Academic Staff Satisfaction Scale: Validity and Reliability Study[1]

Ertuğ CAN[2], Şenol SEZER[3]

Abstract

In this study, it was aimed to develop an Academic Staff Satisfaction Scale to determine the satisfaction of academic staff in higher education. For this purpose, this study was conducted in a survey model. The population of this study consists of academic staff working in a total of 14 public universities in seven different geographical regions in the 2020-2021 academic year. Two separate sampling groups were selected to perform exploratory and confirmatory factor analyses. Sample I consists of 394 participants for Exploratory Factor Analysis (EFA). Sample II consists of 262 academic staff for Confirmatory Factor Analysis (CFA). In the development process of the Academic Staff Satisfaction Scale, a comprehensive literature review was conducted, an item pool was created, and expert opinions were taken for the language consistency and content validity of the items. A draft scale consisting of thirty-eight items of 5-point Likert type was developed as a result of the pilot application to ensure the item validity of the raw scale. For construct validity, Kaiser-Meyer-Olkin (KMO) and Bartlett Sphericity test values and the Varimax method were used to find the sub-factors, factor loadings, and variance percentages of the scale. As a result of the Exploratory Factor Analysis (EFA), it was determined that the scale had a 5-factor structure. Varimax rotation technique and principal component analysis were used to determine the factor loadings of the scale items and to analyze whether the items explained more than one factor. According to the Confirmatory Factor Analysis (CFA) results, the structure consisting of five factors and twenty-five items was confirmed. The first and second sub-dimensions consist of seven items each, the third sub-dimension consists of five items, and the fourth and fifth sub-dimensions consist of three items each. After analyzing the item contents, the first sub-dimension was named as "academic development," the second sub-dimension as "managerial attitude," the third sub-dimension as "communication and cooperation," the fourth sub-dimension as "physical infrastructure." The fifth sub-dimension was named as "social support." As a result, it can be said that the Academic Staff Satisfaction Scale is a valid and reliable scale. The scale can be used to determine the satisfaction of academic staff in higher education institutions.

Keywords: Academic staff, satisfaction, scale development, higher education.

---

[2] Corresponding author: Assoc. Prof. Dr. Ertuğ Can, Kırklareli University, Türkiye, ertugcan@gmail.com, ORCID: 0000-0002- 0885-9042

3 Assoc. Prof. Dr. Şenol Sezer, Ordu University, Türkiye, senolsezer.28@gmail.com, ORCID: 0000-0001-8800-6017

Introduction

Job satisfaction is a pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values (Leung, Siu, & Spector, 2000). Since the late 1950s, researchers have theorized the nature of job satisfaction. The models were developed that explain differences in job satisfaction and conducted empirical studies to test their models (Lacy & Sheehan, 1997). Herzberg et al. (1959) developed one of the best-known job satisfaction theories. Herzberg's (1987) two-factor theory supposed that the phenomenon of job satisfaction and/or dissatisfaction is a function of two classes of variables named motivator and hygiene factors.

One of the most crucial factors of productivity and success in higher education is the satisfaction of academic staff. There are different factors affecting the satisfaction level of academic staff. In general, these factors arise from the structure of the organizational culture. These can be listed as follows: interpersonal relations, working environment (Baş & Ardıç, 2002; Shakirova & Nurakhmetova, 2015), level of meeting expectations (Douglas, Douglas, and Barnes, 2006), participation in decision-making (Nutt, 1992; Serinkan & Bardakçı, 2009, Spector, 1986), team management, fair task distribution (Baş & Ardıç, 2002), and cooperation with colleagues (Karaman & Altunoğlu, 2007). Some of these arise from personal characteristics such as age, title, being abroad, prestige, and free decision-making (Karaman & Altunoğlu, 2007). Also, some of them stems from the work itself. These are the wage (Emmert & Taher, 1992; Karaman & Altunoğlu, 2007; Koçoğlu, 2015), the quality of the work, the work area (Bilge et al., 2007), the academic environment and the attitude of colleagues (Baş, 2002; Koçoğlu, 2015). Additionally, administrative workload, academic workload, progress and evaluation, research funding (Eker et al., 2007), and flexible working hours (Öztürk & Şahbudak, 2015) can be seen among these factors. According to Murat and Çevik (2008), the primary factor affecting job satisfaction of academic staff is management and organizational structure. In addition, education, academic activities, physical and technical conditions, socio-cultural conditions, health and communication factors affect academic satisfaction.

In Karadağ and Yücel's (2020) study, according to academics the variables such as academic freedom, burnout among academics, support of academic culture by the university, satisfaction of academics with university administration affect satisfaction of academic staff. In addition, academics' commitment and dedication to the university, cooperation between academics, toxicity of relationships in the institutional environment, perceived teaching quality, discomfort with the political attitude of the university administration provide important data in determining academicians' general perspective on satisfaction in higher education. It can be stated that these variables directly affect the satisfaction level of academics. Academics in Türkiye experience academic and social negativities such as excessive bureaucracy, lack of coordination, limited initiative of the university, discrimination at the assigned university, appointment by centralized scoring, and compulsory service obligation (Er et al., 2019). According to Karaman and Altunoğlu (2007), there is a need to develop policies to maximize the job satisfaction levels of academics in Türkiye. As can be seen, the satisfaction of academicians is affected by varied factors. Undoubtedly, as in all professions, satisfaction in academics is of significant importance in terms of productive work, success and happiness.

Academic satisfaction in higher education institutions is also important for the success of universities and quality assessment processes. It is seen that the Higher Education Quality Board [YÖKAK] (2020) bases the institutional external evaluation and accreditation processes of universities on criteria such as quality assurance system, education and training, research and development, management system and social contribution. Under the heading of education and training, there are targets to increase the competence of academic staff, develop them, ensure their continuity, monitor and develop them. These goals are directly related to the satisfaction of academic staff. In this sense, it is seen that practices and policies aimed at ensuring the satisfaction of academics in quality and accreditation processes, which have become increasingly widespread in higher education in recent years, have begun to gain importance.

