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Organizational Development Level Determination Scale: A Validity and Reliability Study

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Abstract

The aim of this study was to develop a scaling instrument for measuring organizational development level in the Turkish higher education context depending on perceptions of the faculty. The sample consisted of academicians of higher education institutions in the 2020–2021 academic year. Data were gathered in two stages. Exploratory Factor Analysis (EFA) was conducted in the first stage and Confirmatory Factor Analysis (CFA) was conducted in the second stage. The EFA sample consisted of 216 academicians working in 6 higher education institutions while the CFA sample consisted of 501 academicians working in 6 higher education institutions. Maximum Likelihood extraction and Varimax rotation methods were used in EFA. Results of EFA showed that the scale had a four-factor structure with 21 Items. The four-factor structure was confirmed with CFA. Cronbach's alpha, Spearman Brown, and Guttman (G) were calculated in order to determine the reliability of the scores obtained from the scale. Item discrimination was verified by calculating Item-total correlation and item-remainder correlation. Also, t-test was carried out between upper and lower 27% to check item discrimination. Analyses were conducted making use of IBM SPSS 22 Statistical Package for the Social Sciences and AMOS Analysis of Moment Structure programmes. Overall, the results showed that the structure of the Organizational Development Level Determination Scale was valid. The measurement tool was concluded to have three factors and 18 Items, all in affirmative form.

Keywords: organizational development, scale development, factor analysis

1. Introduction

Universities around the world are constantly changing in order to improve themselves. In many countries, governments have expectations of economic returns from universities. In some countries, government intervention is weaker and universities initiate the change themselves for various reasons. Since universities aim to gain prestige at the national and international levels, they have to take global trends into account. Higher education institutions need change in order to continue their institutional life (Geertsema & van Niekerk, 2009, p. 912). Monitoring the change in the needs of the target audience, sharing this information with employees and suppliers, and continuous development and improvement can be achieved with self-managing teams, namely quality circles and Kaizen philosophy and Total Quality Management understanding (Eren, 2019, p. 114).

Organization Development is the activities aimed at providing organizational competence by making changes in all organizational dimensions such as human, structure, and process with a holistic approach within a planned process with the support of the senior management by receiving consultancy assistance (Karadağ, 1999, p. 30).

All kinds of organizational activities that contribute to the implementation of the processes by providing employee harmony with open and reassuring communication can be regarded as an organizational development technique changing the approaches and values in a structural and planned way starting from the organizational culture via including the employees who will be affected by that process, and by getting feedback from the employees about this effect (Robbins et al., 2013, p. 205; Levent, 2016, p. 351). Organizational development covers the necessity of transforming an organization into a complex operating system with all its aspects and developing people and context and changing organizations in order to develop the organization (Ballaro et al., 2020, p. 46).

Organization development is based on findings and hypotheses of behavioral sciences. Organization

development is the way in which the classical scientific method is adapted to organizational behavior by the members themselves. Increasing the sense of organizational ownership by providing opportunities for creating a certain style of behavior, providing more options for individuals regarding their behaviors, providing more flexibility in choosing them, and creating self-renewing organizations with a change approach by nurturing the spirit of research and cooperation can be counted among the goals of organizational development (Kegan, 1971, p. 456).

In the organizational development process, the intervention phase is executed together with the action plan that follows the phases of problem diagnosis, solution development, and action. Organizational intervention can be defined as the process of improving the organization directly or indirectly through structured activities. Organizations participate actively in these activities and become the planner and implementer of the activities together with the change experts (Dinçer, 1986, p. 471). It is argued that attitudes developed by individuals can be changed through persuasion, communication and education. Subjective norms depend on the way an individual perceives social normative pressures. Employees tend to follow the values of their organizations and conform to the organizations they are affiliated with in order to make progress (Xie et al., 2021, p. 3).

As for Organization Development processes, socio-organizational issues are seen as a deficiency when trying to develop organizations cognitively with information operating systems. Problem identification processes carried out by system analysts are natural cognitive processes, and social problems such as human information processing and prejudices are mental factors that should be taken into account (Kim & Kumar, 2017, p. 18).

Organization Development activities have long-term complex processes. These processes are identification of problems, contacting the consultant, data collection and diagnosis, development of a joint solution, taking action (intervention), evaluation of results, and finally the completion of the program and collection of data repeatedly (Karadağ, 1999, p. 33).

French (1969, p. 27) emphasizes the importance of the action research model among organizational development strategies. In this model, data collection, action plan, action, discussion of the results with repetitive cycles, and re-planning are made by entering into ~~an~~ intensive cooperation with the change expert or consultant to be supplied from inside or outside the organization. Organization development includes diagnosing organizational problems and solving these problems by adapting planned change management to organizational processes. Through the organizational development, it is ensured that the members of the organization gain the necessary knowledge and skills to carry out these activities by including them in the change process (Cummings & Worley, 2009, p. 3).

Organizational Development elements include planned change, organizational learning, action research, and consultancy processes Organization development processes, on the other hand, consist of sequential phases such as identifying problems, contacting the consultant, collecting data, diagnosis, developing joint solutions, intervention, evaluation, terminating the program, and collecting data again (Öncül, 1995, pp. 23, 33). The selection of new behaviors and thoughts by the organization and the focus on innovation bring about organizational change in processes and activities. Organizational change includes the concepts of development, growth, and innovation (Yıldırım, 2018, p. 91).

The current situation of the organization should be evaluated in the competitive environment and change should be created. For this reason, organizational development includes intervention processes, and SWOT analysis contributes to this process by revealing the strengths and weaknesses of the organization, the opportunities and threats of the organization in a comparative way (Öktem & Uçar Kocaoğlu, p. 118).

Performance evaluation is a systematic process that allows the organization or its employees to measure and evaluate their performance by comparing them with previously determined standards. Multidimensional models have been developed that aim to evaluate the success of institutions not only in financial terms but also in all aspects. Organizations make performance evaluations by applying the strategies they create, the qualifications of their employees, and their own structure and abilities (Öztürk, 2019, p. 252).

While the organization development activities are being discussed, the solution options developed by the management and the organizational development consultant according to the problem structure experienced in the organization are shared and a common point is reached. The most appropriate intervention technique for the organization is selected and an activity and intervention plan is made. The scope of the program and the persons responsible for the intervention should be determined and the extent to which the results obtained are related to the objectives should be evaluated with a participatory management approach. Re-planning and arrangements can be made according to the evaluation results (Ünüvar & Bektaş, 2017, p. 71).

In order for institutions to achieve sustainable developments, they need to continuously improve their business processes, differentiate the services and products they offer to their target audiences, and provide better quality output. (Sarıaltın & Yılmazer, 2006, p. 79). The level of development should be considered by taking both abstract and concrete determinants. It is stated that by considering these criteria, countries can achieve innovation and sustainable competition through the qualified workforce capacity, innovation, and technologies and sensitive management approach used by the owned organizations. The concept of sustainability is one of the types of abstract development that may differ between nations having common importance (Erhan & Yastıoğlu, 2020, p. 78).

2. Method

In this section, information regarding the sample is presented and steps of scale development are explained in detail.

2.1 Sample

The sample of the study was selected through proportional stratified sampling. In stratified sampling, the universe is divided into subgroups with different characteristics and samples are selected from each group in order to represent the groups (Baştürk & Taştepe, 2013, p. 142). Stratification was made based on the type of university and the ratio of the number of academicians working in each university type to the total number of academicians. Data in the study were gathered online via Google Forms.

Regarding the sample size in factor analysis, MacCallum et al. (1999, p. 90) suggest that as the number of N increases, the sampling error will decrease and the results of the factor analysis performed on the sample will become more stable. In this way, the structure of the real universe will be evaluated more accurately.

Data regarding the participants are presented in Table 1.

