MEASURING THE RELIABILITY AND VALIDITY OF ALLEN AND MEYER'S ORGANIZATIONAL COMMITMENT SCALE IN THE PUBLIC SECTOR

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Abstract

The aim of this study is to look into the reliability and validity of the multidimensional Allen and Meyer's (1990) organizational commitment (OC) scale in a financial organization belonging to the public sector in Greece, as well as the relationship between the factors of the questionnaire. Using stratified random sampling, 205 employees were selected to participate in the survey, currently working in the aforementioned organization. The necessary ethical issues of participation in the research were observed. The reliability of the questionnaire was examined using Cronbach's alpha coefficient, while the validity was checked using factor analysis. Correlations were investigated using Spearman's coefficient. Results confirmed that affective, continuance and normative dimensions of commitment were statistically reliable and valid while measuring the levels of Greece's public sector OC with a statistically significant positive correlation between them. The findings are consistent with the results of previous studies that Allen and Meyer's (1990) OC scale is the most reliable, validated, well-established and widely used instrument which provides a true picture of the relationship between various dimensions and sub-dimensions of commitment (Khajuria & Khan, 2022).

Keywords: Organizational Commitment, Allen and Meyer's Measurement Scale, Construct Reliability, Construct Validity

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1. INTRODUCTION

The level of identification that employees feel within their organization determines organizational commitment (OC), which reflects the extent to which employees consider that organization's values and goals are consistent with their own values and professional goals and have a strong sense of staying and continuing their career in the organization (Lin et al., 2024; Radosavljević et al., 2017; Al-Jabari & Ghazzawi 2019). Allen and Meyer's (1990) three-component model (TCM) has been widely adopted and employed across several contexts (Klein et al.,

2012) becoming the predominant theory for understudying the concept. In this model, OC is defined as "a psychological state that characterizes the employee's relationship with the organization, and has implications for the decision to continue or discontinue membership in the organization" (Meyer & Allen, 1991, p. 67) and three dimensions of commitment are distinguished: 1) affective commitment (AC), which refers to the employees' emotional and psychological attachment to the organization; 2) continuance commitment (CC), which is related to the cost of the employees' leaving the organization (prestige, socioeconomic reasons);

and 3) normative commitment (NC), which reflects the sense of moral obligation to continue working in the organization.

The above relationships may offer practical implications to policymakers regarding the different dimensions of OC, especially in case of public bureaucratic organizations where employees exhibit low commitment with detrimental behavioral and performance consequences (Kjeldsen & Hansen, 2018) or in uncertain economic times where employees may feel threatened, overworked, neglected, and afraid. Openness in communication is an essential element in developing an environment that fosters high levels of employee commitment and job satisfaction, leading to high levels of productivity (Nur & Pefriyadi, 2023; Wolor et al., 2023). The improvement of employees' commitment reduces absenteeism (Khan et al., 2016), and enhances job satisfaction (Loan, 2020), and organizational performance (Liang et al., 2019). Also, a positive relationship between OC and organizational citizenship behavior has been confirmed (Liu, 2009) while according to Grego-Planer (2019), in public entities, committed employees exhibit a willingness to provide mutual assistance.

Several internal and external obstacles prevent public organizations from successfully implementing strategies related to the accomplishment of their missions. Public institutions should reduce impediments related to talent loss and bureaucratic processes in order to prevent missing out on possibilities (Brown et al., 2020). In order to do this, public organizations today must not only hire talented staff members but also maintain and strengthen their commitment to the organization (Mrwebi, 2019) while they carry out the real public sector changes (Sun, 2021).

Most instruments measuring OC have been developed in English, the same is true of Allen and Meyer's (1990) OC measurement scale, which is a questionnaire that has been used more than any other globally (Khajuria & Khan, 2022) and validated in several settings (Devece et al., 2016). Translating, adapting, and validating established English-language measures for non-English target populations is an effective way for researchers to overcome the lack of available instruments when working with populations in non-English-speaking countries or cultural groups that differ significantly from the population that was used as the target population for instrument development. Since cultures and business environments differ among countries, a cross-cultural comparison of Allen and Meyer's (1990) OC measurement scale application would provide an efficient tool extending the corpus of knowledge regarding organizational human resource development that needs to assess OC, especially in the public sector (Jangsiriwattana & Tulwatana, 2019; Sun, 2021). To this end, the Greek public sector provides an instrumental setting for examining the reliability and validity of Allen and Meyer's (1990) commitment measurement scale, as well as the relationship between its factors, since Greece, the global financial crisis of 2007–2008, like most of Organisation for Economic Co-operation and Development's (OECD) countries, approaches to civil service reforms primarily aimed at controlling costs and maintaining staff commitment and motivation in the face of complex retrenchment programs (OECD, 2016).