Başkan (2001) asserted that higher education in Türkiye does not receive enough attention from the society in achieving its goals. However, in order to provide a healthy working environment for

academics and therefore to enable academics to contribute more to students, people and society, the problems experienced by academics must be determined accurately and clearly (Doğan et al., 2020). The results of numerous studies reveal that the satisfaction levels of academics vary according to their titles. For example, according to the results of the research conducted by Öztürk and Şahbudak (2015), academicians' job satisfaction levels increase in direct proportion to their titles, and the highest job satisfaction scores were reported by academics with the title of professor. This result shows that the status of academics directly affects job satisfaction. According to the research results of Özdemir and Gürbüz (2020), while academics indicate the highest satisfaction scores in the 'infrastructure' dimension, this dimension is followed by management-organization, relations with stakeholders, and education dimensions. Academicians expressed their satisfaction in the 'research' sub-dimension with the lowest score. It was also found that academic staff with the title of professor were more satisfied with the research dimension than those with the title of associate professor. Similarly, academic staff with the title of professor were more satisfied with the infrastructure and relations with stakeholders than those with the title of research assistant.

The satisfaction of stakeholders should not be ignored as the key to sustainability in the strategic decisions of higher education institutions. According to Hamutoğlu et al., (2020), one of the most important elements of ensuring quality in the higher education process is to ensure the satisfaction of all stakeholders. In addition, the expectations of all stakeholders should be considered (Yüksel et al., 2018). Undoubtedly, one of the most important of these stakeholders is the academic staff. Doğan et al. (2020) found a moderate level job satisfaction and role conflicts in academic staff. It should not be overlooked that measuring the satisfaction level of academic staff and evaluating the results is a prominent issue in higher education. Ensuring the satisfaction of academic staff in line with their perspectives and expectations is of significant importance in terms of quality in higher education. For this purpose, valid and reliable measurement tools are needed to determine the satisfaction level of academic staff. In recent years, it has been observed that all higher education institutions have conducted intensive studies to determine the satisfaction level of academic staff (Toker, 2011; Karadağ & Yücel, 2020). Although numerous research in the employee satisfaction field have been related to profit-making industrial and service organizations, there has been a growing interest in the satisfaction of employees in higher education. The reason for this increasing interest is the reality that higher education institutions are labor intensive, and their budgets are predominantly devoted to personnel and their effectiveness is largely dependent on their staff (Chen et al., 2006; Enders & Teichler, 1997; Hickson & Oshagbemi, 1999; Okpara et al., 2005; Rhodes at al., 2007). Consequently, satisfaction of the employees in higher education institutions is an especially critical issue (Küskü, 2003). It is thought that the Academic Satisfaction Scale, whose validity and reliability studies were conducted using scientific methods in this research may be sufficient to meet this need. The aim of this research is to develop an "Academic Staff Satisfaction Scale" to determine the satisfaction level of academics with universities.

Method

This section includes the research model, population and sample, data collection tools, data collection process, and data analysis.

Research Model

A general survey model was used in the research. The general survey model is research conducted on the entire population, or a group of samples selected from the population to reach a general conclusion about a subject under investigation (Karasar, 2006, p.79). Survey model research is used to quantitatively describe specific aspects of a given population. These aspects often involve examining the relationships among variables. Second, the data required for survey research are collected from people and are, therefore, subjective. Finally, survey research uses a selected portion of the population from which the findings can later be generalized back to the population (Creswell, 2015; Leedy & Ormrod, 2010). In survey research, independent and dependent variables are used to

define the scope of study but cannot be explicitly controlled by the researcher. Before conducting the survey, the researcher must predicate a model that identifies the expected relationships among these variables. The survey is then constructed to test this model against observations of the phenomena (Freankel & Wallen, 2009). The population of the research consists of faculty members working at a total of 14 state universities in seven different geographies in the 2020-2021 academic year. The data were obtained electronically via Google Forms. Before collecting the data, ethics committee approval and research permission were obtained from the relevant units.

During the development process of the Academic Staff Satisfaction Scale, a comprehensive literature review was conducted, an item pool was created, and expert opinions were consulted for the language consistency and content validity of the items. Two different sample groups were selected to perform exploratory and confirmatory factor analyses of the Academic Staff Satisfaction Scale. The views of 394 faculty members were consulted for Exploratory Factor Analysis (EFA) and 262 faculty members for Confirmatory Factor Analysis (CFA).

Population and sample of the study

The demographic characteristics of the sample group within the scope of Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) are presented in Table 1.

Table 1. *Demographic Characteristics of Sample Group*

Variable	Feature	Exploratory Factor Analysis (EFA)		Confirmatory Factor Analysis (CFA)	
		n	%	N	%
Gender	Female	146	37	99	38
	Male	248	63	163	62
	Total	394	100	262	100
Vocation	Lecturer	314	80	205	78
	Teaching assistant	60	15	49	19
	Research assistant	20	5	8	3
	Total	394	100	262	100
Age	25-35 year	77	20	42	16
	36-45 year	169	43	123	47
	46-55 year	68	17	52	20
	56+	80	20	45	17
	Total	394	100	262	100
Seniority	1-10 years	225	57	155	59
	11-20 years	106	27	58	22
	21-30 years	46	12	34	13
	31 +	17	4	15	6
	Total	394	100	262	100

In Table 1, it is seen that the majority of the academic staff are male (EFA: 63%, CFA: 62%), and their positions are listed as lecturer, teaching assistant and research assistant. It is also seen that the age of the participants is distributed in the range of 36-45 years and their job seniority is in the range of 1-10 years. The sample group within the scope of Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) has similar demographic characteristics.

