t-scores	Error Variance	Standardized Loadings	R^2
4	15.43	.41	.84	.63
5	11.80	.61	.67	.42
6	13.23	.46	.69	.50
7	12.29	.55	.67	.45
Factor 3: Data-based decision making				
Item	t-scores	Error Variance	Standardized Loadings	R^2
8	11.35	.59	.75	.49
9	9.80	.86	.71	.37
10	9.22	.64	.56	.33
11	10.48	.56	.64	.42
Factor 4: Data-based performance profiling				
Item	t-scores	Error Variance	Standardized Loadings	R^2
12	15.76	.48	.93	.65
13	13.65	.57	.79	.52
14	13.32	.52	.73	.50
15	16.33	.32	.82	.68

As the results suggest, t scores are meaningful ($t > 2.56$, $p < .05$) Çokluk et al. (2018) denote that t values over 2.56 are significant at the significance level of .05. The lowest standardized factor loading is .37. Cohen et al. (2018, p. 578) assert that items with factor loadings lower than .30 should be considered for exclusion. Error variances are all below 1, which is the threshold value (French & Finch, 2006, p. 383;). The goodness of fit statistics for the first order confirmatory factor analysis about the model is presented in Table 6.

Table 6: *Goodness of Fit Statistics for the First Order CFA Analysis*

Model	X^2	(X^2/sd)*	**RMSEA**	**SRMR**	**NFI**	**NNFI**	**CFI**	**GFI**	**AGFI**

First Order	84.23	1.003	0.003	0.032	0.96	1.00	1.00	0.96	0.95

*df=84, p=.47238

Prudon (2015, p. 9) puts forward that a value below 3 for (X^2 /sd) verifies that the model is robust. As the value of X^2 could be influenced by the sample size, it should not be regarded as the only indication of good fit (Harrington, 2009, p. 80). Brown (2006, p. 84) denotes that a value for root mean square error of approximation which is close to .00 indicates the existence of a good fit in the model. The root mean square of approximation (RMSEA) score of the model was calculated to be .036, verifying the goodness of fit. Standardized root mean square residual (SRMR) can take a value between 1 and 0 and a value close to 0 is regarded as the indication of a good fit (Brown, 2006, p. 83). Kline (2016, p. 277) denotes that a value over .10 should be approached as a serious problem. As a result, it can be put forward that SRMR index signifies a good fit, .032. The value for normed fit index (NFI) should be equal to .90 or over in a good fit model (Shek & Yu, 2014, p. 198). Normed fit index denotes a good fit, having the value of .96. In the same way, non-normed fix index (NNFI) should be .90 or over (Obst & White, 2004, p. 699). The value is 1.00, which is an indication of a good fit.

The comparative fit index (CFI) has a range of possible values of 0.0 to 1.0, with values closer to 1.0 implying good model fit (Brown, 2006, p. 85). The model has a CFI value of 1.00 and signals a good fit. Hair et al. (2014, p. 579) denotes that a score over .90 for goodness of fit index (GFI) addresses to the goodness of fit and the value in this model is .96. The adjusted goodness of fit index (AGFI) penalizes more complicated models and favors the ones with a minimum number of free paths. AGFI values are generally lower than GFI values in view of the model complexity (Hair et al., 2014, p. 581). Joreskog and Sorbom (1993; as cited in Çokluk et al., 2018, p. 400) allege that adjusted goodness of fit index (AGFI) score should be over .90 for a good fit. The score in the model is .95. The goodness of fit indexes signify that the model has acceptable scores for goodness of fit indexes. The first order path diagram of the model is presented in Figure 1;