Using certain process of translation guidelines Allen and Meyer's (1990) scale was translated into Greek and distributed to all employees of a Greek public organization. Data were analyzed using correlation analysis and exploratory factor analysis. The results provide support for the reliability and validity of Allen and Meyer's (1990) OC measurement scale in all its subscales and contribute to the literature as it is the first time that the reliability and validity of Allen and Meyer's (1990) OC scale has been measured in the cultural context of the Greek public sector, which, in contrast to the cultural context other Western countries, is characterized by reforms, high power distance between hierarchical superiors and employees, and high power orientation.

The remainder of the article is organized as follows. Section 2 reviews the relevant literature. Section 3 analyses the methodology used to conduct empirical research assessing the reliability and validity of Allen and Meyer's (1990) questionnaire. Section 4 explains the results of the study. Section 5 discusses the results, which provide important information and opportunities for further research in the future. Section 6 presents the study's conclusions, limitations, and suggestions for future research.

2. LITERATURE REVIEW

Allen and Meyer's TCM has dominated research in OC since the 1990s, when its final concept was proposed (Allen & Meyer, 1990; Meyer & Allen, 1991). The researchers took into account the work done up to that time, which allowed them to move towards a multidimensional model, characterized as a "three-component conceptualization of organizational commitment". Ultimately, it consisted of three dimensions: 1) AC (a positive sense of identification with the employing organization), 2) CC (the degree to which employees experience commitment to remain in an organization since they calculate the expenses related to departing the organization), and 3) NC (the sentiments of duty to stay with the company to meet its goals). To assess this conceptualization of OC, Allen and Meyer (1990) developed an instrument consisting of an eight-item scale per dimension. This OC scale was evaluated (in Western culture) for validity and reliability using full-time university and factory personnel. Meyer et al. (1993), developed an improved version of the TCM scale by reducing the number of items in each of the three constructs (AC, CC, and NC) from eight to six. The main difference between the initial and updated versions is in the NC subscale. Information regarding the basis for the obligation was one of the items in the initial NC, however, the updated version focused more on the sense of duty, without outlining the foundation. According to Meyer and Allen (2004), the best decision between these two versions could be based on whether knowledge about the causes of the sense of obligation is relevant (Mugizi et al., 2016). Since the introduction of Allen and Meyer's OC scale, or in its revised version of Meyer et al. (1993), numerous investigations have been carried out with the purpose of testing the dimensions of these tools in non-Western cultural contexts, such as China (Chen & Francesco, 2003), Taiwan (Chang et al., 2007), Pakistan (Abbas & Khanam, 2013), Indonesia

(Suryani & Tentama, 2020), and Türkiye (Wasti, 2002), while on the other hand, many researchers have tested their psychometric properties, in various professional contexts, in Western and non-Western cultures, and found to be reliable and valid (see Table 1).

Table 1. Main reliability and validity research of Allen and Meyer's (1990) OC scale and its revisions

Author(s)	Country	Sample	Findings
Faisaluddin et al. (2023)	Indonesia	204 university faculty members	Herscovitch and Meyer's (2002) scale was found reliable and valid.
Agegnehu et al. (2022)	Ethiopia	630 health professionals	Allen and Meyer's (1990) scale exhibited discriminant and convergent validity.
Suryani and Tentama (2020)	Indonesia	60 university teachers	Meyer et al. (1993) scale was found reliable and valid.
Jonathan (2020)	Tanzania	194 employees in district councils	Allen and Meyer's (1990) scale was found reliable and valid.
Jangsiriwattana and Tulwatana (2019)	Thailand	170 employees in the aviation sector	Allen and Meyer's (1990) scale was found reliable and valid.
Neves et al. (2018)	Portugal	850 nurses	Allen and Meyer's (1990) scale demonstrated adequate goodness of fit.
Betanzos-Díaz et al. (2017)	Mexico	298 employees in the private sector	Meyer et al. (1993) NC scale exhibited adequate internal consistency.
Mugizi et al. (2012)	Uganda	301 academic employees	Allen and Meyer's (1990) scale was found reliable and valid.
Abbas and Khanam (2013)	Pakistan	261 teachers	Meyer et al. (1993) scale of Pakistani culture was found reliable and valid.
Maqsood et al. (2012)	Pakistan	462 faculty members of public and private sector universities	Discrepancies of the Meyer et al. (1993) scale with reference to the CC due to the context.
Karim and Noor (2006)	Malaysia	222 academic librarians	Allen and Meyer's (1990) AC and CC scales exhibited validity.
Vandenberghe et al. (2001)	12 European countries	580 translators	Allen and Meyer's (1990) scale was found reliable, valid, and culturally invariant.

