Ampirik Araştırma / Original Empirical Research

www.yuksekogretim.org

TÜBA-HER Yükseköğretim Dergisi
TÜBA Higher Education Research/Review

Program Accreditation Attitude Scale: Validity and Reliability Study

Program Akreditasyonu Tutum Ölçeği: Geçerlik ve Güvenirlik Çalışması

Okan Dede[1], Doğan Can Akçin[1]

[1] Karabük University, School of Foreign Languages, Karabük, Türkiye

Abstract

The aim of this study is to develop a scale to assess student attitudes towards program accreditation, a critical tool for evaluating the quality of programs in higher education institutions. During the scale development process, an item pool consisting of 40 items was created, and expert opinions were solicited for review. The study utilized maximum diversity sampling, one of the purposive sampling methods, and data were collected from 913 students enrolled in accredited programs at higher education institutions. Data analysis occurred in two stages, involving two different student groups. After performing thorough data cleaning and preliminary checks for normality and reliability, Exploratory Factor Analysis (EFA) was conducted to determine the scale's factor structure. To validate the factor structure identified through EFA, Confirmatory Factor Analysis (CFA) was performed using the Mplus 8.4 program. The results of these analyses confirmed the reliability, model fit, and construct validity of the Program Accreditation Attitude Scale factors. This multi-dimensional scale, which includes five factors and 28 items, covers the following areas: education and training, management, physical infrastructure and facilities, scientific and social activities, and continuous development. The scale has an approximate response time of 30 minutes. Based on the findings, it was concluded that the scale is a valid and reliable measurement tool for assessing student attitudes towards program accreditation in higher education institutions.

Keywords: Accreditation, Attitude Scale, Program Accreditation, Quality in Higher Education

Özet

Araştırmanın amacı yükseköğretim kurumlarındaki programların kalitesinin değerlendirilmesinde kullanılan önemli bir araç olan program akreditasyonuna yönelik öğrenci tutumlarının belirlenmesine ilişkin bir ölçek geliştirmektir. Ölçek geliştirilmesi sürecinde 40 maddelik bir madde havuzu oluşturularak bu madde havuzu için uzman görüş alınmıştır. Amaçlı örnekleme yöntemi türlerinden maksimum çeşitlilik örneklemesinin tercih edildiği bu çalışmada veriler yükseköğretim kurumlarının akredite olan programlarında eğitim alan öğrencilerden (n=913) elde edilmiştir. Analizler iki farklı öğrenci grubuyla birbirini takip eden iki aşamada yapılmıştır. Derinlemesine yapılan veri temizliği, normallik ve güvenilirlik varsayımlarına ilişkin ön analizlerin ardından faktör yapısının belirlenebilmesi amacıyla Açımlayıcı Faktör Analizi (AFA) yapılmıştır. Bu analizden sonra ortaya çıkan ölçek yapısının doğrulanması için Mplus 8.4 programı aracılığıyla Doğrulayıcı Faktör Analizi (DFA) yapılmıştır. Bu analizlerin ardından Program Akreditasyonu Tutum Ölçeği faktörlerinin güvenilirliğini, model uyumu ve yapı geçerliliği doğrulanmıştır. Çok boyutlu bir ölçme aracı olan söz konusu ölçek eğitim-öğretim, yönetim, fiziki altyapı ve tesisler, bilimsel ve sosyal etkinlikler ve sürekli gelişim olmak üzere beş faktörü ve 28 maddeyi içermektedir. Ölçeğin cevaplama süresi yaklaşık 30 dakikadır. Yapılan analizler sonucunda ölçeğin yükseköğretim kurumları öğrencilerinin program akreditasyonuna ilişkin tutumlarının belirlenmesi bağlamında geçerli ve güvenilir bir ölçme aracı olarak kullanılabileceğine karar verilmiştir.

Anahtar Kelimeler: Akreditasyon, Program Akreditasyonu, Tutum Ölçeği, Yükseköğretimde Kalite

Today's societies must contend with a fiercely competitive environment due to the revolutions and changes that have occurred in every sphere of existence. Public and private educational institutions alike need to properly meet the needs and expectations of the students to survive in this competitive environment. To meet these needs and expectations, all services provided by educational institutions must be of the highest standard and give importance to quality. The term "quality" has various meanings particularly in the context of economics, and its root is the Latin word "Qualis" (Beecham, 2009). From a historical standpoint, the notion of quality was attempted to be defined as fitness for use, product or service price, and conformity to conditions (Feigenbaum, 1956; Ishikawa, 1984; Juran, 1954).

İletişim / Correspondence:
Dr. Okan Dede
Karabük University,
School of Foreign Languages,
Karabük / Türkiye
e-mail: okandede@karabuk.edu.tr

Yükseköğretim Dergisi / TÜBA Higher Education Research/Review (TÜBA-HER), 15(1), 182-194. © 2025 TÜBA
Geliş tarihi / Received: Mayıs / May 3, 2024; **Kabul tarihi / Accepted:** Ağustos / August 19, 2024
Bu makalenin atıf künyesi / How to cite this article: Dede, O., & Akçin, D. C. (2025). Program Accreditation Attitude Scale: Validity and Reliability Study. *Yükseköğretim Dergisi, 15*(1), 182-194. https://doi.org/10.53478/yuksekogretim.1477599

