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# Reliability and Validity Study of the Healthcare Workers' Multidimensional Glocal Leadership Scale

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## Abstract

*The concept of leadership is as old as history of humanity. Until today, different definitions have been made about the concept of leadership, but a common concept or definition could not be created because the researchers defined it from their own perspective. We can say that leadership is the act of an individual or a group by influencing and directing the behaviours and activities of people around to achieve common goals. As the presence of a good leader is important in every organization, it is also an indispensable concept in medical organizations where human health is essential. This is a descriptive study carried out to determine the levels of demonstrating glocal leadership behaviours of pre-hospital emergency healthcare professionals and national medical rescue team personnel, and to determine whether these personnel show different levels of glocal leadership according to some demographic features (age, gender, professional seniority, education level). Within this aim, "Healthcare Workers' Multidimensional Glocal Leadership Scale" consisting of 29 items in 4 sub-dimensions and "Information Form" to determine the demographic characteristics of the study group were used as data collection tools. The scale form was delivered to the participants personally by the researchers, and the data was collected by face-to-face interviews. The participants were informed that participation was based on voluntariness and the answers given would be used only for scientific purposes. The participants were also informed that they could leave the study any time and made to sign the "Volunteer Participation Form". The study group consisted of pre-hospital emergency healthcare services, emergency call center healthcare personnel and 20th region UMKE personnel in Edirne province.*

**Keywords:** *leadership, glocal leadership, healthcare workers, scale development*

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# Sağlık Çalışanları Çok Boyutlu Glokal Liderlik Ölçeğinin Geçerlilik ve Güvenirlilik Çalışması

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## Öz

*Liderlik kavramı tarihi, insanlığın tarihi kadar eskidir. Günümüze kadar liderlik kavramı hakkında farklı tanımlamalar yapılmış ancak araştırmacıların kendi bakış açısıyla tanımlaması sebebiyle ortak bir kavram ya da tanım oluşturulamamıştır. Liderlik, bir birey veya grubun ortak amaçlarını gerçekleştirebilmesi için çevresindeki kişilerin davranışlarını ve/veya faaliyetlerini etkilemesi ve yönlendirmesidir diyebiliriz. Her organizasyonda iyi bir liderin varlığı önemli olduğu gibi sağlık organizasyonlarında da vazgeçilmezdir. Hastane öncesi acil sağlık hizmeti sunan sağlık çalışanları ve ulusal medikal kurtarma ekibi personeli glokal liderlik davranışlarını gösterme düzeyleri ve bu personelin demografik özelliklere (yaş, cinsiyet, kıdem, eğitim seviyesi) göre glokal liderlik davranışlarını gösterme düzeylerinin farklılaşma gösterip göstermediğini belirlemek amacıyla yürütülmüş olan bu çalışma betimsel bir çalışmadır. Bu amaçla, 4 alt boyut ve toplamda 29 maddeden oluşan ''Sağlık Çalışanları Cok Boyutlu Glokal Liderlik Ölçeği'' ve çalışma grubunun demografik özelliklerinin saptanması amacıyla ''Bilgi Formu'' veri toplama araçları olarak kullanılmıştır. Ölçek formu katılımcılara bizzat araştırmacılar tarafından ulaştırılmış, veriler yüz yüze görüşme yöntemiyle toplanmıştır. Katılımcılara araştırmanın gönüllülük esasına dayandığına ve verilen cevapların sadece bilimsel amaçlarla kullanılacağına ilişkin bilgiler verilmiştir. Ayrıca katılımcılara istedikleri zaman araştırmadan ayrılabilecekleri belirtilerek "Gönüllü Katılım Formunu" imzalamaları sağlanmıştır. Araştırmanın çalışma grubunu Edirne ili hastane öncesi acil sağlık hizmetleri, acil çağrı merkezi sağlık personeli ve 20'nci bölge UMKE personeli oluşturmuştur.*

