

# Confirmatory and Exploratory Factor Analysis for Validating Allen and Meyer Organizational Commitment Questionnaire for Health Professionals in Ethiopia—Amharic Language

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**Background:** Ethiopia does not have validated tools for assessing organizational commitment. The aim of this study was to develop an Ethiopian version of the organizational commitment questionnaire (OCQ-Eth) and to evaluate its psychometric properties in the assessment of organizational commitment in healthcare organizations in Ethiopia.

**Methods:** A cross-sectional study was conducted in 14 healthcare facilities of the Bench-Sheko zone. The collected data were entered into EpiData version 3.1. The data were then exported into STATA version 14.1 and SPSS version 22 for analysis. Confirmatory factor analysis and exploratory factor analyses were performed for psychometric evaluation of OCQ in the Ethiopian context.

**Results:** Confirmatory factor analysis showed the original model for organizational commitment did not meet the acceptable model fit. After confirmatory factor analysis, exploratory factor analysis was performed and subsequent confirmatory factor analysis resulted in the development of OCQ-Eth with 16 items classified under four factors (continuance, affective, normative, and concern for the organization) which explained 61.2% of cumulative variance. The three measures of organizational commitment exhibited discriminant and convergent validity. The model fit was improved after exploratory factor analysis.

**Conclusion:** The extracted factor structure exhibited acceptable goodness of fit. The instrument was fit to evaluate the organizational commitment of healthcare professionals of Ethiopia.

**Keywords:** organizational commitment, Amharic language, Ethiopia

## Introduction

Commitment is a multidimensional concept which is one of the fundamental challenging and researchable problem in the fields of management, organizational behavior and human resource management.<sup>1</sup> It is a force that attaches employees to a path of action that is important to certain types of targets.<sup>2</sup> There are several kinds of commitment in the workplace such as commitment to, goals, career, teams, occupation, and leaders or organizations.<sup>3</sup>

Commitment has been defined as a process of making individual and organizational goals go together,<sup>4</sup> a process of attaching a person and their interests to an organization,<sup>5</sup> and the firmness of a person and his working environment with the organization.<sup>6</sup>

Organizational commitment is a major point of interest in the management of organizations. Organizational commitment is defined as employees bonding with their organizations, a process which ensures positivity and continuity in their work. Historically, it has been viewed as a single construct. Nowadays, it is recognized as a multidimensional construct.<sup>7</sup> According to Meyer and Allen, organizational commitment is a multidimensional construct and they proposed a three-dimensional view of a commitment.<sup>7</sup>

According to Meyer and Allen, organizational commitment is the psychological relationship of workers to the organizations and it has implications to continue within the organizations.<sup>7</sup>

Although there are different kinds of commitment, the main focus of this study was organizational commitment (OC). Organizational commitment is defined as an emotional connection characterized by workers' feelings of obligation, attachment and loyalty to their organization. Organizational commitment has three components. These are, continuance, normative, and affective commitments. Affective commitment is an employee's psychological attachment to, identification with, and participation in the organization.

Normative organizational commitment is an employee's feelings of concern for the organization. Employees who have a high level of normative commitment tend to stay with their organization because they feel they have to. And continuance organizational commitment is about employees' evaluation of whether the disadvantages of departing the organization are larger than the value of staying. Employees who see the costs of abandoning the organization are larger than the costs of continuing will stay in the organization.<sup>3</sup>

Studies suggested that the magnitude of organizational commitment of health professionals are related to, motivation of employees, job performance, perceived organizational support (POS), interpersonal relationship, job satisfaction, transformational leadership behavior, educational qualification, working ward,<sup>8</sup> perceived leadership style, training opportunity, perceived value and care for employee, perceived remuneration, perceived staff interaction, perceived resource availability, work setting,<sup>9</sup> and employee empowerment.<sup>10</sup>

Organizational commitment is linked with both positive and negative consequences for health sectors. Highly committed health professionals (HPs) are characterized by their strong desire to strive for achieving organizational goals, high satisfaction with their job, strong desire to stay in the organization, reduced absenteeism, decreased turnover intention, representation of staff's views toward their organization, good mental spirit, better organizational performance, their better manifestation of personal and organizational lofty goals.<sup>11</sup> They are also characterized by their increased effort, motivation, retention in the organization and by their sense of belonging, affiliation, and attachment to organizations. These all characteristics of committed health professionals create a favorable environment for better job performance and financial success, which in turn result in the effectiveness and efficiency of an organization.<sup>12</sup>

There is ample of evidence for the factor structure of Meyer and Allen's three-component model of organizational commitment scale. Almost all studies that have been conducted on Meyer and Allen's organizational commitment scale were in European and Asian countries.<sup>13</sup>

## Factor Analysis

It is a statistical method applied to examine the relations between the latent and observed variables. Factor analysis identifies joint variations in response to unobserved latent variables. It is used to describe variability among observed variables in terms of a potentially lower number of unobserved variables called "factors."<sup>14</sup> They are of two types: confirmatory factor analysis and exploratory factor analysis. For ease of understanding this study, a brief explanation of these factor analysis modalities follows.