ORCID: O. Dede: 0000-0002-2771-6522; D. C. Akçin: 0000-0002-0981-0515

The pursuit of excellence in educational institutions has heightened, given the inevitable influence of societal shifts and changes on these establishments. It can be contended that despite the outcomes of the comprehensive studies conducted a universally accepted definition of excellence in higher education does not exist (Hämäläinen, 2003). The notion of quality in higher education may change based on the circumstances since different stakeholders may have different ideas about what constitutes quality (Harvey & Green, 1993). While the term "quality" lacks precise definition in this context, various metrics exist for evaluating quality in higher education (Altbach et al., 2009). Within this particular framework, certification stands out as a prevalent approach for implementing quality assurance systems. Aligned with the objectives of academic programs the anticipated standards of diverse stakeholders such as businesses, students, and the institutional mission, accreditation can delineate a specified level of quality. The origin of the concept in question comes from the Latin verb "accreditare", while the prefix "ac-" means "to get close", the verb "creditare" means "to trust" or "to believe" (Doğan, 1999).

Internal and external examiners participate in an accreditation process to certify to the public that specified standards and criteria are being met and to guarantee established standards and criteria are being followed (Kumar et al., 2020). To phrase it differently within the realm of higher education, accreditation involves the impartial evaluation of the quality and scope of courses offered by universities to their students (Skolnik, 2010). A set quality level is to be met by the elements that are examined in this process, which includes faculty-school cooperation, academic and administrative staff qualifications, management system, use of resources, and education services. Globally, there is a growing interest in studying accreditation and quality in higher education. The three main tenets of this interest are internationalization of higher education, university rankings, and accountability. Staub (2019) states that universities, especially in Europe, have realized the importance of accreditation and perceive the studies carried out in this context as a mandatory step to improve quality. Thus, credit transfers and student-faculty mobility may not be feasible without guaranteeing the caliber of higher education programs, particularly in light of globalization (Mandavkar, 2019). The Council of Higher Education [CoHE] (2019) lists the following as the main goals of accreditation studies conducted in higher education institutions:

- Satisfying specific requirements;
- Providing education and training services effectively and on a sustainable basis,
- Cooperating with international institutions and organizations,
- Assuring high-quality training and education,
- Ensuring comparability of diplomas issued by higher education institutions.

The evaluation of higher education programs or institutions is crucial for determining their applicability and quality. A quality accreditation certificate, valid for a specific period, represents the culmination of extensive quality assurance efforts (Ngoc et al., 2023). Accreditation is conducted through two methods: institutional and program accreditation (Coffey & Millsaps, 2004). Program accreditation demonstrates that a specific curriculum meets the standards set by national or international bodies, assessing factors like innovation, societal impact, faculty quality, student success, and program innovation (Eaton, 2003; Harvey, 2004). It ensures students acquire necessary skills for the corporate sector (Schwarz & Westerheijden, 2007). Institutional accreditation verifies the overall ability of an institution to provide high-quality education by systematically evaluating research, student services, administration, curriculum, and instruction (Harvey, 2004; Yorke, 1999). This process assures students that the institution they choose will offer a high-quality educational experience.

Despite their positive aspects, accreditation studies face several issues. A primary problem is that faculty, staff, and students often don't fully understand the process (Johnson, 2018). Researchers argue that accreditation procedures impose a significant bureaucratic burden on faculty and fail to effectively ensure internal quality (Harvey, 2004). There's also a belief that accreditation places an excessive burden on academic staff and administrators, especially in higher education institutions with high standards (Dill, 2000). Certification is intended to ensure excellence in all school services, not to create a hierarchy. Accreditation certifies that universities meet global standards (Hou, 2011). While it is crucial for universities to offer excellent education and gain global recognition, the process can help set quantitative goals to improve program quality (Knight, 2007). These goals include enhancing students' academic achievement, improving instructional strategies and resources, increasing student satisfaction, and developing research projects. As quality and certification become more important, understanding how higher education stakeholders perceive and experience these procedures is essential.

Institutions of higher learning have always needed qualified applicants for training. In this context, accreditation studies are viewed as an essential tool for improving higher education standards and generating qualified graduates. In order to successfully implement quality assurance systems, establishing mechanisms that facilitate comprehension and active participation from all stakeholders in the process is crucial. The significance of this study is underscored by the creation of an assessment tool designed to illuminate the perspectives of students regarding program accreditation. This contributes to a better understanding of Türkiye's capacity to respond to changes and shifts in quality assurance and accreditation within the higher education system. Moreover, it enhances the competence in overseeing these procedures effectively.

Purpose of the Research and Research Questions

One concept that has gained traction recently is accreditation especially in the field of education. When looking at national or international studies on related subject, it becomes evident that a scale of attitudes measuring attitudes toward program accreditation in higher education is missing. The objective of this study is to formulate a scale for gauging students' viewpoints regarding program accreditation, addressing the existing deficiency concerning the prerequisites of Turkish higher education institutions. The development of the "Program Accreditation Attitude Scale" (PAAS) aims to assess students' attitudes toward program accreditation within higher education institutions. This scale is envisaged to enrich research in the realm of higher education certification and to facilitate the accreditation of studies based on emerging scientific insights. As a result, this work addresses the following research issues:

1. Is PAAS a valid measurement tool to figure out the perceptions of students studying at higher education institutions regarding program accreditation?
2. Is PAAS a reliable measurement tool to determine the perceptions of students studying in higher education institutions regarding program accreditation?