**Anahtar Kelimeler:** *liderlik, glokal liderlik, sağlık çalışanları, ölçek geliştirme*

## Introduction

Liberalization process that accelerated in all areas towards the end of the 1980s, turned into a new process called "globalization" with the advances and developments at an unprecedented pace in the world in the early 1990s (Şimşeker and Ünsar, 2008). Globalization, what has become an indispensable element of the new world order, provided a basis for a change where regional formations may become universal and/or universal that universal events can affect regional formations (Giddens, 2004). Regardless of how it is considered, it is clear that globalization has positive or negative multidimensional effects with individual and institutional dimensions. Predicting in what way, at what level and how these effects will occur is only possible with leaders taking global and local responsibilities (Erçetin, 2007). In other words, there is a need for glocal (globe-local) leaders who are able to eliminate and remove possible negative effects of globalization in today's world. Glocal leadership approach can be considered as a modern and contemporary approach emerged depending on this need.

The capitalist world order started to be effective with the industrial revolution, led all countries to open their industries to other countries. This situation prompted countries to become globalized. However, the necessity of adapting global thinking to local has emerged over time and the concept of "glocal" was born (Akbaşlı, Erçetin and Yüce, 2019). Glocal leadership is relatively a new concept in the literature and was first mentioned by Begley and Boyd (2003). Begley and Boyd (2003) defined glocal leadership as a leadership which covers both global and local thinking. In another saying, glocal leadership is the shaping of global leadership skills in accordance with local requirements (Erçetin et al., 2017). According to Kohondker (2004) glocal leadership approach is summarized as "think global, act local". As a new form of leadership, glocal leadership emphasizes the effective application of globalization with local differences (Gök, 2014). In the literature, glocal leadership has been studied in the framework of various dimensions such as; "political literacy, cultural literacy, economic literacy, information literacy, spiritual literacy, pedagogical literacy, religious literacy, (Brooks and Normore, 2010); global literacy, ethics, nationality, vision, shared leadership (Erçetin and Hamedoğlu, 2007); having a vision, managing social networks, global literacy and local literacy (Erçetin, Potas, Açıkalın and

Kısa, 2011). In this study, glocal leadership approach is addressed in the dimension of Erçetin et al. (2011). The dimension of having a vision in glocal leadership involves the leader's ability to mobilize his environment with his individual characteristics, to keep a balance between as-is and to-be, and the capacity to take risks (Erçetin, 2007). A visionary leader, not content with the present, predicts beyond what exists and different scenarios for the future (Hwang, Khatri and Srinivas, 2005). Visionary leaders are equipped with personality traits such as imagination, insight, authenticity, perseverance, risk, patience and optimism (Pathardikar & Sahu, 2014). The dimension of managing social networks is relationship patterns that occur within an organization or community. Leaders eliminate the factors that prevent the communication and interaction by managing social networks effectively and contribute to information sharing (Çakmaklı, 2011). The dimension of global literacy emphasizes the ability to comprehend, make sense, and recognize current events experienced. Global literacy desires for a human profile that is not foreign to his own culture and other cultures, and accept differences. (Çakmak and Bulut, 2019; Yoon, Yol, Haag and Simpson, 2018). Local literacy, on the other hand, means being sensitive to local values, characteristics, conditions and priorities. The leaders whose local leadership is strong care for the cultural needs and are sensitive towards the society they live in.

In today's organizations, glocal leadership contributes to the universal and local adaptation processes of organizations. From this perspective, just as it is in all organizations, existence of local leadership in health organizations is extremely important. It can be claimed that with the COVID-19 pandemic process first seen in Wuhan, China, and then spread all over the world in late December-2019 glocal leaders are needed in the management of health organizations. For the COVID-19 pandemic obliges the efficient and timely delivery of health services more than ever. Thus, as in other organizations, in health organizations it can be said that multidimensional glocal leadership practices are necessary to provide the health services in place and on time. Some measurement tools are needed to measure multidimensional glocal leadership behaviours of health workers. So, this current research is expected to meet this need.

In the 21st century glocal leadership is predicted to be a determinant in the management of health organizations. However, although there has been

an increase in the international and local studies about glocal leadership in the field of education in recent years (Adifatoni, 2016; Akbaşlı et al., 2019; Brooks and Normore, 2010; Canbolat, Mumcu, Şahan, Öcal and Akdoğan, 2018; Çakmaklı, 2011; Erçetin and Hamedoğlu, 2007; Erçetin et al., 2011; Erçetin et al., 2017; Francois, 2015; Gök, 2014; Weber, 2007), no studies on glocal leadership in health organizations been encountered, and this can be considered as a gap in the literature. This is the reason why this study is constructed as a scale development study aiming to raise awareness and contribute to the literature.