The population of this study consists of lecturers working in a total of fourteen state universities in seven different geographical regions in the 2020-2021 academic year. In scale development studies, it is of significant importance that the sample has the adequacy to represent the population. In accordance with this purpose, two different samples were formed for exploratory and confirmatory analyses procedures. Some criteria were taken as basis in determining the sample size. For example, Nunnally (1979) states that a sample group of 300 people is sufficient in scale development studies and that the sample size should be at least 10 times the number of items. Bryman and Cramer (2001)

suggest that the sample size should be at least 5 times the number of items, and Gorsuch (1983) suggests at least 15 times the number of items. In this study, there are a total of 38 items in the draft scale form. The sample size determined for Exploratory and Confirmatory Factor Analyses procedures were ensured to be at least 10 times the number of items in the scale. According to these criteria, Sample I consisted of 394 participants for the exploratory factor analysis. The sampling group (Sample I) was selected from the population by using simple random sampling methods. The Sample II consists of 262 participants for confirmatory factor analysis. The Sample II was also selected by simple random sampling method. According to 95% certainty level, 356 participants from a population of 5000 are theoretically sufficient for a population of different sizes (Anderson, 1990, as cited in Balcı, 2004). When it comes to scale development studies, Comrey and Lee (1992) consider 100 participants as a poor sample, 200 participants as an average sample, 300 participants as a good sample, 500 participants as a very good sample and 1000 participants as an excellent sample. According to these explanations, it can be stated that the sample size of this study is good.

Data collection tools and process

The Academic Staff Satisfaction Scale development process was carried out in the following stages. These stages are creating the item pool based on literature, consulting expert opinions for the language validity of each item and the content validity of the items in the scale, conducting pre-testing, factor analysis and reliability tests. First, a literature review was conducted to create an item pool. During the creation of the scale items, utmost care was taken to ensure that the items were clear and understandable, that each item was related to real life, and that each item expressed a single judgment. In this context, a draft 5-point Likert-type scale consisting of 38 items was developed. For the scale items, the expressions "Never" (1), "Rarely" (2), "Partly" (3), "Mostly" (4), "Always" (5) were used.

Expert opinion was consulted during the process of ensuring the content validity of the scale items. At this stage, the opinion of faculty members who are experts in the field of Educational Sciences (Measurement and Evaluation in Education, Educational Management) benefited. Büyüköztürk (2011) recommends evaluating the content validity of the scale items and making necessary corrections by obtaining expert opinion to guarantee the validity of the measurement tool. To evaluate the suitability and comprehensiveness of the raw scale items consisting of 38 items in the item pool prepared based on literature review, the opinions and suggestions of five faculty members working in the educational sciences departments of different universities were taken.

For the suitability of the scale items in terms of language and meaning, the opinions of language experts at Kırklareli and Ordu Universities were consulted, and the necessary adjustments were made to the scale items, considering the suggestions. In line with expert opinions and feedback received from academics, it was decided to write all scale items as positive expressions. During the pre-test phase of the scale, the draft scale consisting of 38 items was applied to 20 faculty members within the scope of the pilot application and the linguistic comprehensibility of the draft scale items was tested. As a result of the pilot application, it was understood that the scale items were understood and answered correctly by the faculty members.

After the pilot application, the scale items were digitally transferred via Google Forms and the opinions of academicians working at 12 different state universities were consulted. Data from 394 academics were analyzed for Exploratory Factor Analysis. Each data set collected via Google Forms was given an ID number and data was entered into the SPSS program. After checking whether the data was entered into the system completely, the data analysis process began. The arithmetic mean scores of the items in the sub-dimensions of the Academic Staff Satisfaction Scale and the entire scale were determined. The scoring for each judgment on the Likert rating scale is as follows: 4.21/5.00=Always; 3.41-4.20 Mostly; 2.61-3.40 Partly; 1.81-2.60 Rarely; 1.00-1.80 Never.

Data analysis

IBM SPSS Statistics 25 program was used for data analysis. At this stage, first of all, the construct validity of the "Academic Staff Satisfaction Scale" was evaluated. Both exploratory and confirmatory factor analysis were used to test construct validity. After determining that the Kaiser-Meyer-Olkin (KMO) and Bartlett Sphericity test values were suitable for analysis, Exploratory Factor Analysis was

applied to the data set. At this stage, the sub-factors of the scale, their factor loadings (eigenvalues) and the percentage of variance they explained were found by using the Varimax rotation method. At this stage, a scree plot was also created to facilitate determining the number of sub-dimensions of the scale. When any item is included in the scale, the rule is that its factor loading must be at least .40. According to Büyüköztürk (2011), for an item to belong to a factor, it is sufficient for the factor load value to be .45 or above. If necessary, this value can be reduced to .30. It is also stated that the difference between item factor loadings should be at least .10 in order to prevent overlap. In the last stage, the sub-dimension to which each scale item belonged and the factor loadings in that sub-dimension were determined. To test the construct validity of the scale, the correlation between the sub-dimensions and the correlation between the sub-dimensions and the total of the scale items were examined. Pearson Correlation Coefficient was used for this purpose. Internal consistency coefficients were obtained by dividing the items into two equal halves (Spearman & Guttman) and Cronbach's Alpha (α). Finally, the reliability coefficients of all items of the test were obtained by determining the item-total correlation.