Method

This research aimed to develop a scale to determine student attitudes towards program accreditation, which is an important tool used in evaluating the quality of programs in higher education institutions. One of the designs for quantitative research methods, the survey design, was used in the study.

Participants

The study employed maximum diversity sampling for Exploratory Factor Analysis (EFA). The sample size (N = 410) was determined by taking into account the number of elements in the draft scale as well as the characteristics that were highlighted in the literature. Following a preliminary review of the data set 24 forms were found to be missing or improperly completed. As a result the data set, which included information from 386 students overall, was used to conduct an EFA. The applicable value is appropriate for EFA stated in the literature (Tabachnick & Fidell, 2018). Students enrolled in the accredited program who did not take part in the EFA provided the data for the second stage, which includes the factor pattern validated following the EFA in the first stage. Maximum diversity sampling was applied for Confirmatory Factor Analysis (CFA). 600 students who did not take part in the prior phase made up the sample. Following a preliminary review of the data set, 73 forms were found to be missing or improperly completed. Consequently, the data set, which included information from 527 students overall, was chosen to be used for the CFA.

Table 1.
Demographics of the participants

Demographics of the participants in EFA			
		N	%
Gender	Male	180	46,63
	Female	206	53,37
	Total	386	100
Department	English Language Teaching	95	24,6
	Preschool Teaching	74	19,1
	Primary Mathematics Teaching	52	13,4
	Science Teaching	49	12,8
	Social Sciences Teaching	34	8,8
	Geography Education	30	7,9
	History Education	27	6,9
	Others (5 Departments)	25	6.5
	Total	386	100

Demographics of the participants in EFA			
		N	%
Gender	Male	258	48,96
	Female	269	51,04
	Total	527	100
Department	Preschool Teaching	107	20,3
	English Language Teaching	88	16,8
	Science Teaching	79	14,9
	Social Sciences Teaching	61	11,7
	Primary Mathematics Teaching	59	11,1
	Turkish Language and Literature Teaching	49	9,2
	Computer Education and Educational Technology	47	8,9
	Others (6 Departments)	37	7,1
	Total	527	100

Scale Development Process

The scale's items which measure students' views regarding program accreditation were developed after a thorough analysis of pertinent literature. The methodologies employed for data collection in these inquiries underwent comprehensive scrutiny, aligning with relevant studies on standards, accreditation, and the accrediting processes within higher education. During the scale development process, a literature review was conducted to determine the item pool, and the accreditation criteria of the accrediting organizations were examined in order to ensure that the items in the scale covered the criteria used in the program accreditation process. After completing the research to create the theoretical framework, fifteen college students were required to write a composition discussing the concepts of accreditation, quality, and accountability.

Following the content analysis of these publications, the notable expressions were transformed into attitude statements. Then, 40 questions on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) were chosen.

Upon the completion of the draft scale form, three experts were invited to evaluate it for acceptable language use and expression. Their suggestions made it easier to make sure the required adjustments were made. The procedure of submitting the proposed scale form to expert opinion involved consulting with eight faculty members who are authorities in the domains of higher education accreditation and quality. To assess the appropriateness of the scale's components in this case, a triple rating scale was created, and experts were invited to use the scale and provide input. Lawshe analysis was performed once the input was consolidated into a single format to assess if the questions pertaining to the pertinent element were suitable for assessing the data. Furthermore, information regarding the consistency or inconsistency of expert opinions is crucial for ensuring the authenticity of the content or structure. To evaluate the content validity of each scale item, Content Validity Ratios were computed. Content validation is a process that aims to provide assurance that an instrument (checklist, questionnaire, scale, etc.) measures the content area it is expected to measure (Frank-Stromborg & Olsen, 2004). The content validity ratio was first proposed by Lawshe and is widely used to quantify content validity. Veneziano and Hooper (1997) state that the validity rate for eight experts is 0.78. The scale's items were looked over in light of this information, and care was taken to omit any that had a CVR value of less than 0.78. Following these research, it was agreed to remove 12 questions from the 40-item draft scale.

A pilot study with 64 students was conducted to assess the draft scale's item comprehensibility, which comprised 28 items within the pilot research. The researchers supervised the study's execution and students were asked to identify words and sentences that they found difficult to grasp in the pilot study. Throughout this procedure, students were also encouraged to ask any concerns they may have regarding the scale. Each was carefully scrutinized after the data was collected to identify the problematic portions. It was noted that three of the item's words were unclear, thus it was decided to change the pertinent keywords in this case without eliminating anything from the draft scale (See Appendix).

Data Analysis

Item analysis are employed to ascertain the relevance of items within subscales or the overarching measuring instrument. Factor analysis is frequently used in the field of education as well. Its objective is to identify variables that naturally cluster together or to divide a group of variables into latent factors (Kline, 2014). The scale's factor structure was ascertained using principal component analysis, and once the factors were identified, the Varimax orthogonal rotation approach with Kaiser Normalization was used. The factor analysis's interpretability was also assessed using the KMO and Bartlett Tests. As outlined by Shrestha (2021), the Kaiser-Meyer-Olkin (KMO) test is an essential instrument for evaluating the data suitability obtained from the study sample. A rating close to 1 is deemed satisfactory, while a score below 0.50 is deemed insufficient. It is imperative for factor analysis that the data exhibit a normal distribution. This condition is validated by the Bartlett test, and a significant result indicates that the data possess a multivariate normal distribution. Every item on the scale was carefully checked to ensure that it had a minimum of three items, that each factor was under one, and that its factor load value was at least 0.32 (Tabachnick & Fidell, 2018). To ascertain the Attitude Scale's construct validity regarding program accreditation, an EFA was carried out. According to Worthington and Whittaker (2006) CFA is required to evaluate the construct validity that was discovered following EFA in the scale creation process. To establish the validity of the scale structure in the relevant study, CFA was performed in this instance utilizing the Mplus 8.4 software.