In the context of this general framework, the following questions were tried to be answered in the present study;

- Is "Healthcare Workers' Multidimensional Glocal Leadership Scale" a psychometrically suitable and valid scale which can be used in health organizations?
- Is "Healthcare Workers' Multidimensional Glocal Leadership Scale" a reliable scale?

## Method

This part of the research presents the information about the model of the research, the study group, the stages of data collection tool development, data collection and data analysis.

### *Model of the research*

The research is a scale development study designed in descriptive survey model. Descriptive survey model is a research model that aims to describe a situation as it exists without any intervention or change (Erçetin and Açıkalın, 2020; Karasar, 2009).

### *Study group*

The study group of the research is consisted of 232 232 healthcare workers working in various health units in Edirne city centre. In scale development studies it is stated that having the number of participants between 200 and 300 (Comrey & Lee, 1992) or that the sample size should be at least five times the number of items (Bryman & Cramer, 2001). In this regard, the sample size in this study (n=232) can be accepted as adequate. Exploratory

factor analysis (EFA) and confirmatory factor analysis (CFA) were carried out on the same sample group and personal information about the participants is given in Table 1.

***Table 1. Personal information about the participants (n=232)***

| Variable | Level | n | % |
|---|---|---|---|
| **Gender** | Female | 114 | 49.1 |
| | Male | 118 | 50.9 |
| **Title** | Doctor | 4 | 1.7 |
| | Nurse | 48 | 20.7 |
| | Healthcare officer | 30 | 12.9 |
| | Healthcare technician | 45 | 19.4 |
| | Healthcare operator | 105 | 45.3 |
| **State of education** | High school | 87 | 37.5 |
| | Associate degree | 37 | 15.9 |
| | Graduate | 88 | 37.9 |
| | Postgraduate | 20 | 8.6 |
| **Professional seniority** | 1-5 years | 35 | 15.1 |
| | 6-10 years | 117 | 50.4 |
| | 11-15 years | 59 | 25.4 |
| | 16 years and over | 21 | 9.1 |

As seen in Table 1 of the participants in this study; 49.1% (n=114) is female, 50.9% (n=118) is male; 1.7% (n=4) is doctor, 20.7% (n=48) is nurse, 12.9% (n=30) is healthcare officer, 19.4% (n=45) is healthcare technician, 45.3% (n=105) is healthcare operator; 37.5% (n=87) is a graduate of high school, 15.9% (n=37) is associate degree, 37.9% (n=88) is graduate, 8.6% (n=20) is postgraduate; 15.1% (n=35) has 1-5 years of experience, 50.4% (n=117) has 6-10 years of experience, 25.4% (n=59) has 11-15 years of experience and 9.1% (n=21) has 16 years or over experience.

### *Stages of Developing the Data Collection Tool*

In order to develop a measurement tool to measure the multidimensional glocal leadership traits of healthcare workers, a draft scale with 38 items in Likert type was prepared. Relevant local and international literature was used to create the item pool of the scale and attention was for the items to include "having a vision, managing social networks, global literacy and local literacy" dimensions. Draft scale items were reduced to 33 by excluding the items with similar meanings or having other properties than ex-

pected to be measured in accordance with the recommendations of language and field experts.

The scale draft form consisting of 33 items was applied to a group of 45 participants within the scope of the pilot application. After the pilot application, it was detected that some participants did not answer some of the scale items because they had difficulty in understanding. Suggestions and feedback obtained through the pilot application were noted by the researchers and experts' opinion was consulted. Regarding the opinions of the scholars in fields of management, health management and assessment and evaluation, items were revised and the scale -with 29 items- was given its last form for the main application. The scale was named "Healthcare Workers' Multidimensional Glocal Leadership Scale" and was formed in 4 point Likert with the following options; (1) I never try to do it, (2) I sometimes try to do it, (3) I frequently try to do it if it is within possibilities, (4) I always push the limits to do it. Data obtained from 232 healthcare workers who fully and completely answered the scale items were included in the analyses.

