Development of Organizational Sustainability Scale*

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Abstract. The aim of this study is to develop a valid and reliable measurement tool measuring organizational sustainability. In this respect, firstly, an item pool was formed and subsequently content validity rates, content validity criteria and content validity indices were calculated based on the experts. It was seen that the Organizational Sustainability Scale provided content validity with 40 items and 5 sub-dimensions in total. For the factorial validity of the scale, first, exploratory (EFA) and then confirmatory (CFA) factor analyses were performed in the separate sample groups. As result, the model established in 39 items and five sub-dimensions had an excellent and acceptable level of fit indexes. Also, it was found that both convergence validity and discriminant validity were achieved in all sub-dimensions. Finally, the Cronbach alpha and composite reliability of the scale were examined. In this context, the reliability of the scale was proved as a result of all values being excellent and close to perfect. In this context, it was determined that the Organizational Sustainability Scale is a valid and reliable scale consisting of 39 items in 5-point Likert type and five sub-dimensions which are environmental sustainability, cultural sustainability, social sustainability, economic sustainability and administrative sustainability.

Keywords: Educational Organizations, Higher Education Institutions, Organizational Sustainability, Scale Development, Sustainability.

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1. INTRODUCTION

The sustainable development approach is conveyed to the institutional level with the expression of organizational sustainability. Organizational sustainability is based on the regulation of environmental, economic and social sustainability according to long-term fundamental values and behaviors based on universal principles. In this way, organizational sustainability guides the structure and actions of the organization and network partners and ensures that differences are respected and supported (Cagnin, Loveridge, & Butler, 2005). In this context, organizational sustainability can be defined as the development achieved without jeopardizing the ability of an organization to meet the needs of its direct and indirect stakeholders (such as partners, employees, customers, pressure groups, society, etc.) and the needs of its future stakeholders (Dyllick & Hockerts, 2002; as cited in Turhan, Özen & Albayrak, 2018).

Sustainability created a framework for the integration of environmental policies and development strategies in the early years (Brundtland, 1987) and thus was considered only in the economic context. In the following years, this perspective changed and a broader definition of sustainability emerged. In this new definition, while sustainability is related to economic, social and environmental effects in the long term (Jeong, 2015); the sustainability of organizations is not only an attitude that sustains itself by preserving profitability, but also the act of successfully balancing people, well-being and the planet (3P/people-prosperity-planet) by seeking a dynamic balance (Wals & Schwarzin, 2012). In this context, organizational sustainability can be defined as a term not only for organizations to continue their existence for profit, but also as an effort to act in a balanced way and to build a future by carrying the sustainability logic to the outside world to which the organization belongs with all its levels while trying to keep their assets alive in line with their goals.

Reporting processes of organizations related to sustainability started in 1970s with social balance papers and discussion the social benefits of payments made to employees. Then, the reporting started to deal with environmental issues and gradually entered into competition issues due to the natural disasters experienced in the 1980s, and today it has become a marketing element (Székely & vom Brocke, 2017). For this reason, it can be stated that while sustainability was initially social, economic and environmental issues for organizations, it has become a matter of existence in the focus of competition in the following years.

The purpose of organizational sustainability is to transform the natural environmental and social constraints that underlie an organization’s activities throughout its product and service life cycles, into business opportunities and thus create economic wealth in accordance with the principles of sustainable prosperity (Cagnin, Loveridge & Butler, 2005). In this context, organizational sustainability has become a key principle adopted by many companies, state institutions and non-governmental organizations, rather than being an unusual concept (Wang & Lin, 2007). In this direction, the journey of
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Sustainability, which started in the 20th century, appears to be a rapidly ongoing effort in all areas, especially in educational organizations at different levels such as universities.

**Sustainability in Educational Organizations**

It can be said that there are differences between education levels in terms of sustainability initiatives. The distinctive feature of higher education compared to primary and secondary education is the relative autonomy of higher education institutions as much as their teaching staff and researchers. The efforts in sustainability integration in higher education institutions are the result of global developments that shape universities and are shaped by universities. Therefore, the integration of sustainability principles into higher education takes place in various ways such as international and national channels at different levels (projects or programs specific to sustainability), university leaders with sustainability awareness (creating sustainable leadership positions in organizations) or organizational commitment (including faculty, researchers or students) (Kapitulčinová, AtKisson, Perdue, & Will, 2018). For this reason, when compared to other educational levels, it can be expected that higher education institutions make more attempts for organizational sustainability due to their autonomous structure and that the spreading effect will be more in terms of this initiative due to the opportunities it has. Because, considering that the open system structure of higher education institutions appeals to stakeholders from every field and to global competition areas, it is possible that organizational sustainability actions will also change according to targets, resources and management styles.