Results

Explatory Factor Analysis

The data set was subjected to descriptive statistics (see Table 1) which show that the skewness and kurtosis values are within allowable ranges and the mean, median, and mode are sufficiently near to each other (George & Mallery, 2010).

The significance values derived from normality tests, commonly employed in the literature to gauge the extent of data deviation from the normal distribution, affirm the normality of the data. Table 2 displays these numbers.

Table 2.
Normality statistics before EFA

N	Valid	386
	Missing	0
Mean		3,62
Median		3,63
Mode		3,53
Std. deviation		,500
Skewness		-,299
Std.Error of Skewness		,136
Kurtosis		,383
Std.Error of Kurtosis		,272

Table 3.
Normality tests before EFA

	Kolmogorov-Smirnov Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Mean	,046	386	,200	,995	386	,418
a. Lilliefors Significance Correction						

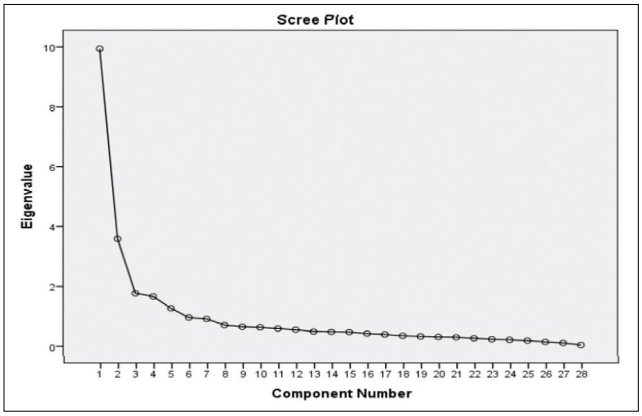
Subsequently, an independent t-test was employed to ascertain the distinctions between the mean scores of the top 27% and the lower 27%. In this scenario, an independent t-test was conducted, with individuals coded as 1 or 2 to denote their respective groups. The means of the upper (M = 4.17, SD = 0.25) and lower (M = 3.01, SD = 0.33) groups exhibited a statistically significant difference based on the data. The pertinent findings indicate that the items demonstrate adequate discrimination[t(168) = 25.475, p<.01].

To execute validity procedures, it is essential to initially establish the factors among the items. In this case, the factor analysis method was employed. Following the determination of Bartlett values and Kaiser-Meyer-Olkin (KMO) using factor analysis, principal component analysis was conducted to identify the most plausible interpretation for the data. By performing varimax rotation, the dependency between factors was reduced and a clearer understanding of the factors was achieved. In this study, the KMO value computed for Principal Components Analysis came out to be 0.867. The KMO test assesses if the data distribution utilized in factor analysis is appropriate by using partial correlations. Depending on how near the estimated result is to 1, Kaiser (1974) characterizes it as excellent (close to 1), undesirable (below 0.50), or good (between 0.80-0.90). As a result, the KMO value determined during this study can be deemed satisfactory. Moreover, the significance of the Bartlett test result is significant (X2(703= 4691,710; p<.001). The hypothesis that the provided data show a normal distribution with numerous variables is supported by this finding (Hinkin, 1995).

Factor analysis yields the load value, an important statistic that indicates an item's degree of relationship to the detected factor and is used to determine whether the item will be included in a factor. The strength of association between an item and the corresponding component is reflected in its load value; consequently, items with higher load values are more likely to be incorporated under the relevant factor. If a particular group of items is determined to be associated with a high loading value under a factor, these items are considered to describe or measure that factor (Harman, 1976). In this instance, these items are thought to be significant indications that can most effectively describe the factor's properties and establish the factor's measure. Because of this, the characteristics and impacts of items with high loading values are closely scrutinized and interpreted throughout the factor analysis process in a manner that will facilitate accurate understanding of the factor. Principal component analysis is known as a frequently preferred method for determining factor structures in the factor analysis process, where different techniques can be used (Zeller & Carmines, 1978). Principal component analysis summarizes the observed data under fewer components or elements, making it easier to grasp and interpret the data. Hence, the precision and interpretability of the outcomes obtained from factor analysis rely on the chosen approach to principal component analysis.

When the Eigen value is taken to be 1, repetitive factor analysis produces five factors, as seen in Figure 1. The cumulative variance accounted for by the five factors amounts to 65.11% which is accepted sufficient in the literature (Shrestha, 2021). Specifically, the first factor explains 35.49% of the variance, the second factor explains 12.83%, the third factor explains 6.32%, the fourth factor explains 5.95%, and the fifth factor explains 4.52%. Elevated rates of variation in the outcomes of factor analysis indicate a robust factor structure within the scale. A guidance for the caliber of item factor loadings in factor analysis was offered by Comrey and Lee (2013). An evaluation of 0.71 or more is considered outstanding, 0.63 very good, 0.55 good, 0.45 ordinary, and 0.32 low, according to this reference point. Similar to this, Tabachnick and Fidell (2018) stressed that an item's minimal factor loading shouldn't be any lower than 0.32. Within this particular context, the scale's maximum item load is .909, while the lowest item load is .480.