### *Data Collection*

Before starting the fieldwork of the research, necessary approvals and ethics committee permissions were obtained from relevant official institutions. Scale form was delivered to participants by the researchers in person. Participants were informed that the taking part in this research is voluntary and the answers given will only be used for scientific purposes. Additionally, the participants were informed that they could leave the study at any time and they were made to sign the "Volunteer Participation Form". During the application, the existence of at least one researcher with the participants was provided.

### *Data Analysis*

The data set of the scale was first converted to *z* standard scores, the values (n=25) out of -3 and +3 range were excluded from data analysis. Missing values in the data set have been corrected by assigning the serial average. Following the identification of Missing values and outliers, it was determined that the coefficients showed normal distribution by examining the kurtosis and skewness values of the research data. In order to test the con-

struct validity of "Healthcare Workers' Multidimensional Glocal Leadership Scale", exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were carried out.

In EFA principal component analysis and varimax vertical rotation method, and in CFA maximum likelihood analysis were performed. Prior to EFA Kaiser-Meyer-Olkin (KMO) coefficient and Barlett were accounted to determine whether research data is suitable for factor analysis. In EFA, some criteria were taken into consideration such as elimination of items that do not measure the same structure, common factor variance, item eigenvalues at least 1, explained variance ratio and representation of the theoretical background to be measured. CFA was conducted in order to reveal the model-data fit of the findings obtained in EFA. In CFA, fit indices generally accepted in the literature were taken into consideration. In this direction, it has been stated in the literature that the fit values should generally as the following: $\chi^2$ /sd ratio smaller than 4, RMSEA and RMR values smaller than .08, NFI, NNFI, IFI, RFI values .90 and over, CFI value .95 and over AGFI and GFI values .85 and over (Brown, 2006; Çokluk et al., 2010; Hu and Bentler, 1999; Jöreskog & Sörbom, 1993; Kline, 2005; Meydan and Şeşen, 2011). For the reliability of the scale, Cronbach's Alpha internal consistency coefficient was calculated and all validity and reliability analyses were carried out by SPSS 22.00 and AMOS 24.00 package programs.

## Findings

This section consists of the descriptive analysis findings of the scale, exploratory factor analysis (EFA) findings, confirmatory factor analysis (CFA) findings and reliability analysis findings.

### *Descriptive Analysis Findings of the Scale*

Descriptive analysis findings of the "Healthcare Workers' Multidimensional Glocal Leadership Scale" were displayed in Table 2.

***Table 2. Descriptive analysis findings of the scale (n=232)***

| Descriptive Statistics | Value |
|---|---|
| Mean | 3.23 |
| Median | 3.24 |
| Mode | 3.14 |
| Standard Deviation | .36 |
| Variance | .13 |
| Skewness | -.47 |
| Kurtosis | 1.42 |
| Minimum | 1.57 |
| Maximum | 4.00 |

As seen in table 1, mean of the data set is 3.23, median is 3.24, mode is 3.14, standard deviation is .36, variance is .13, skewness value is -.47 and kurtosis value is 1.42, minimum point is 1.57 and maximum point is 4.00. That the mean, median, mode of the scale are approximate values, kurtosis and skewness values are between -1.5 and +1.5 indicates that the data has a normal distribution (Tabachnick and Fidell, 2013).

### *Findings of Exploratory Factor Analysis (EFA)*

In order to determine the sample fit of the research data, Kaiser-Mayer-Olkin (KMO) value and Bartlett test results were examined. The results of KMO were displayed in Table 3.

***Table 3. KMO and Bartlett's test results of the study***

| KMO | | .864 |
|---|---|---|
| Bartlett's Test | Chi-Square | 2317.194 |
| | df | 210 |
| | p | .000 |

As Table 3 displays, as a result of the analysis conducted to test the suitability of the data obtained from the sample group to factor analysis, KMO value was found as .864 and Bartlett test $\chi^2$ value was 2317.194 ($p < .001$). That the KMO value is greater than .60 and the Bartlett test being significant can be seen as an indication that the research data is suitable for factor analysis and the scores are normally distributed (Bayram, 2013). After the data was determined to be suitable for factor analysis, EFA was performed according to the rotated principal component analysis method.

