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Development of an online evaluation awareness scale

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Highlights

- The OnEvA scale was developed within the scope of the study to assess instructors' awareness of online evaluation.
- The internal consistency of the scale is high, and the results of factor analysis confirms that the scale consists of two dimensions: Technological Evaluation Knowledge and Pedagogical Evaluation Knowledge.
- The obtained results indicate the scale's capability to measure the intended attributes, and the measurements affirm the validity and reliability of the scale.

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Keywords: *online learning, awareness, online evaluation, scale development*

Abstract

The COVID-19 epidemic has precipitated a rapid and widespread adoption of online education, leading to its normalization in contemporary society. Online education is evident across several educational levels. However, assessing the efficacy and effectiveness of these training programs can only be achieved by implementing a suitable evaluation methodology. One of the primary challenges associated with online education is the difficulty in assessing its quality and effectiveness. One of the contributing factors to this issue is the instructor's lack of technological skills and knowledge relevant to online teaching. This research aims to develop a scale (Online Evaluation Awareness-OnEvA) to determine the instructors' awareness of online evaluation. 165 participants' data from 63 universities was used for exploratory factor analysis. The items of the scale are designed to measure awareness in both pedagogical and technological dimensions. The items in the pedagogical dimension include the essential competencies that instructors should possess, and alternative evaluation methods offered online. In the technological dimension, the items are created to determine instructors' awareness of the use of technological platforms and tools. For the next step, a confirmatory factor analysis was performed to establish the scale's construct validity with 161 instructors. Additionally, the scale's internal consistency was determined to be high, with a Cronbach's alpha of .964. It is affirmed that this awareness scale developed within the scope of this research will contribute to the development of future models or frameworks related to the dimensions of evaluation knowledge in online learning.

1. Introduction

Measurement and evaluation are essential elements of the learning process. They provide feedback to both students and instructors on the success of the learning and teaching process. In online learning environments, measurement and evaluation are similarly significant, but some elements are a subject of

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discussion. Some educators find online assessment unsafe due to the lack of student control (Ferretti et al., 2021). Uncontrolled assessment activities lead to behaviors such as cheating, which undermines the trust in online assessment. Nevertheless, online test exams are the most widely preferred assessment tools because they are easy to use (Al Roomy, 2022; Arnold, 2016), but it is known they fall short in measuring some metacognitive behaviors. In addition, the nature of online environments raises doubts about the reliability of online tests due to the flexibility they offer learners (King, 2009; Meccawy et al., 2021). In this context, there is a need for more reliable online measurement and evaluation technologies that prepared by the learning gains and target behaviors preferred by instructors, which not only evaluate success but also contribute to the learning process (Cheek, 2022; Sudakova et al., 2022; Villiers et al., 2016).

2. Literature Review

In recent years, studies and technology investments have shown that online evaluation is wider than test taking and that effective, efficient, and reliable alternative methods and platforms have emerged (Topuz et al., 2022; Xiong & Suen, 2018). In developed measurement and evaluation platforms, new online measurement and evaluation methods and tools, and techniques are offered to overcome existing reliability problems (Okada et al., 2019; Okur et al., 2021), to provide effective/efficient evaluation (Villiers et al., 2016) and to support learning (Van Maele et al., 2013; Vonderwell & Boboc, 2013). These developments, in addition to self and peer evaluation (Li et al., 2020; Meek et al., 2017; Zheng et al., 2019) and gamified evaluation environments (Attali & Arieli-Attali, 2015; Moccozet et al., 2013; Taşkın & Kılıç Çakmak, 2017), have become more common in recent years. Therefore, the number of alternative evaluation technologies that can be offered to the instructors' preferences is increasing day by day to popularize online evaluation.

Higher education institutions mostly prefer online education (Kirkan & Kalelioğlu, 2017). It is known that some common courses in most higher education programs are given through online education. For instance, in Türkiye, after the COVID-19 global pandemic, it was decided that up to 30% of all courses in higher education institutions can be given through online distance education (YÖK, 2022). In this context, it is accepted that a new era has begun in online learning with the Emergency Remote Teaching caused by the global pandemic (Bozkurt & Sharma, 2020). Especially after the COVID-19 pandemic; it is expected that instructors should be aware of the principles, rules, and limitations of online evaluation in the "new normal" (YÖK, 2020) conditions. However, this sudden change accelerated by the pandemic can be a challenge for all instructors. It is difficult to apply some technological and pedagogical elements in the learning ecology to online learning environments (Layco et al., 2022). Furthermore, today's learning behaviors are rapidly changing, which also affects the evaluation process. For this reason, instructors should renew their teaching approaches to keep up with today's current teaching form of online learning and conditions.