As a result of Exploratory Factor Analysis (EFA), it was determined that the scale had a five-factor structure. Then, Confirmatory Factor Analysis (CFA) was applied to test the accuracy of the five-factor structure. Moreover, in determining which factor the variable groups obtained by Exploratory Factor Analysis are highly related to, Confirmatory Factor Analysis is used to determine whether the variable groups contributing to the number of 'k' factors are adequately represented by these factors (Özdamar, 2002).

Ethical approval of the research

Before the data were collected, the approval of the ethics committee was obtained with the decision of Ordu University Social and Human Sciences Research Ethics Committee dated 27/10/2020 and numbered 220-79.

Findings

Construct Validity

After analyzing the data set, the factor structure of the scale was tested. For this purpose, Kaiser-Meyer-Olkin (KMO) and Bartlett Sphericity tests were applied, and it was checked whether the values were appropriate to determine the factor structure of the scale. According to Çokluk, Şekercioğlu, and Büyüköztürk (2010) and Şencan (2005), the KMO test is a suitability test that tries to determine the correlations between variables and the suitability of factor analysis. Kaiser-Meyer-Olkin Measure of Sampling Adequacy test value varies in the range of 0-1. If the value of a variable is accurately estimated by other variables, the KMO value is 1.00. In cases where the value of a variable cannot be adequately estimated by other variables, it is recommended not to use factor analysis. Regarding the KMO values, it is stated that KMO test results will not be accepted if they are less than .50. KMO values 0.50-0.60 is bad, 0.61-0.70 is poor, 0.71-0.80 is moderate, 0.81-0.90 is good, and 0.90 and above is excellent. After determining that the values were suitable for analysis, (KMO=.89, Bartlett's Test of Sphericity X^2=4135,022; df=630, p<.001) the sub-factors of the scale, factor loadings and the variance values they explained were found using the Varimax method. Varimax rotation technique and principal component analysis were used to determine the factor loadings of the scale items and to analyze whether the items explained more than one factor. As a result of the Exploratory Factor Analysis (EFA), it was determined that the scale had a 5-factor structure.

Exploratory Factor Analysis (EFA)

To perform Exploratory Factor Analysis (EFA), the KMO value must be at least 0.60 and the Bartlett Sphericity test must be significant (Büyüköztürk, 2011, p.126). Data analysis showed that the KMO value was .891. These results verified that the data set was sufficient for factor analysis. Bartlett Sphericity test (X^2=4135,022, p<.001) was also found significant. According to these results, it was understood that the variable measured in the population parameter was multidimensional.

The variance values explained by the factors were given in Table 2.

Table 2. *Factors and Variance Values*

Factors	Eigenvalues	% of variance	Cumulative %
1	8.821	24.503	24.503
2	2.577	7.159	31.662
3	2.146	5.960	37.622
4	1.487	4.131	41.753
5	1.262	3.506	45.259

As seen in Table 2, Academic Staff Satisfaction Scale appeared in a 5-factor structure according to factor values. Moreover, the scree plot presented in Figure 1 confirms this result. The eigenvalue of the first factor is 8.821 and the percentage of variance it explains is 24.503%. The eigenvalue of the second factor is 2.577 and the percentage of variance it explains is 7.159%. In addition, the eigenvalue of the third factor is 2.146 and the percentage of variance it explains is 5.960%. Moreover, the eigenvalue of the fourth factor is 1.487 and the percentage of variance it explains is 4.131%. And finally, the eigenvalue of the fifth factor is 1.262 and the percentage of variance it explains is 3.506%. In total, the scale explains 45.259% of the variance of the trait measured in the population parameter. According to Exploratory Factor Analysis, the percentage of variance explained by a scale with high construct validity should be at least 40%. The result obtained in this study exceeds this criterion.

The scree plot is presented in Figure 1.
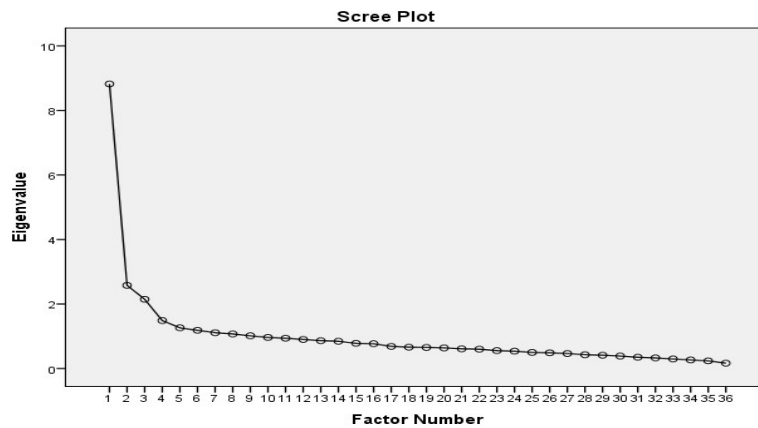
Figure 1

Accumulation graph

When the scree plot presented in Figure 1 is analyzed, the breaking points confirm that the scale should consist of 5 factors. After determining the factors of the scale, the factor loadings of the scale items were determined using Varimax rotation technique and principal component analysis, and it was analyzed whether the items explained more than one factor.

Item factor loadings are presented in Table 3.