In scale development studies, it is recommended that the item correlations for the items in the scale should be .30 and above, and the items should

not be in more than one factor (Tavşancıl, 2010). The criterion for being in different factors having at least .10 difference between the factor loads of the items. In another saying, items with a difference of less than .10 between the load values of the scale items in different factors are accepted as overlapping items and removed from the scale (Yavuz, 2005).

Additionally, it is stated that in order for any item to be included in the scale, the factor load value should be at least .30. For this reason, the items whose item factor loading, communalities and item total correlations under .30 in the study and the overlapping items with a difference of less than .10 between the loading values in different factors were removed from the scale. According to the EFA results, 2 items whose communalities under .30, and other 3 items whose item factor loadings are under .30 and finally 3 overlapping items with high loading values were excluded from the scale.

Thus, according to the principal component analysis, it has been determined that the 21 items in the scale are compatible in terms of meaning and content and they gathered under 4 sub-dimensions with an eigenvalue greater than 1. Scree Plot resulting from the analysis is shown in Figure 1.

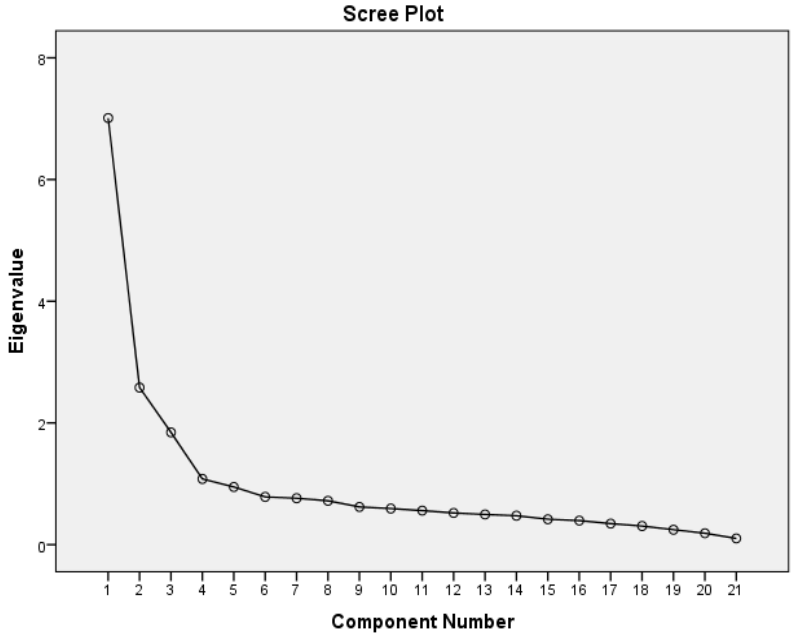


*Figure 1. Scree Plot of the Scale*

As displayed in the scree-plot in Figure 1, the components of the Y axis descend towards the components of the X axis and from point 5 onwards the contribution of the components to the variance remains approximately the same. This is the reason why it was decided that that the factor number to be 4 would be appropriate. The distribution of scale items according to dimensions, communalities, item factor loading values, item total correlations, eigenvalues, variance ratios explained by the factors and total variance values are presented in Table 4.

***Table 4: EFA results of the Scale***

| Factor | Item | Communalities | Item factor loading values | Total item correlation | Eigenvalues | Variance (%) |
|---|---|---|---|---|---|---|
| Factor 1 | S1 | .38 | .37 | .55 | 7.010 | 33.383 |
| | S2 | .53 | .68 | .48 | | |
| | S3 | .52 | .67 | .51 | | |
| | S4 | .48 | .53 | .53 | | |
| | S5 | .57 | .64 | .58 | | |
| | S6 | .43 | .47 | .54 | | |
| | S7 | .48 | .58 | .56 | | |
| Factor 2 | S8 | .56 | .60 | .50 | 2.581 | 12.292 |
| | S9 | .58 | .72 | .48 | | |
| | S10 | .57 | .69 | .52 | | |
| | S11 | .49 | .67 | .42 | | |
| | S12 | .53 | .66 | .53 | | |
| Factor 3 | S13 | .65 | .76 | .55 | 1.845 | 8.784 |
| | S14 | .69 | .77 | .61 | | |
| | S15 | .67 | .75 | .53 | | |
| | S16 | .61 | .74 | .52 | | |
| | S17 | .68 | .78 | .56 | | |
| Factor 4 | S18 | .78 | .81 | .58 | 1.080 | 5.142 |
| | S19 | .77 | .86 | .45 | | |
| | S20 | .82 | .89 | .47 | | |
| | S21 | .74 | .86 | .35 | | |
| **Total variance (%)** | | | | | 59.601 | |