Source: Authors' elaboration.

As it proves, there doesn't seem to be any testing evidence regarding Allen and Meyer's (1990) OC scale validity and reliability in Greece's cultural context, so the present study will help as a baseline for future research measuring levels of Greek employees' commitment at the collective level. According to Hofstede et al.'s (2010) framework for the study of cultural values (Clearly Cultural, n.d.), Greece's cultural context, is distinguished by a huge power gap between employers and workers, and a high rule orientation standing at the opposite of the spectrum, where Anglo-Saxon countries, Netherlands, Sweden, and Denmark are situated (characterized by low power distance and low rule orientation). These characteristics make future research on measuring the level of commitment of Greek employees at the collective level attractive, and this study may act as a baseline towards this direction.

3. RESEARCH METHODOLOGY

3.1. Questionnaire

Allen and Meyer's (1990) scale investigated the three different forms of OC and is composed of 24 items, 8 Likert-type scale questions in each of the OC dimension: AC, CC, and NC (see Tables 2, 3, and 4).

Table 2. Items of the affective commitment scale

Factor	Item	Question
Affective commitment (AC)	AC1	I would be very happy to spend the rest of my career with this organization.
	AC2	I enjoy discussing the organization with people outside of it.
	AC3	I really feel like this organization's problems are mine.
	AC4	I find that I could not easily be associated with another organization as I am in this one.
	AC5	I feel like a "family member" in my organization.
	AC6	I feel "emotionally attached" to this organization.
	AC7	This organization means a lot to me personally.
	AC8	I feel a strong sense of belonging to my organization.

Table 3. Items of the continuance commitment scale

Factor	Item	Question
Continuance commitment (CC)	CC1	I am afraid of what might happen if I quit my job without having found employment elsewhere.
	CC2	It would be very difficult for me to leave my organization right now, even if I wanted to.
	CC3	Too much in my life would be disrupted if I decided I wanted to leave my own organization now.
	CC4	It would cost me too much to leave my own organization now.
	CC5	Right now, staying in my organization is a matter of both necessity and desire.
	CC6	I feel I have very few options to consider leaving this organization.
	CC7	One of the few serious consequences of leaving this organization would be the lack of available alternatives.
	CC8	One of the main reasons I continue to work for this organization is that leaving would require significant personal sacrifice — another organization may not match the overall benefits I have here.

Table 4. Items of the normative commitment scale

Factor	Item	Question
Normative commitment (NC)	NC1	I think people these days move from organization to organization too often.
	NC2	I believe that a person should always be loyal to her/his organization.
	NC3	Jumping from organization to organization seems unethical to me.
	NC4	One of the main reasons I continue to work for this organization is because I believe loyalty is important and, therefore, I feel a sense of moral obligation to stay.
	NC5	If I had another offer for a better job elsewhere, I wouldn't feel it was right to leave my organization.
	NC6	I was taught to believe in the value of staying loyal to an organization.
	NC7	Things were better when people stayed with one organization for most of their careers.
	NC8	I think wanting to be the "company man" or the "company woman" makes sense.

All twenty-four Likert scale questions, range from 1–7 possible answers (1 = Strongly disagree, 2 = Disagree, 3 = Slightly disagree, 4 = Neither agree nor disagree, 5 = Slightly agree, 6 = Agree, 7 = Strongly agree). The researcher obtained the necessary permissions for use and translated the questionnaire through an email communication in which written consent was requested from the producers. To adapt the scale to the Greek language, the instructions of Hulin (1987), and Hui and Triandis (1985) were followed to ensure an accurate translation and not to affect the validity of the translated questionnaire. When returning the questionnaire from the target language back to the source language, forward translation from the source language to the target language and back translation were employed. Initially, the translation was carried out by two translators who could translate fluently in English at the C2 level. The first translator was familiar with the topic of organizational behavior, and the second translator had nothing to do with this topic. Eventually, possible differences were detected, and the two translators arrived at a final translation. Then, the reverse translation of the text of the questions was accomplished, from the Greek language into English by two translators, who were not related to the use of such concepts. Among them, one was a native English speaker and the other was a Greek native speaker. Similarly, the two translators arrived at the final solution by correcting possible errors and improving term rendering. Because equal attention is required to correctly convey the conceptual and idiomatic meaning of terms (Beaton et al., 2000), the two translation texts were compared and the minor differences identified were discussed and evaluated by the statistician and by the faculty professor, who formed the group of experts and who, together with the translators, arrived at the final composition of the translated questionnaire.