Table 1. Participants

	1st Stage		2nd Stage	
Variable	n	%	n	%
Woman	104	48.1	250	49.9
Male	112	51.9	251	50.1
Age 20–30	32	14.8	71	14.1
Age 31–40	59	27.3	146	29.0
Age 41–50	46	21.3	136	27.0
51 and above	79	36.6	148	29.9
1–5 years	39	18.1	106	21.1
6–10 years	35	16.2	78	15.6
11–15 years	23	10.6	65	13.0
16 years and above	119	55.1	252	50.3
Research Assist	54	25	132	26.3
Dr.	67	31	164	32.7
Assoc. Prof	35	16.2	79	15.8
Prof.	60	27.8	126	25.2
State University	118	54.6	246	49.4
Foundation	98	45.4	255	50.6
Administrative Task Exists	104	48.1	222	44.3
No Administrative Tasks	112	51.9	279	55.7
Project Task Exist	156	72.2	344	68.7
No Project Tasks	60	27.8	157	31.3
Total	216	100	501	100

According to Table 1, it is seen that 104 of the academicians constituting the first stage of the study group are female and 112 are male. In the second stage, 250 were female and 251 male. 32 of the academicians were between the ages of 20–30, 59 were between 31–40, 46 were between 41–50, and 79 were 51 years old and over in the first stage. In the second stage, 71 of the academicians were between the ages of 20–30, 146 between 31–40, 136 between 41–50, and 148 were 51 years old and over. In the first stage, 39 of the academicians have seniority between 1–5 years, 35 between 6–10 years, 23 between 11–15 years, and 119 have 16 years or more. In the second stage, 106 were between 1–5 years, 78 between 6–10 years, 65 between 11–15 years, and 252 have seniority of 16 years or more. In the first stage, 54 were Research Assistants, 67 were Doctors, 35 were

Associate Professors and 60 were Professors. In the second stage, 32 of them were Research Assistants, 164 were Doctors, 79 were Associate Professors and 126 of them were Professor Doctors. In the first stage, 118 of the academicians work at state universities and 98 at foundation universities. In the second stage, 246 were at the state and 255 were at the foundation universities. In the first stage, 104 of them have an administrative duty, while 112 do not. In the second stage, 222 have an administrative duty, while 279 do not. In the first stage 156 of them take part in national or international projects while 60 do not take part in any project. In the second stage 344 of the academicians take part in projects while 157 do not take part in any projects.

In the use of exploratory factor analysis methods, it is stated that the number of participants to collect data should be 10 for each item, that is, the observed variable. That means a sample consisting of 200 people is needed for a scale consisting of 20 items (Güngör, 2016, p. 106). According to Bryman and Cramer (2001), this number is 5 to 10 times the number of items. In order for the factor analysis which is one of the stages of the Organizational Development Level Determination Scale development to be carried out, it was concluded that a sample size of at least 205 people, 5 times the number of 41 draft items consisted upon Lawshe study should be selected. 216 academicians participated in the first stage in which EFA was conducted and 501 academicians from state and foundation universities with various titles participated in the second stage in which CFA was conducted.

2.2 Development of the Scale

The scale to be improved is the Organizational Development Level Determination Scale, which will be introduced to the literature with the scale development study in this research. The model to be used for the development of the scale is shown in Figure 1.

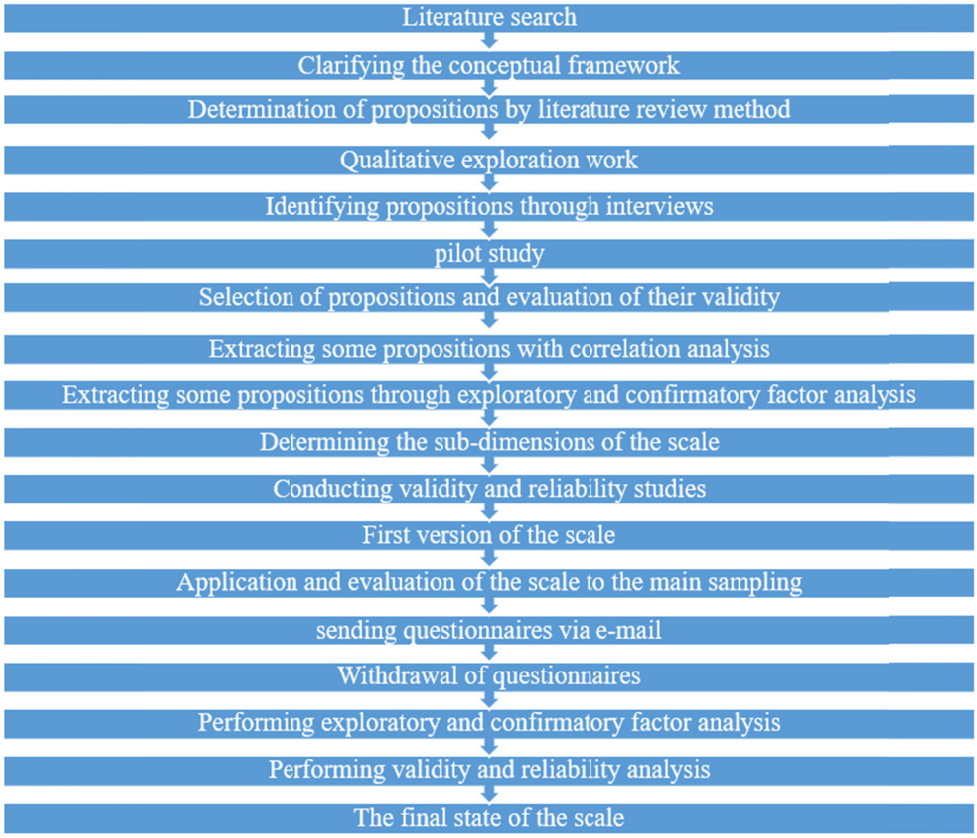

Figure 1. Organizational development level determination scale development model

Source: Esen & Maden Eyiusta, 2015, p. 10.

In this study, the abovementioned scale development steps were followed. After the literature review and interviews with experts, the propositions of the scale were determined. Following the content and structure validity studies, extraction of some propositions was conducted via exploratory and confirmatory factor analysis.

Sub-dimensions that are factors of the scale were determined. After validity and reliability studies, the final state of the scale was concluded.

2.2.1 Purpose of the Scale

The aim of development of Organizational Development Level Determination Scale is to determine the organizational development level of any organization but mainly higher education institutions. In this context, the target group of the Organizational Development Level Determination Scale was decided to be academicians who have been studying in higher education institutions. Also, it was foreseen that the results of the scale to be used for evaluating the level of organizational development level of the higher education institutions according to the perceptions of academicians.

2.2.2 Draft Item Pool

In the item formation phase, stimuli belonging to the latent variable are created. After the relevant environment, situation or context is determined in accordance with the conceptual structure, behavioral indicators based on this structure are determined and converted into an item format compatible with the content (Erkuş, 2007, p. 18).

In order to develop the scale, domestic and foreign literature were surveyed with the survey method, and an item pool was created by establishing the theoretical infrastructure. 5 academicians were interviewed about the concept of organizational development and the perceptions of academicians about the concept were determined. The items were chosen completely structured close-ended and were prepared in five-point Likert type. Rating scales are widely used in social sciences and with attitude scores. Such measurement tools are generally designed using a Likert-type scale. The Likert -type scale requires the person to respond to a series of statements by stating one of the following statements: “strongly agree”, “agree”, “undecided”, “disagree” or strongly disagree. A point value is assigned to each answer, and the individual’s score is determined as the sum of the point values of all statements (Croasmun & Ostrom, 2011, p. 19).

Draft item pool, which was prepared as 13 possible dimensions consisting of 197 items, took its final form after the focus group discussions with the experts of organizational studies and scale development and after dimension merging, item elimination, or correction processes. In the draft item pool created for the first time by the researcher after the literature review, possible dimensions were predicted as organizational identification, shared vision, organizational communication networks, organizational competence, personnel empowerment, organizational learning, organizational effectiveness, organizational change, technological adaptation, and professionalism. Sources utilized during the creation of the draft item pool upon literature review on research regarding organizational development are Kegan (1971); Raia (1972); White and Wooten (1983); Dinçer (1986); Öncül (1995); Karadağ (1999); Yılmaz (2007); İbrahimoğlu (2008); Cummings and Worley (2009); Robbins et al. (2013); Al-Quraan (2015); Hassan et al. (2016); Levent (2016); Dobrai and Farkas (2016); European Education and Culture Executive Agency, Eurydice, Crosier Birch, Davydovskaia (2017); Stewart and Gapp (2017); Kim and Kumar (2017); Church, Shull and Burke (2018); Parlar (2019); Ballaro et al. (2020); Nagaishi (2020). After the focus group discussions, the number of dimensions reached in the new situation was reduced to 7 and the number of items to 41.

2.2.3 Technical Supervision and Inspection in Terms of Language

At this stage, the linguistic modification was provided for a better understanding of draft items. Linguistic modification of test items involves simplifying or modifying the language of a text while keeping the content the same (Abedi, 2011, p. 384). For this reason, the draft item pool was sent to a panel of 2 language experts who hold a bachelor’s degree in the Turkish Language and literature to examine the compliance with the spelling rules. As a result, items in the draft pool were revised via correction or reduction of the items which have repeated meanings depending on the feedback on punctuation and grammar.

2.2.4 Opinions of Panel of Experts

The draft items were sent to 13 academicians having titles from research assistant to professor via e-mail by using purposeful criterion sampling. The criteria are to be an expert in organization or scale development issues in higher education institutions. In order to understand whether the skill or knowledge is measured by the relevant item, feedback from field experts on compliance was received through a graded form consisting of “appropriate”, “correction needed” and “not appropriate” statements and an explanations section at the end of each item.

