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Development and Validation of an Instrument to Measure Religious Moderation among Islamic Higher Education Students Using Factor Analysis

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ABSTRACT: This research aims to develop and validate the T Religious Moderation instrument for Islamic Higher Education Students through exploratory and confirmatory analysis. The study involved 420 Student. This research collected data using survey techniques with Likert Scale parameters ranging from 1 to 5. The study's empirical findings revealed that 24 of the Religious Moderation instrument's 37 items were analyzed and divided into four dimensions. The initial testing results using exploratory factor analysis (EFA) showed that the sample feasibility test through the KMO value and the MSA inter-item correlation value was greater than 0. 50. Similarly, confirmatory factor analysis (CFA) testing yielded 24 valid items based loading factor more than 0.30.

INTRODUCTION

Religious moderation constitutes a key concept in maintaining harmonious religious life within pluralistic societies (Subchi et al., 2022). In the Indonesian context, which is characterized by religious, cultural, and ethnic diversity, religious moderation serves as a fundamental foundation for fostering a peaceful, tolerant, and just social order (Pajarianto et al., 2022). Through various policies and programs, the Indonesian government has positioned religious moderation as a strategic national agenda, particularly in the educational, social, and religious sectors (Yanti & Witro, 2020).

Therefore, religious moderation constitutes one of the strategic issues in the development of national life in Indonesia, a country characterized by a high degree of religious, cultural, and ethnic diversity (Widodo & Karnawati, 2019). This pluralistic reality, on the one hand, represents a form of social capital; on the other hand, it has the potential to generate friction and conflict if not managed through an inclusive, just, and balanced religious approach. In this context, religious moderation is understood as a religious perspective, attitude, and practice that emphasizes the principles of balance (wasathiyyah), justice, tolerance, and the rejection of extremism and violence in the name of religion (Amirudin et al., 2022).

The Indonesian government, through the Ministry of Religious Affairs, has designated religious moderation as a national priority program integrated across various sectors, particularly education, religious services, and public policy. Nevertheless, the practical implementation of religious moderation continues to face significant challenges, including the strengthening of exclusive religious attitudes, rising intolerance, and the proliferation of religious narratives that tend toward extremism in the public sphere, including digital media (Ridho, 2020). These conditions underscore the need for systematic efforts to map and evaluate levels of religious moderation in an objective and data-driven manner.

Although the concept of religious moderation has been extensively discussed at the conceptual and normative levels, a major challenge that remains is the limited availability of valid and reliable instruments for empirically measuring levels of religious moderation (Latifa et al., 2022). Most existing studies remain descriptive or qualitative in nature, making them difficult to employ as a basis for policy evaluation, mapping societal religious attitudes, or developing data-driven intervention programs.

The development of a measurement instrument for religious moderation has therefore become an urgent necessity, so that the concept does not remain merely discursive but can be operationalized scientifically. A robust instrument is expected to comprehensively capture the core dimensions of religious moderation, including national commitment, tolerance, anti-violence, and

acceptance of local traditions. Accordingly, this study aims to develop a religious moderation measurement instrument grounded in a strong theoretical framework and meeting adequate psychometric criteria.

METHOD

Research Design

This study adopted a research and development (R&D) design aimed at constructing a psychometrically sound instrument to measure religious moderation. The instrument development process followed several systematic stages: (1) a comprehensive literature review and conceptual analysis, (2) development of the instrument blueprint, (3) item generation, (4) content validity evaluation through expert judgment, and (5) empirical testing of the instrument.

Participants and Sampling

Participants in the empirical testing phase consisted of 420 among Islamic Higher Education Students recruited from several Islamic higher education institutions in the central and western regions of Indonesia. A cluster sampling technique was employed to ensure adequate representation of participants with characteristics relevant to the measurement of religious moderation.

Instrument

The instrument was developed as an attitude scale using a five-point Likert format, ranging from *strongly disagree* to *strongly agree*. The instrument blueprint was constructed based on four core dimensions of religious moderation: (1) national commitment, (2) tolerance, (3) rejection of violence in the name of religion, and (4) accommodative attitudes toward local culture and indigenous wisdom (Fahri & Zainuri, 2019).