Exploratory factor analysis is used when the researcher is not aware of the relationship between the observed and unobserved (latent variables). In exploratory factor analysis, the researcher examines how and to what extent the observed variables and the latent variables are related. During exploratory factor analysis, factors (latent structures) will be generated and the number of factors generated from a set of observed items are called factor structures.<sup>15</sup> For example, in Allen and Meyer's organizational commitment scale there are 24 items and after exploratory factor analysis, let us say, has generated four factors, the model would be termed a four-factor model. When we come to confirmatory factor analysis, the researcher has prior knowledge about the factor structure and what they are going to do is to confirm or validate whether the underlying latent variables are supported by the observed data set. An exploratory factor analysis is data driven and confirmatory factor analysis is a theory-based approach. In this study, the researchers applied both methods sequentially. First, confirmatory factor analysis was done based on Allen and Meyer's organizational commitment scale dimensions. Then, exploratory factor analysis was done to improve the model fit afterward.

Few studies were conducted in Ethiopia on organizational commitment but the tool that is being used in the Ethiopian context is not validated for its psychometric properties and model fit. Therefore this study was aimed at assessing the

model fit of OCQ and its psychometric properties in order to make it usable for other researchers to apply in the Ethiopian context.

## Methods

The study was conducted in Bench Sheko zone, southwest Ethiopia from March 10 to April 30, 2021 GC. The zone has six woredas and two town administrations with a total population of 625,345. Mizan Aman town is the administrative capital of the zone, which is located 585 km away from Addis Ababa, capital of the country and 853 km away from the regional capital Hawassa. The health facilities comprise 1 teaching hospital, 26 health centers, 9 medium clinics, 122 primary clinics, 35 drug stores, 128 health posts, and 5 rural drug stores. Of the 26 health centers, 25 were governmental and the remaining 1 was nongovernmental. During the time of obtaining this data one primary hospital has been under the process of construction. There were a total of 904 HPs working in these facilities. The coverage of Primary healthcare facilities in the Bench Sheko zone was 98.6%.

## Study Design

### Population

#### Source population

All health professionals in public health facilities of the Bench Sheko zone.

#### Study Population

All health professionals working within PHFs of selected woredas, Bench Sheko zone.

#### Sampling Procedure

In the study area, there were eight woredas (six rural and two town administrations). From the two strata, we took 50% of the woredas and town administrations (three woredas and one town administration). Then the woredas and town administration were selected by lottery method. From town administrations, Mizan-Aman town was selected. From woreda administrations, Sheko woreda, Dehub-Bench woreda, and semen Bench woreda were selected. All public health facilities found in those woredas and town administration were included in this study. All health professionals working for those health facilities who met the inclusion criteria were included in the study.

#### Inclusion and Exclusion Criteria

All health professionals who had worked for at least six months in the selected public health facility.

#### Exclusion Criteria

Health professionals who were absent in the workplace during the study period.

#### Measurement of Organizational Commitment

The tool of organizational commitment is a self-administered 24-item scale which was designed to measure the organizational commitment in the context of healthcare settings. It takes about 30 min to complete. Study participants rate the level of organizational commitment on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) with higher scores indicative of higher level of organizational commitment. For negatively worded questions, reverse coding was done.

## Procedures

After ethical approval of the study by Jimma University, the questionnaire was self-administered to health professionals working in the Bench-Sheko zone, southwest Ethiopia. The participants had the right not to participate in the study and the items were not mandatory and participants had the right to opt out of any item they do not want to answer. The self-administered questionnaire was collected after three days of the administration.

## Data Analysis

The data collected from the health professionals were coded and cleaned and entered into EpiData (version 14.1) and exported to Stata version 14 for further analysis. Descriptive statistics were done for each item. As the investigators had no idea of the factor structure of the questionnaire in the Ethiopia, principal component analysis (PCA) was conducted to examine the relationship of the observed variables with the latent variables (components or factors) hence to identify the factor structures. Factors with eigenvalues greater than 1.0 were retained.<sup>16</sup> Items with factor coefficients of greater than or equal to 0.4 were required for interpretation of factor structures. Inter-item reliability was assessed by Cronbach's  $\alpha$ . Accordingly, Cronbach's  $\alpha$  of greater than 0.7 was considered to be an acceptable reliability coefficient of the scale.<sup>17</sup> Confirmatory factor analysis (CFA) was undertaken by using structural equation modeling (SEM) and was done to assess the link between the structural paths and latent variable (hypothesized dimensions of organizational commitment, ie affective, continuance, and normative organizational commitment).