3.2. Sample

The study was conducted in a public financial institution in Greece, which is owned by the central government and whose mission is to promote competitiveness, productivity, entrepreneurship and innovation in the economy. All employees of the organization make up the study population, which at the end of 2020 amounted to 431 people according to data provided upon request by the organization's human resources department. Regarding the sample, the criteria for participation were that the participants were permanent employees of the specific public organization and had an excellent knowledge of the Greek language. All 431 employees filled both criteria. A desired minimum sample size of 431 population with

a margin of error of 5%, a confidence interval (CI) of 95%, and a population proportion of 50% was calculated for 204 participants. In order not to burden the entire staff of the organization with questionnaire invitations, after discussing with the top management it was decided to invite half of the staff to participate (as 215 / 6 > 204). Invitations for participation went through organization channels and had full management approval, so the researcher expected a very high response rate. After conducting a fully randomized computer-generated selection 215 out of the 431 individuals accepted the researcher's invitation to participate in the study by receiving both a digital and printed questionnaire. All invitees were asked to consent to participate in the study. Of the 215 individuals contacted, 205 responded to the questionnaire indicating a very satisfactory return rate of 94.9% and 47.56% of the total population. Table 5 presents the demographics of the sample.

The majority of the sample are women (71.71%, N = 147), people aged 45–64 years old (74.14%, N = 152), with university or postgraduate education (60.97%, N = 123), with 11–30 years of work in the organization (78.05%, N = 160), with work experience from 3 to 11 years in the current position (81.96%, N = 168), and employees (72.68%, N = 149).

Table 5. Demographics

Category	N	f (%)
Gender		
Male	58	28.29%
Female	147	71.71%
Age		
25–34 years old	4	1.95%
35–44 years old	34	16.59%
45–54 years old	81	39.51%
55–64 years old	71	34.63%
> 65 years old	15	7.32%
Educational level		
High school	45	21.95%
Technological Educational Institute	22	10.73%
Bachelor	63	30.73%
Master	62	30.24%
PhD	13	6.34%
Years of working in organization		
0–10	32	15.61%
11–20	83	40.49%
21–30	77	37.56%
> 30	13	6.34%
Years of working in current position		
0–2	18	8.78%
3–5	47	22.93%
6–8	78	38.05%
9–11	43	20.98%
> 12	19	9.27%
Position in organization		
Permanent employee	149	72.68%
Deputy head of department	16	7.80%
Head of department	25	12.20%
Deputy head of directorate	10	4.88%
Head of directorate	5	2.44%

3.3. Data analysis

The reliability of the questionnaire was tested through the internal consistency, which assesses the consistency of the answers to the items of a questionnaire (Higgins & Straub, 2006). Reliability was measured through Cronbach's alpha where values above 0.7 are considered satisfactory (Tavakol & Dennick, 2011). The constructs have previously demonstrated satisfactory reliability with AC $\alpha = 0.87$, CC $\alpha = 0.75$, and NC $\alpha = 0.79$ (Allen & Meyer, 1990, p. 6). When a questionnaire accurately measures the concept it purports to measure, it can be considered valid (McGarland & Kimberly, 2005). An attempt was made to demonstrate construct validity, which refers to how well a questionnaire corresponds to the actual theoretical meaning of the concept it purports to assess. Construct validity can be determined by factor analysis (both exploratory and confirmatory) (Field, 2013), where items are assigned to factors that express individual dimensions of the concept measured by the questionnaire (McLeod, 2023). Numerous publications (Allen & Meyer, 1990; Meyer & Allen, 1991), support the construct validity of the questionnaire, through the three factors of AC, CC and NC. The first step of validating these results was conducting an exploratory factor analysis (EFA, principal components analysis with Varimax rotation) to identify the adapted instrument's adherence to the three-factor structure and assign items to their optimal component and/or remove items that proved problematic (Field, 2013). Followingly a confirmatory factor analysis (CFA) was performed in order to further assess the model's fit, and, in case it was not satisfactory, to undergo all the required modifications to ensure the good fit of the model (Kline et al., 2016).

The correlation test of the factors was accomplished through the Spearman correlation coefficient as the factors are not normally distributed. Normality was tested using the Shapiro-Wilk test (Field, 2013).

3.4. Ethical issues

An application for permission to anonymously distribute the questionnaire was submitted to the appropriate organization with a clear indication of the method, purpose and objectives of the study, as well as the presentation of the questionnaire. A quantitative study was conducted between February 2021 and April 2021, taking into account all relevant containment measures in light of the trajectory of COVID-19 pandemic in Greece (Oates et al., 2021).