The larger the number of experts (over 50%) who perceive the item as “necessary”, the greater the extent or degree of content validity. Based on this assumption, the following formula was developed for the content validity ratio (CVR) where Na is the number of experts who deemed the item appropriate, N, the total number of

experts: CVR= (Na-N/2)/N/2. CVR is negative if considered "necessary" by less than half of the experts. If half of the experts consider the Item "necessary", the CVR is zero (Lawshe, 1975, p. 567).

The Lawshe technique is an item statistics based on the content validity of whether the relevant scale item is included in the scale. Content Validity Ratio CVR can take a value between -1 (absolute rejection) and +1 (absolute acceptance). If all participants who gave an opinion rate any item on the scale with an "appropriate" opinion, the CVR value of the relevant item becomes 1. According to the Lawshe technique, it is expected that the content validity criterion (CVR), that is, critical or acceptable CVR values, for each Item with a positive value should have a significance level of at least 0.05 (Yeşilyurt and Çapraz, 2018, p. 255). It is recommended that the $CVR_{critical}$ value, the probability of Type I error for an alpha, be 0.05, provided that a one-tailed test is used (Ayre & Scally, 2014, p. 82).

Taking the opinions of experts, it was determined that 41 items were found to be suitable for the scale. 41 items in the pool are presented in Table 2.

Table 2. Item pool for organizational development level determination scale

Item in Turkish	English Translation
1. Kurumumda problemler çalışanlardan gizlenir.	In my organization, problems are hidden from the employees.
2. Kurumumla ilgili istatistiksel veriler yöneticiler tarafından çarpıtılır.	Statistical data about my institution are distorted by the managers.
3. Kurumumda paydaş ihtiyaçları düzenli aralıklarla analiz edilir.	In my institution, stakeholder needs are analyzed at regular intervals.
4. Kurumumda gelişime açık alanlar birlikte belirlenir.	Areas open to improvement in my institution are determined together.
5. Kurumumda GZFT (Güçlü-Zayıf yönler, Fırsat ve Tehditler) tüm çalışanların katılımıyla değerlendirilir.	In my institution, SWOT (Strengths-Weaknesses, Opportunities and Threats) is evaluated with the participation of all employees.
6. Kurumumda çalışanlar ortak değerler geliştirir.	Employees in my organization develop common values.
7. Kurumumda bir sonraki adımla ilgili belirsizlik hissi hakimdir.	There is a feeling of uncertainty about the next step in my institution.
8. Kurumumda kendimi sistem içinde kaybolmuş gibi hissederim.	In my institution, I feel like I am lost in the system.
9. Kurumumun uzun vadeli planlarını benimserim.	I adopt the long-term plans of my institution.
10. Kurumumda stratejik kararlarla ilgili fikir beyan ederim.	I express my opinion on strategic decisions in my institution.
11. Kurumumda gelişime açık alanlarımla ilgili mentorluk/rehberlik faaliyetlerinden yararlanırım.	I benefit from mentoring /guidance activities related to my areas open to development in my institution.
12. Kurumumda hizmet-içi eğitim olanaklarından faydalanırım.	I benefit from in-service training opportunities in my institution.
13. Kurumumda yeteneklerimi geliştirme olanaklarım vardır.	I have opportunities to develop my capabilities in my institution.
14. Kurumumda yöneticiler mesleki gelişimimi destekler.	Managers in my institution support my professional development.
15. Kurumumda öğrenme topluluklarına (deneyim paylaşım toplulukları, çevrim-içi öğrenme ağları, vb.) katılım sağlarım.	I participate in learning communities (experience sharing communities, online learning networks, etc.) in my institution.
16. Kurumumda kurumsal gelişim planları tüm birimleri kapsayacak şekilde tasarlanır.	Institutional development plans are designed to cover all units in my institution.
17. Kurumumda iç veya dış uzmanlardan yeterince faydalanılır.	Internal or external experts are sufficiently utilized in my institution.
18. Kurumumun gelişime yönelik hedeflerini somut olarak ifade edebilirim.	I can concretely express the development goals of my institution.
19. Kurumumda problemler planlı aşamalar halinde çözülür.	In my institution, problems are solved in planned stages.
20. Kurumumda görev tanımları açık bir dille ifade edilir.	Job descriptions are expressed clearly in my institution.
21. Kurumumu ileriye taşıyacak projeler geliştirilmesine katkı sağlarım.	I contribute to the development of projects that will carry my institution forward.
22. Kurumumda farklı birimlerle (teknoloji transfer ofisi, kuluçka merkezi, vb.) yapılan iş birlikleri yeterli seviyededir.	Cooperation with different units (technology transfer office, incubation center, etc.) in my institution is at a sufficient level.
23. Kurumumda diğer çalışanlarla iş birliği yaparım.	I cooperate with other employees in my organization.
24. Kurumumda insan kaynakları yeteneklerine uygun işlerde görevlendirilir.	In my institution, human resources are assigned to jobs suitable for their abilities.
25. Kurum yöneticileri potansiyelimden en üst seviyede faydalanır.	Corporate managers benefit from my potential at the highest level.
26. Kurumumda belirli standartlara göre performans ölçümleri yapılır.	Performance measurements are made according to certain standards in my institution.
27. Kurumumdaki yöneticilere belirli aralıklarla geribildirim veririm.	I give feedback to the managers in my institution at regular intervals.
28. Kurumumda faaliyetlerin geldiği noktanın tespitine yönelik izleme faaliyetleri mevcuttur.	There are monitoring activities in my institution to determine the point of the activities.
29. Kurumumun ihtiyaçları değerlendirme verilerine göre tespit edilir.	The needs of my institution are determined according to the evaluation data.
30. Kurumumun stratejik planı değişen koşullara uygun olarak güncellenir.	The strategic plan of my institution is updated in accordance with the changing conditions.

31. Kurumumda, herhangi bir problem çözüme ulaşana kadar farklı yaklaşımlar denenir.	In my institution, different approaches are tried until a given problem is solved.
32. Kurumumda faydalı teknolojiler kurum içerisine transfer edilir.	In my institution, useful technologies are transferred to the institution.
33. Kurumumda değişimle ilgili kararlar değerlendirme verilerine dayalı olarak alınır.	Decisions about change in my institution are made based on evaluation data.
34. Kurumumda üretilen değerlerin sürdürülebilir olması sağlanır.	It is ensured that the values produced in my institution are
35. Kurumumda kalite standartlarının yerleşik olduğunu düşünürüm.	I think that quality standards are established in my institution.
36. Kurumumda kurumla özdeşleşmiş beceriler mevcuttur.	There are skills identified with my institution.
37. Kurumumda öğrenilenler kurumsal davranış değişikliği ile sonuçlanır.	What is learned in my institution results in organizational behavior change.
38. Kurumumda öğrenilenler daha sonra kullanılmak üzere örgütsel hafızaya dönüşür.	What is learned in my institution turns into organizational memory for later use.
39. Kurumumda kolektif öğrenme gerçekleşir.	Collective learning takes place in my institution.
40. Kurumumda öğrenilen teorik bilgiler çalışma sahasına aktarılır.	The theoretical knowledge learned in my institution is transferred to the field of study.
41. Kurumum çevresinde sürdürülebilir etkiye sahiptir.	My institution has a sustainable impact on its environment.

2.2.5 Data Collection

The draft scale was distributed to 45 academicians to determine the level of clarity and response time of the items. Adjustments were made taking into account the feedback received from academics. At this stage, data were collected using the draft scale. Psychometric aspects of the scale were determined depending on the data collected at this stage. Data were collected in two steps. First, the draft scale was used and 216 participants were reached. Using the data from the first step, EFA was conducted and the number of the items was reduced. Second, using the final version of the scale depending on the EFA results, another 501 participants were reached and data was collected for conducting CFA.

2.2.6 Evaluation of Psychometric Aspects of the Scale

In this stage, the validity and reliability of the scale will be evaluated. The main purpose of item analysis processes is to select the items that will allow the measurement of the structure without confusing it with other structures and to ensure that the scale is consistent within itself. These structures are generally compound and can be divided into related sub-elements. Depending on the theoretical approach, factor analysis is used to determine the main components namely dimensions (Tezbaşaran, 2008, pp. 52−53).

Factor analysis is one of the strongest correlation methods used so far in order to reduce the complexity of the variable to simplicity and to create logical constructs in the next stages. Factor analysis is classified in two ways as exploratory factor analysis and confirmatory factor analysis. These analyzes require the researcher to have certain expectations about the number of factors, which variables reflect the given factors, and whether the factors are related. CFA explicitly and directly tests the suitability of factor models (Thompson, 2004, pp. 5−6).

2.3 Data Analysis

IBM SPSS 22 statistical package for social sciences was used for EFA and IBM SPSS AMOS 26 analysis of moment structures for CFA.