As seen in Table 4, items gathered in 4 independent dimensions. Item communalities range from .38 and .82; factor loading values .37 and .89; and total item correlation .35 and .61. Eigenvalues were found as 7.010 in the first factor, 2.581 in the second factor, 1.845 in the third factor and 1.080 in the fourth factor. Besides, the variance ratio explained by each factor is 33.383% in the first, 12.292% in the second, 8.784% in the third and 5.142% in the fourth factor. Total variance ratio explained by all four factors is 59.42%.

Thus, as a result of the analysis, a 21-item measurement tool was created, consisting of 7 items in the first factor, 5 items in the second factor, 5 items in the third factor and 4 items in the fourth factor.

The 4 sub-factors emerged as a result of the EFA were named as dimensions, taking into account the contents of the items that make up the factor. In this framework, there are 7 items in the dimension of "having a vision" (1st, 2nd, 3rd, 4th, 5th, 6th and 7th items); 5 items in the dimension of "managing social networks" (8th, 9th, 10th, 11th and 12th items); 5 items in the dimension of "global literacy" (13th, 14th, 15th, 16th, and 17th items) and 4 items in the dimension of "local literacy" (18th, 19th, 20th and 21st items). There aren't any anti-items in the scale. The total score can be obtained from the scale. The high score obtained from the whole scale or each dimension of the scale means that glocal leadership qualities are demonstrated in high level, low score on the other hand means glocal leadership behaviors are demonstrated in low level.

**Findings of Confirmatory Factor Analysis (CFA)**

In order to determine the validity of the 4-factor structure of the scale revealed by EFA, CFA was conducted using AMOS 24.00 computer package program and the goodness of fit values for the model were obtained. The result obtained from CFA regarding 21-item "Healthcare Workers' Multidimensional Glocal Leadership Scale" are illustrated in Figure 2.