The quality of online evaluation technology is primarily characterized by the awareness and then the competency of the instructor (İzmirli & Kirmaci, 2017). Due to advancements in technology, it is important for instructors who serve as practitioners to primarily be aware of the methods and tools that can be used in online evaluation and to be able to overcome the problems they encounter in terms of effective usage in terms of their competencies. Studies have reported that instructors' literacy in online measurement and evaluation (Ng et al., 2018) and their perceptions of self-competence are low (Arifin & Setiawan, 2022; Mirza, 2021). However, in the study of Layco et al. (2022) it was reported that most instructors use only Google Forms as an online measurement tool and consider themselves competent in online measurement and evaluation. In this way, we can say that teachers don't know about online assessment tools because most of them only use one assessment tool instead of picking the right one for the course and don't know they have other choices. In this context, recently, studies that introduce online measurement and evaluation platforms to increase the awareness of instructors have been encountered. For example, in the studies of Ali et al., (2022), they examined the online evaluation platforms that can be used in dental education. According to the results of the study, it is seen that almost all platforms adopt the test approach and offer solutions to ensure test security accordingly. Topuz et al. (2022) carried out a systematic analysis of studies

on online platforms to guide practitioners, decision-makers, researchers, and system developers in the selecting and/or developing an online evaluation system for determining trends and measuring and evaluating online. The research results indicate that when choosing online evaluation platforms, attention should be paid to criteria such as having mobile support, supporting the Student Information System (SIS), providing satisfactory reports on security measures, and supporting different types of evaluations.

The online tools that the instructor will use can vary according to the purpose of the measurement and evaluation (Byrne et al., 2021; Loureiro & Gomes, 2023) and the type of behavior to be measured. Therefore, it is expected that the instructor is aware and conscious of the different online evaluation tools available according to the purpose and type of measurement and evaluation. In this way, instructors will have a different perspective and potential to solve problems that they may encounter in online evaluations. For example, instructors can have the opportunity for process-based formative evaluations in addition to online tests by being aware of e-portfolios, blogs, and social media platforms (Ferretti et al., 2021; Villiers et al., 2016). Being knowledgeable about the types and tools of feedback, which is one of the important elements of measurement and evaluation, can help instructors provide effective feedback to learners and increase the contribution of the evaluation process to learning (Hattie & Timperley, 2007; Johnson, 2016). On the other hand, the opportunity for a personalized and flexible learning experience is considered one of the advantages of online learning environments (Van Schoors et al., 2021). This situation leads to an increase in the number of students under the management of the instructor and causes difficulties in the evaluation process of products such as projects and assignments in the context of online performance and skill evaluation (Seifert & Feliks, 2019; Zheng et al., 2019). Peer and self-evaluation methods are preferred because they can be used to evaluate the work of many students, allow students to actively participate in the evaluation process, and make the evaluation process autonomous while still being supervised by the instructor (Lee & Kwon, 2021). However, as in all learning environments, there are also basic characteristics that instructors should consider when designing and implementing online self and peer-evaluation environments (Kırmacı & Çakmak, 2022; Kurnaz, 2022; Sun-Lin & Chiou, 2019). Therefore, it is expected that instructors should have basic knowledge about alternative assessment methods (Gikandi, et. al., 2011; Gaytan & McEwen, 2007) such as online self- and peer-assessments, to conduct appropriate and quality assessments (Loureiro & Gomes, 2023).

In online evaluation processes, instructors should be aware of the problems they may encounter in technological and pedagogical scopes and the solutions to them to determine evaluation methods effectively and strategies and to select the most appropriate platform (Layco et al., 2022; Topuz et al., 2022). Knowing the services, capacity, and limitations offered by the chosen platform and evaluation tools will increase the quality of online evaluation and online learning. Hence, revealing awareness levels of online evaluation is an important step in training instructors who can use it effectively. Awareness is related to or defined by various concepts such as mindfulness, consciousness, self-awareness, and attention (Şahin & Yeniçeri, 2015). From this angle, the term awareness is mainly used to refer to self-consciousness. The widely accepted definition of consciousness, given by Appelbaum (1973), is the capacity to analyze and comprehend one's thoughts, feelings, and the connections between them to make sense of one's experiences and life as a unique process.

Measurement and evaluation play a critical role in the learning process and are fundamental elements of the learning experience. However, it's possible to note that in online education, some of these elements' most challenging aspects emerge. For instance, some educators find online evaluation insecure due to the lack of student supervision (Ferretti et al., 2021). Particularly, unsupervised assessment activities undermine confidence in online evaluation by potentially leading students to behaviors such as copying. On the other hand, some educators face trust issues regarding the effectiveness of online evaluation (Baleni, 2015). Especially considering that many instructors have a high number of students, they are compelled to use specific assessment tools. These trust issues prompt educators to question their awareness levels regarding online evaluation. In this regard, some researchers conduct studies directly aimed at exploring and introducing online evaluation tools and platforms. Particularly, there is an increasing number of studies

developing and introducing tools aimed at preventing situations based on student control, such as plagiarism, which are considered weak aspects of online evaluation (Meccawy et al., 2021). However, this study aims to develop a tool to determine the awareness levels of instructors concerning online evaluation. This tool is designed to help instructors understand their consciousness about online evaluation and to assist them in addressing any deficiencies. In other words, there are confidence issues stemming from the lack of awareness among educators about online measurement and evaluation. Many researchers are introducing and developing tools to increase educators' awareness.