## Assessment of Model Fitness

The parameters of the SEM was assessed using STATA version 14. Five goodness-of-fit indices were calculated so as to assess global fit of the model by total sample and gender. These indices include: chi-squared, goodness-of-fit index (GFI), adjusted GFI, comparative fit index (CFI) and root mean square error of approximation (RMSEA). The chi-squared statistics was calculated to evaluate the fit between the observed variables and the hypothesized model. A statistically significant chi-squared test is suggestive that the model lacks fit with the data. In addition to chi-squared statistics, fit statistics like GFI and CFI were calculated to describe how well the model fits the set of observed data. After assessing the model fitness, construct reliability (CR) and average variance extracted (AVE) for convergent validity and discriminant validity were calculated respectively. Then, exploratory factor analysis was performed with maximum likelihood estimation. Varimax (orthogonal rotation) was used in EFA. Finally, the reliability of items in each factor was assessed by Cronbach's alpha.

## Ethical Considerations

Ethical clearance was obtained from the Ethical Review Committee of Jimma University. An official letter of cooperation was written to the Bench-Sheko zone bureau and each health institution. After explaining the purpose of the study, written informed consents were obtained. Participants were also informed that participation was voluntary and that they can withdraw at any time if they are not comfortable with the questionnaire. Personal identifiers were not included in the written questionnaires to ensure participants' confidentiality. This study was conducted in accordance with the Declaration of Helsinki.

## Results

### Sociodemographic Characteristics of Respondents

Among 663 eligible health professionals in the study area, 630 of them fulfilled the inclusion criteria and 630 questionnaires were distributed for health professionals active during the data collection period. However, 610 health professionals were correctly filled and returned the questionnaires yielding a response rate of 96.8%. Among 610 respondents nearly two-thirds (61.6%) were males. Similarly, a little more than half of the respondents (53.7%) were married. The median age of the participants was 28 years. Almost half of respondents (47%) had six months to two years of work experience at the current health facility. Of this 181 (29.7%) had work experience of less than two years.

With a professional background, 40.8% were nurses. Three-fifths (60.3%) of respondents had a college diploma. Four hundred and seventy-two (77.4%) were urban residents and 343 (56.2%) work in health centers. Eighty-six (14.1%) worked in a managerial position. Fifty (8%) of the participants reside within the compound of the health facility. The median net monthly salary of health professionals was 3137 Birr (85.94 USD) (IQR=1478) (Table 1).

The descriptive analysis of the organizational commitment items (mean and standard deviation) is presented by Table 2.

**Table I** Sociodemographic Characteristics of Health Professionals Working in Public Health Facilities of Bench Sheko Zone SWE, 2020 (n=610)

Sociodemographic Characteristics		Frequency	Percent
Gender	Male	377	61.8
	Female	233	38.2
Marital status	Married	328	53.8
	Single	265	43.4
	Divorced	14	2.3
	Widowed	3	0.5
Field of specialization	Nurse	254	41.7
	Midwife	79	12.9
	Health officer	76	12.5
	Laboratory professional	59	9.7
	Pharmacist	53	8.7
	Medical doctor	48	7.8
	Others	41	6.7
Educational level	Diploma	368	60.3
	First degree	239	39.2
	Postgraduate	3	0.5
Years of service at current facility	6 months–2 years	287	47.0
	2.01 years–5 years	191	31.3
	5.01 years–10 years	109	17.9
	>10 years	23	3.8
Residence	Urban	472	77.4
	Rural	138	22.6
Type of facility you are working	Health center	344	56.4
	Hospital	266	43.6
Type of post	Nonmanagerial	521	85.4
	Managerial	89	14.6
Place of living house	Outside compound of health facility	558	91.5
	Within compound of health facility	52	8.5

**Note:** Others=anesthesia, emergency surgeons and health informatics professionals.

## Confirmatory Factor Analysis

### Global Fit Index

Confirmatory factor analysis was undertaken to determine if the observed data fit the proposed three factor model of the organizational commitment questionnaire proposed by Meyer and Allen.<sup>18</sup> Model fit was assessed by chi-squared test, Tucker–Lewis Index (TLI), comparative fit index (CFI) and root mean-square error of approximation (RMSEA).