In this direction, in order for sustainability to realize the full transformation potential in higher education and society, it should be ensured that sustainability establishes a relationship with the anticipated practices and even private working areas (Sherman, 2008). For this reason, the analysis units in the studies conducted for sustainability, that is, what is being sustained, gains importance. While the studies dealing with organizational sustainability generally focus on maintaining a certain unit or only a center, the others focus on maintaining the activities and effects of the programs in these centers (Zemke, 2013). These studies are mainly the ones such as sustainability of the campus environment (Alshuwaikhat & Abubakar, 2008; Cole, 2003; Disterheft, Caeiro, Azeiteiro & LealFilho, 2015; Kamal & Asmuss, 2013; Kurland, 2011; Lang, 2015; Levy & Marans, 2012; Lidstone, Wright & Sherren, 2015; LealFilho, Shiel & Paco, 2016; Lo, 2015; Mitchell, 2011; Moganadas, Corral-Verdugo & Ramanathan, 2013; Savanick, Baker & Perry, 2007; Savanick, Strong & Manning, 2008; Savelyeva & McKenna, 2011; Shriberg, 2002; Sherman, 2008; Shriberg, & Harris, 2012); evaluation of sustainability in terms of curriculum and teaching in higher education (Fisher & McAdams, 2015; Lozano, Barreiro-Gen, Lozano & Sammalisto, 2019; Stough, Ceulemans, Lambrechts & Cappuyns, 2018); sustainability in terms of student exchange (Shields, 2019); leadership (Savage, Tapics, Evarts, Wilson & Tiron, 2015); sustainability in terms of strategy (Larrán, Herrera & Andrades, 2016; Ramíso, Pinto, Gouveia, Costa & Arezes, 2019); environmental sustainability (Piza, Aparicio, Rodríguez, Marín, Beltrán & Bedolla,
sustainability in terms of vision, mission and graduate quality (Lee, Barker & Mouasher, 2013); sustainability in terms of communication (Franz-Balsen & Heinrichs, 2007) or only the ones such as at the level of case study or literature review only (Bizerril, Rosa, Carvalho & Pedrosa, 2018; Ceulemans, Molderes & Van Liedekerke, 2015; Moore, Pagani, Quayle, Robinson, Sawada, Spiegelman & Van Wynsberghe, 2005). For this reason, although there are studies on sustainability in higher education institutions in the literature, these studies reduce sustainability more specifically on the basis of the researched subject rather than addressing the organizational standards. In other words, instead of investigating the sustainability based on the organizational functioning of higher education institutions as a whole, the related studies act in a narrow scope by focusing on sustainability only in that field. However, this study has made a general survey of how higher education institutions act as an organization as a whole instead of focusing on a single subject area as in other studies in the literature. In this way, it will be easier to examine what kind of sustainability action universities have taken as an organization from a holistic perspective. Because organizations are like a body and if some of them are sick, the rest do not work as they should (Coblentz, 2002). For this reason, it is necessary to examine sustainability in higher education organizations in a holistic manner, apart from being examined piecemeal. Ultimately, according to Darwin, "the whole is more than the sum of the parts".

The Purpose of the Study and the Problem Statement

In this context, the purpose of this study is the development of the Organizational Sustainability Scale (OSS), since there is no scale related to organizational sustainability in the Turkish literature, the scales developed in the foreign literature remain more business-oriented and there is a gap in the education sector and especially in higher education institutions.

2. METHOD

Population and Sample

Ethics committee approval for this study was obtained from the Ethics Committee of Bolu Abant İzzet Baysal University Rectorate, dated 27/12/2018 and numbered 2018/18. In the study, different study groups were used for exploratory (EFA) and confirmatory (CFA) factor analyzes to develop the scale. Firstly, the data for EFA were collected and after the analysis of the data, CFA data were obtained from a different study group to confirm the structure obtained. In the literature, it is seen that there are different opinions about the sample size regarding measurement tools. According to Tabachnick and Fidelı (2001), the sample size between 100 and 200 is sufficient when the factors are strong and distinct and the number of variables is not too large. However, to generalize, the sample size indicates that the number of items should be at least five times according to both Tabachnick and Fidelı (2001) and Bryman and Cramer (2001). On the other hand, Nunually (1978) and Kline (1994) suggest keeping the subject-variable (item) ratio as 10:1 for the sample size and state that this ratio can be reduced,
but should be at least 2:1. From a different point of view, Gorusch (1983) states that the number of factors should be reached 15 times for the sample size (Büyüköztürk, 2002; Comrey & Lee; 1992 as cited in Delice & Ergene, 2015).

Although higher numbers are sometimes recommended for sample size, it is thought that too many samples may cause problems, especially in terms of exploratory factor analysis. For example, according to Costello and Osborne (2005), a relatively large sample size in exploratory factor analysis is an error-prone procedure. Costello and Osborne (2005) showed in their study that the sample size of 20:1 according to the item ratio caused error rates well above the standard alpha = .05 level. For this reason, they state that using large samples in exploratory factor analysis will produce repeated results. In this case, it can be said that the ideal number of participants for exploratory factor analysis should be at least 5 to 10 times the number of items in the scale. For this reason, in order not to cause repetitive results and not to increase the error rate, for the exploratory factor analyzes addressed in this study, it was taken into account that the number of items reached 5 to 10 times and the number of participants was reached nearly 10 times. On the other hand, based on expert opinion, the number of items in the scale was taken into consideration for confirmatory factor analyzes and it was tried to reach as much sample size as possible. According to Myers, Ahn, and Jin (2011), one of the most accepted rules for a certain confirmatory factor application is the sample size greater than 200. For this reason, in the confirmatory factor analyzes discussed in this study, at least 10 times the number of items was reached and the study group was determined to be at least 200 people. Detailed information on the relevant working groups is as follows.