During the COVID-19 pandemic, many instructors were forced to experience the online evaluation process without being prepared, which may have triggered an awareness process that began unconsciously. In this context, the experience and performance of instructors in the online evaluation process, which they gained during the pandemic, can increase their self-awareness by interpreting them with their knowledge and skills. Therefore, an evaluation tool has been developed to ensure the interpretation process discusses the technological and pedagogical factors that instructors need to be aware of during the online evaluation process and determine the level of their awareness.

This study focuses on two research questions:

RQ1: What is the evidence for the validity of the scale developed to determine the awareness levels of instructors towards online evaluation?

RQ2: What is the evidence for the reliability of the scale developed to determine the awareness levels of instructors towards online evaluation?

3. Methodology

In this study, a development study of the Online Evaluation Awareness Scale (OnEvA) for instructors was carried out. In the scope of this research, awareness was considered as the points that instructors pay attention to in their online evaluation process. These experiences were collected in two dimensions, defined as technological and pedagogical evaluation knowledge dimensions.

3.1. Scale Development Process

As part of the study, items related to online evaluation were examined in the scales developed by Balçın and Ergün (2016); Kaya and Dağ (2013); Kaya et al. (2013); Timur and Taşar (2011); Chai et al. (2017); Şenel et al. (2018); Valtonen et al. (2017); Hsu et al. (2017); Hacıömeroğlu et al. (2018); Öztürk and Horzum (2011); Kartal et al. (2016); Hiçyılmaz (2018); Canbazoğlu et al. (2013); and Önal (2016) to create a pool of items for the study. Based on the examined scales, items measuring faculty members' awareness about online evaluation have been generated. The researchers finalized the item pool consisting of 33 items. Subsequently, the Content Validity Form (CVF) was prepared to determine the scale's content validity and presented to the opinions of 14 experts. Two of the experts were Professors, eight were Associate Professors, and four were Assistant Professors working in Computer Education and Instructional Technology, Distance Education, Informatics, Turkish Education, and Measurement and Evaluation departments from different universities. The scale included 33 items sent to the experts' opinion. Three options, "Appropriate", "Revised" and "Removed" were added to each item in the SVF. The items were analyzed with the appropriate options, revised as 1 point, and removed as 0 point. The items' content validity was analyzed by using Lawshe technique, and expert feedback. The expert content validity ratio (CVR) for 14 experts at the 0.05 significance level was determined as .51 according to the Lawshe (1975) technique. In addition to this analysis, the experts' comments on each item were also examined individually, and these comments were considered in the revision or removal of the item. As a result of the conducted analyses, two items were removed from the scale, two items were added, and it reached its final form with 33 items. In addition, the item-based (I-CVI) and scale-based (S-CVI) validity indices of the scale were calculated; 17 items were found to have an I-CVI of 1, 11 items had an I-CVI of .928, and five items had an I-CVI of .857. It can be observed that all values obtained from the items are greater than .79, indicating an appropriate content validity index (Zamazadeh et al., 2015). The S-CVI value of the scale was

determined to be .958, classifying it as having excellent content validity (Shi et al., 2012). Following expert opinions, two items were removed from the scale, two items were added, and it reached its final form with 33 items. At this stage, the scale was provided in its final version and underwent review by six different field experts.

3.2. Study Group

This study was conducted with 326 participants. The scale included 33 items in the draft form. To evaluate the construct validity, it was aimed to reach 5 times the number of people (165 people) in the number of items in the draft form. Tabachnick and Fidell (2007) contend that reaching five times the number of people in the factor analysis is sufficient for analysis. The draft prepared as an e-form, which was approved by the Ethics Committee (Gazi University Ethics Committee March 8, 2022, meeting decision and approval number 2022-387 research), was officially announced to all universities in Türkiye by official letter and opened to all instructors' access. The scale was filled out voluntarily in the study. The answers from 173 instructors who filled out the scale were examined, and eight forms were excluded for various reasons (all items were rated the same, etc.) and analyses were made on the data of 165 instructors. The instructors are from 63 universities. Participant data related to exploratory and confirmatory factor analysis is presented in Table 1.

Table 1.