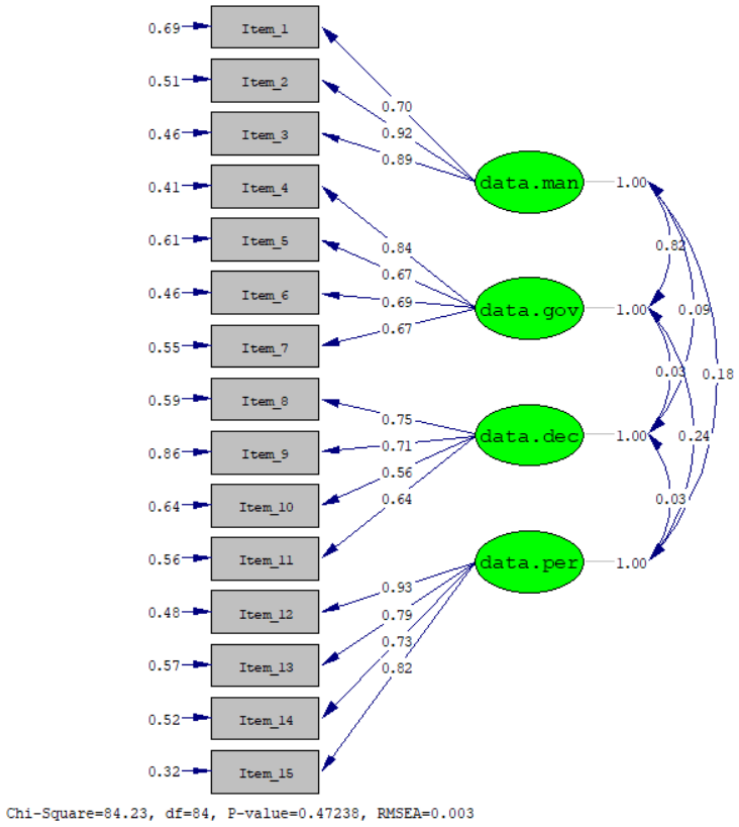

Figure 1: The First Order Path Diagram of the Data Culture at School Scale

Correlations among the factors were checked for multi-collinearity. Field (2099, p. 224) puts forward that for multi-collinearity, the correlation coefficient among variables should be .90 or over. Brown (2006, p. 32) denote

that an inter-correlation score over .85 implies poor discriminant validity. In the model, the highest correlation coefficient score is .82 between factors 1 and 2. The findings put forward no high correlation coefficient among factors. In the light of the findings, the four factorial structure formed through exploratory factor analysis was confirmed. It can be alleged that the goodness of fit indexes of CFA display that the four factorial structure established by the principal component analysis is robust.

As the final stage, reliability tests were carried out for the final scale. First of all, Cronbach Alpha coefficient was tested to find out the internal validity of the scale. Field (2009, p. 675) denotes that a value over .7 or .8 for Cronbach's α should be considered acceptable. Cronbach's α was calculated to be .780, signifying the internal validity of the scale. The internal validity and reliability were also tested by split-half method. Split-half is a reliability test in which a test is split into two parts and correlation coefficient for the parts are calculated (Kline, 2016, p. 91). Split half method is preferable to Cronbach alpha especially when the items are multi-dimensional (Thompson et al., 2010, p. 235). Split-half reliability analyzes half of the items assuming them to be the whole (Singh, 2007, p. 78). Thus, a high correlation coefficient must be met in split half reliability test for a good fit model. In the analysis, the correlation between the two halves is r=.737 and Spearman-Brown coefficient is R=.849. The findings verify the goodness of fit. As the last stage of testing internal validity and reliability, Gutman split-half coefficient was checked and Guttman's lambda was calculated to be λ=.846, signifying the goodness of fit.

To test the external validity, test-retest technique was utilized. The scale was applied to the same group of teachers and administrators twice in an interval of two weeks (First implementation, n=42, second implementation, n=34). The correlation coefficients were calculated between the results of the two implementations. Pearson correlation coefficient is r=.884, p≤.05, Spearman-Brown correlation coefficient is R=.624, p≤.05, and Kendal's tau-b is τ_b=.508, p≤.05. The findings of test-retest technique verified the external validity of the scale.

After the model is confirmed and reliability tests were carried out, the final scale was sent to language experts for translation. When all translations were gathered, the draft was reviewed by the researchers and the final version of the "data culture at school scale" was formed. The final version of the scale is presented in Table 7;