**Table 2** Descriptive Statistics of Organizational Commitment Questionnaire (n=610)

Variable	Mean	Std Dev.
OC8 I do not feel a “strong” sense of belonging to my organization (R)	2.01	1.22
OC7 This organization has a great deal of personal meaning for me	3.86	1.27
OC6R I do not feel “emotionally attached” to this organization (R)	3.96	1.13
OC5R I do not feel like “part of the family” at my organization (R)	4.03	1.10
OC4R I think that I could easily attach myself to another organization as I am to this one (R)	3.67	1.46
OC3 I really feel as if this organization’s problems are my own	3.86	1.22
OC2 I enjoy discussing about my organization with people outside it	3.62	1.32
OC1 I would be very happy to spend the rest of my career with this organization	3.68	1.48
OC16 One of the major reasons I continue to work for this organization is that leaving would require considerable personal sacrifice and besides this, another organization may not match the overall benefits I have here	3.48	1.45
OC15 One of few serious consequences of leaving this organization would be scarcity of available alternatives	3.61	1.34
OC14 I feel that I have very few options to consider leaving this organization	3.72	1.26
OC13 Right now, staying with my organization is a matter of necessity as much as desire	3.88	1.21
OC12R It would not be too costly for me to leave my organization now (R)	3.74	1.29
OC11 Too much in my life would be disrupted if I decided to leave my organization now	3.68	1.27
OC10 It would be very hard for me to leave my organization right now, even if I wanted to	3.86	1.28
OC9R I am not afraid of what might happen if I quit my job without having another one lined up (R)	3.94	1.18
OC17R I think that people these days move from company to company too often	3.64	1.47
OC18R I do not believe that a person must always be loyal to his or her organization. (R)	3.81	1.36
OC19R Jumping from organization to organization does not seem at all unethical to me (R)	3.44	1.46
OC20 One of the major reasons I continue to work in this organization is that I believe loyalty is important and therefore feel a sense of moral obligation to remain	3.86	1.26
OC21 If I got another offer for a better job elsewhere, I would not feel it was right to leave my organization	3.45	1.49
OC22 I was taught to believe in the value of remaining loyal to one organization	3.48	1.39
OC23 Things were better in the days when people stayed in one organization for most of their careers	3.55	1.36
OC24R I do not think that to be a “company man” or “company woman” is sensible anymore (R)	3.91	1.33

A significant chi-squared value indicates poor model fit; TLI and CFI value of >0.95 indicates a good fit and an RMSEA value of <0.06 indicates good fit. Accordingly, the original three factor model had the following indices:  $\chi^2=2134.567$ ,  $p<0.001$ ; CFI=0.694; TLI=0.661; RMSEA=0.111. Based on the result of the confirmatory analysis, the three factor model for organizational commitment proposed by Meyer and Allen did not meet the acceptable model fit criteria and we rejected the hypothesis that the proposed model fits the data. Therefore, the confirmatory factor analysis of the three factor organizational commitment model revealed a poor fit to the data obtained from 610 healthcare providers.

### Equation Level Goodness of Fit

A statistical measure of fit that indicates how much variation of the indicator variable (observed variable) was assessed by  $R^2$  in the regression model of the confirmatory factor analysis. The following table shows the  $R^2$  (Table 3 displays the  $R^2$  with other equation level statistics. The table shows the fitted model, variance predicted by the model for every item and their

**Table 3** Equation Level Model Fit of Organizational Commitment Questionnaire—Ethiopian Version

Observed	Fitted	Predicted	Residual	R <sup>2</sup>	Mc	mc <sup>2</sup>
OC8	1.485152	0.1791286	1.306023	0.120613	0.3472939	0.120613
OC7	1.603074	0.4219282	1.181146	0.2631994	0.5130297	0.2631994
OC6R	1.268812	0.2416179	1.043658	0.1306137	0.3614051	0.1306137
OC4R	2.124721	0.5017128	1.623009	0.2361311	0.4859332	0.2361311
OC3	1.488043	0.6395037	0.8485394	0.4297615	0.655562	0.4297615
OC2	1.74348	0.8460866	0.8973929	0.4852862	0.6966249	0.4852862
OC1	2.184694	1.462299	0.7223948	0.6693382	0.8181309	0.6693382
OC16	2.111908	1.131426	0.9804818	0.5357365	0.7319402	0.5357365
OC15	1.804045	1.126953	0.6770923	0.624681	0.7903676	0.624681
OC14	1.583502	0.9649229	0.618579	0.6093601	0.7806152	0.6093601
OC13	1.460693	0.6258552	0.8348383	0.4284644	0.654572	0.4284644
OC12R	1.662349	0.0695737	1.592775	0.0418527	0.2045793	0.0418527
OC11	1.605539	0.7861456	0.8193933	0.4896459	0.6997471	0.4896459
OC10	1.643593	0.6619557	0.9816376	0.4027491	0.6346251	0.4027491
OC9R	1.393238	0.0564548	1.336784	0.0405206	0.2012972	0.0405206
OC17R	2.155173	0.6245637	1.53061	0.2897974	0.5383284	0.2897974
OC18R	1.852569	0.2811172	1.571452	0.1517445	0.389544	0.1517445
OC19R	2.134644	0.6531404	1.481504	0.3059716	0.553147	0.3059716
OC20	1.583126	0.3138957	1.26923	0.1982759	0.4452818	0.1982759
OC21	2.214461	0.9747799	1.239681	0.4401883	0.6634669	0.4401883
OC22	1.934641	0.9901501	0.9444913	0.5118003	0.7154022	0.5118003
OC23	1.840516	0.9786957	0.8618205	0.5317507	0.7292124	0.5317507
OC24R	1.765343	0.2182816	1.547061	0.1236483	0.3516365	0.1236483
Overall	0.9838208					