Demographic information for participants

Analysis	Variable		N
Exploratory Factor Analysis	Gender		
		Female	81
		Male	84
	Title		
		Research assistant	25
		Lecturer	43
		Assistant Professor	42
		Associate Professor	25
		Professor	20
		Other	10
Total			165
Confirmatory factor analysis	Gender		
		Female	84
		Male	77
	Title		
		Research assistant	25
		Lecturer	44
		Assistant Professor	41
		Associate Professor	26
		Professor	23
		Other	2
Total			161

As seen in Table 1, 81 of the participants are women, 84 are men; 25 participants are research assistants conducting online courses, 43 participants are instructors, 42 participants are assistant professors, 25 participants are associate professors, 20 participants are professors, and 10 participants have other titles.

In the second stage, data from 161 of these participants was used for confirmatory factor analysis. Four participants were excluded from the analysis due to similar reasons identified in the exploratory factor analysis. The 161 participants came from 49 different universities; 84 of the participants were female, and 77 were male. 25 participants were research assistants conducting online courses, 44 participants were instructors, 41 participants were assistant professors, 26 participants were associate professors, 23

participants were professors, and 2 participants had other titles. A total of 82 universities participated in the study.

3.3. Data Collection Tool

The Online Evaluation Awareness Scale was developed to determine the awareness of instructors towards online evaluation. Each item in the scale is composed of a five-point Likert-type scale, including "Strongly disagree" (1), "Disagree" (2), "Neutral/Uncertain" (3), "Agree" (4), and "Strongly agree" (5), and there are no reverse items. After receiving feedback from experts and conducting content validity analyses, 33 items were included in the scale, and it was ready for the practice.

3.4. Data Analysis

To evaluate the construct validity of the scale, both exploratory factor analysis and confirmatory factor analysis were performed. To evaluate reliability, Corrected Item- Total Correlation, comparing the mean scores of the lower 27% and upper 27% groups, and the Cronbach Alpha coefficient for internal consistency reliability, Composite/construct reliability (CR), and average variance extracted (AVE) were used. The results obtained from these methods are reported in the findings section.

4. Findings

4.1. Findings for the Exploratory Factor Analysis of the Scale

The exploratory factor analysis of the OnEvA was conducted with the participation of 165 instructors working at different universities. The calculated statistics related to the factor analysis are presented in Table 2.

Table 2.

Item Load and Explained Variance Values of the Online Evaluation Awareness Scale

Dimension 1	**Item No**	**Factor Load**	**Dimension 2**	**Item No**	**Factor Load**
Technological Evaluation Knowledge	m9	.814	Pedagogical Evaluation Knowledge	m27	.850
	m3	.806		m26	.837
	m2	.801		m30	.799
	m16	.781		m25	.793
	m13	.758		m28	.729
	m5	.748		m29	.706
	m1	.743		m24	.690
	m22	.729		m32	.666
	m8	.712		m31	.632
	m7	.710		m33	.626
	m10	.707			
	m11	.698			
	m12	.698			
	m15	.673			
	m19	.658			
	m20	.649			
	m17	.573			
	m21	.543			
Explained Variance Value		**52.21**	**Explained Variance Value**		**9.23**
Total Explained Variance Value					**61.43**

The Kaiser-Meyer-Olkin (KMO) coefficient of the Online Evaluation Awareness Scale is .942 and the Bartlett result is significant (p<.01). The principal component analysis method was used in the factor extraction of the scale. Karaman et al. (2017) state that principal component analysis is the method that best explains the variance in the desired structure under all conditions. The number of factors in the scale merged under four dimensions, with the explained variance of the other three dimensions under 8% of the total variance, and the items under the factors did not create a common meaning. Therefore, the items were merged under two factors in accordance with the purpose of creating the scale, and the analyses were carried out. The varimax rotation method was used in the factor analysis of the scale. After the analysis, three items gave a combined value and were removed from the scale. Additionally, two items gave a load value outside of the factor they were created for and their relationship with that factor was found to be insignificant, so they were removed from the scale by the researchers. After the removed items, the final version of the scale was given with 28 items. In this context, the explained variance ratio for the Technological Evaluation Knowledge factor is 52.21%, with 28 items; for Pedagogical Evaluation Knowledge, the explained variance ratio is 9.23%, with 10 items. The total explained variance value of the scale is 61.43%.

4.2. Findings for the Reliability Analysis of the Scale

The reliability analysis of the explanatory factor analysis-completed scale is presented in Table 3.

Table 3.