Table 7: *Factors and Items of the Data Culture at School Scale*

Items	Factor 1: Data-based management
2	The discussion on meeting agendas are based on data-based assessment
6	Data is included in teacher performance evaluation reports
7	Opinion data on administrative processes at school are regularly and perpetually collected
Items	Factor 2: Data management and use
27	Opinion data from students are collected to decide on activities of students' social clubs
8	Members of the school have competence for data analysis
28	Social activities at school are planned by referring to opinions of the members
30	School administration regularly and perpetually collects performance data of similar schools
Items	Factor 3: Data-based decision making
12	Mission statement of the school includes measurable goals
11	The allocation of the resources at school are carried out based on data
24	Teacher competence data are considered while setting up project and working groups
23	The school has data archive for competency areas of teachers
Items	Factor 4: Data-based performance evaluation
22	Gathering demographic data (age, economic situation etc.) about students is attached importance
21	Socio-economic grants for students at school are allocated based on data
15	Performance data of other schools are taken into account for performance evaluation of the school.
19	Rewarding at school is carried out based on data

Note: The data was collected through a draft scale in Turkish and in Turkish context. No adaptation was made for the items presented in English in the table. The English items presented here have been presented so as to provide insights to the readers. The original Turkish version of the items in the scale is presented in the Appendix.

DISCUSSION AND RESULT

This study aimed to develop a scale to evaluate the current state and level of data culture at schools. The scale was developed in four main main stages: forming the item pool and draft scale, first implementation for exploratory factor analysis, second implementation for confirmatory factor analysis and test-retest phase for external validity and reliability. Content validity before the main applications was provided by expert opinions and pilot studies. Moreover, reliability and validity were checked in both the first and the second implementations. To test the external validity and reliability of the final version of the scale, test-retest technique was utilized. The form was applied to same group of participants in a two-week interval. After the data were collected through test-retest phase, various tools such as Cronbach Alpha, split-half and Guttman's lambda were applied to test validity and reliability. All analyses verified the reliability and validity of the scale. The four dimensions of data culture at school were formed through analysis. The first dimension is data based management, which can be defined as a type of management placing objective and verifiable data at the center in administrative processes and attaching importance to data flow from every single unit towards the management (Cemaloğlu & Duykuluoğlu, 2002, p. 292). Data based management can be functional in educational processes such as data-informed decision making and effective planning for instructional activities. The dimension of the scale can help shareholders of the schools form a healthy understanding for the data-based management activities at their schools.

The second dimension is data management and use which can be defined as the management of processes and sources of information (Maritz, 2003, p. 75). Data management is the coordination and control of the processes in which reliable information is defined and obtained, and put to work to find solutions for organizational issues (Gordon, 2007, p. 54). In short, data management can be defined as the process of transforming raw data to actionable information to be utilized in organizational and administrative processes. The scale in this regard can shed light on the capacity and organizational level understanding for data management at schools.

The third dimension is data-based decision making. Decision making is at the center of management processes (Stewart, 2005; as cited in Robbins & Coulter, 2012, p. 182). Managers or administrators have to make decisions while carrying out planning, organization, leading and controlling (Robbins & Coulter, 2012, p. 182). Administrators decide on a scale of a total certainty and a total uncertainty. A total certainty means administrators' having the whole information about the decision variables and alternatives (Gomez-Mejia & Balkin, 2012, p. 169). When uncertainty is high, the number of decision alternatives will also increase (Kreitner, 2009, s. 215), which will make decision process a more complicated phenomenon. Data in this regard can function as a tool to decrease uncertainty and help make better decisions. Therefore, data-based approach in decision making could add to the quality of decision processes and decisions in organizations. The dimension in the scale could help school community evaluate their decision processes and form an awareness for data-based decision making.

The last dimension is data-based performance. An effective performance evaluation in organizations requires carrying out the processes based on objective and verifiable data (Hitt et al., 2012, p. 406). It can be alleged that evaluation itself, to a large extent, is based on data collected through observation and other data collection tools. Evaluation without verifiable data could be regarded as nothing more than subjective judgment. Data-based evaluation could contribute to the effectiveness of evaluation processes. The scale in this regard can help school community have a clearer picture of data-based evaluation processes at school.

To sum up, data culture at school could add to effectiveness of the administrative and instructional processes. The scale in this regard could pave way for an understanding towards the importance of data culture at school. It might lead the school community to make use of data in administrative, educational and instructional processes. Forming an awareness for the significance of data and data culture at school, the scale could help school community to prepare the organizational setting and structure to establish and institutionalize data culture.