3. Findings

Findings of EFA, CFA, and reliability analyses are presented in this section.

3.1 Exploratory Factor Analysis

During Exploratory Factor Analysis, the Kaiser-Meyer-Olkin test will be performed in order to test the suitability of the data structure for factor analysis in terms of sample size, and if this value is high, it will mean that each variable in the scale can be predicted perfectly by other variables. If the KMO test value is lower than 0.50, factor analysis can not be continued (Çokluk et al., 2016, p. 207).

Bartlett test of sphericity must be performed before proceeding with factor extraction which gives a chi-square value indicating that a correlation matrix may have come from a population with zero correlation coefficients. (Tobias & Carlson, 1969, p. 375).

According to Büyüköztürk (2002), Kaiser-Meyer-Olkin (KMO), and Barlett's tests, which were conducted to determine the suitability of the data obtained from the study group for factorability, are as follows: The KMO test value is .965, and, this value is greater than .70, so the data provided by the study group is suitable for factoring. The analysis result was significant at the level of Barlett's Test of Sphericity ($p < .001$). In this case, it

can be said that the data set comes from a multidimensional universe.

In order to determine whether the data showed a normal distribution, skewness, and kurtosis values were examined. The skewness value -.49 and kurtosis values of .68 were found to be between -1.5 and +1.5, which are the threshold values specified by Tabachnick and Fidell (2014), and show a normal distribution.

Whatever the purpose, in most cases the analysis will include all of the following steps namely identifying variables, correlation matrix between the variables, removing unrotated factors, factor rotation, and interpreting the rotated factor matrix (Comrey & Lee, 1992, pp. 4–5). According to Brown (2006), the steps of exploratory factor analysis are factor extraction, factor selection, factor rotation, interpretation and evaluation of factors, and repeating factor analysis. These steps can be explained as follows:

Factor Extraction

In Exploratory Factor Analysis, factor extraction can be done with different methods. Principal Component Analysis is the most widely used method. Unweighted Least Squares, Alpha Analysis, Generalized Least Squares Principal Axis, Maximum Likelihood, and Image Factor Analysis. In Principal Components Analysis, where the total variance is explained at the maximum level compared to other methods, the aim is for each component to have the highest level of variance (Karaman et al., 2017, pp. 1174–1175).

Factor analysis approaches are based on the assumption that the number of factors is known beforehand. The maximum likelihood, on the other hand, can be used to determine whether the assumed factor number is correct (Zwick & Velicer, 1986, p. 253). Basic principal factors have less inclination towards inaccurate results than the maximum likelihood method. The maximum likelihood method assumes multivariate normality but allows assessment of goodness of fit, and in some cases, a confidence interval can be obtained for tests of significance and parameter estimates.

Factor Selection

There are several ways to evaluate the adequacy of inference and the number of factors. The ability to quickly estimate the number of factors is first obtained from the eigenvalues, which are part of the initial analysis to extract the principal components. A component with an eigenvalue less than 1 is not as important to the variance as an observed variable, since each standardized variable contributes variance to the principal component inference. Another criterion is the scree plot (scatter diagram) of the eigenvalues to be drawn against the factors. The factors are arranged in descending order along the abscissa, while the eigenvalues are arranged in the ordinate. The graph is used to find the number of factors in accordance with the basic components or factor analysis in the first analysis and subsequent analyzes and can be obtained through IBM SPSS and SAS FACTOR programs (Tabachnick & Fidell, 2014, p. 697).

Generally, the scree plot tends towards decreasing values. The eigenvalue is highest for the first factor, decreases to moderate levels for the next few factors, and reaches small values for the last few factors. The point where the line passing through the points changes the slope is taken into account. The results of the scree plot are more reliable when the sample size is large, the ensemble values are high, and each factor has several variables with high loading (Tabachnick & Fidell, 2014, p. 697).

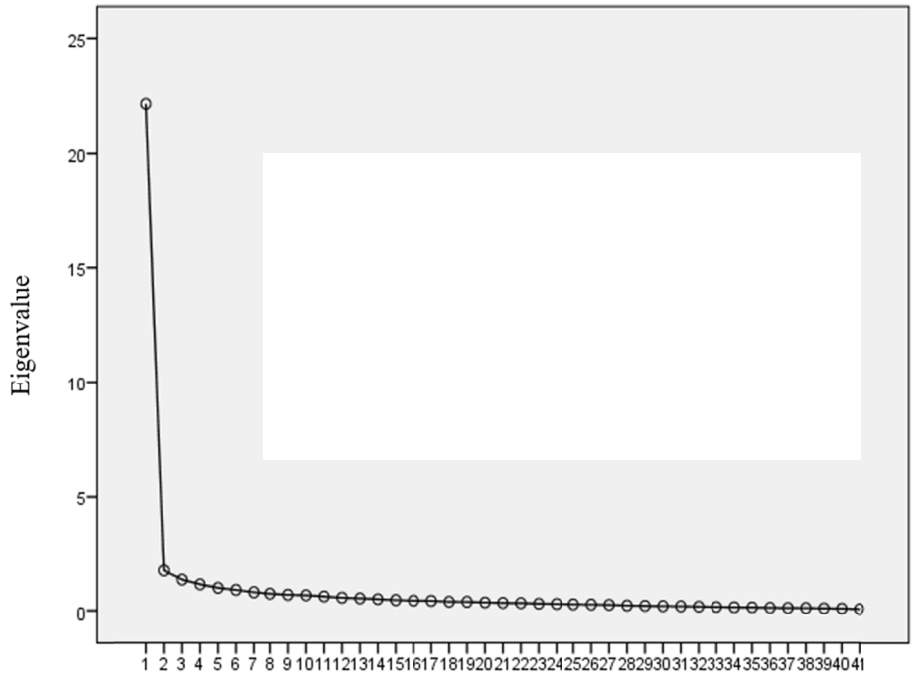

Figure 2. Scree plot of the 41-Item scale

The factor structure of the scale being developed is revealed in the scree plot shown in Figure 2. According to this graph, the scale can optionally be used as a single factor. According to Henson and Roberts (2006, p. 402), the variance explained in the measurement tool should be at least 52%. As a result of the factor analysis performed with the maximum likelihood analysis by accepting the eigenvalue as 1, it is seen that the scale exhibits a 5-factor structure with an eigenvalue greater than 1 at the beginning.

Factor Rotation

Rotation is often used after factor subtraction to maximize high correlations between factors and variables and to minimize low ones. There are many rotation methods available, the most common being varimax. The purpose of the varimax rotation is to maximize the variance of factor loadings by making high loads higher and low ones lower for each factor. Emphasizing the differences in the loads removes the uncertainty about the variables associated with the factor, adds certainty to the situation, and facilitates the interpretation of the factor (Tabachnick & Fidell, 2014, p. 673).

In research, the rotation technique should be decided first. In general, factors should be rotated obliquely if the researcher is primarily concerned with obtaining results that "best fit" their data. On the other hand, the orthogonal rotation should be made if there is a further concern with the generalizability of its results. However, the results obtained from vertical rotation are generally similar to those obtained from oblique rotation. For this reason, vertical rotation is generally preferred by researchers. Vertical rotation results are advantageous in terms of simplicity and are more stable (Rennie, 1997, p. 13)

Exploratory factor analysis was continued by ticking the Maximum Likelihood option. The eigenvalues of the scale factors and the explained variance amounts were determined. In the first stage, the scale exhibited a five-factor structure, varimax (maximum variability) rotation, one of the vertical rotation techniques, was performed and the factor analysis was repeated by excluding the overlapping items in more than one factor, respectively. It was observed that the scale exhibited a four-factor structure with an eigenvalue greater than 1. The correlation coefficient between the factors revealed by EFA and the total score was calculated. The obtained model was tested with Confirmatory Factor Analysis (CFA) and scale structure suitability was determined.

The choice of subjects can also affect the invariance of the factors. This basically happens by using preselected subjects on a variable related to one or more of the factors in the analysis. In this case, the range is limited and

correlations between variables related to this factor are systematically reduced (Gorsuch, 1988, p. 239).

Kaiser and Rice (1974, p. 112) state that Factorial Simplicity indices ranging from 0 to 1 are .90 excellent, .80 commendable, .70 moderate, .60 mediocre, .50 bad, and below .50 unacceptable. The maximum value that this value can reach is 1 with excellent unifactoriality as a single factor. It is assumed that loads of 0.30 and above are high enough during the interpretation phase. However, the availability of data variables with loads in the "very good" to "excellent" category allows researchers to make more precise interpretations of the factor. (Comrey & Lee, 1992, p. 243).