4. RESULTS

4.1. Reliability analysis

Table 6 presents the descriptive statistics of questions and factors as well as the results of the reliability analysis. CC (M = 5.32) was rated highest among all factors, followed by AC (M = 4.22) and NC (M = 3.73). The item correlations of the AC are greater than or equal to 0.592 with the factor showing excellent reliability ($\alpha = 0.950$). The item correlations of the CC are greater than or equal to 0.552 with the factor showing excellent reliability

($\alpha = 0.908$). In the NC, the first question "*I think that people these days move from organization to organization too often*" showed a low loading ($\alpha = 0.101$), therefore, it was excluded from the analysis. NC without the 1st question showed excellent reliability ($\alpha = 0.949$), with individual rest item correlations to be greater than or equal to 0.764. The fact that the item correlations are greater than 0.5 certifies that the specific questions contribute positively to the factor, while factor reliability values above 0.9 indicate excellent reliability (Field, 2013; Tavakol & Dennick, 2011).

Table 6. Descriptive statistics and reliability analysis

Item	M	Correlation AC	Correlation CC	Correlation NC	α
AC	**4.22**				**0.950**
AC1	4.45	0.845			
AC2	4.23	0.878			
AC3	3.84	0.860			
AC4	3.74	0.592			
AC5	4.34	0.879			
AC6	4.28	0.884			
AC7	4.29	0.864			
AC8	4.54	0.749			
CC	**5.32**				**0.908**
CC1	5.46		0.552		
CC2	5.37		0.763		
CC3	5.32		0.809		
CC4	5.37		0.702		
CC5	5.63		0.588		
CC6	4.99		0.736		
CC7	5.20		0.775		
CC8	5.24		0.733		
NC	**3.73***				**0.949***
NC1	5.68			0.102	
NC2	3.73			0.764	
NC3	3.45			0.862	
NC4	4.18			0.814	
NC5	3.90			0.769	
NC6	3.68			0.882	
NC7	3.66			0.875	
NC8	3.50			0.835	

*Note: * NC1 was dropped because of low correlation.*

4.2. Validity

4.2.1. Exploratory factor analysis

Table 7 presents the results of the factorial analysis of the questionnaire. The data were suitable for factor analysis with the Kaiser-Meyer-Olkin (KMO) coefficient being $0.928 > 0.800$ (Kline, 2016) and Bartlett's test of sphericity being statistically significant (p < 0.001).

The first factor includes all questions of AC with loadings greater than or equal to 0.507, explaining 24.85% of the total variance with an eigenvalue of 11.92. The second factor includes all NC questions with loadings greater than or equal to 0.679, explaining 24.33% of the total variance with an eigenvalue of 3.33. The third factor includes all CC questions with loadings greater than or equal to 0.634, explaining 22.81% of the total variance with an eigenvalue of 1.31.

The fact that all loadings are greater than 0.5 confirms the validity of the instrument (Costello & Osborne, 2005), while the number of factors is considered correct based on eigenvalues greater than 1 (Lance et al., 2006), moreover, commonalities scores were all above the 0.4 threshold with the majority being above 0.7 indicating that a significant portion of the variance of each item can

be attributed to the underlying common factors (Field, 2013). Therefore, the conclusion of the EFA supports the confirmation of construct validity.

Table 7. Results of factor analysis

Item	Factor (KMO = 0.928)		
	1	**2**	**3**
AC5	0.881		
AC6	0.854		
AC2	0.781		
AC1	0.764		
AC7	0.745		
AC8	0.733		
AC3	0.731		
AC4	0.507		
NC6		0.835	
NC7		0.823	
NC3		0.798	
NC8		0.778	
NC5		0.775	
NC4		0.733	
NC2		0.679	
CC3			0.859
CC2			0.822
CC7			0.794
CC6			0.778
CC4			0.766
CC8			0.726
CC5			0.638
CC1			0.634
Eigenvalue	11.92	3.33	1.31
Variance (%)	24.85%	24.33%	22.81%