Figure 1.
Scree plot graphic for the scale



The scale was found to be dispersed into five distinct factors with eigenvalues greater than one after Varimax Orthogonal Rotation analysis. As indicated in Table 3, there are a total of 5 factors and 28 items on the scale. The second factor has five items, compared to the first factor's eight items. The fourth and fifth factors each have four items, and the third factor has seven. Under each component, sub-dimensions were identified by looking at the item content. Within this framework, "education " is the first factor; "management" is the second; "physical infrastructure and facilities" is the third; "scientific and social activities" is the fourth; and "continuous development" is the fifth. Thus, the rise in all factor scores is seen to be a sign of an increase in the pertinent feature.

After the validity studies of the items and factors were completed, reliability studies were carried out. Table 4 presents the Cronbach's Alpha values calculated for both the overall measure and each factor. One could argue that the collected data demonstrate the scale's reliability.

Table 4.
Descriptive statistics, factor loading values, item-total correlations and cronbach's alpha internal consistency coefficients of the scale

Items				Factors				
	$\bar{x}$	Sx	Rij	1	2	3	4	5
Item1	3,55	,81	,314	.852				
Item 2	3,19	1,04	,393	.828				
Item 3	3,21	1,07	,375	.750				
Item 4	3,80	,82	,452	.716				
Item 5	3,19	1,02	,439	.692				
Item6	3,45	1,02	,412	.671				
Item7	3.81	,96	,694	.630				
Item8	3,20	1,07	,384	.623				
Item 9	4,28	,97	,418		.909			
Item 10	2,45	1,31	,448		.898			
Item 11	2,37	1,27	,714		.873			
Item 12	2,41	1,22	,630		.762			
Item 13	2,51	1,13	,749		.480			
Item 14	4,60	,58	,734			.786		
Item 15	4,04	,81	,633			.700		
Item 16	4,52	,64	,615			.683		
Item 17	4,32	,71	,560			.628		
Item 18	4,42	,60	,559			.576		
Item 19	4,42	,67	,573			.568		
Item 20	4,29	,72	,603			.567		
Item 21	4,66	,50	,388				.777	
Item 22	4,70	,51	,741				.755	
Item 23	4,52	,57	,682				.693	
Item 24	4,46	,66	,625				.665	
Item 25	2,55	1,16	,651					.807
Item 26	2,32	1,22	,606					.784
Item 27	2,28	1,16	,307					.716
Item 28	1,98	1,11	,418					.711

Table 5.
Reliability coefficients for the overall scale and the factors

Factor	Cronbach's Alpha
1. Education	0,92
2. Management	0,89
3. Physical infrastructure and facilities	0,81
4. Scientific and social events	0,89
5. Continuous improvement	0,82
Total	**0,93**

Confirmatory Factor Analysis

As part of this study, the Attitude Scale Towards Program Accreditation for Higher Education Institution Students was created, and CFA was employed to evaluate the construct validity of the scale. The data collection was examined for outliers and missing values before employing CFA. Table 5 demonstrates that the z-standard scores fall between +3 and -3, the mode, median, and mean for the normality parameters are close to one another, and the data's skewness and kurtosis fall between +1 and -1 (Byrne, 2013).

The normality of the data is confirmed by the significance values obtained from normality tests, commonly utilized in the literature to assess the extent of data deviation from the normal distribution. Table 6 displays these numbers.

Table 6.
Normality statistics before CFA

N	Valid	527
	Missing	0
Mean		3,71
Median		3,70
Mode		3,92
Std. deviations		,437
Skewness		,003
Std.Error of Skewness		,105
Kurtosis		-,451
Std.Error of Kurtosis		,211

Table 7.
Normality tests before CFA

	Kolmogorov-Smirnov Statistic	df	Sig.w	Shapiro-Wilk Statistic	df Serbestlik derecesi	Sig.
Mean	,039	527	,054	,993	527	,018
a. Lilliefors Significance Correction						

Subsequently, an independent t-test was employed to examine potential disparities in the average scores between the top 27% and the bottom 27%. The data revealed a noteworthy contrast in the means of the upper (M = 4.26, SD = 0.20) and lower (M = 3.18, SD = 0.19) groups. Consequently, the results indicated satisfactory differentiation among the items [t(281) = 44.886, p < .01]. Next, item-total correlation values were looked at, and reliability analysis was used to calculate item discrimination. Item discrimination was then calculated and item-total correlation values were determined using reliability analysis. Field (2013) emphasizes that no item should have a score of less than 0.32. Every number for the categories included in the draft scale exceeded this cutoff mark, according to the data that was provided.