REFERENCES

Anderson, C. (2015). *Creating a data driven organization: Practical advice from the trenches.* Sebastopol, CA: O'Reilly Media, Inc. https://l24.im/5awV8

Andrade, C. (2021). Z scores, standard scores, and composite test scores explained. *Indian Journal of Psychological Medicine*, *43*(6), 555-557. https://journals.sagepub.com/doi/pdf/10.1177/02537176211046525

Bai, J., & Ng, S. (2005). Tests for skewness, kurtosis, and normality for time series data. *Journal of Business & Economic Statistics*, *23*(1), 49-60. http://www.columbia.edu/~sn2294/pub/jbes-05.pdf

Bartlett, M. S. (1950). Tests of significance in factor analysis. *British journal of psychology*, 5(2), 109-133. https://sci-hub.se/10.1111/j.2044-8317.1952.tb00117.x

Bates, J. (2017) Data Cultures, Power and the City. In: Kitchin, R., Lauriault, T. and McArdle, G., (Eds.) Data and the City. Routledge, Oxon, pp. 189-200. https://l24.im/k5YIbN1

Bevans, K., Bradshaw, C., Miech, R., & Leaf, P. (2007). Staff-and school-Level predictors of school organizational health: A multilevel analysis. *Journal of School Health*, *77*(6), 294-302. https://sci-hub.se/10.1111/j.1746-1561.2007.00210.x

Brown, T. A. (2006). Confirmatory factor analysis for applied research. D. A. Kenny (Edt). Methodology in the social sciences (pp. 1-100). The Guilford Press. https://epdf.tips/confirmatory-factor-analysis-for-applied-research.html

Büyüköztürk, Ş., Çokluk, Ö., & Köklü, N. (2013). *Sosyal bilimler için istatistik* (13th ed.). Pegem Akademi.

Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2008). *Bilimsel araştırma yöntemleri* (2. bs). Pegem Akademi.

Carpenter, S. (2018). Ten steps in scale development and reporting: A guide for researchers. Communication methods and measures, 12(1), 25-44. https://doi.org/10.1080/19312458.2017.1396583

Cemaloğlu, N. & Duykuluoğlu, A. (2002). Eğitimde veriye dayalı yönetim. Pegem akademi.

Cohen, L., Manion, L. & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.

Çokluk, Ö., Şekercioğlu, G. & Büyüköztürk, Ş. (2018). *Sosyal bilimler için çok değişkenli istatistik: SPSS ve LISREL uygulamaları* (5. bs). Pegem Akademi.

Cokluk, O., & Kayri, M. (2011). The Effects of Methods of Imputation for Missing Values on the Validity and Reliability of Scales. *Educational Sciences: Theory and Practice*, *11*(1), 303-309. https://files.eric.ed.gov/fulltext/EJ919903.pdf

Coolican, H. (2013). *Research methods and statistics in psychology* (5th ed). Routledge. https://l24.im/NVBjw

Díaz, A., Rowshankish, K., & Saleh, T. (2018). Why data culture matters. *McKinsey Quarterly*, *3*(1), 36-53. https://l24.im/IhEzM7L

Engmann, S., & Cousineau, D. (2011). Comparing distributions: The two-sample Anderson-Darling test as an alternative to the Kolmogorov-Smirnoff test. Journal of applied quantitative methods, 6(3), 1-38. https://l24.im/pXQcE8j

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed). Sage Publications Ltd.

French, B. F., & Finch, W. H. (2006). Confirmatory factor analytic procedures for the determination of measurement invariance. *Structural Equation Modeling*, *13*(3), 378-402. https://sci-hub.se/10.1207/s15328007sem1303_3

Gomez-Mejia, L. R. ve Balkin, D. B. (2012). *Management: People, performance, change.* Pearson Education, Inc. https://epdf.pub/managementa0db94685bc6e29af82e539abae08cd816325.html

Gordon, K. (2007). *Principles of data management: Facilitating information sharing*. The British Computer Society Publishing and Information Products. https://l24.im/knhzAr

Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2014). *Multivariate data analysis* (7th ed). Pearson Education Limited.

Harrington, D. (2009). Confirmatory factor analysis. In T. Tripodi (Edt.). Pocket guides to social work reseacrh methods (pp. 3-121). Oxford University Press. https://l24.im/s4Y6den

Hitt, M. A., Black, J. S., & Porter, L. W. (2012). *Management* (3rd ed.). Pearson Education, Inc. https://epdf.pub/management-3rd-edition-5ea6b18753bde.html

Howitt, D. & Cramer, D. (2017). *Research methods in psychology* (5th ed). Pearson Education Limited.