Data Analysis

Data analysis was conducted in a stepwise manner. Content validity was assessed based on expert evaluations of the relevance and representativeness of each item with respect to the defined indicators. Construct validity was examined using factor analysis techniques, while instrument reliability was evaluated using internal consistency coefficients. These analyses were conducted to ensure that the instrument items consistently and accurately represented the construct of religious moderation.

RESULT AND DISCUSSIONS

Exploratory Factor Analysis

National Commitment Dimension

The first analysis stage yielded results using an exploratory approach, a statistical method useful for developing structural models with many variables or only one set (Schmitt, 2011). Exploratory Factor Analysis (EFA) is one of the most common factor analysis techniques for determining the relationship between indicator or manifest variables. The factor analysis assessment also aims to assess the feasibility of several variables before including them in further testing (Yang et al., 2025). This is done to collect a set of variables that can be analyzed using specific criteri (Thompson, 2002). SPSS version 26 was used to conduct exploratory factor analysis tests.

The results of the factor analysis for the national commitment dimension indicated a Kaiser–Meyer–Olkin (KMO) value of 0.810, with a chi-square value of 2795.483 and a significance level of $p = 0.000$ (df = 66), indicating that the significance level was below 0.05. These findings suggest that the variables representing the items of the national commitment dimension met the adequacy criteria for factor analysis and were therefore suitable for subsequent analyses. The results are presented in Table 1

Table 1. Results of the KMO and Sampling Adequacy of the National Commitment Dimension

Kaisar-Meyer-Olkin Measure of Sampling Adequacy		.810
Bartletts Test of Sphericity	Approach. Chi-Square	2795.483
	df	66
	Sig	.000

Subsequently, the Measure of Sampling Adequacy (MSA) was examined to determine the extent to which the items exhibited sufficient intercorrelations. Of the 12 items constituting the national commitment dimension, all items demonstrated MSA values exceeding the acceptable threshold (> 0.50). Accordingly, no items were removed, and no reanalysis was required to achieve acceptable MSA values.

Under the assumption of the applied significance criteria, a significance value (*Sig.*) greater than 0.05 indicates that the null hypothesis (H_0) is accepted, whereas a *Sig.* value below 0.05 leads to the practical rejection of H_0. The MSA, which assesses sampling adequacy, ranges from 0 to 1 and follows the following criteria: (a) an MSA value of 1 indicates that a variable can be perfectly predicted by other variables; (b) an MSA value greater than 0.50 indicates that the variable is suitable for estimation and

subsequent analysis; and (c) an MSA value below 0.50 indicates that the variable cannot be adequately predicted and is therefore excluded from further analysis. After completing the initial screening stage, in which a set of variables was determined to meet the criteria for further analysis, the subsequent stage involved the core procedure of factor analysis, namely the extraction of variables.

Table 2. Total Variance

Component	total	Initial eigenvalues of Variance		Extraction Sums of Squared Loadings		
		of Variance	Cumulative %	total	Variance %	Cummualtive %
1	3,500	29,164	29,164	3,500	29,164	29,164
2	1,714	14,287	43,451	1,714	14,287	43,451
3	1,149	9,577	53,028	1,149	9,577	53,028
4	,908	7,565	60,593			
5	,819	6,825	67,417			
6	,728	6,064	73,482			
7	,666	5,552	79,034			
8	,608	5,070	84,104			
9	,593	4,939	89,043			
10	,509	4,244	93,287			
11	,429	3,576	96,863			
12	,376	3,137	100,000			

The table above indicates that the total variance can be explained by components with eigenvalues greater than 1.00. Specifically, at least three factors exhibited eigenvalues exceeding the threshold of 1.00. The first factor had an eigenvalue of 3.500, the second factor 1.714, and the third factor 1.149, yielding a cumulative explained variance of 53.028% across the three factors. The eigenvalue of the first factor was the largest, providing evidence of the presence of a dominant factor underlying the extracted variables. The factor structure based on the eigenvalues is illustrated in the scree plot presented below.