Table 3. *Item Factor Loadings*

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
30	.737				
32	.735				
33	.654				
34	.652				
31	.647				
36	.570				
37	.471				
15		.715			
16		.593			
17		.590			

|				
24	.539			
21	.430			
23	.422			
19	.417			
26		.741		
25		.676		
27		.577		
28		.517		
29		.501		
9			.464	
8			.444	
13			.423	
5				.479
12				.458
2				.435

***p<.001

In Table 3, item factor loadings are given. As a result of factor analysis, a 5-factor scale structure including 25 items emerged. It was decided to remove items 35 and 38 from the scale set because they were overlapping. Items 1, 3, 6, 7, 10, 11, 14, 18, 20 and 22 were removed from the scale set because their factor loads were below the determined correlation value (factor load should be .40 and above). Table 3 shows that the first sub-dimension consists of seven items (30, 31, 32, 33, 34, 36, 37), and the second sub-dimension consists of seven items (15, 16, 17, 19, 21, 23, 24). In addition, the third sub-dimension consists of five items (25, 26, 27, 28, 29), the fourth sub-dimension consists of three items (8, 9, 13), and the fifth sub-dimension consists of three items (2, 5, 12). After analyzing the item contents, the first sub-dimension was named as "academic development", the second sub-dimension as "managerial attitude", the third sub-dimension as "communication and cooperation", and the fourth sub-dimension as "physical infrastructure". And finally, the fifth sub-dimension was named as "social support".

Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis is used to determine which factor groups of variables obtained through Exploratory Factor Analysis are highly related to and to confirm the factor structure of the scale (Özdamar, 2002). JASP Team 2020, JASP Version 0.14.1 was used for Confirmatory Factor Analysis.

The path diagram is presented in Figure 2.
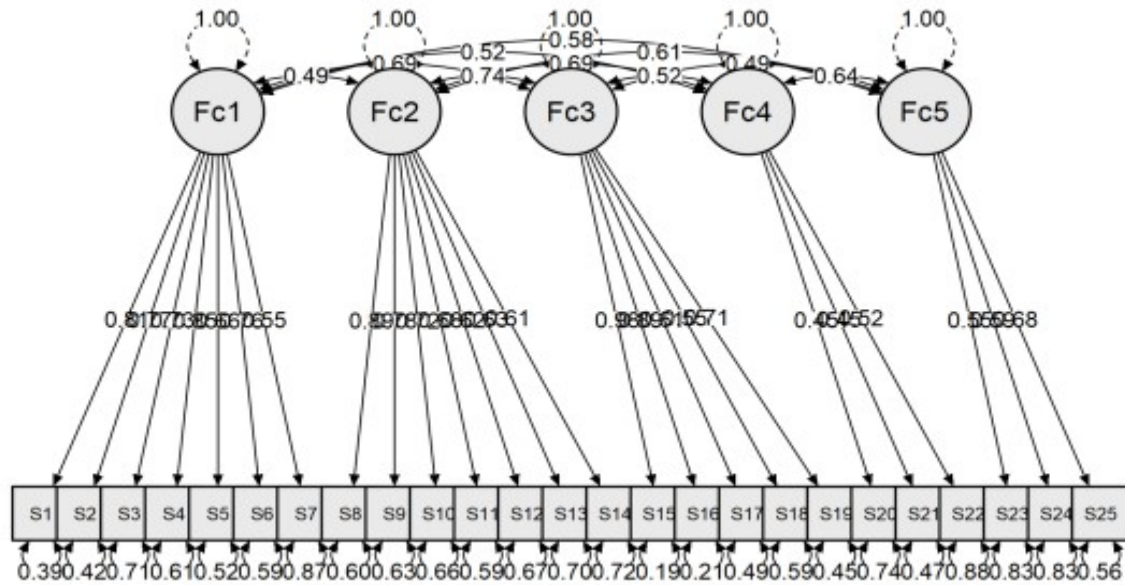
Figure 2

CFA Result Path Diagram.

The path diagram in Figure 2 shows the model variables, factor loadings, unexplained variance, and some goodness of fit values. After creating the path diagram, the significance of the standardized coefficients of the items belonging to the factors should first be checked. All items were found to be significant under the relevant factors and factor load values were analyzed. An error variance of 0.90 and above is a condition that weakens the fit of the model to the data, and it is stated that variables with very high error variance can be removed from the model (Çokluk et al., 2010; Kline, 2005). In addition, the factors loading between the factor and the related items are expected to be greater than 0.30. In Figure 2, it is observed that the path coefficients between items and factors vary between 0.49 and 0.74. In addition, the error variances of the items indicating the unexplained part of the variance are less than 0.90.

After examining the values in the path diagram, the goodness of fit indices produced must be examined in order to evaluate the model as a whole. Fit index values were given in Table 4.

Table 4. *Fit Index Values*

χ^2	sd	χ^2/sd	AGFI	GFI	CFI	IFI	NFI	NNFI	RMSEA	SRMR
677.35	460	1.47	0.84	0.88	0.91	0.92	0.84	0.90	0.065	0.054

In Table 4, it is seen that the χ^2 value is 677,35. The value χ^2/sd is 1.47. A value of 5 and below indicates that the model fit is good (Çokluk et al., 2010). In addition, it is stated that it would be more appropriate to evaluate the model in confirmatory factor analysis by considering multiple fit indices rather than depending on a single value (especially χ^2). Accordingly, when the fit indices of the scale are examined, it is seen that the AGFI value is 0.84 and the GFI value is 0.88. According to Byrne (1998), AGFI and GFI values above 0.80 indicate an acceptable fit. CFI (0.91), NFI (0.84) and NNFI (0.90) values also indicate a good fit. According to Çokluk et al. (2010), the good fit value for GFI, AGFI, CFI, NFI, NNFI, IFI, and RFI fit indices is 0.90 and the perfect fit value is 0.95 and above. Finally, RMSEA (0.065) and SRMR (0.054) values were examined, and these values were below 0.08, indicating a good fit. As a result, when all these fit index values obtained with CFA are evaluated together, it is seen that the 5-factor structure of the "Academic Personnel Satisfaction Scale", which consists of 25 items, generally fits the data well and the model is confirmed.

In the last stage of the construct validity procedures, the correlation between the subscale scores and the correlations between the subscales themselves were examined. Correlation coefficients were calculated according to the Pearson Correlation Coefficients formula. The correlation coefficients determined after this process are presented in Table 5.