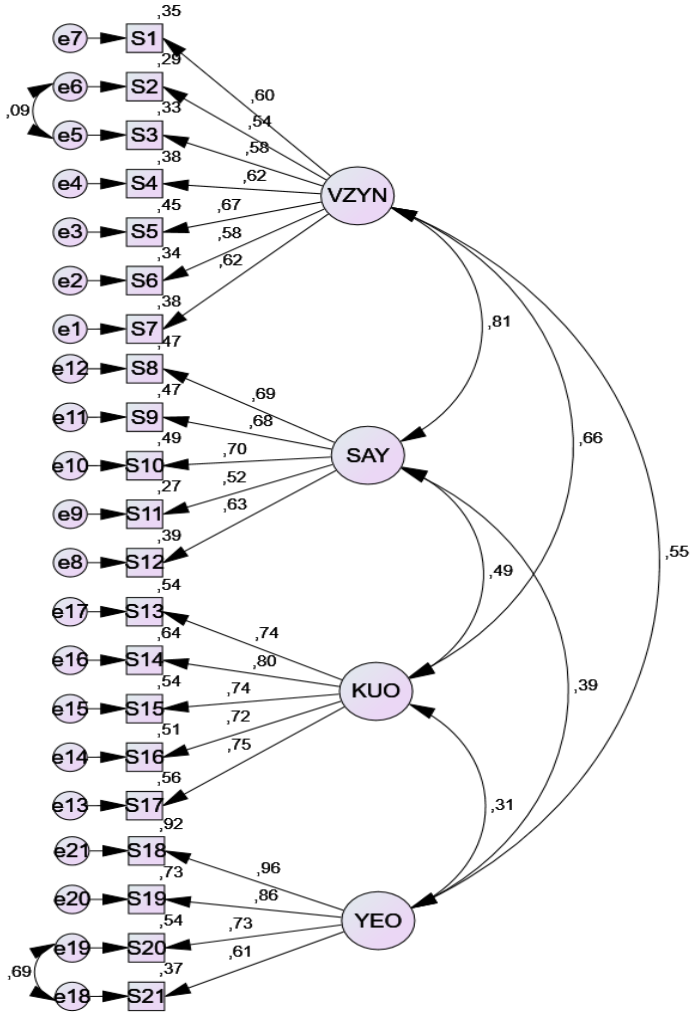


*Figure 2. CFA results of the scale*

As Figure 2 shows, item loading values are between .54 and .67 in the dimension of "having a vision", .52 and .70 in the dimension of "managing social networks", .72 and .80 in the dimension of "global literacy", .61 and .96 in the dimension of "local literacy" and finally between .52 and .96 in the whole scale. According to CFA results, all items of the scale have significant difference $p<.05$ level in terms of *t* values. Besides, two modifications were made between items S2-S3 and S20-S21 to ensure better model fit values of

the scale. In this context, the model fit values obtained from the CFA are presented in Table 5.

*Table 5. Goodness of fit values of the scale*

| Fit Measure | Good Fit | Acceptable Fit | Fit Values of the Scale |
|---|---|---|---|
| p | > .01 or .05 | < .01 or .05 | .000 (Acceptable fit) |
| $\chi^2$ / sd | ≤ 2 | 2-5 | 327.883 / 181 = 1.812 (Good fit) |
| RMSEA | ≤ .05 | ≤ .08 | .059 (Good fit) |
| RMR | ≤ .05 | ≤ .08 | .022 (Good fit) |
| SRMR | ≤ .05 | ≤ .08 | .054 (Acceptable fit) |
| AGFI | ≥ .90 | ≥ .85 | .85 (Acceptable fit) |
| GFI | ≥ .90 | ≥ .85 | .88 (Acceptable fit) |
| CFI | ≥ .95 | ≥ .90 | .93 (Acceptable fit) |
| NNFI (TLI) | ≥ .95 | ≥ .90 | .92 (Acceptable fit) |
| IFI | ≥ .95 | ≥ .90 | .93 (Acceptable fit) |

As seen in Table 5, when the fit values calculated for this study and the data obtained from the sample group are examined, it can be said that the 4-dimensional model related to the scale has structure validity within the accepted ranges in the literature (Arbuckle, 2007; Brown, 2006; Çokluk et al., 2010; Hu and Bentler, 1999; Jöreskog and Sörbom, 1993; Kline, 2005; Marcoulides and Schumacher, 2001; Meydan and Şeşen, 2011; Sümer, 2000; Şimşek, 2007) and the four-dimensional structure of the scale is confirmed.

### *Findings of the Reliability Analyses*

The reliability analyses of the "Healthcare Workers' Multidimensional Glocal Leadership Scale" were performed by Cronbach's Alpha and CR (Composite Reliability) methods. In Table 6, Cronbach's Alpha and CR (Composite Reliability) coefficients are presented.

*Table 6. Cronbach's Alpha and CR (Composite Reliability) coefficient values of the scale*

| Dimension | Cronbach's Alpha internal consistency coefficient | CR (Composite Reliability) coefficient |
|---|---|---|
| Having a vision | .80 | .77 |
| Managing social networks | .78 | .80 |
| Global literacy | .86 | .87 |
| Local literacy | .89 | .92 |
| Whole scale | .90 | .95 |

It is clearly demonstrated in Table 5 that Cronbach's Alpha internal consistency coefficients of the scale ranged between .78 and .90 and CR coeffi-

cients ranged between .77 and .95. If the reliability coefficient of the measurement tools is .70 and higher, it is sufficient in terms of the reliability of the scale (Hair, Black, Babin and Anderson, 2014) and within this fact the whole scale and all sub-dimensions of the scale can be considered as reliable.