Keller, S., & Price, C. (2011). Organizational health: The ultimate competitive advantage. *McKinsey Quarterly*, *2*(6), 94-107. https://l24.im/qBG

Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed). Guilford Press.

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed). Guilford Press. http://ndl.ethernet.edu.et/bitstream/123456789/74702/1/35.pdf

Knapp, M. S., Copland, M A., & Swinnerton, J. A. (2007). Understanding the promise and dynamics of data-informed leadership. *Yearbook of the National Society for the Study of Education, 106(1),* 74-104. https://doi.org/10.1111/j.1744-7984.2007.00098.x

Korkmaz, M. (2007). The effects of leadership styles on organizational health. *Educational research quarterly*, *30*(3), 23-55. https://files.eric.ed.gov/fulltext/EJ787712.pdf

Kreitner, R. (2009). *Management* (11th ed.). Houghton Mifflin Harcourt Publishing Company. https://l24.im/JH6

Lasater, K., Albiladi, W. S., Davis, W. S., & Bengtson, E. (2020). The data culture continuum: An examination of school data cultures. *Educational Administration Quarterly*, *56*(4), 533-569. https://sci-hub.se/10.1177/0013161x19873034

Leary, L. M. (2015). *It is the data revolution and the year of evaluation, is your organization ready?: Assessing organizational data culture to create an ideal data ecosystem* (Unpublished Master's Thesis). SIT Graduate Institute, Washington, DC. https://digitalcollections.sit.edu/cgi/viewcontent.cgi?article=3845&context=capstones

Licata, J. W., & Harper, G. W. (2001). Organizational health and robust school vision. *Educational Administration Quarterly*, *37*(1), 5-26. https://sci-hub.se/10.1177/00131610121969226

Martin, W. E. & Bridgmon, K. D. (2012). *Quantitative and statistical research methods: From hypothesis to results.* Jossey-Bass.

Maritz, S. G. (2003). Data management: Managing data as an organisational resource. *Acta Commercii, 2003(3),* 75-84. DOI: https://doi.org/10.4102/ac.v3i1.44

Mehta, T. G., Atkins, M. S., & Frazier, S. L. (2013). The organizational health of urban elementary schools: School health and teacher functioning. *School mental health*, *5*, 144-154. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3736843/

McNeish, D. (2018). Thanks coefficient alpha, we'll take it from here. *Psychological methods* 23(3), 412-434. http://dx.doi.org/10.1037/met0000144

Muthen, L. K., & Muthen, B. O. (2002). How to use a Monte Carlo study to decide on sample size and determine power. Structural Equation Modeling: *A Multidisciplinary Journal, 9*(4), 599-620. https://psychology.concordia.ca/fac/kline/sem/qicss2/muthen2002.pdf

Obst, P. L., & White, K. M. (2004). Revisiting the sense of community index: A confirmatory factor analysis. *Journal of community psychology*, *32*(6), 691-705. https://eprints.qut.edu.au/604/2/604.pdf

Olaleye, S.A. & Adusei, A.G. (2023). Exploring bibliometric perspectives on data culture in scholarly discourse. In Li, E.Y. et al. (Eds.) Proceedings of The International Conference on Electronic Business, Volume 23, 232-243. https://www.theseus.fi/bitstream/handle/10024/817273/Article.pdf?sequence=1

Oliver, G., Cranefield, J., Lilley, S., & Lewellen, M. J. (2023). Understanding data culture/s: Influences, activities, and initiatives: An Annual Review of Information Science and Technology (ARIST) paper. *Journal of the Association for Information Science and Technology*, 2023(1), 1-14. https://asistdl.onlinelibrary.wiley.com/doi/pdfdirect/10.1002/asi.24737

Quick, J. C., Macik-Frey, M., & Cooper, C. L. (2007). Managerial dimensions of organizational health: The healthy leader at work. *Journal of Management Studies*, *44*(2), 189-205. https://sci-hub.se/10.1111/j.1467-6486.2007.00684.x