**Notes:** mc = correlation between depvar and its prediction, mc<sup>2</sup> = mc<sup>2</sup> is the Bentler–Raykov squared multiple correlation coefficient.

differences as residuals. The residual shows how closely the model and the sample variance are related. Equation-level goodness of fit was assessed and the maximum R<sup>2</sup> was for OC1 and the minimum R<sup>2</sup> was for OC8 (Table 3).

### Exploratory Factor Analysis

After the confirmatory factor analysis, exploratory factor analysis was conducted to identify the underlying factor structure that best reflects the specific characteristics of organizational commitment in health service facilities. Based on the confirmatory factor analysis, we conducted an exploratory factor analysis to identify the underlying factor structure that best reflects the specific characteristics of organizational commitment in public healthcare facilities. The eigenvalue shown in Figure 1 indicated a two-factor structure that emerged with an overall Cronbach's  $\alpha$  of 0.91.

Assumptions for factor analysis were met. Sampling adequacy for each item was checked and it was found to be greater than 0.5. The overall sampling adequacy (measured by Kaiser–Meyer–Olkin measure of sampling adequacy) was 0.861 which is an adequate sample for factor analysis. The ratio of cases to variables was 25 which is above the

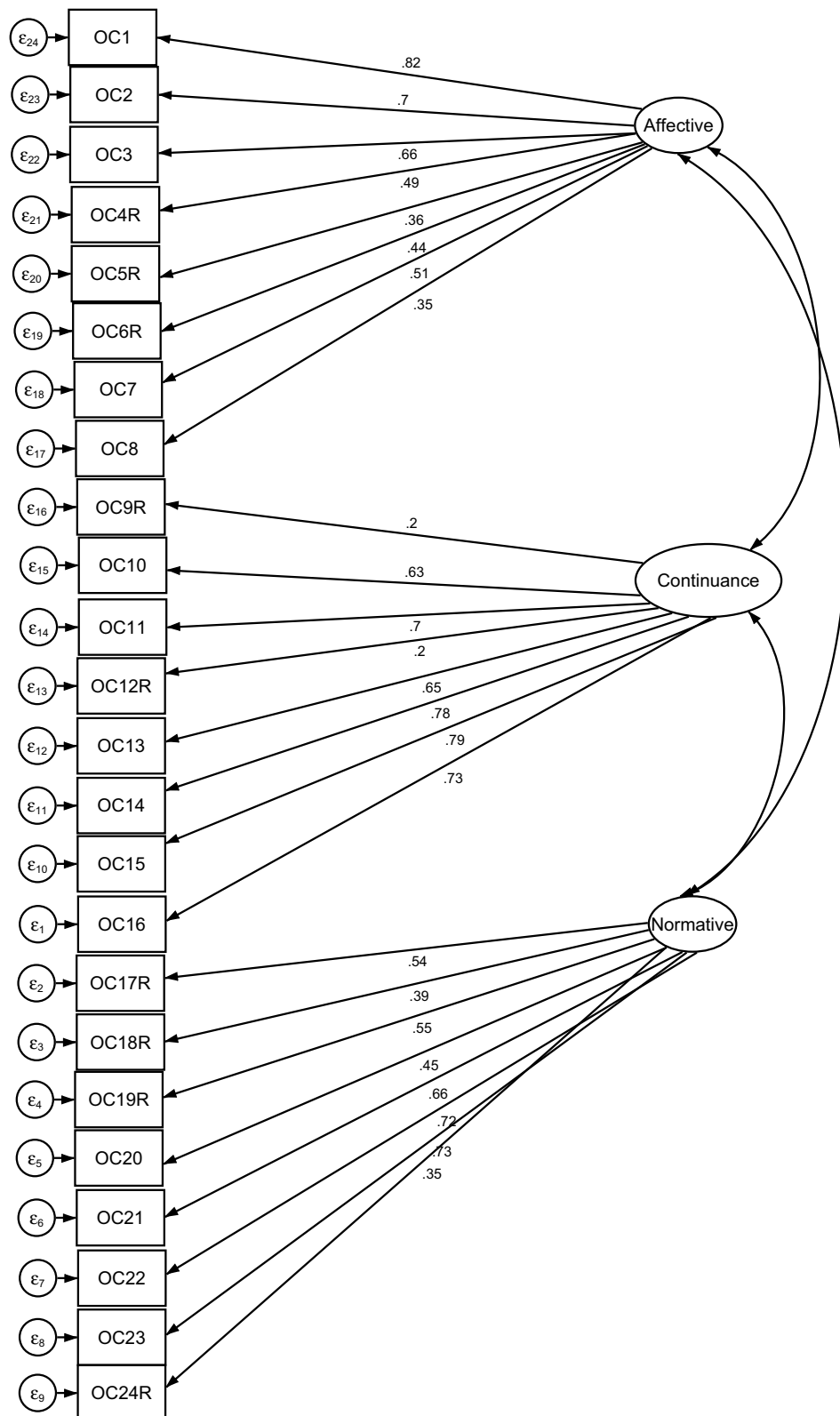


Figure 1 Three-factor structure of the original organizational commitment—Amharic version.

recommended value of 5. Bartlett’s test of sphericity was significant ( $p < 0.001$ ). We performed the item reduction and evaluation of the factor structure, through exploratory factor analysis. We identified the number of factors as those with eigenvalues larger than 1.00. We used Varimax rotation based on the assumption that the factors did not relate to one

another. Factor loadings >0.4 were considered significant. Based on this criterion, we excluded items with lower factor loading and those associated with more than one factor (those variables that have complex structures). In addition, we calculated the percent variance explained by each factor and communality of each item. The communality of each item with the factors was greater 0.50. Table 3 presents results of the factor analysis.

According to the result of the exploratory factor analysis, the four factor solution explains 61.67% variance of organizational commitment. The first factor explains 24% of the variance and the second explains about 14.6% of the variance. The third and fourth factors explained 13.5 and 9.7% of the variance, respectively.

The eigenvalues shown in Figure 1 and the scree plot in Figure 2 indicate a four-factor structure. Table 3 shows factor loadings for the 16-item, four-factor solution that emerged with an overall Cronbach’s  $\alpha$  of 0.863. These items collectively accounted for 61.76% of the variance in the responses. Eight items were removed from the original set of 24 items due to low factor loadings (<0.4) or cross-loadings of two or more components (Table 4).