Reliability Values of the Online Evaluation Awareness Scale

Dimension	Item Number	Corrected Item- Total Correlation	T (Lower %27- Upper%27)	Communalities Extraction
Technological Evaluation Knowledge	m9	.785	11.81***	.694
	m3	.807	13.96***	.718
	m2	.794	13.05***	.700
	m16	.809	13.86***	.689
	m13	.747	10.86***	.616
	m5	.754	11.10***	.633
	m1	.761	11.83***	.645
	m22	.809	16.66***	.711
	m8	.753	11.08***	.626
	m7	.741	11.10***	.605
	m10	.719	11.01***	.549
	m11	.745	13.38***	.591
	m12	.702	11.03***	.531
	m15	.652	12.02***	.486
	m19	.712	11.14***	.568
	m20	.691	10.78***	.524
	m17	.643	9.57***	.458
	m21	.593	8.77***	.395
AVE			.510	
CR			.949	
Cronbach's Alpha coefficient			**.957**	
Pedagogical Evaluation Knowledge	m27	.769	7.76***	.735
	m26	.839	10.66***	.786
	m30	.811	9.06***	.735
	m25	.800	9.68***	.735

	m28	.641	7.32***	.544
	m29	.765	9.30***	.665
	m24	.717	8.68***	.593
	m32	.692	9.72***	.554
	m31	.685	9.27***	.543
	m33	.682	8.10***	.573
AVE			.740	
CR			.924	
MSV			**.595**	
ASV			**.595**	
Cronbach's Alpha coefficient			**.932**	
General Cronbach's Alpha coefficient			**.964**	
Heterotrait-Monotrait Ratio of Correlations			**.789**	
$\bar{X}$			**3.9**	
SD			**.74**	

[1]n=165 (n^1=n^2=45) ***p<.001

In Table 3, the values of the total correlation of items, lower 27%-upper 27%, and Cronbach's Alpha coefficient of internal consistency of the items in the scale are provided. In this context, it is seen that the values of the total correlation of the items vary between .593 and .839 and the t values are significant (p<.001). These results show that the validity of the items in the scale is high, and the individuals can be distinguished in terms of the behavior measured. On the other hand, the internal consistency alpha coefficient for the Technological Evaluation Knowledge factor is .957; for Pedagogical Evaluation Knowledge, the internal consistency alpha coefficient is 937; and the Cronbach's Alpha coefficient of the scale is .964. Therefore, it is seen that the scale is highly reliable. For the structural reliability, besides Cronbach's alpha value, comp Fornellosite reliability (CR) and average variance extracted (AVE) values were also calculated. Fornell and Larcker (1981) suggest that the CR value should be ≥0.70 and the AVE value should be ≥0.50. Within this context, it can be seen that the values obtained from the scale are within acceptable limits. When examining the MSV (Maximum Shared Variance) value of the scale, it is observed that this value is close to the AVE (Average Variance Extracted) level for the first-dimension while being smaller than the AVE level for the second dimension. Fornell and Larcker (1981) have stated that the MSV value should be smaller than the AVE value. Within this context, it can be said that the obtained values are acceptable. Additionally, it is expected that the ASV (Average Shared Variance) value of the scale is smaller than the MSV value (Fornell & Larcker, 1981). However, this condition has been disregarded due to the scale being two-dimensional. However, it should be noted that the communalities extraction values of the scale range from .395 to .786, and the participants have an average score of 3.9. The discriminant validity findings indicates that Heterotrait-Monotrait Ratio of Correlations (HTMT) is .789 and the discriminant validity of the developed OnEvA scale is acceptable, as it falls below the recommended threshold of .85 or .90 suggested by Henseler, et al., (2015).

4.3. Findings for the Confirmatory Factor Analysis of the Scale

After these analyses, a confirmatory factor analysis based on the structural validation of the scale (Çokluk et al., 2012) was carried out. Data were collected from 161 instructors working in different universities in Türkiye. In the study, X^2 /df, Goodness of Fit Index (GFI), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Adjusted Goodness of Fit Index (AGFI), Root Mean Square Residal (RMR), and Normed Fit Index (NFI) were used to determine the model's fit analysis. The acceptable fit index values are given in Table 3 and the analysis results are examined based on these values.

When looking at the modification-free fit indices for OnEvA, it is seen that the Chi-Square value (CMIN=1203.221; DF=349; p=.000) is significant. The CMIN/DF value of the scale is 3.448. The fit indices of the model are found to be RMSEA= .124; GFI=.630; AGFI=.569; CFI=.787; NFI=.726; RMR=.387. Based on the results obtained, modification suggestions were examined, and modifications were created by prioritizing procedures with excessive covariance values. After the applied modifications, the fit indices of the model are found to be RMSEA= .041; GFI=.863; AGFI=.802; CFI=.981; NFI=.919; RMR=.057. Therefore, it is seen that the CMIN/DF, RMSEA, CFI, RMR values of the fit indices are at an excellent level (Büyüköztürk et al., 2004; Çokluk et al., 2012; Seçer, 2013); the GFI, AGFI, NFI values are at an acceptable level (Çokluk et al. 2012; Seçer, 2013). Figure 1 contains the results of the confirmatory factor analysis for the scale.