The distribution of the items under the factors after 13 iterations (rotations) with the varimax vertical rotation technique provides maximum variability. 17 Items were included in more than one factor, and 1 item (Item 1) exhibited a factor load below .30. Item 1 was directly excluded from the analysis. It should be noted that the Item loads are at a value of .32 or higher and not under more than one factor. It is suggested that there should be a difference of more than .10 between the item loads of the items under more than one factor (Çokluk et al., 2016, p. 233). In addition, the fact that an item has a factor load of 0.30 means that the variance explained by the factor is 9%, as can be understood from the equation $0.30^2 = 0.09$ (p. 194). Factor loads in vertical rotation are the commonly used shear level of 0.30; that is, no variables with factor loadings below 0.30 are listed among the data variables describing the factor. If this value is less than 0.30, it is understood that a data variable associated with a factor has less than 10 percent of its common variance with the factor (Comrey & Lee, 1992, p. 242). Items with an item load below .30 or under more than one factor but showing a factor load difference of .10 and below were removed from the analysis, respectively, and the analyzes were repeated from the beginning and the draft scale was given its final form.

Interpretation

At this stage, it is necessary to consider the significance and interpretability levels of the factors. At this stage, the items identified as weak should be eliminated. Factors on which two or three items have significant loadings and those explained by items with low covariance and small loadings should be eliminated. If there are items or factors eliminated in the previous step, exploratory factor analysis should be reapplied to the same sample group. (Brown, 2006, p. 38).

If significant values remain in the residual correlations of the first factor, a second factor must be subtracted. If significant values remain in the second factor residual correlations, a third factor should be subtracted. Factor subtraction is continued until the residuals reach values that are too small to continue the process (Comrey & Lee, 1992, p. 8).

As a result of the factor analysis performed with the maximum likelihood (maximum likelihood) analysis by accepting the value (eigenvalue) as 1, it is seen that the scale exhibits a 4-factor structure with an eigenvalue greater than 1 at the beginning. The 1st factor explains 53.271% of the total variance, the 2nd factor explains 5.644% of the total variance, the 3rd factor explains 4.072% of the total variance, and the 4th factor explains 3.637% of the total variance. In the final analysis, it was observed that the variance explained by the second, third and fourth factors increased. Four factors explain 66.623% of the total variance of the scale.

The variance rate of 66.623%, explained by the four-factor structure, is above the values between 40% and 60%, which is seen as sufficient by Tavşancıl (2010). The amount of variance explained as a result of rotation is shown in Table 3.

Table 3. Rotation result factor eigenvalues and explained variance amounts

Factor	Eigenvalue	Variance	Cumulative Total
1	15.449	53.271	53.271
2	1.181	4.072	57.343
3	1.055	3.637	60.980

According to Table 3, it is seen that the number of factors with an eigenvalue greater than 1% decreased to 3 as a result of vertical rotation. Accordingly, 53.271% of the explained variance is composed of the first factor, 4.072% of the second factor, and 3.637% of the third factor. The 3 factors that emerged explain 60.980% of the total variance.

The factor loads of the scale and the factors under which the items fell were revealed after 7 iterations with the varimax vertical rotation technique. The results are shown in Table 4.

Table 4. EFA results

Item No.	New Item No	Components			
		1	2	3	Communalities
Item 38	15	.81	.20	.22	.81
Item 41	18	.77	.21	.19	.67
Item 37	14	.75	.19	.24	.76
Item 36	13	.74	.22	.23	.65
Item 40	17	.74	.26	.18	.64
Item 39	16	.72	.25	.22	.67
Item 35	12	.66	0	.36	.71
Item 6	8	.59	.20	.23	.60
Item 22	9	.58	.19	.33	.53
Item 32	10	.56	.18	.24	.53
Item 34	11	.50	.29	.30	.75
Item 12	7	.19	.80	0	.54
Item 11	6	.19	.77	.23	.65
Item 5	5	.33	.65	-.11	.82
Item 28	2	.39	.30	.67	.63
Item 26	1	.45	0	.63	.47
Item 29	3	.45	.20	.61	.83
Item 33	4	.47	.24	.57	.76
Variance Explained (%)		53.27	4.07	3.64	

According to Table 4, Items 38, 41, 37, 36, 40, 39, 35, 34, 6, 22, and 32 are under the 1st factor; Items 3,4,5 and 8 are under the 2nd factor; Items 5, 11, and 12 were grouped under Factor 3 and Items 26, 28, 29 and 33 were grouped under Factor 4. The 1st and 27th items, on the other hand, were found to have a difference of less than 0.1 value between the levels of correlation they exhibited in the factors they were in, and these items were excluded from the analysis as they overlapped. The items collected under the sub-dimensions (factors) of the scale, taking into account the literature on organizational development, the 1st factor with 11 items is "organizational sustainability", the second factor consisting of 4 Items is "organizational diagnosis", the 3rd factor consisting of 3 items is "organizational intervention" and the 4th factor is called "organizational evaluation". The scale consists of 22 items in total.

Correlations between each item and the scale score will be calculated. The scale scores of the Items and their high correlations with each other are an indication that item homogeneity is ensured, that the items measure in the same dimension and measure the same feature (Ghiselli et al., 1981, p. 277). In order to determine the relationship between scale factors and scale total scores within the scope of construct validity, Pearson Moment Correlation analysis was performed and the results are presented in Table 5.

Table 5. Inter-factor correlations

	Organizational Sustainability	Organizational Intervention	Organizational Evaluation
Sustainability	1	.566	.812
Intervention	.566	1	.505
Evaluation	.812	.505	1

As seen in Table 5, there was a positive correlation between sustainability sub-dimension scores and intervention sub-dimension scores ($r = .566$; $p < .001$). There was a positive correlation between sustainability sub-dimension scores and evaluation sub-dimension scores ($r = .812$; $p < .001$); There was a positive correlation between intervention sub-dimension scores and evaluation sub-dimension scores ($r = .505$; $p < .001$); positive correlation between intervention sub-dimension scores and scale total scores ($r = .702$; $p < .001$). It is seen that the sub-dimensions (factors) of the scale are related to each other and measure the same structure.

Table 6. Correlation test results

		Sustainability	Intervention	Evaluation
Organizational Intervention	r	.566		
	p	.000		
	N	216		
Organizational Evaluation	r	.812	.505	
	p	.000	.000	
	N	216	216	
Organizational Development	r	.958	.702	.881
	p	.000	.000	.000
	N	216	216	216

As seen in Table 6, there was a positive correlation between sustainability sub-dimension scores and intervention sub-dimension scores ($r = .566$; $p < .001$); a positive correlation between sustainability sub-dimension scores and evaluation sub-dimension scores ($r = .812$; $p < .001$); a positive correlation between the sustainability sub-dimension scores and the scale total scores ($r = .958$; $p < .001$); positive correlation between intervention sub-dimension scores and evaluation sub-dimension scores ($r = .505$; $p < .001$); positive correlation between intervention sub-dimension scores and scale total scores ($r = .702$; $p < .001$). There was a positive ($r = .881$; $p < .001$) significant relationship between the evaluation sub-dimension and the scale total scores. It is seen that the sub-dimensions (factors) of the scale are related to each other and measure the same structure.

3.2 Confirmatory Factor Analysis

CFA is an extension of exploratory factor analysis. While EFA has a determining function for the factors in order to form hypotheses, CFA is used to test the independence between the relevant factors, the adequacy of the relationship level, which variables are related to which factors, and the adequacy of the factors in explaining the model (Erkorkmaz et al., 2013, p. 211).

According to Fan et al. (1999, p. 78), the main purpose of performing Structural Equation Modeling (SEM analysis) is to test the theory. In other words, examining the fit between a theoretical model and empirical data, that is, the fit of the model is of great importance in SEM analysis, as well as fit indices such as GFI, AGFI, and NFI.

In this study, one of the more commonly used fit indices, Comparative Fit Index (CFI) and NFI, TLI, root mean square error of approximation (RMSEA), chi-square X^2 test statistics, df, X^2/df will be taken as reference.

Acceptable fit and good fit values fit indices for Confirmatory Factor Analysis are shown in Table 7.

Table 7. Fit Indices and CFA results

Parameter	**Result**	**Good Fit**	**Acceptable Fit**
$\chi 2$	860.11	$0 \leq \chi 2 \leq 2df$	$2df \leq \chi 2 \leq 3df$
$\chi 2$/ df	4.70	$0 \leq \chi 2/df \leq 2$	$\chi 2/df < 5$
RMSEA	.08	$0 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$
CFI	.91	$.97 \leq CFI \leq 1.00$	$0.90 < CFI$
TLI	.89	$0.95 < TLI$	$0.90 < TLI$
NFI	.89	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$

Source: Erkorkmaz et al., 2013, p. 220; Hu & Bentler, 1999; Doll et al., 1994; Hooper et al., 2008; Browne & Cudeck, 1992, p. 239.