4.2.2. Confirmatory factor analysis

Following the EFA, a CFA was conducted in order to ensure a good fit of the model to the data. The CFA was carried out with the help of the IBM SPSS Amos (v.21) statistical package. The goodness of fit indices that were utilized for this study are four in number and are flowingly presented and discussed. The first index is the normalized index χ^2 (normed chi-square), i.e., the adjustment of the index χ^2 for the degrees of freedom (CMIN/DF or χ^2/df), with desirable values < 5 (Marsh & Hocevar, 1985) and good values < 3 (Kline, 2016). The second fit index is the comparative fit index (CFI), which is the corrected version of the normed fit index (NFI), for sample size. Values above 0.90 support the acceptance of the considered model (Byrne, 2001). The third index utilized is the root mean square error of approximation (RMSEA) index, which belongs to absolute fit indices, accompanied by a 90% CI. Values below 0.10 are considered desirable (MacCallum et al., 1996). Values of the order of 0.06 are characteristic of an excellent fit (Hu & Bentler, 1999). Finally, the standardized root mean squared residual (SRMR) of below 0.08 (Hu & Bentler, 1999; MacCallum et al., 1996) was utilized. Figure 1 presents the post-EFA version of the model (Model 1) with three factors and 23 items, the diagram shows standardized estimates.

Figure 1. Confirmatory factor analysis — Model 1
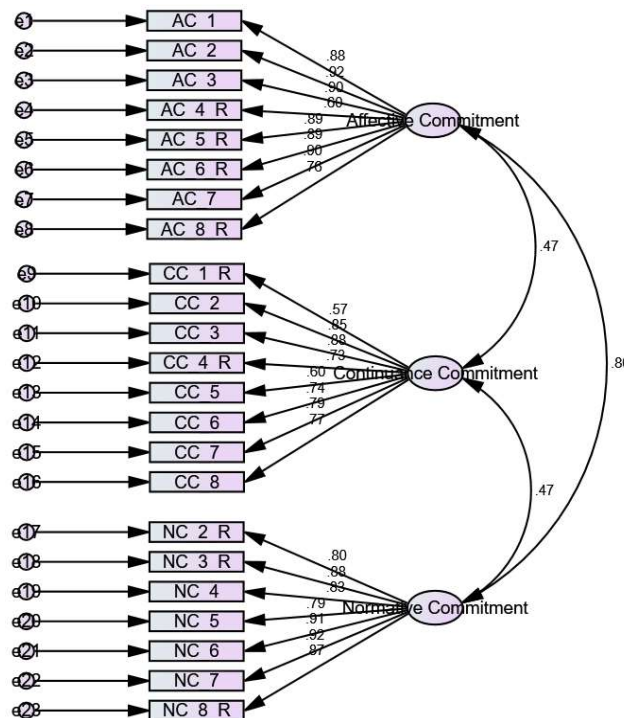
Table 8. Model 1 fit

Model	Factors	χ^2	df	χ^2/df	CFI	RMSEA	SRMR
1	3	891.187	227	3.926	0.859	0.120	0.065

As seen in Table 8 it appears that the normalized index χ^2 is satisfactory (χ^2/df = 3.926) but the CFI (0.859) is lower than the desired lower limit of 0.9, the RMSEA index is above the limit of 0.1 (0.12), while SRMR was below the desired upper limit of 0.065. Consequently, the fit of the model is not satisfactory, and actions must be taken to improve it.

Table 9 presents the results of the regressions between latent factors and their respective items. Good practice dictates excluding from the model questions that either do not have a statistically significant beta coefficient (β) or the standardized beta coefficient (*Std β*) is less than 0.5 (Chen & Tsai, 2007; Truong & McColl, 2011).

Table 9. Model 1 regression weights

Relationships	β	Std β	S.E.	C.R.	P
$AC\_8\_R \leftarrow AC$	1.000	0.757			
$AC\_7 \leftarrow AC$	1.193	0.903	0.084	14.203	***
$AC\_6\_R \leftarrow AC$	1.227	0.893	0.088	14.002	***
$AC\_5\_R \leftarrow AC$	1.245	0.887	0.090	13.888	***
$AC\_4\_R \leftarrow AC$	0.868	0.603	0.098	8.874	***
$AC\_3 \leftarrow AC$	1.122	0.896	0.080	14.048	***
$AC\_2 \leftarrow AC$	1.200	00.920	0.083	14.519	***
$AC\_1 \leftarrow AC$	1.233	0.880	0.090	13.737	***
$CC\_8 \leftarrow CC$	1.000	0.765			
$CC\_7 \leftarrow CC$	1.112	0.790	0.093	11.901	***
$CC\_6 \leftarrow CC$	1.143	0.745	0.103	11.095	***
$CC\_5 \leftarrow CC$	0.592	0.605	0.068	8.760	***
$CC\_4\_R \leftarrow CC$	0.964	0.731	0.089	10.854	***
$CC\_3 \leftarrow CC$	1.231	0.884	0.090	13.608	***
$CC\_2 \leftarrow CC$	1.137	0.849	0.088	12.965	***
$CC\_1\_R \leftarrow CC$	0.753	0.568	0.092	8.175	***
$NC\_8\_R \leftarrow NC$	1.000	0.867			
$NC\_7 \leftarrow NC$	1.092	0.921	0.056	19.422	***
$NC\_6 \leftarrow NC$	1.130	0.913	0.059	19.047	***
$NC\_5 \leftarrow NC$	1.090	0.789	0.076	14.409	***
$NC\_4 \leftarrow NC$	1.142	0.830	0.073	15.725	***
$NC\_3\_R \leftarrow NC$	1.174	0.876	0.067	17.474	***
$NC\_2\_R \leftarrow NC$	1.075	0.804	0.072	14.869	***