Before conducting CFA, the Kaiser-Meyer-Olkin (KMO) coefficient (KMO = 0.83) and the Bartlett test of sphericity (3877.624, p < .001) were employed to evaluate the data's adequacy. Following preliminary calculations and analysis, it was ascertained that the dataset was suitable for CFA. The component structural validity of the 28-item scale was then evaluated using CFA. The validity of the examined five-factor structure within the scale's parameters was assessed through several fit indices. Fit indices like RMSEA, χ^2 /sd, CFI, SRMR, and TLI were computed for this reason. In this context, the values for fit indices were calculated as RMSEA = 0.060, X^2/sd = 1.62, CFI = 0.90, SRMR = 0.070 and TLI = 0.89. In order to obtain an ideal model it was determined that if covariances were added between some items (items 10 and 11) considering the modification indices, the estimated χ^2 value would drop, and this was the change that most significantly impacted the relevant drop. Since the contents of the relevant items were similar, covariance was added between the items in question and the analysis was repeated.

Upon subtracting the covariance attributed to the interconnected items of the scale, a recalculation of the fit indices was performed. The analysis yielded the following fit indices: RMSEA = 0.056, χ^2/sd = 1.54, CFI = 0.92, SRMR = 0.067, and TLI = 0.91. It was observed that the newly obtained fit indices surpassed those of the model assessed in the initial step. The scale's second stage CFA study was conducted after this analysis.

The results of the second-level CFA investigation produced the following fit indices: RMSEA = 0.060, χ^2/sd = 1.61, CFI = 0.91, SRMR = 0.081, and TLI = 0.90. According to the literature review, a measurement instrument is considered

reliable when the χ^2/sd ratio is below 5, RMSEA and SRMR are below 0.08, CFI and TLI values are above 0.90, and χ^2 is below 5 (Kline, 2011). To further substantiate the scale's reliability, Average Variance Extracted (AVE) and Composite Reliability (CR) values for the scale's factors were calculated after the CFA stage. The CR values were as follows: 0.86 for the scale's first factor, 0.88 for its second, 0.85 for its third, 0.80 for its fourth, and 0.86 for its fifth. The literature states that scales can be deemed dependable if their CR values are at least 0.70 (Hair et al., 2010). Viewing the AVE values in the developed scale, the first factor's values are 0.60, the second factor's values are 0.61, the third factor's values are 0.55, the fourth factor's values are 0.61, and the fifth factor's values are 0.60. The CR value established by the scales should be more than the AVE value, even if Raykov (1997) states that the AVE value shouldn't be less than 0.50. As a result, it was understood that the generated scale was reliable after reviewing the data.

Discussion, Conclusion and Future Research

The objective of this study is to formulate a valid and reliable measure assessing program accreditation attitudes among university students. The study provides an explanation of the step-by-step approach used to build the scale. To initiate the procedure, the researchers conducted a thorough literature analysis. Fifteen college students were requested to compose a paper on the topics of responsibility, quality, and accreditation to develop the theoretical framework. Remarkable expressions were converted into attitude expressions using content analysis of the collected data, and a pool of 40 items was produced. The expert panel provided feedback on the pertinent issues, and the draft form was pared down to 28 items. A pilot study using 64 students evaluated the comprehensibility of the items in the preliminary version, and many things were adjusted.

The implementation phase involved two different participant groups in this study. The first study, which involved 386 students from various accredited schools, found that the draft form's contents were categorized into five EFA components. The five-factor structure explains 65.11 percent of the variation, and the factors—education, management, physical infrastructure and facilities, scientific and social activities, and continuous development—all fully conform to the theoretical framework found in the literature. A high degree of reliability was indicated by the 28-item scale with five variables, which had an internal consistency coefficient of 0.93 Cronbach Alpha. In this particular context, it was observed that both the factor-specific context and the overall scale demonstrated a high level of reliability.

CFA was performed to validate the accuracy of the data collected subsequent to the EFA phase. A separate sample of 527 students, not partaking in the initial stage, engaged in the CFA. This step was taken to evaluate the validity of the theoretical framework derived from the EFA. At this point, all values were found to match the fit levels using the RMSEA, χ^2 /sd, CFI, SRMR, and TLI fit indices. Following comprehensive validity and reliability assessments, it is clear that students' perceptions regarding program accreditation at higher education institutions may be reliably determined using this scale, which is a reliable and valid measuring tool.

The literature study (Bakioğlu & Can, 2014; Can, 2012; Yamamoto & Can, 2013) showed that higher education in Türkiye has seen significant quantitative development in recent times. Nonetheless, there are still several shortcomings in higher education with regard to legislation, pedagogy, funding, administration, and standards, especially with regard to measurement and assessment. There are many expectations and obligations placed on students attending higher education institutions, particularly with regard to academic performance, institutional demands, and student affairs. Higher education services are deemed insufficient by students. This implies that establishing the requirements for higher education accreditation should be given top attention. Consequently, the establishment of accrediting bodies is required. Finding out how much higher education satisfies accreditation requirements is essential after these certification bodies and standards are set. To address this important requirement, Program Accreditation Attitude Scale, which was created in this study, can be utilized.

It might be said that research on certification and quality control in Turkish higher education has accelerated, particularly since the early 2000s. Regretfully, there isn't a comprehensive measurement tool in the literature that can indicate how higher education stakeholders see these studies. Positive perceptions of these research are necessary among higher education stakeholders in order to meet program and institutional accreditation goals. A validated and accurate measure was created specifically for this study to find out how well higher education students understood program accreditation. Despite extensive research on accreditation and quality assurance in higher education, reaching a consensus on the precise definition of program certification remains challenging. The concept of institutional or program accreditation in higher education has been defined, interpreted, and approached from various perspectives. Numerous assessment instruments have been formulated in this context to evaluate the perspectives of higher education students regarding accreditation (Can, 2016; Semerci, 2017). For example, while the Accreditation Perception scale developed by Semerci (2017) consists of quality assurance and quality assessment as factors, the Accreditation Standards Scale developed by Can (2016) includes factors aiming to determine accreditation

standards for distance education. However, the Program Accreditation Attitude Scale developed in this study has a more comprehensive feature with its five factors and is a suitable measurement tool to determine the accreditation perception of all students in higher education, regardless of the program.