Estimated Root Error Mean of Squares (Root mean square Thanks to its consistent estimation strategies with the Error of Approximation (RMSEA) index confidence interval, it reduces the parameters of test models with large sample sizes and eliminates the problems inherent in the model (Steiger, 1998, p. 413). It is used to find the fitness level of the estimated covariance matrix obtained from the model with the covariance matrix obtained from the sample. For RMSEA, 0 indicates excellent, values less than 0.05 indicate good fit, values less than 0.08 are acceptable, and values between 0.08 and -0.10 indicate moderate agreement. Values above 0.10 are not acceptable (Erkorkmaz et al., 2013, p. 216).

Chi-square is 860,113 while df Degree of freedom was found to be 183. The value of χ^2/ df is 4.70. CFI value is .911; The NFI value was found to be .891. The TLI is .89. According to Brown (2006, p.87), χ^2/ df value below 5 is an acceptable level. In order to obtain good fit values, the CFI and TLI values should be above .90.

Also, according to Browne and Cudeck (1992, p. 239), an RMSEA value between .050 and .080 indicates a good fit. The RMSEA value of .080 provided good fit criteria.

It is appropriate to exclude the diagnostic factor and the three items below it from the scale, which gives negative values. After removing the relevant items, the 18-item structure consisting of 3 sub-dimensions (factors) as a result of the Exploratory Factor Analysis was tested with the first level of Confirmatory Factor Analysis (CFA). As a result of CFA, factor loads of the model were revealed. The factor and item coefficients of the Organizational Development Level Determination Scale path analysis are shown in Figure 3.

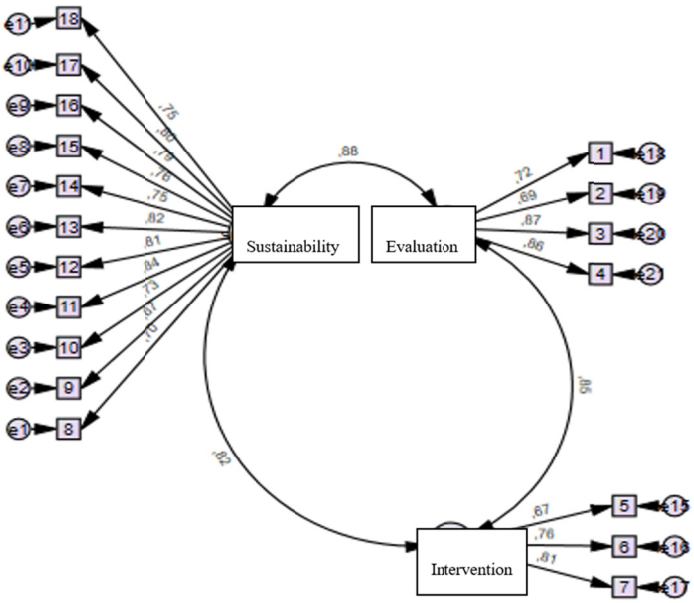

Figure 3. Measurement model for the organizational development level determination scale

According to Figure 3, the scale consisted of 3 factors and 18 items. In Confirmatory Factor Analysis, the selection of the number of factors essentially means the selection of the number of theoretical processes underlying a research area (Tabachnick & Fidell, 2014, p. 697).

3.3 Reliability

Reliability is the power of the measurement tool to give the measurement result in a consistent, stable, and sensitive way, and the validity is the power of giving the measures of the feature to be measured without mixing them with the measures of other features (Tezbaşaran, 2008, p. 47). The scale was distributed to 216 academicians with different titles working at state and foundation universities in Istanbul for validity and reliability calculations.

Reliability coefficients of the Organizational Development Level Determination Scale in general and its sub-dimensions are given in Table 8.

Table 8. Internal reliability test results

Organizational Development Scale	Cronbach's Alpha (α)	Spearman Brown	Guttman (G)
Organizational Evaluation	.864	.837	.834
Organizational Intervention	.799	.835	.778
Organizational Sustainability	.939	.905	.901
Total Score	.960	.924	.969

As can be seen in Table 8, the reliability coefficients for the "organizational diagnosis" factor were low and it was decided to exclude this factor from the scale dimensions. The internal consistency coefficients of the scale are very high. Cronbach alpha (α) was found .96, half reliability coefficient (r_{1-2}) was .919, Spearman Brown value was .92, and Guttman (G) value was .97. The reliability levels of scales with a value of $\alpha \geq 0.90$ are high

(Baydar, 2021, p. 126). Cronbach alpha is an internal consistency estimation method developed by Cronbach in 1951. Split half is the halving method that shows the correlation between the scores obtained from the halves after the application of the two halves of the form divided into equal parts to the participants (Ercan & Kan, 2004, p. 213). According to the reliability statistics and the coefficients obtained, the scale has high reliability as a result.

In order to determine the distinctiveness of the scale items, item total and item remainder correlation analyzes were performed. Correlation coefficients, the independent groups' T-Test results conducted between the upper 27% and lower 27% groups to determine the discrimination of the scale items are given in Table 9.

Table 9. Item analysis results

Dimension	Item	r_{it}	*p*	r_{ir}	*p*	Top 27% $\bar{X}$	Bottom 27% $\bar{X}$	*t*	*df*	*p*
Organizational	38	.773	.000	,672	.000	4.46	1.83	23.99	500	.000
Sustainability	41	.738	.000	,581	.000	4.54	2.16	20.39	500	.000
	37	.773	.000	,634	.000	4.32	2.04	19.83	500	.000
	36	.756	.000	,613	.000	4.72	2.26	20.79	500	.000
	40	.730	.000	,574	.000	4.21	2.18	18.72	500	.000
	39	.790	.000	,664	.000	4.46	1.68	30.45	500	.000
	35	.780	.000	,652	.000	4.60	1.75	27.43	500	.000
	34	.800	.000	,670	.000	4.44	1.97	21.08	500	.000
	6	.699	.000	,501	.000	4.56	1.70	30.55	500	.000
	22	.643	.000	,447	.000	4.47	1.81	26.19	500	.000
	32	.672	.000	,518	.000	4.53	2.16	19.78	500	.000
Organizational	12	.637	.000	,440	.000	4.51	1.86	24.57	500	.000
Intervention	11	.716	.000	,519	.000	4.32	1.56	30.32	500	.000
	5	.587	.000	,352	.000	4.35	1.58	30.21	500	.000
Organizational	28	.677	.000	,462	.000	4.42	2.11	20.37	500	.000
Evaluation	26	.650	.000	,424	.000	4.58	1.88	26.97	500	.000
	29	.788	.000	,651	.000	4.28	1.74	24.45	500	.000
	33	.736	.000	,594	.000	4.40	1.91	24.04	500	.000

As seen in Table 9, the differences in all sub-dimensions of the scale were found to be significant in favor of the scale's upper quartiles ($p < .001$). It is expected that the variable measured by the scale to which the item belongs will be related to the variable measured by the item. It is stated that items with an item-total correlation of .30 and above distinguish well, a value between .20 and .30 should be corrected, however, they can be included in the test, and the value below .20 should be excluded from the test (Büyüköztürk, 2018, p. 183). Accordingly, it would be appropriate to remove the items constituting the organizational diagnosis dimension from the scale. After removing these items, the item-total correlation coefficients were between .587 and .800; the item remainder correlation coefficients were between .352 and .672. The values were found to be significant at the $p < .01$ level, and it was concluded that the scale items were related to other items and measured variables. According to these results, it can be stated that the scale items are distinctive.

The Organizational Development Level Determination Scale has been given its final form and the scale Items consist of 3 dimensions and 18 items under the name of organizational evaluation, organizational intervention, and organizational sustainability.

4. Discussion and Conclusion

In this study, perceptions of academicians regarding the organizational development level in higher education institutions were in focus. Determination of academicians' perceptions in terms of organizational development holds importance as the academicians are at the core of developmental processes in higher education institutions. In this manner, it is expected that the study will contribute to the literature. In the study, a scale with a valid structure for measuring organizational development levels of higher education institutions depending upon academician perceptions was developed. Item pool consisting of 197 items thought to be belonging to 13 possible dimensions for the scale was formed after an extensive literature review. 2 language experts evaluated the initial item pool for language suitability and a panel of 13 for content validity. 156 items were eliminated depending on the opinions of field experts. The draft item pool had 41 items. Data were collected in two stages. In the first stage, 216 academicians from state and foundation universities participated in the study, and the draft

item pool consisting of 41 items was used. In the second stage, 501 academicians participated in the study. In the first stage, the scale structure was revealed through EFA. Results of EFA revealed that Organizational Development Level Determination Scale had 3 factors including organizational evaluation with 4 items, organizational intervention with 3 items, and organizational sustainability with 11 items. 53.27% of the explained variance is composed of the first factor, 4.07% of the second factor, and 3.64% of the third factor. The 3 factors that emerged explain 60.98 % of the total variance.