**EFA Sample**

In this study, a statistically sufficient number was reached by reaching approximately 10 times the number of items in the study group (f = 358) for the exploratory factor analysis of OSS. The sample consisted of 358 academicians working at different universities in Turkey during the 2018-2019 academic year. In this context, the demographic characteristics of the academicians in the study group are as follows: 171 women (47.6%) and 188 men (52.4%); 30 having bachelor degree (8.38%), 120 having master degree (33.52%) and 208 having Ph.D. degree (58.10%); 89 having 1-5 years of seniority (24.86%), 103 having 6-10 years of seniority (28.77%), 62 having 11-15 years of seniority (17.32%), 36 having 16-20 years of seniority (10.05%), 32 having 21-25 years of seniority (8.93%) and 36 having 26 years of and more seniority (10.05%).

**CFA Sample**

In this study, for the confirmatory factor analysis of OSS, a statistically sufficient number was attained by reaching at least 10 times the number of items and at least 200 academicians (f = 802). CFA study group consisted of 802 academicians working at different universities in Turkey during the 2018-2019 academic year. In this context, the demographic characteristics of the academicians in the study group are as follows: 332
female (41.40%) and 470 male (58.60%); 62 having bachelor degree (7.70%), 304 having master degree (37.90%) and 436 having Ph.D. degree (54.40%); 221 having 1-5 years of seniority (27.60%), 238 having 6-10 years of seniority (29.70%), 104 having 11-15 years of seniority (13%), 67 having 16-20 years of seniority (8.40%), 76 having 21-25 years of seniority (9.50%) and 96 having 26 years of or more seniority (12%).

Procedures for the Development of the Organizational Sustainability Scale (OSS)

Creating the Item Pool

For the development of OSS, firstly, the literature was reviewed and the studies (Al Kaabi, 2014; Clark, 2013; Dewangga, Goldsmith & Pegram, 2008; Florea, Cheung & Herndon, 2013; Lee & Ha-Brookshire, 2017; Lee & Saen, 2012; Nawaz & Koç, 2018; Paulraj, 2011; Terouhid, 2013; Turhan, 2010; Wang & Lin, 2007; Adams, Martin & Boom, 2018; Batista, & Francisco, 2018; Ceptureanu, Ceptureanu, Bogdan & Radulescu, 2018; Coule, 2008; Emmons, 2013; Lee, 2014; Navickas & Navickienė, 2011; Savage, Tapics, Evarts, Wilson & Tirone, 2015; Shafiq, Johnson, Klassen & Awaysheh, 2017; Singh, Murty, Gupta & Dikshit, 2007; Uitto & Saloranta, 2017; Wikström, 2010) related to organizational sustainability were examined. Secondly, the measurement tools used in these studies were focused and the items in these measurement tools were collected in a pool. Thirdly, the main concepts of the expressions in these items collected in the pool were stated and the keywords that were thought to fully serve organizational sustainability were collected together. Fourthly, inspired by the meaning that the items in the relevant studies wanted to express and these keywords brought together, new items on organizational sustainability were written.

During the review of the literature, it was seen that the concept of organizational sustainability was generally divided into three dimensions as economic, environmental and social sustainability based on the Triple Bottom Line (TBL) approach, while some went beyond the TBL approach and they addressed organizational sustainability within the context of new dimensions such as “integration, behavior, internal-external, forward-looking, human, human resources, human relations, business factors, business models, operations, holistic practices, government policy, capacity building, interpersonal, culture, leadership, normative, partnership studies, organizational transformation subjective well-being, stakeholder and accountability, shared purpose, system understanding, system structure, strategy, verification of sustainability policy, implementation of sustainability policy, technique, governance”. In this context, in this study, after being addressed the additional factors that concern the organization and without abandoning the TBL approach, organizational sustainability was handled with the dimensions of "environmental, social, cultural, economic and administrative sustainability” and the item pool was designed on these dimensions.

3. FINDINGS

Procedures for the Validity of the Organizational Sustainability Scale (OSS)
Presenting the Candidate Scale to Expert Opinion and Content Validity

In content validity, expert opinion is consulted to review the item pool created for a candidate scale. In this step, experts evaluate the necessity, clarity and specificity of the questions and make suggestions to remove or change some statements (DeVellis, 2003, cited as in Karakoç & Dönmez, 2014). For this purpose, the candidate scale developed in order to demonstrate organizational sustainability was presented to expert opinion with a total of five sub-dimensions and 98 items. The statistical transactions made within this scope are presented below.

Determination of Experts

In order to develop the OSS, the opinions of a total of 15 experts including 12 field experts, 2 measurement and evaluation experts, 1 guidance and psychological counseling specialist, were consulted. In determining the experts, since the field of study is Educational Administration and Supervision, the criteria of having a command of this field and having enough knowledge to express an opinion on the concept of sustainability were taken into consideration. In this context, the opinions were taken from five professor doctors, two associate professor doctors, four assistant professor doctors, two doctors, one doctoral candidate and one scientific specialist candidate. Since the focal point in the content validity is the evaluation of the property to be measured, 12 field experts’ opinions were included, while the opinions of the assessment and evaluation experts and guidance and psychological counseling expert were included in the analysis within the scope of appearance validity.