Since research on quality assurance and accreditation in higher education cannot be limited to students alone, similar scale development studies on program accreditation can be carried out with faculty administrators and auditors working in accreditation. Additionally, scale development studies involving students, teachers, administrators, and evaluators working in accreditation can be conducted to determine how stakeholders in higher education interpret institutional accreditation.

References

Altbach, P. G., Reisberg, L., & Rumbley, L. E. (2009). *Trends in global higher education: Tracking an academic revolution*. UNESCO.

Bakioğlu, A., & Can, E. (2014). *Quality and accreditation in distance education*. Vize Yayıncılık.

Beecham, R. (2009). Teaching quality and student satisfaction: nexus or simulacrum?. *London Review of Education*, *7*(2), 135-146.

Byrne, B. M. (2013). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Routledge.

Can, E. (2012). *Açık ve uzaktan eğitimde akreditasyon yeterlilik düzeylerinin incelenmesi* [Doktora Tezi, Marmara Üniversitesi]. Ulusal Tez Merkezi.

Can, E. (2016). Open and distance education accreditation standards scale: Validity and reliability studies. *International Journal of Environmental and Science Education*, *11*(14), 6444-6455.

Coffey, K. R., & Millsaps, E. M. (2004). *A handbook to guide educational institutions through the accreditation process: The ABCs of accreditation*. Edwin Mellen Press.

CoHE (2019). *Yükseköğretimde akreditasyon, tanıma ve denklik hizmetleri daire başkanlığı* Retrieved November 14, 2023, from https://denklik.yok.gov.tr/akreditasyontanima-denklik-nedir

Comrey, A. L., & Lee, H. B. (2013). *A first course in factor analysis*. Psychology Press. https://doi.org/10.4324/9781315827506.

Dill, D. D. (2000). Is there an academic audit in your future? Reforming quality assurance in US higher education. *Change: The Magazine of Higher Learning*, *32*(4), 34-41. https://doi.org/10.1080/00091380009601746

Doğan, İ. (1999). Eğitimde kalite ve akreditasyon sorunu: Eğitim fakülteleri üzerine bir deneme. *Kuram ve Uygulamada Eğitim Yönetimi Dergisi*, *5*(4), 503-519.

Eaton, J. S. (2003). *Is accreditation accountable? The continuing conversation between accreditation and the federal government*. CHEA Monograph Series 2003, Number 1. Council for Higher Education Accreditation.

Feigenbaum, A. V. (1956). Total quality control. *Harvard Business Review*, 93-101.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics: and sex and drugs and rock "n" roll*,(4th Edition). Sage.

Frank-Stromborg, M., & Olsen, S. J. (Eds.). (2004). *Instruments for clinical health-care research*. Jones & Bartlett Learning.

George, D., & Mallery, M. (2010). *SPSS for windows step by step: a simple guide and reference, 17.0 update, (*10th Edition). Pearson.

Hair, J., Black, W. C., Babin, B. J., & Anderson, R. E. (2010) *Multivariate data analysis*, (7th Edition), Pearson Educational International.

Hämäläinen, K. (2003). Common standards for programme evaluations and accreditation? *European Journal of Education*, *38*(3), 291-300. https://doi.org/10.1111/1467-3435.00148

Harman, H. H. (1976). *Modern factor analysis*. University of Chicago press.

Harvey, L. (2004). The power of accreditation: Views of academics. *Journal of Higher Education Policy and Management*, *26*(2), 207-223. https://doi.org/10.1080/1360080042000218267

Harvey, L., & Green, D. (1993). Defining quality. *Assessment & Evaluation in Higher Education*, *18*(1), 9-34.

Hinkin, T. R. (1995). A review of scale development practices in the study of organisations. *Journal of Management*, *21*(5), 967- 988.

Hou, A. Y. C. (2011). Quality assurance at a distance: international accreditation in Taiwan higher education. *Higher Education*, *61*, 179-191. https://doi.org/10.1007/s10734-010-9331-9.

Ishikawa, K. (1984). Quality control in Japan. In *The Japanese approach to product quality* (pp. 1-5). Pergamon.

Johnson, D. M. (2018). Accreditation: How it works and is it working? In D. M. Johnson (Eds.), *The uncertain future of American Public higher education* (pp. 175-191). Palgrave Macmillan, Cham.

Juran, J. M. (1954). Universals in management planning and controlling. *Management Review*, *43*(11), 748-761.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31-46.

Kline, R. B. (2011). *Principles and practice of structural equation modelling*. The Guilford Press.

Kline, P. (2014). *An easy guide to factor analysis*. Routledge.

Knight, J. (2007) Cross-border higher education: Issues and implications for quality assurance and accreditation. In GUNI Series on the social commitment of universities 2: Higher education in the world (2007), *Accreditation for quality assurance – What is at stake*?, 134–46. Palgrave / MacMillan.