In the second stage of the study, the theoretical model proposed by the results of EFA was validated by CFA. Results of CFA confirmed that Organizational Development Level Determination Scale consisted of three factors and 18 items, all in affirmative form. The scale is structured in a 5-point Likert-type with options ranging from (1) strongly disagree to (5) strongly agree. The higher the obtained score, the better the perception of academicians regarding the organizational evaluation, organizational intervention, and organizational sustainability. The reliability of the scores obtained from the scale was tested. The internal consistency coefficients of the scale were found to be very high. Cronbach alpha (α) was found .96, half reliability coefficient (r_{1-2}) was .919, Spearman Brown value was .92, and Guttman (G) value was .97. Results of the reliability tests proved that the scale had internal consistency. Item discrimination was inspected by calculating item-total and item-remainder correlation coefficients which revealed that all the items in the scale served the purpose of the scale. In addition, a t-test was conducted between upper 27% scores and lower 27% scores for all the items results of which showed that there was a statistically significant difference in favor of upper ones. Items on the scale were proved to be discriminating. The final form of the Organizational Development Level Determination Scale is provided in Appendix A. It was observed that there found to be limited studies in the literature on measurement tools regarding organizational development. It was statistically proven that The Organizational Development Level Determination Scale developed in the study is a measurement tool having a valid structure. In this context, it is expected that the aforementioned scale contributes to the literature. Using the scale, both the academic leaders of higher education institutions and academicians themselves may have the opportunity to get a clearer picture of the academician perceptions regarding organizational development level in universities. It should be kept in mind that this study only covers the perceptions of the academicians of higher education institutions. Similar studies regarding perceptions of students, non-academic staff and/or administrators in higher education institutions are suggested to be carried out to provide a more explicit perception of the organizational development level of higher education institutions.

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Declaration of Conflicting Interests and Ethics

The authors declare no conflict of interest. This research study complies with research publishing ethics. The scientific and legal responsibility for manuscripts published belongs to the authors. **Ethics Committee Number:** Marmara University, 15.09.2021, 142051.

Authorship Contribution Statement

Authors are expected to present author contributions statement to their manuscript such as; **Şeyma Karaokur Akdağ:** Investigation, Resources, Visualization, Software, Formal Analysis, and Writing the original draft. **Münevver Çetin:** Supervision and Validation.

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References

Abedi, J. (2011). Language issues in item development. In S. M. Downing & T. M. Haladyna (Eds.), *Handbook of test development* (pp. 377–398) Routledge.

Al-Quraan, M. H. (2015). *An organizational assessment tool for the Jordanian civil society context*. Capstone Collection-2826, Sit Graduate Institute. Retrieved from https://digitalcollections.sit.edu/capstones/2826

Ayre, C., & Scally, A. J. (2014). Critical values for Lawshe's content validity ratio: Revisiting the original methods of calculation. *Measurements and Evaluation in Counseling and Development*, *47*(1), 79–86. https://doi.org/10.1177/0748175613513808

Ballaro, J. M., Mazzi, M. A., & Holland, K. (2020). Organization development through effective communication,

implementation, and change process. *Organizational Development Journal*, *38*(1), 45–63.

Baştürk, S., & Taştepe, M. (2013). Universe and Sample. In S. Baştürk (Ed.), *Scientific Research Methods* (pp. 129–159). Ankara, Vize.

Baydar, F. (2021). *The pattern of relations between intellectual capital, learning organization and innovation-oriented structure in educational organizations*. PhD thesis. Marmara University-Sabahattin Zaim University Institute of Educational Sciences, Istanbul.

Brown, T. A. (2006). Confirmatory factor analysis for applied research. In D. A. Kenny (Ed)., *Methodology in the social sciences*. Guilford Press.

Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research*, *21*(2), 230–258. https://doi.org/10.1177/0049124192021002005

Bryman, A., & Cramer, D. (2001). *Quantitative data analysis with SPSS release 10 for Windows*. Routledge. https://doi.org/10.4324/9780203471548

Büyüköztürk, S. (2002). *Manual of data analysis for social sciences*. Pegem Academy Publications.

Büyüköztürk, S. (2018). *Data analysis handbook for social sciences: Statistics, research design SPSS Applications and Interpretation* (24th ed.). Pegem Akademi publications. https://doi.org/10.14527/9789756802748

Church, A. H., Shull, A. C., & Burke, W. W. (2018). Organization development and talent management: Divergent sides of the same values equation. In D. W. Jamieson, A. H. Church & J. D. Vogelsang (Eds.), *Enacting values-based change: Organization development in action* (pp. 265–294). USA, Palgrave MacMillan. https://doi.org/10.1007/978-3-319-69590-7_15

Çokluk, Ö., Şekercioğlu, G., & Büyüköztürk, Ş. (2016). *SPSS and LISREL applications of multivariate statistics for social sciences* (4th ed.). Ankara, Pegem Academy.

Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis* (2nd ed.). Psychology press. https://doi.org/10.4324/9781315827506

Croasmun, J. T., & Ostrom, L. (2011). Using likert-type scales in the social sciences. *Journal of Adults Education*, *40*(1), 19–22.

Cummings, T. G., & Worley, C. G. (2009). *Organization development and change* (9th ed.). South Western Cengage Learning.

Dinçer, Ö. (1986). Intervention and change for the receiving system in the organizational development process. *Marmara University Journal of Economic and Administrative Sciences*, *3*(3), 471–488.

Dobrai, K., & Farkas, F. (2016). Nonprofit organizations from the perspective of organizational development and their influence on professionalization. *Our Economy*, *62*(2), 25–32. https://doi.org/10.1515/ngoe-2016-0009

Doll, W. J., Xia, W., & Torkzadeh, G. (1994). A confirmatory factor analysis of the end-user computing satisfaction instrument. *MS Quarterly*, *18*(4), 453–461. https://doi.org/10.2307/249524

Ercan, İ., & Kan, İ. (2004). Reliability and validity in the scales. *Journal of Uludağ University of Medical Faculty*, *30*(3), 211–216.

Eren, E. (2019). *Management and Organization: Contemporary and Global Approaches* (13th ed.). Istanbul, Beta Publishing.

Erhan, T., & Yastıoğlu, S. (2020). The Effect of Innovation and Reputation Levels of Countries on Sustainable Competition. *Sosyal Mucit Academic Review*, *1*(1), 73–87.

Erkorkmaz, U., Etikan, İ., Demir, O., Özdamar, K. S., & Sanisoğlu, S. Y. (2013). Confirmatory factor analysis and fit indices. *Turkey Clinics. J. Med. Sci*., *33*(1), 210–223. https://doi.org/10.5336/medsci.2011-26747

Erkuş, A. (2007). Problems encountered in scale development and adaptation studies. *Turkish Psychological Bulletin*, *13*(40), 17–25.

Esen, A., & Maden, E. C. (2015). *Corporate social innovation*. A scale development project for the measurement of social innovation skills in organizations. (Project No. 113k258) Program Code: 3501, TÜBİTAK.

European Education and Culture Executive Agency, Eurydice, C. D., Birch, P., & Davydovskaia, O. (2017). *Modernisation of higher education in Europe: Academic staff 2017*. Publications Office. Retrieved from

https://data.europa.eu/doi/10.2797/9642

Fan, X., Thompson, B., & Wang, L. (1999). Effects of sample size, estimation methods, and model specification on structural equation modeling fit indexes, structural equation modeling. *A Multidisciplinary Journal*, *6*(1), 56–83. https://doi.org/10.1080/10705519909540119

French, W. L (1969). Organization development: Objectives, assumptions and strategies. *California Management Review*, *12*(2), 23–34. https://doi.org/10.2307/41164216

Geertsema, J. C., & van Niekerk, F. (2009). Strategies for university improvement: The research profile change at a South African non-research intensive university. *SAJHE*, *23*(5), 912–934. https://doi.org/10.4314/sajhe.v23i5.48808

Ghiselli, E. E., Campbell, J. P., & Zedeck, S. (1981). Measurements theory for the behavioral sciences. In R. C. Atkinson, J. Freedman, G. Lindzey & R. F. Thompson (Eds.), *A Series of Books in Psychology* (pp. 1–494), San Francisco, CA, W.H. Freeman company.

Gorsuch, R. L. (1988). Exploratory factor analysis. In J. R. Nesselroade & R. B. Cattell (Eds.), *Handbook of multivariate experimental psychology: Perspectives on individual differences* (pp. 231–258). Springer, Boston, MA. https://doi.org/10.1007/978-1-4613-0893-5_6

Güngör, D. (2016). A Guide to Scale Development and Adaptation in Psychology. *Turkish Psychological Articles*, *19*(38), 104–112.