Peiró, J. M., & Rodríguez, I. (2008). Work stress, leadership and organizational health. *Papeles del Psicólogo*, *29*(1), 68-82. https://www2.papelesdelpsicologo.es/English/1540.pdf

Prudon, P. (2015). Confirmatory factor analysis as a tool in research using questionnaires: a critique. *Comprehensive Psychology*, *4*(10), 1-17. https://journals.sagepub.com/doi/pdf/10.2466/03.CP.4.10

Robbins, S. P. ve Coulter, M. (2012). *Management* (11th ed.). Pearson Education, Inc. https://l24.im/6GLe8SY

Shek, D. T., & Yu, L. (2014). Confirmatory factor analysis using AMOS: A demonstration. *International Journal on Disability and Human Development*, *13*(2), 191-204. https://www.academia.edu/download/54409775/cfa-amos.pdf

Singh, K. (2007). *Quantitative social research methods.* Sage Publications Inc.

Smith, P. A., Hoy, W. K., & Sweetland, S. R. (2001). Organizational health of high schools and dimensions of faculty trust. *Journal of School leadership*, *11*(2), 135-151. https://sci-hub.se/10.1177/105268460101100204

Stockemer, D. (2019). *Quantitative methods for the social sciences: A practical introduction with examples in SPSS and stata.* Springer International Publishing.

Sutherland, S. (2004). Creating a culture of data use for continuous improvement: A case study of an Edison Project school. *American Journal of Evaluation*, *25*(3), 277-293. https://sci-hub.se/10.1177/109821400402500302

Tabachnick, B. G. & Fidell, L. S. (2013). Using multivariate statistics (6th ed). Pearson Education, Inc.

Thompson, B. L., Green, S. B., & Yang, Y. (2010). Assessment of the maximal split-half coefficient to estimate reliability. *Educational and Psychological Measurement*, *70*(2), 232-251. https://l24.im/4BZF8

Tofighi, S., Chaghary, M., Amerioun, A., & Karimi Zarchi, A. A. (2011). Effect of organizational changes on organizational health indicators and its relationship with organizational effectiveness. *Journal of Military Medicine*, *13*(3), 173-179. https://l24.im/KRaykq

Xenidis, Y., & Theocharous, K. (2014). Organizational health: Definition and assessment. *Procedia Engineering*, *85*, 562-570. https://sci-hub.se/10.1016/j.proeng.2014.10.584

Appendix

Table 8: *The Original Turkish Version of the Scale Implemented in Turkish Context*

Madde	Faktör 1: Veriye dayalı yönetim
2	Toplantılarda gündem maddelerinin görüşülmesinde veriye dayalı değerlendirmeler ön plandadır
6	Öğretmen performans değerlendirmelerinde veriye dayalı açıklamalara yer verilir
7	Okulda yönetsel uygulamalara dönük sürekli ve düzenli olarak veri toplanır
Madde	**Faktör 2: Veri yönetimi ve kullanımı**
27	Okulda öğrenci kulüp çalışmalarına karar verilirken öğrenci görüşleri de alınır
8	Okulun iç paydaşları veri analizi hususunda yeterliliğe sahiptir
28	Okulda sosyal faaliyetler paydaşların görüşleri alınarak planlanır
30	Okul yönetimi benzer okulların performanslarına ilişkin verileri düzenli olarak toplar
Madde	**Faktör 3: Veriye dayalı karar verme**
12	Okulun misyon ifadesinde ölçülebilir amaçlara yer verilmiştir
11	Okulda kaynakların dağıtımı veriye dayalı gerçekleştirilir
24	Proje ekipleri ve çalışma gruplarının oluşturulmasında öğretmenlerin yeterliliklerine dönük veri esas alınır
23	Okulda öğretmenlerin yeterlilik alanlarına ilişkin veri arşivi vardır
Madde	**Faktör 4: Veriye dayalı performans değerlendirme**
22	Okulda öğrencilere dönük demografik veri (yaş, ekonomik durum vs) toplanmasına önem verilir
21	Okulda öğrencilere sağlanan sosyal yardımlar öğrencilerin ekonomik durumuna ilişkin verilere dayalı gerçekleştirilir
15	Okulun performansının değerlendirilmesinde diğer okulların performans verileri dikkate alınır
19	Okulda ödüllendirmeler performans verilerine dayalı olarak gerçekleştirilir