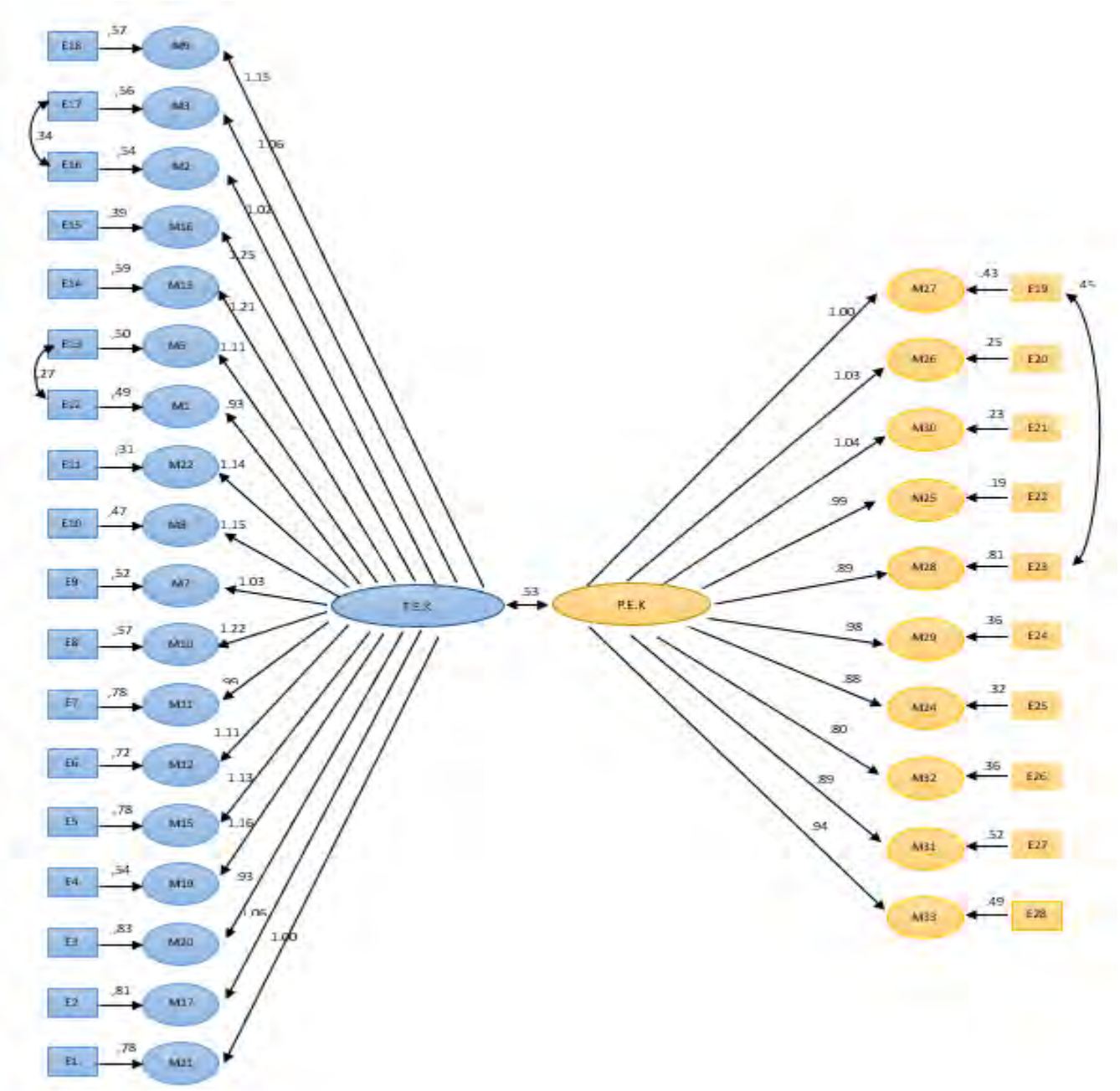

Figure 1. Results of the Confirmatory Factor Analysis of the Online Evaluation Awareness Scale

As seen in Figure 1, based on the results of the analysis, the factor weights of the items range from 0.88 to 1.22, and all the weights are statistically significant ($p<.05$).

5. Discussion and Conclusion

Due to the unexpected pandemic conditions, educational institutions swiftly transitioned from regular classroom teaching to online instruction. Throughout this transition process, institutions at all levels, from primary school to higher education, endeavored to adapt their course content for online learning. Consequently, various challenges arose in the delivery of classes and student evaluation (Junus et al., 2021; Öztürk, 2021). This situation highlighted the necessity for instructors to be prepared for online learning processes both pedagogically and technologically (Pulham & Graham, 2018). Measurement and evaluation should not be left out of instructors' preparations for online teaching after the pandemic. It has become inevitable to update the measurement tools to assess instructors' readiness for measurement and evaluation in online teaching. The aim of this research is to meet this need for updating.