Hassan, M., Laghari, S., Kathiya, A. A., & Ayub, A. (2016). Identifying determinants of organizational development as the key developers of employee soft skill. *Acta Universitatis Danubius Economica* (AUDE), *12*(5), 120–129.

Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research: Common errors and some comment on improved practice. *Educational and Psychological Measurement*, *66*(3), 393–416. https://doi.org/10.1177/0013164405282485

Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, *6*(1), 53–60. https://doi.org/10.21427/D79B73

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

İbrahimoğlu, N. (2008). *The effect of socialization and mentor in increasing the level of organizational career-commitment in terms of personality level: An organizational development model*. PhD Thesis. Hacettepe University Graduate School of Social Sciences, Ankara.

Kaiser, H. F., & Rice, J. (1974). Little Jiffy, Mark IV. *Educational and Psychological Measurement*, *34*, 111–117. https://doi.org/10.1177/001316447403400115

Karadağ, M. (1999). *A fundamental approach to developing public administration: Organization development and a field study*. PhD thesis. Cumhuriyet University Institute of Social Sciences, Sivas.

Karaman, H., Atar, B., & Çobanoğlu Aktan, D. (2017). The Comparison of factor extraction methods used in exploratory factor analysis. *GUJGEF*, *37*(3), 1173–1193. https://doi.org/10.17152/gefad.309356

Kegan, D. L. (1971). Organizational development description, issues and some research results. *Journal of the Academy of Management*, *14*(4), 453–464. https://doi.org/10.5465/255060

Kim, J. U., & Kumar, K. (2017). The lack of attention to socio-organizational concerns in systems development: A cognitive biases perspective. *Journal of Marketing Thought*, *3*(4), 10–21

Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, *28*, 563–575. https://doi.org/10.1111/j.1744-6570.1975.tb01393.x

Levent, A. F. (2016). Change Management. In A. Bakioğlu (Ed.), *Turkish Education System and School Management* (1st ed., pp. 339–362). Ankara, Nobel.

MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological Methods*, *4*(1), 84–99. https://doi.org/10.1037/1082-989X.4.1.84

Nagaishi, M. (2020). Diagnostic and dialogic organization development assumptions: Their fit with Japanese culture. *Organization Development Journal*, *38*(3), 33–44.

Öktem, M. K., & Uçar Kocaoğlu, B. (2012). A Research on Organizational Development in Turkish Public Administration. *Hacettepe University Journal of Economics and Administrative Sciences*, *30*(2), 111–136.

Öncül, M. S. (1995). *Organization development: An application in Atatürk University Faculty of Economics and Administrative Sciences*. PhD thesis. Ataturk University Institute of Social Sciences, Erzurum.

Öztürk, D. (2019). Organizational Performance. In Y. Demir Uslu, Y. Hancıoğlu, G. Yeşilaydın & N. Oral Kaya (Eds.), *Organizational Approaches* (pp. 240–260). Eskişehir: Nisan.

Parlar, H. (2019). *All aspects of school development: Theory, approach and practice* (2nd ed.). Ankara: Nobel.

Raia, A. P. (1972). Organizational development: Some issues and challenges. *California Management Review*, *14*(4), 13–20. https://doi.org/10.2307/41164378

Rennie, K. M. (1997). *Exploratory and confirmatory rotation strategies in exploratory factor analysis*. Paper presented at the annual meeting of the southwest educational research association, Austin, TX, January, 23–25, 1997.

Robbins, S. P., Decenzo, D. A., & Coulter, M. (2013). *Fundamentals of Management: Essentials Concepts and Application* (8th ed.). Prentice Hall, Upper Saddle River.

Sarıaltın, H., & Yılmazer, A. (2006). Current methods in measuring organizational performance. *Bilgi Journal of Social Sciences*, *12*(1), 79–94.

Steiger, J. H. (1998). A note on multiple sample extensions of the RMSEA fit index. *Structural Equation Modeling: A Multidisciplinary Journal*, *5*(4), 411–419. https://doi.org/10.1080/10705519809540115

Stewart, H., & Gapp, R. (2017). The role of organizational development in understanding leadership to achieve sustainability: Practices in small to medium enterprises. *Organizational Development Journal*, *35*(2), 33–57.

Tabachnick, B. G., & Fidell, L. S. (2014). *Using multivariate statistics: Principal components and factor analysis* (6th ed.). Essex, England, Pearson New International Edition.

Tavşancıl, E. (2010). *Measuring Attitudes and Data Analysis with SPSS*. Ankara, Nobel.

Tezbaşaran, A. A. (2008). *Likert type scale preparation guide* (3rd ed.). Mersin. e -book. ISBN: 975-9756-08-5

Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications* (1st ed.). Washington, American Psychological association. https://doi.org/10.1037/10694-000

Tobias, S., & Carlson, J. E. (1969). Brief report: Bartlett's test of sphericity and chance findings in factors analysis. *Multivariate behavioral Research*, *4*(3), 375–377. https://doi.org/10.1207/s15327906mbr0403_8

Ünüvar, H., & Bektaş C. (2017). Critical success factors in organizational development. *Gaziosmanpaşa University Journal of Gazi Economics and Business Administration*, *3*(3), 67–76.

White, L. P., & Wooten, K. C. (1983). Ethical dilemmas in various stages of organizational development. *Academy of Management Review*, *8*(4), 690–697. https://doi.org/10.2307/258270

Xie, C., Ding, H., Zhang, H., Yuan, J., Su, S., & Tang, M. (2021). Exploring the psychological mechanism underlying the relationship between organizational interventions and employees' energy-saving behaviors. *Energy Policy*, *156*, 1–10. https://doi.org/10.1016/j.enpol.2021.112411

Yeşilyurt, S., & Çapraz, C. (2018). A roadmap for content validity used in scale development studies. *Erzincan University Journal of Education Faculty*, *20*(1), 251–264. https://doi.org/10.17556/erziefd.297741

Yıldırım, A. (2018). Within the context of the management of organizational change "Environment Harmonization Relationship. Evaluation between New Institutional Theory and Source Dependency Theories. *Süleyman Demirel University Faculty of Science and Literature Journal of Social Sciences*, *44*, 89–102.

Yılmaz, Ü. (2007). *The scope and impact of behavior change interventions in the organizational development process: A practice in 4 and 5-star hotel businesses operating in Ankara*. Master's Thesis. Gazi University Graduate School of Educational Sciences.

Zwick, W. R., & Velicer, W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin*, *99*, 432–442. https://doi.org/10.1037/0033-2909.99.3.432

Appendix A

Table A1. Turkish Version of Organizational Development Level Determination Scale

	Örgütsel Gelişmişlik Düzeyi Belirleme Ölçeği								
	Madde No	Madde	Hiç	Katılmıyorum	Kısmen	Katılıyorum	Kararsızım	Katılıyorum	Tamamen	Katılıyorum
Örgütsel Değerlendirme	1	Kurumumda faaliyetlerin geldiği noktanın tespitine yönelik izleme faaliyetleri mevcuttur.								
	2	Kurumumda belirli standartlara göre performans ölçümü yapılır.								
	3	Kurumumun ihtiyaçları değerlendirme verilerine göre tespit edilir.								
	4	Kurumumda değişimle ilgili kararlar değerlendirme verilerine dayalı olarak alınır.								
Örgütsel Müdahale	5	Kurumumda hizmet-içi eğitim olanaklarından faydalanırım.								
	6	Kurumumda gelişime açık alanlarımla ilgili mentorluk/rehberlik faaliyetlerinden yararlanırım.								
	7	Kurumumda GZFT (Güçlü-Zayıf yönler, Fırsat ve Tehditler) tüm çalışanların katılımıyla değerlendirilir.								
Örgütsel Sürdürülebilirlik	8	Kurumumda faydalı teknolojiler kurum içerisine transfer edilir.								
	9	Kurumumda farklı birimlerle (Teknoloji Transfer Ofisi, kuluçka merkezi, vb.) yapılan iş birlikleri yeterli seviyededir.								
	10	Kurumumda çalışanlar ortak değerler geliştirir.								
	11	Kurumumda üretilen değerlerin sürdürülebilir olması sağlanır.								
	12	Kurumumda kalite standartlarının yerleşik olduğunu düşünürüm.								
	13	Kurumumda kolektif öğrenme gerçekleşir.								
	14	Kurumumda öğrenilen teorik bilgiler çalışma sahasına aktarılır.								
	15	Kurumumda kurumla özdeşleşmiş beceriler mevcuttur.								
	16	Kurumumda öğrenilenler kurumsal davranış değişikliği ile sonuçlanır.								
	17	Kurumumda öğrenilenler daha sonra kullanılmak üzere örgütsel hafızaya dönüşür.								
	18	Kurumum çevresinde sürdürülebilir etkiye sahiptir.								