Table 5. *Relationships between the Subscales of the Scale*

Sub-Dimension	1	2	3	4	5
1. Academic Development	-				
2. Managerial Attitude	.598**	-			
3. Communication and Cooperation	.770***	.821***	-		
4. Physical Infrastructure	.708***	.853***	.693**	-	
5. Social Support	.714***	.748***	.635**	.882***	-

***p<.001

In Table 5, it is seen that the correlation between the sub-dimensions of the scale is statistically significant at the p<.001 level. The correlation between the sub-dimensions is expected to be neither too high nor too low. A moderate correlation (r=.598, p<.001) was found between "academic development" and "managerial attitude" sub-dimension. A high-level correlation (r=.770, p<.001) was found between "academic development" and "communication and cooperation" sub-dimension. In addition, a high-level correlation (r=.708, p<.001) was found between "academic development" and "physical infrastructure" sub-dimension. Moreover, a high-level correlation (r=.714, p<.001) was found between "academic development" and "social support sub-dimension.

A high-level correlation (r=.821, p<.001) was found between "managerial attitude" and "communication and cooperation" sub-dimension. In addition, a high-level correlation (r=.853, p<.001) was found between "managerial attitude" and "physical infrastructure" sub-dimension. Moreover, a high-level correlation (r=748, p<.001) was found between "managerial attitude" and "social support" sub-dimension.

A moderate level correlation (r=.693, p<.001) was found between "communication and cooperation" and "physical infrastructure" sub-dimension. In addition, a moderate level correlation (r=.635, p<.001) was found between "communication and cooperation" and "social support" sub-dimension. And finally, a high-level correlation (r=.882, p<.001) was found between "physical infrastructure" and "social support" sub-dimension.

The findings show that the sub-dimensions do not overlap with each other and are not very independent from each other. According to these results, it can be said that the construct validity of the scale is high.

Findings Related to Reliability

Reliability analyses are aimed at calculating internal consistency coefficients. Internal consistency coefficients are calculated by two different methods. The first is the technique of dividing a data set into two halves (Spearman-Brown, Guttman) and the other is Cronbach's Alpha (α) Coefficient, which is calculated based on the variance of each item. The internal consistency coefficients of the Academic Staff Satisfaction Scale were calculated with two different methods. The Cronbach Alpha Coefficient of the total test is α=.92, the Spearman-Brown Coefficient is .81 and the Guttman Coefficient is .780.

Conclusion, Discussion and Recommendations

As a result of the research, a 5-factor "Academic Staff Satisfaction Scale" consisting of 25 items was developed. The sub-dimensions of the scale were named as "academic development, managerial attitude, communication and cooperation, physical infrastructure, and social support" as a result of the analyses AFA and EFA. The dimensions of the scale, whose validity and reliability were established through Exploratory Factor Analysis and Confirmatory Factor Analysis, and the factor loadings of the 25 items are presented in Appendix B.

There are different scale development studies on the subject. Tekindal et al. (2022) tried to determine the satisfaction of academic staff in the sub-dimensions of management and organization, education-training, scientific activities, administrative and social services, university-community relations,

institutional belonging, distance education and institutional website. Anıl et al. (2017) examined the factors affecting job satisfaction of academics in higher education in six dimensions as "administrative and organizational structure", "institutional and academic activities", "social, cultural, health services", "physical and technical conditions", "educational activities" and "internal communication".

Since 2015, higher education institutions in Turkey have been regularly measuring the satisfaction of academic staff within the scope of "Quality Assurance in Higher Education Studies". However, there is no standardized measurement tool to measure the satisfaction of academic staff in higher education institutions. Therefore, the "Academic Staff Satisfaction Scale" can be used nationally and internationally to determine the satisfaction of academic staff in higher education institutions. Thus, it can contribute to quality improvement studies in higher education. Qualitative research can be conducted to obtain more in-depth data on academic staff satisfaction in higher education.

Research and Publication Ethics

In this study, all rules specified in the "Directive on Scientific Research and Publication Ethics of Higher Education Institutions" were followed. None of the actions specified under the second section of the Directive, "Actions Contrary to Scientific Research and Publication Ethics", have been carried out.

Disclosure Statements

1. Contribution rate statement of researchers: First Author 50%, Second Author 50%

2. No potential conflict of interest was reported by the author.

Credit authorship contribution statement

Ertuğ CAN: Writing – review & editing, data collection, data analysis, Methodology, Conceptualization

Şenol SEZER: Writing – review & editing, data collection, data analysis, Methodology, Conceptualization

References

Anıl, N. K., İçli, G. E., and Kurtuldu, G. (2017). Akademisyenlerin iş memnuniyetini etkileyen faktörlerin değerlendirilmesi: Kırklareli Üniversitesi örneği. *2. Uluslararası Yükseköğretimde Mesleki Eğitim ve Öğretim Sempozyumu (ISVET-2017),* Bildiri özetleri içinde s.81, 12-14 Ekim, Ankara

Balcı, A. (2004). *Sosyal bilimlerde araştırma, yöntem, teknik ve ilkeler.* Ankara: Pegem Yayıncılık.

Baskan, G. A. (2001). Türkiye de yükseköğretimin gelişimi. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi, 21*(1), 21-32.

Baş, T., and Ardıç, K. (2002). Yükseköğretimde iş tatmin ve tatminsizliği. *İktisat, İşletme ve Finans, Eylül*, 72-81.

Baş, T. (2002). Öğretim üyelerinin iş tatmin profillerinin belirlenmesi. *Dokuz Eylül Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 7*(2), 19-37.

Bilge, F. Akman, Y., and Kelecioğlu, H. (2007). Öğretim elemanlarının iş doyumlarının incelenmesi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 32*, 32-41.