To evaluate the structural validity of the scale, an explanatory factor analysis was conducted, and it was determined that the data set is suitable for factor analysis and the KMO coefficient is at an excellent value (Kalaycı, 2010). The scale was limited to two factors in accordance with its development purpose and the explained variance value was 61.05%. According to Çokluk et al. (2012), an explained variance value between 40% and 60% is considered sufficient in social sciences. Therefore, it can be said that the explained variance value of OnEvA is at a sufficient level. After the explanatory factor analysis, the factor load values of the items were calculated, and all items were evaluated as good, very good, and excellent (Çokluk et al., 2012). However, three items gave high load values in multiple factors and the difference between these values was determined to be less than .10. Büyüköztürk (2014) points out that it would be appropriate to remove these items from the scale. Therefore, these items were removed from the scale and the analysis was continued. Additionally, two items gave load values outside of the factor they were created for, and it was deemed appropriate to remove these items from the scale as they did not have a relationship with the factor. After these procedures, the scale was finalized with 28 items.

According to Büyüköztürk (2014), items with a correlation value above .30 are able to discriminate against individuals to a good degree. Therefore, it can be said that the level of discriminability of all items for the measured feature is good. However, the fact that the mean item scores of the lower-27% to upper-27% groups that were formed as part of the item analysis showed a significant difference is an indicator of the test's internal consistency and shows how well the items discriminate individuals in terms of the measured behavior (Büyüköztürk, 2014). All items in the scale were found to be significant; in other words, it was determined that the items have a discriminative quality. Kalaycı (2010) states that values between .80 and 1 are highly reliable. Therefore, it can be said that the scale is highly reliable.

When the confirmatory factor analysis results of the scale are examined, it can be said that the CMIN/DF value is at an excellent level of fit (Büyüköztürk et al. 2004; Çokluk et al., 2012; Seçer 2013). Additionally, the fit indexes RMSEA, CFI, RMR values are also at an excellent level (Büyüköztürk et al., 2004; Çokluk et al., 2012; Seçer, 2013); GFI, AGFI, NFI values are acceptable (Çokluk et al. 2012; Seçer, 2013).

After the analysis, the scale consisting of 28 items has two dimensions. In the Technological Evaluation Knowledge dimension, the items related to the awareness level of the online evaluation and online evaluation tools of the instructors are included. In the Pedagogical Evaluation Knowledge dimension, items related to the awareness level of the evaluation process are included. With the lowest score given to all items of the scale, 28 points can be obtained and with the highest score, 140 points can be obtained. As the score increases, the individual's awareness level towards online evaluation is high, as the score decreases, the awareness level is low. Based on the scores obtained for the lower-upper 27% groups (Yurdakul et al., 2012), the range of 28-98 points indicates a low level of awareness, the range of 99-121 points indicates a moderate level and the range of 122-140 points indicates a high level of awareness. The scores are provided based on the dimensions.

Technological Evaluation Knowledge=Low 18-59, Medium 60-77, High 78-90

Pedagogical Evaluation Knowledge=Low 12-38, Medium 39-45, High 46-50

While there is currently no scale in the literature specifically measuring faculty members' awareness of online evaluation, it is observed that scales aiming to assess technological pedagogical content knowledge (TPACK) include a few items about online evaluation (Balçın & Ergün, 2016; Canbazoğlu et al., 2013; Chai et al., 2017; Hacıömeroğlu et al., 2018; Hiçyılmaz, 2018; Hsu et al., 2017; Kaya & Dağ, 2013; Kartal et al., 2016; Kaya et al., 2013; Önal 2016; Öztürk & Horzum 2011; Şenel et al., 2018; Timur & Taşar, 2011; Valtonen et al., 2017). However, with OnEvA, academic staff's awareness of online evaluation will be comprehensively addressed, considering both pedagogical and technological dimensions, resulting in a detailed output.

In conclusion, all values of the scale fall within an acceptable range. With the Online Evaluation Awareness (OnEvA) Scale, the awareness levels of instructors towards online evaluation can be determined. Improvements can be made based on these levels. Also, in future studies, data obtained from the scale can be analyzed with different variables. Experimental studies can be conducted to investigate the awareness levels of instructors before and after the application of online evaluation. It was easily observed that the COVID-19 pandemic acted as a catalyst for online learning environments, causing the development of many online skills of both instructors and students. It will be inevitable to update such scale development studies with the innovations that new technologies such as productive artificial intelligence will bring to the field of measurement and evaluation, as well as the "new normal" that replaced the "emergency" during the COVID-19 process.

6. Limitations

The fact that 326 instructors participated in the study can be seen as a limitation of the research. Although the researchers tried to reach instructors through different communication channels, it was not possible to reach a higher participation rate. Brown, et al. (2024) argued that survey fatigue is multifactorial in nature (increasing age, time allocated to research, and belief that responses will affect change, etc.) and attributed the decline in instructors' response rates to increased survey fatigue. Many studies (such as Burnham et al., (2023); Francom et al., (2021); Keldgord and Ching (2022); Shin and Hickey (2021), etc.) see the large number of studies conducted during the COVID era as the cause.