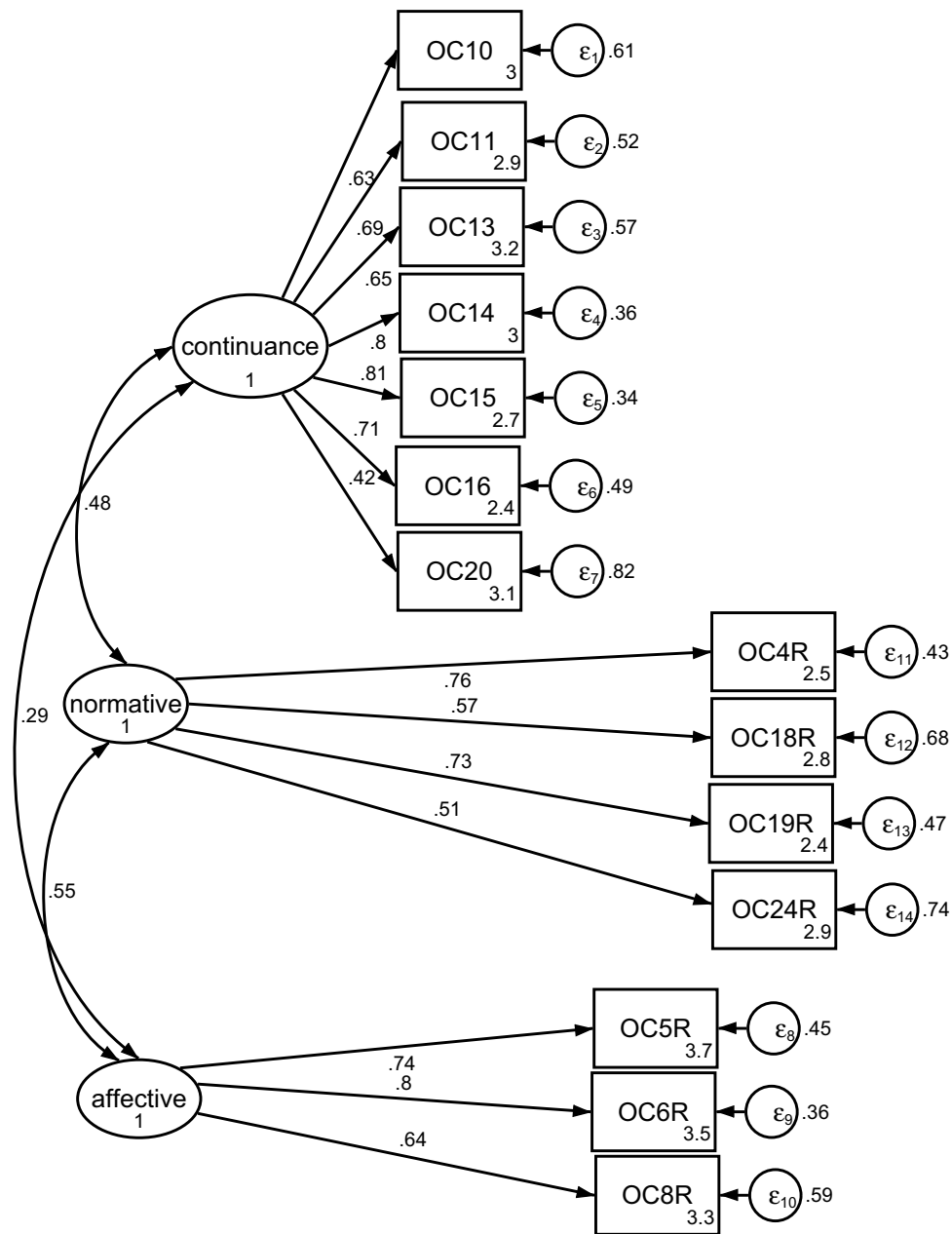


Figure 2 Three factor structure of the original organizational commitment—Amharic version after exploratory factor analysis.

**Table 4** Items Retained by Exploratory Principal Component Analysis with Orthogonal Rotation of Amharic Version of Organizational Commitment: Rotated Component Matrix

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	Percent of Variance	Cumulative %	Total	Percent of Variance	Cumulative %
1	5.361	33.503	33.503	3.838	24	23.987
2	2.185	13.657	47.160	2.332	14.6	38.562
3	1.295	8.094	55.254	2.161	13.509	52.071
4	1.042	6.511	61.765	1.551	9.694	61.765
5	0.802	5.010	66.775			
6	0.769	4.806	71.581			
7	0.670	4.190	75.771			
8	0.599	3.742	79.513			
9	0.587	3.670	83.183			
10	0.522	3.261	86.444			
11	0.439	2.742	89.186			
12	0.427	2.670	91.855			
13	0.378	2.360	94.216			
14	0.338	2.113	96.329			
15	0.315	1.970	98.298			
16	0.272	1.702	100.000			

**Note:** Extraction method: principal component analysis.

In the exploratory factor analysis, eight items were removed from the factor analysis due to low loading and complex structures. From the continuance dimension of organizational commitment, two items were removed (the item “I am not afraid of what might happen if I quit my job without having another one lined up”). From normative organizational commitment, five items were removed from exploratory factor analysis: (1) “I think that people these days move from company to company too often”; (2) “If I got another offer for a better job elsewhere I would not feel it was right to leave my organization”; (3) “I was taught to believe in the value of remaining loyal to one organization”; (4) “Things were better in the days when people stayed in one organization for most of their careers”. From the affective commitment, two items were removed: (1) “I would be very happy to spend the rest of my career with this organization”, and (2) “This organization has a great deal of personal meaning for me”. Some items were mixed in the exploratory factor analysis. The item “One of the major reasons I continue to work in this organization is that I believe loyalty is important and therefore feel a sense of moral obligation to remain” which was originally a normative commitment, was mixed with the continuance commitment and the normative commitment item “I do not believe that a person must always be loyal to his or her