Büyüköztürk, Ş. (2011). *Sosyal bilimler için veri analizi el kitabı: İstatistik, araştırma deseni SPSS uygulamaları ve yorum.* Ankara: Pegem Akademi Yayıncılık.

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

Byrne, B. M. (1998). *Multivariate applications book series. Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Lawrence Erlbaum Associates Publishers.

Chen, S. H., Yang, C. C., Shiau, J. Y. and Wang, H. H. (2006). The development of an employee satisfaction model for higher education. *The TQM Magazine, 18*(5), 484-500.

Comrey, A. L., and Lee, H. B. (1992). *A first course in factor analysis.* Hillsdale, New Jersey: Lawrence Erlbaum.

Çokluk, Ö., Şekercioğlu, G., and Büyüköztürk, Ş. (2010). *Sosyal bilimler için çok değişkenli istatistik*. Ankara: Pegem Akademi.

Creswell, J. W. (2015). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research.* New York: Pearson.

Doğan, A., Demir, R., and Türkmen, E. (2020). Türkiye'deki akademisyenlerin iş tatmini, rol stresi ve işten ayrılma niyetlerinin incelenmesi. *Yükseköğretim Dergisi*, *10*(3), 340-355. doi:10.2399/yod.19.636539

Douglas, J., Douglas, A., and Barnes, B. (2006). Measuring student satisfaction at a UK University. *Quality Assurance in Education, 14*(3), 251-267.

Eker, M., Anbar, A., and Karabıyık, L. (2007). Job satisfaction of academicians in turkey and the factors affecting job satisfaction. *The Journal of Industrial Relations and Human Resources, 9*(4), 66-90.

Emmert, M. A., and Taher, W. A. (1992). Public sector professionals: The effects of public sector jobs on motivation, job satisfaction and work involvement. *American Review of Public Administration, 22*, 37-48.

Enders, J. and Teichler, U. (1997). A victim of their own success? Employment and working conditions of academic staff in comparative perspective. *Higher Education, 34,* 347-372.

Er, E., Kılınç, A. Ç, and Öğdem, Z. (2019). Türk yükseköğretiminde öğretim elemanı yetiştirmeye yönelik bir değerlendirme: Öğretim Üyesi Yetiştirme Programı (ÖYP) örneği. *Başkent Üniversitesi Eğitim Dergisi, 6*(2), 304-312.

Freankel, J. R., & Wallen, N. E. (2009). *How to design and evaluate research in edition*. (7th ed.). Boston: McGraw-Hill.

Gorsuch, R. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Hamutoğlu, N. B., Ünveren-Bilgiç, E. N., and Elmas, M. (2020). Yükseköğretimde kalite süreçleri: İnsanî gelişme endeksi raporlarına göre ülkelerin karşılaştırmalı olarak incelenmesi. *Yükseköğretim Dergisi*, *10*(1), 112-124. doi:10.2399/yod.19.521343.

Herzberg, F., Mausner, B. and Synderman, B. B. (1959). *The motivation to work*. New York: NY Wiley.

Herzberg, F. (1987), One more time: How do you motivate employees? *Harvard Business Review*, *65*(5), 109-120.

Hickson, C., and Oshagbemi, T. (1999). The effect of age on the satisfaction of academics with teaching and research. *International Journal of Social Economics, 26*(4), 537-44.

Karadağ, E., and Yücel, C. (2020). *Akademik ekoloji: Akademisyenlerin gözünden üniversiteler 2020*. Üniar Yayınları.

Karaman, F., and Altunoğlu, A. E. (2007). Kamu üniversiteleri öğretim elemanlarının iş tatmini düzeyini etkileyen faktörler. *Yönetim ve Ekonomi, 14*(1), 109-120.

Karasar, N. (2006). *Bilimsel araştırma yöntemi*. Ankara: Nobel Yayın Dağıtım.

Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York: The Guilford Press.

Koçoğlu, C. M. (2015). Akademik personelin iş tatmin düzeylerinin ölçülmesi. *Ordu Üniversitesi Sosyal Bilimler Enstitüsü Sosyal Bilimler Araştırmaları Dergisi, 5*(13), 16-35.

Küskü, F. (2003). Employee satisfaction in higher education: The case of academic and administrative staff in Turkey. *Career Development International, 8*(7), 347-56.

Lacy, F. J. and Sheehan, B. A. (1997). Job satisfaction among academic staff: An international perspective. *Higher Education*, *34*(3), 305-322.

Leedy, P. D., & Ormrod, J. E. (2010). *Practical research: Planning and design.* (9th ed.). Boston: Pearson Educational International

Leung, T., Siu, O., and Spector, P. (2000). Faculty stressors, job satisfaction, and psychological distress among university teachers in Hong Kong: The role of locus of control. *International Journal of Stress Management, 7* (2), 121-38.

Murat, G., and Çevik, E. İ. (2008). İç paydaş olarak akademik personel memnuniyetini etkileyen faktörlerin analizi: Zonguldak Karaelmas Üniversitesi Örneği. *ZKÜ Sosyal Bilimler Dergisi, 4*(8),1-18.

Nunnally, J.C. (1979). *Psychometric theory*. New York: McGraw Hill.

Nutt, P. C. (1992). Helping top management avoid failure during planned change. *Human Resource Management, 31*, 319-344.

Okpara, J. O., Squillace, M., and Erondu, E.A. (2005). Gender differences and job satisfaction: A study of university teachers in the United States. *Women in Management Review, 20*(3), 177-90.

Özdamar, K. (2002). *Paket programlar ile istatistiksel veri analizi: Çok değişkenli analizler*. Eskişehir: Kaan Kitabevi.