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Çevrimiçi Değerlendirmeye Yönelik Farkındalık Ölçeği

Çevrimiçi Değerlendirmeye ilişkin deneyiminizi göz önünde bulundurarak aşağıdaki soruları cevaplayınız. Ölçek sorularını aşağıda belirtilen tabloya göre puanlayabilirsiniz.

1. Hiç Katılmıyorum
2. Katılmıyorum
3. Kararsızım
4. Katılıyorum
5. Tamamen Katılıyorum

Lütfen size en uygun cevabı işaretleyiniz.

	Teknolojik Değerlendirme Bilgisi					
1	Çevrimiçi değerlendirme araçları ile ilgili karşılaştığım soruna çözüm üretebilirim.	1	2	3	4	5
2	Farklı çevrimiçi değerlendirme araçları hakkında bilgi sahibiyim.	1	2	3	4	5
3	Farklı çevrimiçi değerlendirme araçlarının kullanımı hakkında bilgi sahibiyim.	1	2	3	4	5
4	Derslerimde kullanmam gereken çevrimiçi değerlendirme araçları ile ilgili yeterli teknik beceriye sahibim.	1	2	3	4	5
5	Çevrimiçi değerlendirme araçlarındaki yenilikleri takip edebilirim.	1	2	3	4	5
6	Çevrimiçi derslerimi yürüttüğüm öğrenme yönetim sistemlerindeki değerlendirme araçlarının kullanımı hakkında bilgi sahibiyim.	1	2	3	4	5
7	Sanal sınıf (video konferans) yazılımlarının sunduğu farklı araçları değerlendirme amaçlı kullanımı hakkında bilgi sahibiyim.	1	2	3	4	5
8	Sosyal medya araçlarının değerlendirme amaçlı kullanımı hakkında bilgi sahibiyim.	1	2	3	4	5
9	E-portfolyo araçlarından çevrimiçi derslerimde değerlendirme yaparken yararlanabilirim.	1	2	3	4	5
10	Değerlendirme amacıyla bloglardan yararlanabilirim.	1	2	3	4	5
11	Web tabanlı işbirliği araçlarının (Wiki, google doc.) değerlendirme amaçlı kullanımı hakkında bilgi sahibiyim	1	2	3	4	5
12	Çevrimiçi değerlendirme için kullandığım yazılımlara eklenti yükleme hakkında bilgi sahibiyim.	1	2	3	4	5
13	Çevrimiçi değerlendirmelerde farklı dönüt türlerinden yararlanabilirim.	1	2	3	4	5
14	Sosyal medya araçlarını kullanarak öğrencilere dönüt verebilirim	1	2	3	4	5
15	Öğrencilere dönüt vermek amacıyla sanal sınıfların kullanımı hakkında bilgi sahibiyim.	1	2	3	4	5

16	Çevrimiçi değerlendirmede öğrencilerin zorluklarla karşılaşacağı görevler tanımlayabilirim.	1	2	3	4	5
17	Soruları, engelli öğrencilerin ihtiyaçlarına göre (büyük yazı tipi, soruların seslendirilmesi vb. düzenleyebilirim.	1	2	3	4	5
18	Öğrencilere farklı teknolojileri kullanarak yapabilecekleri ödevler/projeler vermek için yeterli bilgiye sahibiyim.	1	2	3	4	5
	Pedagojik Değerlendirme Bilgisi					
1	Öğrencilerin kavram yanılgılarını belirleyebilirim.	1	2	3	4	5
2	Öğrencilerin performansını değerlendirebilirim.	1	2	3	4	5
3	Öğrencilerin bilişsel becerilerini değerlendirebilirim.	1	2	3	4	5
4	Öğrencilerin duyuşsal becerilerini değerlendirebilirim	1	2	3	4	5
5	Öğrencilerin psikomotor becerilerini değerlendirebilirim.	1	2	3	4	5
6	Çevrimiçi değerlendirmede öğrencilerin ön bilgi düzeylerini dikkate alınması gerektiğini bilirim.	1	2	3	4	5
7	Öğrencilerin konuyu öğrenmede yaşadıkları zorlukları belirleyebilirim.	1	2	3	4	5
8	Çevrimiçi değerlendirmede alternatif değerlendirme yöntemlerini (akran/öz/grup değerlendirme) kullanmam gerektiğinin farkındayım.	1	2	3	4	5
9	Öğrencilerin konuyu anlayıp anlamadıklarını belirlemek amacıyla farklı soru türlerinden (çoktan seçmeli, açık uçlu, eşleştirme vb.) yararlanabilirim.	1	2	3	4	5
10	Çevrimiçi sınavlarda kopyanın önüne geçmek için hangi önlemleri (soruları karıştırma, alternatif değerlendirme yöntemlerinin kullanımı, soru zorluk seviyesine göre sınav süresini ayarlama vb.) almam gerektiğini bilirim.	1	2	3	4	5