organization” was mixed with the affective commitment. Another additional factor structure was created on which two items (I enjoy discussing about my organization with people outside it and, I really feel as if this organization’s problems are my own) and that factor was named as concern for the organization after deliberated discussion among the researchers involved (Table 5).

Model fit was assessed after exploratory factor analysis and compared with the original data set. Even though the newly extracted factors do not fit in terms of the chi-squared test (it was significant, <0.001), the confirmatory factor fit indexes were improved after exploratory factor analysis. In the exploratory factor analysis, four components were

**Table 5** Discriminate Validity of Organizational Commitment Substructures

Latent Variable	Normative Commitment	Affective Commitment	Continuance Commitment
Normative commitment	0.704962		
Affective commitment	0.53	0.848528	
Continuance commitment	0.48	0.03	0.885061

identified and on the fourth component, only two items (observed variables) were loaded and that component was removed from the confirmatory factor analysis. For a factor to be included in the confirmatory factor analysis, the extracted component has to have at least three items loaded.

There was an improvement in the overall model fit. Accordingly, the RMSEA was decreased from 0.694 to 0.073 which is less than 0.08, the TLI was improved from the original set of factors (0.661) to 0.91.<sup>19</sup>

## Composite Reliability and Construct Validity

The reliability of the construct and internal consistency were evaluated by composite reliability (CR) and considering alpha greater than 0.70 as indicators of appropriate reliability. The composite reliability (CR) was 0.82. The construct validity was determined in three subcomponents: convergent validity, calculated by average variance extracted for each factor considering value greater than 0.50 as convergent value indicators. Accordingly, the convergent validity for each factor was greater than 0.50 (0.54 for affective commitment scale, 0.585 for normative commitment scale and 0.54875 for continuance commitment scale). The correlation between the three constructs were 0.53 between normative commitment scale and affective commitment scale, 0.03 between affective and continuance, and 0.48 between continuance and normative commitment scales.