Kumar, P., Shukla, B., & Passey, D. (2020). Impact of accreditation on quality and excellence of higher education institutions. *Investigación Operacional*, *41*(2), 151-167.

Mandavkar, P. (2019). Reform process in higher education and need of assessment and accreditation. *Research Journal of India*, *6*(2), 1-4. https://doi.org/10.2139/ssrn.3472356.

Ngoc, N. M., Hieu, V. M., & Tien, N. H. (2023). Impact of accreditation policy on quality assurance activities of public and private universities in Vietnam. *International Journal of Public Sector Performance Management*, *10*, 1-15. https://doi.org/10.1504/IJPSPM.2022.10052573

Raykov, T. (1997). Estimation of composite reliability for congeneric measures. *Applied Psychological Measurement*, *21*(2), 173–184. https://doi.org/10.1177/01466216970212006

Schwarz, S., & Westerheijden, D. F. (2007). *Accreditation and evaluation in the* European *higher education area* (Vol. 5). Springer Science & Business Media.

Semerci, Ç. (2017). Akreditasyon algısı (AA) ölçeğinin geliştirilmesi: Geçerlik ve güvenirlik çalışması. *Bartin Üniversitesi Egitim Fakültesi Dergisi*, *6*(3), 1093-1104. https://doi.org/10.14686/buefad.332383.

Shrestha, N. (2021). Factor analysis as a tool for survey analysis. *American Journal of Applied Mathematics and Statistics*, *9*(1), 4-11. https://doi.org/10.12691/ajams-9-1-2.

Skolnik, M. L. (2010). Quality assurance in higher education as a political process. *Higher Education Management and Policy*, *22*(1), 1-20. https://doi.org/10.1787/hemp-22-5kmlh5gs3zr0.

Staub, D. (2019). Another accreditation? What's the point?' Effective planning and implementation for specialised accreditation. *Journal Quality in Higher Education*, *25*(2), 171-190. https://doi.org/10.1080/13538322.2019.1634342.

Tabachnick, B. G., & Fidell, L. S. (2018). *Using multivariate statistics*, *(*6th Edition). Pearson.

Veneziano, L., & Hooper, J. (1997). A method for quantifying content validity of health-related questionnaires. *American Journal of Health Behavior*, *21*(1), 67-70.

Worthington, R. L., & Whittaker, T. A. (2006). Scale development research: A content analysis and recommendations for best practices. *The Counseling Psychologist*, *34*(6), 806–838. https://doi.org/10.1177/0011000006288127.

Yamamoto, G. T. & Can, E. (2013). An analysis of distance education applications in Turkey. *International Journal of Global Education*. *2*(1), 14-20.

Yorke, M. (1999). Assuring quality and standards in globalised higher education. *Quality Assurance in Education*, 7(1), 14-24. https://doi.org/10.1108/09684889910252496.

Zeller, R. A. & Carmines, E. G. (1978). *Statistical analysis of social data*. Rand McNally College Publishing Company.

Appendix.
Program Accreditation Attitude Scale

	Strongly Disagree	Disagree	Undecided	Agree	Strogly Agree
1. I believe that many different teaching methods should be used in the teaching process in an accredited program.					
2. It is an important requirement that higher education students be trained as individuals with the qualifications required by the age in an accredited program.					
3. New educational technologies should be used in the teaching-learning processes in an accredited program.					
4. Current developments should be reflected in the programs of the accredited department.					
5. I think that students' active participation in classes should be supported in accredited programs.					
6. Students of the accredited program must have individual learning opportunities.					
7. Accredited programs must cooperate with different institutions and organizations in their education processes.					
8. It is an important requirement for the accredited program to have a modern measurement and evaluation system.					
9. I think administrators in accredited programs should treat students with respect.					
10. In accredited programs, administrators must identify problems and take precautions to increase students' academic performance.					
11. Administrators in accredited programs must take students' problems seriously.					
12. I think that administrators in accredited programs should give importance to students' opinions in the decision-making process.					
13. I think that administrators in accredited programs should attach importance to practical work and perceive it as an important part of the education.					
14. It is important that the accredited program has a wealth of facilities and infrastructure for social, cultural and sporting purposes.					
15. The accredited program must have a strong information technology and computer network infrastructure.					
16. It is an important requirement for students in accredited programs to have access to rich print and electronic resources.					
17. In accredited programs, teaching environments such as classrooms, workshops, laboratories, etc. must be adequate.					
18. In accredited programs, the equipment (computer, projector, experimental materials, machines) in teaching environments such as classrooms, workshops, laboratories, etc. must be sufficient.					
19. It is an important requirement for accredited programs to have environments where students can study.					
20. I think that food and beverage facilities should be sufficient for students in accredited programs.					
21. Accredited programs must regularly organize seminars, workshops and trainings for students.					
22. I think that social activities should be held regularly in accredited programs and these activities should be announced to students.					
23. I think that accredited programs should contribute to society with the scientific research they conduct.					
24. It is an important requirement that the student communities in which students will participate in scientific and social activities in accredited programs are sufficient in number and diverse.					
25. I think that accredited programs will be preferred by more and more students every year.					
26. Continuous development of institutional infrastructure is an important requirement in accredited programs.					
27. I think that my conceptual and technical skills will continue to develop during my education in the accredited program.					
28. I think the future of education is secured in accredited programs.					