Getting Expert Opinion

Lawshe technique was followed in determining expert opinions. In Lawshe technique, grading is used as “item measures the targeted structure”, “item is related to structure but unnecessary” or “item does not measure the intended structure” (Yurdugül, 2005). In this context, a triple evaluation form was prepared by the researcher in accordance with the Lawshe technique in order to receive expert opinions. In this form, gaps were left for experts to express their opinions if any and to evaluate the relevant items such as “Item is unnecessary. (-1) ”, “ Item can be used but it is unnecessary. (0) ”, “ Item is required. (1)”. In the upper part of the relevant form, a directive on what is expected from the experts was presented and they were asked to fill in the form appropriately. Expert opinions were collected through face-to-face interviews and e-mail between April 2018 and May 2018 through this content validity form.

Evaluation of Expert Opinions

Determining Appearance Validity

According to Tekin (1977), appearance validity indicates what a measurement tool appears to measure, not what it measures. In other words, the appearance validity of a scale is that a scale seems to measure the property that it wants to measure (Ercan & Kan, 2004). In this context, the opinions of 2 measurement and evaluation experts and 1
guidance and psychological counseling expert were taken. In line with the opinions received, the scale was deemed appropriate to remain in the 5-point Likert type as "totally disagree, disagree, undecided, agree, totally agree", and the expressions in some items were corrected to ensure clarity of meaning.

**Determination of content validity rates (CVR):** In order to calculate the content validity rates for each item by evaluating the expert opinions in accordance with the Lawshe technique, all expert opinions were combined in a single form. In this form, the opinions given for each item were shown numerically. Thus, the data were brought ready for the calculation of the CVR. The data obtained were calculated with the CVR formula presented below and developed by Lawshe (1975).

$$\text{CVR} = \frac{\text{Number of experts stating that the item is required}}{\frac{1}{2} \times \text{Total number of experts}} - 1$$

In this context, the data were processed in accordance with this formula stated above. As a result of these calculations, it was seen that the content validity rates for the candidate items varied between 1.00 and -.45.

**Determining the Content Validity Criterion (CVC):** To decide which of the items with these ratios will be excluded from the candidate scale, CVC determined by Lawshe (1975) is used. This criterion ensures that items below the relevant value are removed from the pool. In this regard, the CVC was determined as .56, since the opinions of 12 experts were obtained within the scope of this study. Accordingly, the CVR obtained for each item were examined and items below .56 were removed from the scale pool. As a result of this process, it was determined that there were 6 items in environmental sustainability, 5 in cultural sustainability, 8 in social sustainability, 6 in economic sustainability, and 15 in administrative sustainability, and it was seen that the CVR ranged from 1.00 to .63.

**Determining the Content Validity Index (CVI):** The content validity index is the average of the content validity rates of the remaining items at the end of the comparison with the content validity criterion (Lawshe, 1975). If the feature to be measured is collected in more than one dimension, the CVI should be obtained for each dimension (Yurdugüllü, 2005). Considering the situations stated by Lawshe (1975) and Yurdugüllü (2005), the CVIs for both the general and the sub-dimensions of the candidate scale were calculated separately, and it was observed that the CVIs varied between .74 and .86 in the sub-dimensions while it was .81 for the overall scale. According to Yurdugüllü (2005), in order for the content validity of a scale to be statistically significant, the content validity index must be greater than the content validity criterion (CVI>CVC). In this context, it was seen that content validity regarding the general and all sub-dimensions of OSS was
statistically significant due to the fact that both all sub-dimensions and the overall scale remain above .56. In this case, it can be said that OSS provides content validity with a total of 40 items and 5 sub-dimensions.

Factorial Validity

Exploratory Factor Analysis (EFA)

Exploratory factor analysis (EFA) was firstly performed for the factorial validity of the scale. To test whether the data are suitable for factor analysis, Kaiser-Meyer-Olkin (KMO) and Bartlett Sphericity Test was applied. As a result of this test, the Kaiser-Meyer-Olkin (KMO) value was found to be .97 and the Bartlett Sphericity test was found as ($\chi^2=13829.185$, $p=.000$). For this reason, due to the KMO value greater than .70 and the Bartlett Sphericity test showing a significant difference (Büyüköztürk, 2011; Hutcheson & Sofroniou, 1999), it was determined that the data were suitable for factor analysis. The values obtained as a result of EFA were reported below. In the OSS consisting of 40 items, Item 24 was removed from the analysis because it broke the structure and came out in three dimensions. Based on the remaining 39 items and 5 factors, the procedure was performed by rotating 25% with the varimax technique. As a result, all the items remained and a 5-dimensional structure emerged in total. This situation was presented in detail in Table 1.