For discriminant validity, the square root of the AVE for each construct should be greater than the correlation between the constructs.<sup>20</sup> The constructs of the organizational commitment exhibit discriminant validity (Table 5).

## Discussion

A measurement tool that is validated for assessing organizational commitment in healthcare settings, to improve healthcare providers' performance, is a prerequisite. These tools are lacking in developing countries, like Ethiopia. Few studies conducted in Ethiopia on organizational commitment did not validate the tool for dimensionality and other psychometric properties and this study provides evidence for the factor structure, internal consistency, and model fit of organizational commitment among health professionals. In this study we used Meyer and Allen's organizational commitment model that is validated in many countries in Asia and Europe. But, for utilization of the tool in the Ethiopian context an adapted tool should be tested to show adequate psychometric properties.

The result of the study showed that the overall reliability of the organizational commitment was good (0.82). Correlation coefficient values are considered good if the coefficient values are greater than or equal to 0.70.<sup>21,22</sup> Values of 0.6 can also be acceptable. Internal consistency testing is fulfilled if construct validity has met the criteria so that the average variance extracted represents internal consistency, because if the construct is valid, then it is reliable, but the opposite might not always be true.<sup>23</sup>

This finding showed the multidimensionality of organizational commitment and this was supported by previous studies.<sup>13,24,25</sup> The exploratory factor analysis showed four components of organizational commitment because the result of EFA showed the dimensionality of affective commitment subscale of organizational commitment. Previous studies showed the dimensionality of continuance commitment scale<sup>25</sup> other studies also showed the single dimensionality of continuance commitment scale.<sup>26</sup> Regarding the validity of the organizational commitment questionnaire, it was assessed by convergent validity and discriminant validity. All commitment scales exhibit convergent validity and discriminant validity.

Even though the exploratory factor extracted four factor solutions, the fourth factor has only two items loaded and it was removed from the confirmatory factor analysis. For a CFA at least three items should have been loaded on the construct. The result of this study shows that a three factor solution with 14 items was a good fit for the data compared with the original 24 items. All model fit indexes were in the acceptable range except the chi-squared. The chi-squared of the model fit was significant and this might be due to the relatively large sample size. The chi-squared statistic with large sample size will become significant.<sup>27</sup>

As to the factorial structure, the original scale of organizational commitment hypothesizes that the subscales of the organizational commitment are independent which is tested by several studies. Although there is paucity of literature on the application of Allen and Meyer's organizational commitment scale on health professionals, its application across the world showed the applicability of the scale in different cultural contexts and different sectors like finance, education and occupational psychology.<sup>28</sup> However, in this study the correlation between normative commitment and affective commitment was good, the correlation between continuance and normative commitment was close to 0.5, and the affective commitment and continuance commitment were poorly correlated. The authors of the questionnaire proposed that the affective, continuance and normative components are independent.<sup>7</sup> However, the finding of this study was supported by several studies that showed the correlation of the normative and affective organizational commitment.<sup>18,29</sup> On the contrary, the study conducted in South Korea revealed that continuance commitment scale and normative commitment scales showed better correlation.<sup>30</sup> This might be due to the cultural and other contextual differences between the study area and South Korea. Moreover, the study conducted in Tanzania showed that the Meyer and Allen's organizational commitment scale is reliable and valid for assessing organizational commitments in the Tanzanian context.<sup>31</sup>

## Conclusion

In this study Allen and Meyer's organizational commitment questionnaire (191) was assessed for constructs, independence reliability, and validity using Ethiopian context. Principal component analysis, reliability analysis and confirmatory factor analysis were utilized to determine the factor structure of the original set of organizational commitment questionnaires and comparisons of the hypothesized model by Allen and Meyer was compared with the newly extracted factor structures of organizational commitment. The finding of this study supported the usefulness of the Meyer and Allen organizational commitment questionnaire. The result of the study showed three-factor structures with 16 items loaded on them and it had acceptable model fit. We recommend the use of the modified organizational commitment scale for use in the Ethiopian context. The finding of this study will be limited to the Ethiopian context, especially for health sectors, and the results will not be generalized. Studies also highlighted that due to the fact that healthcare facilities encourage commitment by different mechanisms like salary increment, attaching attractive benefits which may mask the level of normative and affective commitment of healthcare providers and the organizational commitment scale developed by Allen and Meyer may not reflect the reality.

## Disclosure

The authors report no conflicts of interest in this work.

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