Özdemir, A., and Gürbüz, A. (2020) Akademisyenlerin Memnuniyet Düzeylerinin Belirlenmesi. *Uluslararası İnsan Çalışmaları Dergisi, 3*(5), 162-178. doi.org/10.35235/uicd.688127

Öztürk, M., and Şahbudak, E. (2015). Akademisyenlikte iş doyumu. *Uluslararası Sosyal Araştırmalar Dergisi, 8*(40), 494-501.

Rhodes, C., Hollinshead, A. and Nevill, A. (2007). Changing times, changing lives: A new look at job satisfaction in two university Schools of Education located in the English West Midlands. *Research in Post-Compulsory Education, 12*(1), 71-89.

Serinkan, C., and Bardakçı, A. (2007). Pamukkale Üniversitesi'nde çalışan öğretim elemanlarının iş tatminlerine ilişkin bir araştırma. *Karaman, Selçuk Üniversitesi Karaman İktisadi ve İdari Bilimler Fakültesi Dergisi, 12*, 152-163.

Shakirova, S., and Nurakhmetova, L. (2015). Motivation for research and job Satisfaction of the University Staff: Are They Interconnected?, *European Conference on Intellectual Capital-ECIC*, 286-297.

Spector, P. E. (1986). Perceived control by employees. *Human Relations, 11*, 1005-1016.

Şencan, H. (2005). *Sosyal ve davranışsal ölçümlerde güvenirlik ve geçerlik*. Ankara: Seçkin Yayıncılık.

Tekindal, M. A., Bulduklu, Y., Çoban, B., Köse, S. and Elmalı, F. (2022). Yükseköğretim kurumları memnuniyet ölçümü için yapısal form: İKÇÜ memnuniyet anketi geçerlik-güvenirlik analizleri. *Yükseköğretim Dergisi, 12*(1), 168-186. https://doi.org/10.2399/yod.21.869853

Toker, B. (2011). Job satisfaction of academic staff: An empirical study on Turkey. *Quality Assurance in Education, 19*(2), 156-169.

YÖKAK. (2020). *YÖKAK alt ölçütler rehberi*. https://yokak.gov.tr/Common/Docs/Site web adresinden 10 Ekim 2023 tarihinde erişilmiştir.

Yüksel, C. A., Bilgen, İ., and Yaşbay-Kobal, H. (2018). Yükseköğretim kurumlarında memnuniyet kavramı: Kuramsal bir derleme. *İnsan ve Toplum Bilimleri Araştırmaları Dergisi, 7*(3), 1582-1591.

EK 1. AKADEMİK PERSONEL MEMNUNİYET ÖLÇEĞİ

Boyut	Sıra		Faktör Yükü
Akademik Gelişim	1	Araştırma ve uygulama merkezleri yeterlidir	.737
	2	Akademik personel sayısı yeterlidir	.735
	3	Lisansüstü eğitim altyapısı yeterlidir	.654
	4	Kütüphane akademik gelişimim açısından yeterlidir	.652
	5	Yurtiçi/yurtdışı araştırma projeleri özendirilir	.647
	6	Akademik yükselme ölçütleri yeterli ve adildir	.570
	7	Çalıştığım birimdeki idari personel sayısı yeterlidir	.471
Yönetsel Tutum	8	Yönetim tarafsız ve adildir	.715
	9	Kararlar birlikte alınır	.593
	10	Ödüllendirme politikaları adildir	.590
	11	Sorunlar kısa sürede çözülür	.539
	12	Görüş ve önerilerim dikkate alınır	.430
	13	Alınan kararlar yerinde ve isabetlidir	.422
	14	Çalışanlar arasında sağlıklı bir iletişim vardır	.417
İletişim ve İşbirliği	15	Paylaşma ve dayanışma kültürü egemendir	.741
	16	Çalışanlar çözümün parçasıdır	.676
	17	Çalışma ortamı güvenlidir	.577
	18	İdari personelin tutum ve davranışları naziktir	.517
	19	Gelişmelerden haberdar edilirim	.501
Fiziksel Altyapı	20	Kampus ortamı sakin ve huzurludur	.464
	21	Isıtma altyapısı yeterlidir	.444
	22	Çalışma odaları yeterlidir	.423
Sosyal Destek	23	Servis/ulaşım hizmetleri yeterlidir	.479
	24	Spor tesisleri yeterlidir	.458
	25	Sosyal ve kültürel etkinlikler yeterlidir	.435

Appendix B. The scale (In English): ACADEMIC STAFF SATISFACTION SCALE

Dimension	No		Factor Loading

Academic Development	1	Research and application centers are adequate	.737
	2	The number of academic staff is adequate	.735
	3	Graduate education infrastructure is adequate	.654
	4	The library is adequate for my academic development	.652
	5	Domestic/international research projects are encouraged	.647
	6	Academic promotion criteria are adequate and fair	.570
	7	The number of administrative staff in my unit is adequate	.471
Managerial Attitude	8	Management is impartial and fair	.715
	9	Decisions are taken together	.593
	10	Reward policies are fair	.590
	11	Problems are solved in a short time	.539
	12	My opinions and suggestions are considered	.430
	13	Decisions taken are appropriate and accurate	.422
	14	There is a healthy communication between employees	.417
Communication and Cooperation	15	A culture of sharing and solidarity prevails	.741
	16	Employees are part of the solution	.676
	17	The working environment is safe	.577
	18	Attitudes and behaviors of administrative staff are courteous	.517
	19	I will be informed about developments	.501
Physical Infrastructure	20	Campus environment is calm and peaceful	.464
	21	Heating infrastructure is adequate	.444
	22	Study rooms are adequate	.423
Social Support	23	Service/transportation services are adequate	.479
	24	Sports facilities are adequate	.458
	25	Social and cultural activities are adequate	.435