Table 1

| Items | Administrative Sustainability | Economic Sustainability | Cultural Sustainability | Social Sustainability | Environmental Sustainability |
|-------|-------------------------------|--------------------------|------------------------|-----------------------|-------------------------------|
| m_1   | 0.775                         |                          |                        |                       |                               |
| m_2   | 0.558                         |                          |                        |                       |                               |
| m_3   | 0.522                         |                          |                        |                       |                               |
| m_4   | 0.469                         |                          |                        |                       |                               |
| m_5   | 0.487                         |                          |                        |                       |                               |
| m_6   | 0.539                         |                          |                        |                       |                               |
| m_7   | 0.537                         |                          |                        |                       |                               |
| m_8  | 0,746 |
|------|-------|
| m_9  | 0,661 |
| m_10 | 0,786 |
| m_11 | 0,576 |
| m_12 | 0,305 |
| m_13 | 0,460 |
| m_14 | 0,331 |
| m_15 | 0,402 |
| m_16 | 0,651 |
| m_17 | 0,700 |
| m_18 | 0,524 |
| m_19 | 0,568 |
| m_20 | 0,338 |
| m_21 | 0,597 |
| m_22 | 0,607 |
| m_23 | 0,675 |
| m_24 |       |
| m_25 | 0,462 |
| m_26 | 0,651 |
| m_27 | 0,644 |
| m_28 | 0,680 |
| m_29 | 0,622 |
| m_30 | 0,573 |
| m_31 | 0,646 |
| m_32 | 0,696 |
| m_33 | 0,600 |
| m_34 | 0,711 |
| m_35 | 0,800 |
| m_36 | 0,619 |
| m_37 | 0,743 |
| m_38 | 0,756 |
| m_39 | 0,761 |
| m_40 | 0,726 |

Kaiser-Meyer-Olkin (KMO) 0,97
According to Table 1, the number of items in the scale was reduced from 40 to 39, considering that it disrupted the five-factor structure with eigenvalues greater than 1. The five-factor structure of the scale consisting of 39 items with an eigenvalue greater than 1 explains 71.73% of the total variance with a rotation of 25%. This variance rate explained above 30% is considered sufficient in test development studies in behavioral sciences (Büyüköztürk, 2011). It can be said that the results obtained after validity and reliability studies show that the scale has a consistent structure within itself. So, OSS consists of 5 dimensions as environmental, cultural, social, economic and administrative sustainability and 39 items. It is seen that the factor loads of the scale items vary between .30 and .80.

**Confirmatory Factor Analysis (CFA)**

For CFA, data obtained from 802 individuals were subjected to normal distribution analysis and it was observed that normality was not achieved due to extreme values. For this reason, re-normality tests were performed on the 751 data obtained after excluding the extreme values, and it was seen that the data provided the normality distribution (for environmental sustainability Skewness=-0.039; Kurtosis=-0.636; for cultural sustainability Skewness=-0.340; Kurtosis=-0.492; for social sustainability Skewness=-0.050; Kurtosis=-0.900; for economic sustainability Skewness=0.005; Kurtosis=-0.585; for administrative sustainability Skewness=-0.202; Kurtosis=-0.749; for overall sustainability Skewness=-0.123; Kurtosis=-0.730). As a result of the EFA and CFA, it was seen that the obtained factor structure was confirmed sample of the educational organization in Turkey. While performing CFA, the "maximumlikelihood" method was chosen by taking into account the normality distribution of the data. The factor loads for the model in which the five-factor structure of the scale was obtained by CFA was shown in Figure 1.
Figure 1. Values obtained from the OSS CFA

In Figure 1, it was seen that the standard regression weights in the factors to which the items belong varied between .57 and .90. This situation shows that the obtained standard values are important (p <0.001) in terms of their factors (Büyüköztürk, 2011). As a result of the operations performed, modification suggestions were examined on the grounds that the obtained fit values were low and would cause a significant change in the chi-square value, and based on the expert opinion, it was decided that modification was required between the 2nd and 3rd items in the “cultural sustainability” sub-dimension; between the 3rd and 4th items in the “economic sustainability” sub-dimension; between the 1st and 2nd items in the “social sustainability” sub-dimension; and among the 6th and 7th, 7th and 8th, 12th and 13th, 14th and 15th, 14th and 16th,
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15th and 16th items in the “administrative sustainability” sub-dimension. Starting with the modification proposal that would make the most improvement in the chi-square value, modifications were made sequentially and the model was retested after each modification in accordance with the literature (Meydan & Şeşen, 2011). While making the modifications, it was taken into account that the scale items remain the same sub-dimension. In this context, it has been found that the items measure similar structures, and modification suggestions were observed to increase the fit index coefficients significantly. It was seen that the fit index coefficients of the model obtained with the modifications made had perfect and acceptable fit values, and the model was better fitted. Accordingly, the values of the fit indices of the scale obtained with DFA were presented in Table 2.