**Discussion, Results and Recommendations**

The aim of this research is to develop a valid and reliable measurement tool that will be able to measure the global leadership traits of healthcare workers. Validity and reliability results obtained from EFA and CFA prove that "Healthcare Workers' Multidimensional Glocal Leadership Scale" is a good measurement tool to be used in measuring glocal leadership traits of healthcare workers.

Literature was reviewed before proceeding to the main application of the study and following the review and a four-point Likert-type draft scale with 38 items was developed. In accordance with the suggestions of language and field experts, the items in draft scale were revised and reduced to 33 as a result of removing some items that were not included in the criteria to be measured.

The pilot study of the scale was conducted on a sample group with the participation of 45 healthcare workers. With the pilot application, it was aimed to determine the non-working or incomprehensible items of the scale. In line with the pre-pilot application and expert opinions "Healthcare Workers' Multidimensional Glocal Leadership Scale" was made ready for the main application with 29 items. The scale was formed in 4 point Likert with the options of; (1) I never try to do it, (2) I sometimes try to do it, (3) I frequently try to do it if it is within possibilities, (4) I always push the limits to do it.

The main application of the research was carried out on 232 healthcare workers working in Edirne city center. Construct validity of the scale was tested by EFA and CFA. Following the EFA, the items were gathered in 4 independent dimensions. Item communalities are between .38 and .82, item factor loading values are .37 and .89 and total correlation values range between .35 and .61. Eigenvalues were found as 7.010 in the first dimension, 2.581 in the second dimension, 1.845 in the third dimension and 1.070 in the

fourth dimension. Besides, variance ratio explained by each factor is 33.383% in the first, 12.292% in the second, 8.784% in the third, and 5.142% in the fourth dimension. In this way, in the end of EFA varimax vertical rotation principal components analysis a scale explaining the 59.601% of the total variance and consisted of 21 items was obtained.

The scale was formed with 7 items in the dimension of "having a vision" (1st, 2nd, 3rd, 4th, 5th, 6th and 7th items); 5 items in the dimension of "managing social networks" (8th, 9th, 10th, 11th and 12th items); 5 items in the dimension of "global literacy" (13th, 14th, 15th, 16th, and 17th items) and 4 items in the dimension of "local literacy" (18th, 19th, 20th and 21st items). Furthermore, there no anti-items were used. The high score obtained from the scale is interpreted as there are high level of glocal leadership traits and low score is interpreted as low level of glocal leadership traits.

Following the EFA, CFA was conducted to determine whether the structure was verified or not. According to the results of CFA, all items were found to have significant difference by $p<.05$ level. Also, between items S2-S3 and S20-S21 two modifications were made to ensure better model fit values to be obtained. The goodness of fit values ($\chi^2$/sd, RMSEA, RMR, AGFI, GFI, CFI, NNFI/TLI, IFI) were found to be adequate. Item analysis was also conducted to determine the discrimination levels of the items in the scale. Within the item analysis, the item-total correlation of the scale was examined and it was found that the total correlation values of the items ranged from .35 to .61. Accordingly, that the items in the scale have distinctive features can be stated.

The reliability analyses of the "Healthcare Workers' Multidimensional Glocal Leadership Scale" were performed by Cronbach's Alpha and CR (Composite Reliability) methods. It was seen that Cronbach's Alpha internal consistency coefficients of the scale ranged between .78 and .90 and CR coefficients ranged between .77 and .95. That the reliability coefficient of the measurement tools is .70 and higher is accepted as adequate in terms of the reliability of the scale (Hair, Black, Babin and Anderson, 2014). Considering this value, the present scale can be considered reliable as a whole scale and in all sub-dimensions. According to all findings obtained from EFA and CFA in this research, "Healthcare Workers' Multidimensional Glocal Leadership Scale" can be regarded as a valid and reliable measurement tool which is able to measure glocal leadership traits.

Validity and reliability studies of "Healthcare Workers' Multidimensional Glocal Leadership Scale" can be repeated with larger and different sample groups. Novel scale development studies to reveal the glocal leadership traits of administrators and workers employed in various organizations can be done. Moreover, the glocal leadership scale whose validity and reliability analyses have been carried out according to workers' perceptions can also be examined according to administrators' perceptions in order to see determine whether it has the psychometric properties.

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