Note: S.E. — Standard error, C.R. — Critical ratio.

As observed, all the linear regression relationships between the latent factors and their assigned items are statistically significant, all standardized beta coefficients are above the minimum 0.5 threshold with all bars one being above the more strict 0.6 criterion (Hair et al., 2010) and the vast majority being above 0.7. These results indicate that all items are important contributors to the model and should remain in the construct.

Given that removing items with such satisfactory loadings is not advisable and would be negative for the comprehensiveness and sphericity of the instrument, the most appropriate solution is to allow the covariances between errors of the items belonging to the same factor, as long as they have a modification index (MI) of more than 3.84 (Lei & Wu, 2007). The larger the MI index between two errors, the larger the positive effect on the model goodness-of-fit indices if the covariance between them is allowed. Moreover, it is desirable to keep the number of allowed covariances between item errors in check, therefore standard procedure dictates that error covariances with the largest MIs should be allowed first and only if model fit indices are not within acceptable levels then proceed with allowing the covariance among errors with lower MIs. By studying the MIs four covariances between item errors with very large MIs (55 up to 100) were identified. It was, therefore, decided to first allow these recalculate the model's fit indices before allowing more. The covariances that were allowed were the following:

• AC: Covariance between the errors of items 5 and 6 was allowed (MI = 100.589).
• CC: 1) Covariance between the errors of items 10 and 11 was allowed (MI = 85.974); 2) Covariance between the errors of items 14 and 15 was allowed (MI = 82.625).
• NC: Covariance between the errors of items 17 and 18 was allowed (MI = 55.190)

The resulting model was named Model 2. The following Figure 2 presents the diagram of Model 2 along with the standardized coefficients.

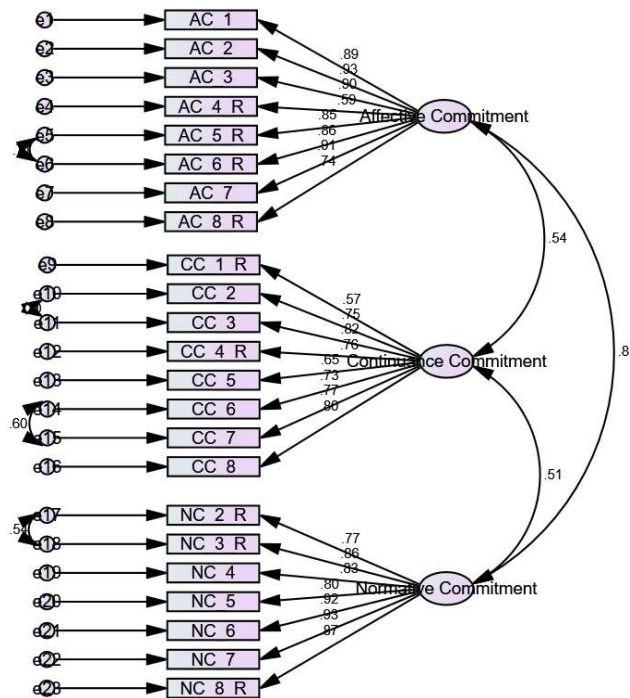**Figure 2.** Confirmatory factor analysis — Model 2