Table 2

The values of fit indices obtained for the model

| Examined Fit Indices | Perfect Fit | Acceptable Fit | Fit Index Value Obtained as a CFA Result |
|----------------------|-------------|----------------|-----------------------------------------|
| $\chi^2$/sd          | $0 \leq \chi^2$/sd $\leq 3$ | $3 \leq \chi^2$/sd $\leq 5$ | $3.81$ |
| GFI                  | $0.95 \leq \text{GFI}$ | $0.85 \leq \text{GFI}$ | $0.84$ |
| AGFI                 | $90 \leq \text{AGFI} \leq 1.00$ | $85 \leq \text{AGFI}$ | $0.81$ |
| CFI                  | $0.95 \leq \text{CFI} \leq 1.00$ | $0.90 \leq \text{CFI} \leq 0.95$ | $0.94$ |
| RMSEA                | $0.00 \leq \text{RMSEA} \leq 0.05$ | $0.06 \leq \text{RMSEA} \leq 0.08$ | $0.06$ |
| SRMR                 | $0.00 \leq \text{SRMR} \leq 0.05$ | $0.06 \leq \text{SRMR} \leq 0.10$ | $0.33$ |

When the fit indices in Table 2 was examined, it was seen that the model has perfect and acceptable fit indices ($\chi^2$/sd $=3.81$; GFI=$0.84$; AGFI=$0.81$; CFI=$0.94$; RMSEA=$0.06$; SRMR=$0.33$) supporting the literature (Bentler, 1980; Bentler & Bonett, 1980; Bollen, 1990; Browne & Cudeck, 1993; Byrne, 2006; Byrne & Campbell, 1999; Hu & Bentler, 1999; Hooper, et al., 2008; Kayacan & Gültekin, 2012; Kline, 2011; Steiger, 2007; Meydan & Şeşen, 2011; Tanaka & Huba, 1985; Schermelleh-Engel & Moosbrugger, 2003).

Convergence and Discrimination Validity

Convergence and discriminant validities were examined for the construct validity of whether the OSS measures its five-factor structure. For convergence validity, common explained variance (CEV) values of each factor were calculated. In terms of convergence
validity, CEV values were found as follows, respectively: .95 for social sustainability (SS), .95 for cultural sustainability (CS), .93 for environmental sustainability (EnS), .94 for economic sustainability (EcS), and .97 for administrative sustainability (AS). According to Bagozzi and Yi (1988), the fact that all of the CEV values are greater than .50 is evidence of convergent validity. In this case, it can be said that OSS is a valid scale in structural sense.

On the other hand, for the discrimination validity, CEV square roots were compared with interstructure correlation. According to Fornell and Larcker (1981), it should be examined whether the square roots of the CEV are greater than both the correlation between the structures and the value of 0.70 for discriminating validity. For this reason, the correlation between the square roots of the obtained OAV values and the structures was examined and the and discrimination values were found to be: .978 for social sustainability, .975 for cultural sustainability, .968 for environmental sustainability, .972 for economic sustainability, .985 for administrative sustainability. In this case, it was seen that OSS had discrimination validity since the values were over .70. The relevant findings are presented in detail in Table 3. The values written in bold in Table 3 represent the discrimination validity and the other values represent the relationship between the sub-dimensions.

Table 3

OSS discrimination validity values

| Variables                      | SS      | CS      | EnS     | EcS     | AS     |
|--------------------------------|---------|---------|---------|---------|--------|
| Social Sustainability (SS)     | 0.978   |         |         |         |        |
| Cultural Sustainability (CS)   | .715**  | 0.975   |         |         |        |
| Environmental Sustainability (EnS) | .731**  | .630**  | 0.968   |         |        |
| Economic Sustainability (EnS)  | .813**  | .638**  | .727**  | 0.972   |        |
| Administrative Sustainability (AS) | .874**  | .764**  | .696**  | .810**  | 0.985  |

**p<.01

Operations For the Reliability of the Organizational Sustainability Scale

In order to determine the reliability of the data obtained as a result of the confirmatory factor analysis, the internal consistency coefficient was calculated with Cronbach’s Alpha and it was found to be .98 for the overall scale, which had a five-factor structure consisting of 39 items. When the reliability was evaluated in terms of the sub-dimensions of the scale, both the Cronbach Alpha internal consistency coefficient and the composite reliability coefficient were calculated. Internal consistency is a general
term used to estimate the reliability of a measure by evaluating the within-scale consistency of responses to scale items. It is applicable only to multi-item measurement tools. The Cronbach's Alpha coefficient is the most commonly used method to estimate internal consistency, and it accepts unidimensionality and equally relevant to the structure of items. In other words, Cronbach's Alpha coefficient assumes that factor loads will be the same for all items. However, composite reliability does not assume this and takes into account the variable factor loadings of the items. If i) your items measure the same single structure, ii) have exactly the same factor load, and iii) there is no error covariance, the composite reliability coefficient and Cronch Alpha coefficient will be the same or very close. The more the factor loadings between the items fluctuate, the greater the difference between composite reliability and Cronbach's alpha coefficients (Dolma, 2016). For this reason, while looking at the Cronbach alpha coefficient for the overall scale and each sub-dimension within the scope of this study; additionally, the composite reliability coefficient was also examined for sub-dimensions. In this case, it was seen that the data obtained are as follows, respectively: Cronbach's alpha .93 and composite .99 for the social sustainability sub-dimension; Cronbach's alpha .89 and composite .98 for the cultural sustainability sub-dimension; Cronbach's alpha .87 and composite .98 for the environmental sustainability sub-dimension; Cronbach's alpha .87 and composite .98 for the economic sustainability sub-dimension; Cronbach's alpha .98 and composite .99 for the administrative sustainability sub-dimension.

Although the Cronbach alpha reliability coefficient varies between 0 and 1 under normal conditions, there is no lower limit in the coefficient. The closer the Cronbach alpha reliability coefficient is to 1, the greater the internal consistency of the scale items. According to George and Mallery (2003), Cronbach alpha reliability coefficient is “≥.90 - Excellent, ≥ .80 - Good, ≥ .70 - Acceptable, ≥ .60 - Suspicious, ≥ .50- Poor and ≤.50 - Unacceptable “. Increasing the alpha value partly depends on the number of items in the scale, and an alpha coefficient of .80 is mostly a reasonable target (Cited in Gliem and Gliem, 2003). In this case, it can be said that the overall OSS and its sub-dimensions of social and administrative sustainability have excellent internal consistency; while cultural sustainability, environmental sustainability and economic sustainability sub-dimensions have good internal consistency.

As a result, OSS is a valid and reliable scale consisting of 39 items in five sub-dimensions: environmental sustainability, cultural sustainability, social sustainability, economic sustainability and administrative sustainability, in the 5-point Likert type, such as "totally disagree, disagree, undecided, agree, completely agree". The scores obtained from the scale within the scope of Likert type vary between 1-5 and, based on the assumption that these intervals are equal, it is accepted that “the organizational sustainability level is very low between 1.00-1.79; low level in the range of 1.80-2.59; moderate level in the range of 2.60-3.39; high level in the range of 3.40-4.19; very high in the range of 4.20-5.00". In this context, high scores from the scale indicate a high level
of organizational sustainability. Information on the use of the scale is presented in the Annex 1.

4. CONCLUSION, DISCUSSIONS AND RECOMMENDATIONS

Within the scope of this study, the Organizational Sustainability Scale was developed to contribute to the literature and to fill the gap in the Turkish literature. As a result of the analysis, a valid and reliable measurement tool consisting of 39 items in 5-point Likert-type environmental sustainability, cultural sustainability, social sustainability, economic sustainability and administrative sustainability was obtained (Annex 1). In this way, with this scale developed, it can be said that a difference is created by focusing on higher education institutions within the scope of educational organizations, and in this way, sustainability is handled on the basis of the educational organization. In addition, when the literature is reviewed, it is seen that the concept of organizational sustainability is generally considered in three dimensions as economic, environmental and social sustainability, based on the TripleBottomLine (TBL) approach by Al Kaabi (2014); Clark (2013); Dewangga, Goldsmith and Pegram (2008); Florea, Cheung and Herndon (2013); Lee and Ha-Brookshire (2017); Lee and Saen (2012); Nawaz and Coach (2018); Paulraj (2011); Terouhid (2013); Turhan (2010); Wang and Lin (2007). On the other hand, Adams, Martin and Boom (2018); Al Kaabi (2014); Bans, Macinive Caldana (2017); Caiado and Quelhas (2016); Batista and Francisco (2018); Ceptureanu, Ceptureanu, Bogdan, and Radulescu (2018); Coule (2008); Emmons (2013); Lee (2014); Navickas and Navickien (2011); Savage, Tapics, Evarts, Wilson, and Tirone (2015); Shafiq, Johnson, Klassen, and Awaysheh (2017); Singh, Murty, Gupta, and Dikshit (2007); Uitto and Saloranta (2017); Wikström (2010) went beyond the TBL approach and they included new dimensions of organizational sustainability into the measurement tools they have developed such as “integration, behavior, internal-external, forward-looking, human, human resources, human relations, business factors, business models, operations, holistic practices, government policy, capacity building, interpersonal, culture, leadership, normative, partnership studies, organizational transformation subjective well-being, stakeholder and accountability, shared purpose, system understanding, system structure, strategy, verification of sustainability policy, implementation of sustainability policy, technique, governance”. In this context, it can be said that the scale developed as a result of this study goes beyond the TBL approach like the relevant researchers and approaches organizational sustainability with a wider perspective. On the other hand, it can be considered that this developed scale contributes to the quality education goal set within the scope of UNESCO 2030 Sustainable Development Goals. Ultimately, with this measurement tool developed, it is possible to contribute to the establishment of a qualified sustainable structure in education by measuring the environmental, cultural, social, economic and administrative sustainability levels of educational organizations in line with their goals.
When the literature is reviewed, it is seen that the concept of organizational sustainability is predominantly introduced within the TBL approach. In this context, it can be said that the scale developed as a result of this study goes beyond the TBL approach and approaches organizational sustainability with a wider perspective. So, in this study, organizational sustainability is handled with the dimensions of "environmental, social, cultural, economic and managerial sustainability" by preserving the essence of the TBL approach, but adding different dimensions. For this reason, it is recommended to develop new measurement tools by employing other dimensions in future studies. In addition, new measurement tools can be developed by adding new sub-dimensions that deal with issues such as research, publications, service to society, as well as the dimensions included in the scale developed in this study in order to be specific to the nature of higher education institutions.