Table 10. Model 2 regression weights

Relationships	β	Std β	S.E.	C.R.	P
AC_3 ← AC	1.151	0.899	0.085	13.577	***
AC_2 ← AC	1.242	0.932	0.088	14.149	***
AC_1 ← AC	1.274	0.889	0.095	13.403	***
CC_8 ← CC	1.000	0.803			
CC_7 ← CC	1.027	0.766	0.088	11.656	***
CC_6 ← CC	1.068	0.729	0.097	10.952	***
CC_5 ← CC	0.610	0.653	0.063	9.629	***
CC_4_R ← CC	0.950	0.756	0.083	11.490	***
CC_3 ← CC	1.082	0.815	0.086	12.606	***
CC_2 ← CC	0.961	0.752	0.085	11.340	***
CC_1_R ← CC	0.725	0.574	0.088	8.279	***
NC_8_R ← NC	1.000	0.865			
NC_7 ← NC	1.099	0.926	0.056	19.519	***
NC_6 ← NC	1.143	0.922	0.059	19.352	***
NC_5 ← NC	1.101	0.796	0.076	14.559	***
NC_4 ← NC	1.147	0.832	0.073	15.742	***
NC_3_R ← NC	1.149	0.856	0.069	16.605	***
NC_2_R ← NC	1.035	0.772	0.075	13.823	***

Note: S.E. — Standard error, C.R. — Critical ratio.

Table 10 presents the results of the regressions between latent factors and their respective items for Model 2. As observed, all the linear regression relationships between the latent factors and their assigned items remain statistically significant in Model 2 and all standardized beta coefficients remain above the minimum 0.5 threshold with the vast majority showing slightly higher *Std β* numbers than they did in Model 1.

Table 11 presents the model's fit indices and derives that the χ^2/df index decreased significantly (χ^2/df = 2.353) so that it is now less than 3, a value that demonstrates good fit, the CFI increased to 0.936 also above the desired limit of 0.9 indicating a good fit, the RMSEA index fell below the limit of 0.1 (RMSEA = 0.081) and is now indicative of good fit, while the SRMR index (0.057) decreased even further below the 0.08 level.

Model 2 may thus be deemed as having a good fit, this result along with the very good reliability scores presented before allows the conclusion that a translated and adapted questionnaire with the three factors and 20 questions is both a valid and reliable instrument for measuring OC in the Greek public sector.

Table 11. Model 2 fit indices

Model	Factors	χ^2	df	χ^2/df	CFI	RMSEA	SRMR
2	3	524.634	223	2.353	0.936	0.081	0.057

4.3. Correlations

Table 12 presents the results of the correlations between the commitment factors where a statistically significant correlation occurred at the 1% significance level in each case.

Table 12. Spearman's correlation between factors

Factors	1	2	3
Affective commitment (AC)	1		
Continuance commitment (CC)	0.467**	1	
Normative commitment (NC)	0.786**	0.427**	1

*Note: ** p < 0.01.*

5. DISCUSSION

Excellent construct validity and reliability of the Allen and Meyers' (1990) OC scale properly adapted to the Greek cultural context was established. The three constructs, AC, CC, and NC can be considered reliable and valid to measure Greece's public sector OC with a statistically significant positive correlation between them. These results are in line with those of earlier research that created or verified the measurements of OC of the same or other Allen and Meyers scales (see Table 1 above).

Due to the infrequent thorough investigation of Greek public institutions, this paper contributes to the body of literature. and this study focused for the first time on the reliability and validity of Allen and Meyer's questionnaire in the cultural context of the Greek public sector which, unlike other Western countries' cultural context, is characterized by high power distance between employers and employees and a high rule orientation.

6. CONCLUSION

The study revealed that the three measures (AC, CC and NC) were distinguishable from each other, based on construct validity and internal reliability analysis.

This validates that Allen and Meyer's (1990) OC scale can be applied in Greek culture too. This scale is of practical use to identify areas of organizations' strengths and weaknesses with regard to each of the dimensions of the OC. As this research is focused on the public sector, this may lead to the better functioning of a country's public administration and has implications and consequences for organizational change and development (Toosi et al., 2020), the economic performance and the well-being of its citizens and the strategies that should be implemented towards attaining continual improvement (Morrison, 2023).

A limitation of the study is the time period of the data collection which refers to the period of the pandemic which could have had an effect on the participant's responses. Moreover, the results refer to the employees of a financial organization of the Greek public sector and not to Greek employees in general. Since the economic crisis in Greece had a significant impact on the commitment of the employees of both the public and private sectors (OECD, 2016), future research is suggested in a non-pandemic period and also on employees of the private sector and/or of different business nature.

In an environment where one of the major problems faced by euro-area enterprises is the availability of skilled labor (ECB, 2023), the measurement of employee commitment by organizational leaders may be the answer against employee retention (Mrwebi, 2019). Also, future researchers utilizing the instrument in similar public organization environments should also work on contextual factors and how characteristics of bureaucracy are associated with the degree and dimensions of OC, rewording, if necessary, the first question of the NC factor or considering its exclusion. Public organizations that can achieve and sustain employee commitment will benefit not only from improved overall performance and business outcomes but also will implement the actual public sector changes (Sun, 2021).

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