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**Appendixes**

**Appendix 1**

**Organizational Sustainability Scale**

| Kurumumuz,                                                                 | Kesinlikle Katılmıyorum | Katılmıyorum | Kararsız | Katılıyorum | Kesinlikle Katılmıyorum |
|---------------------------------------------------------------------------|--------------------------|---------------|----------|-------------|--------------------------|
| 1. çeşitli geri dönüşüm etkinlikleri (atık pil kutusu, kağıt toplama vb.) düzenler. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 2. doğa dostu ürünler (ekolojik kağıtlar, doğal temizlik malzemeleri, organik gıdalar vb.) kullanır. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 3. doğanın korunması için sosyal sorumluluk projeleri (Doğaya Dokun, Denizlerimiz Mavi Kalsın vb.) yürütür. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 4. kaynakların (elektrik, su, doğalgaz vb.) tasarruflu kullanımına ilişkin etkinliklerde bulunur. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 5. çevre kirliği hakkında eğitimler (kirliliğin türleri, önlenmesi vb.) verir. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 6. çevre ile ilgili faaliyetlere (ağac dikme, atık toplama vb.) aktif katımlı sağlar. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 7. sahip olduğu kültürel değerlerinin yıldan yıla aktarılacağına inanır. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 8. kültürüne belirli simgeler (flama, rozet, arma vb.) aracılığı ile yaşatmaktadır. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 9. kültürü geçmiş, bugün ve gelecek arasında bir köprü olarak görür. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 10. kuruluş yıldönümü gibi özel günlerde ilişkin etkinlikler düzenleyerek kültürüne yaşatmaya çalışır. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 11. geçmiş deneyimlerden faydalanmayı bir kültür haline getirmiştir. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 12. bünüyesinde yeni işe başlayan çalışanların oryantasyonu için etkinlikler (tanışma toplantısı, işe uyum eğitimi vb.) düzenler. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 13. öğrenciler arasında dışlama, yalnız bırakma eylemlerinin önüne geçmek için uygulamalar yapar. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 14. kişi istismarının (sömürü, ihmal vb.) önüne geçilmesi için eğitimler vererek farkındalık yaratır. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 15. toplumsal faida için sosyal sorumluluk projeleri (engelliler, yaşlılar, yoksuullar vb.) düzenler. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 16. her çalışanın esit muamele görmesi adına çaba gösterir. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 17. her öğrencinin esit muamele görmesi adına çaba gösterir. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 18. şeffaf ve hesapverebilir bir yönetim anlayışına sahiptir. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 19. çalışanların değerlerine saygı duyar. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
| 20. bütçesini ihtiyaçları doğrultusunda etkili biçimde kullanır. | 1 2 3 4 5               |               |          |             | 1 2 3 4 5               |
21. etkili tasarruf programları (akıllı/fotoselli lamba, musluk vb.) uygular.  
22. yerel ürün satın alıma teşvik etme gibi eylemlerle milli bilinç oluşturulmaya çalışır.  
23. bilinçli tüketim alışkanlığı kazandırılmasına yönelik etkinlikler (tasarruf eğitimi vb.) gerçekleştirir.  
24. çalışmalarında paydaşları ile işbirliği içindedir.  
25. değişime uyum sağlayabilecek yenilikçi bir yapı sahiptir.  
26. amaçları doğrultusunda varoluşunu sürdürmek için deneyimlerinden yararlanır.  
27. her koşulda amaçları doğrultusunda varoluşunu sürdürebilecek derecedede dayanıklı bir yapı sahiptir.  
28. çalışmalarının kesintiye uğramaması için paydaşlar arası bilgi alışverişi yapar.  
29. öğrencilere yetenek gelişimine yönelik fırsatlar sunar.  
30. çalışanlar için sürdürebilebilir hedefler ortaya koyar.  
31. çalışanlar için kolay anlaşılabilir iş tanımlarına sahiptir.  
32. resmi görevler dışındaki işlerde gönüllü katılımı esas alır.  
33. sahip olduğu bilgilerin geleceğe aktarılmasını sağlamak için örgütSEL hafızasını (arşivini) etkili biçimde kullanır.  
34. amaçları doğrultusunda varoluşunu sürdürmesinde karşılaştığı engelleri aşabilme potansiyeline sahiptir.  
35. varlığını yaşatacak etkinlikleri özel gün ve haftalar dışında da önemser.  
36. amaçları doğrultusunda varoluşunu sürdürmeye bir vizyon haline getirmiştir.  
37. Yöneticilerimiz geleceğe şeklvermede isteklidir.  
38. Yöneticilerimiz düny, bugünü ve yarını birlikte değerlendirebilecek birikime sahiptir.  
39. Yöneticilerimiz kurumumuzda işbirlikçi çalışma ortamı yaratır.

|            | 1 | 2 | 3 | 4 | 5 |
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| 21.        |   |   |   |   |   |
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| 37.        |   |   |   |   |   |
| 38.        |   |   |   |   |   |
| 39.        |   |   |   |   |   |
Ethics committee approval for this study was obtained from the Ethics Committee of Bolu Abant İzzet Baysal University Rectorate, dated 27/12/2018 and numbered 2018/18.