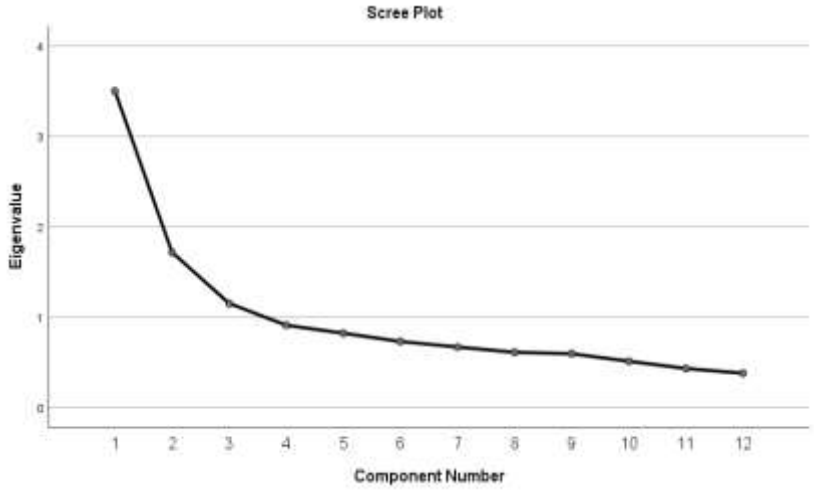

Diagram. 1 *Scree Plot* National Commitment

As shown in the scree plot in Figure 4.1, the curve exhibits a sharp downward trend from the point indicating the first factor on the left, with an eigenvalue of 1.573, to the point representing the second factor, with an eigenvalue of 1.254. The plot continues to decline for subsequent factors, with progressively smaller values in accordance with their respective eigenvalues. Furthermore, factor membership was confirmed, and the factors were labeled as presented in the following table.

Table 3. Distribution and Factor Loadings for the National Commitment Dimension

Factor	Item Distribution	Factor Names
1	A4, A5, A6, A7, A8, A10	National Spirit
2	A3, A9, A11, A12	Sense of Affection for the Unitary State of the Republic of Indonesia (NKRI)
3	A1, A2	Acceptance of Pancasila

Dimension of Tolerance

For this dimension, the Kaiser–Meyer–Olkin (KMO) measure prior to examining the individual item MSA values was 0.726, with 55 degrees of freedom and a significance level of $p = 0.000$, indicating that the data were suitable for further analysis. However, inspection of the individual MSA values revealed that one item (Item 24) had an MSA value below the acceptable threshold of 0.50 and was therefore removed. After the initial screening stage, in which the remaining variables were confirmed to meet the criteria for subsequent analysis, the core procedure of factor analysis was conducted, namely the extraction of factors, to determine the number of underlying factors formed. Subsequently, factor membership was confirmed, and the factors were labeled as presented in the following table:

Table 4. Distribution and Factor Loadings for Tolerance

Factor	Item Distribution	Factor Names
1	B13, B16, B17, B21, **B22**	Religious Harmony
2	B14, B18, B19	Acting Fairly
3	B15, B20, B23	Cooperation within Society

Dimension of Anti Violence

The results of the factor analysis for the yielded a Kaiser Meyer Olkin (KMO) value of 0.737, with a chi-square value of 1539.168 at a significance level of 0.009 (df = 36), indicating that the significance level was below 0.05. In other words, the variables representing the anti-violence indicators were deemed suitable for factor analysis. The overall variance was explained by components with eigenvalues greater than 1.00, resulting in the extraction of factors with eigenvalues exceeding the recommended threshold. Specifically, the first factor demonstrated an eigenvalue of 2.694, followed by the second factor with an eigenvalue of 1.433, and the third factor with an eigenvalue of 1.070. The cumulative variance explained by the two primary factors accounted for 57.747% of the total variance. Subsequently, factor membership was confirmed, and the factors were labeled as presented in the following table.

Table 5. Distribution and Factor Loadings Dimension of Anti Violence

Factor	Item Distribution	Factor Names
1	C24, C25, C31, C32	Demonstrating Humanistic Attitudes
2	C26, C29, C30	Safeguarding the Rights of Children and Women
3	C27, C28	Protecting the Rights of Minorities

Dimension of Accommodation to Local Culture

The results of the factor analysis for the Accommodation to Local Culture dimension yielded a Kaiser–Meyer–Olkin (KMO) value of 0.737, with a chi-square value of 1539.168 at a significance level of 0.009 (df = 36), indicating that the significance level was below 0.05. In other words, the variables representing the items of the Accommodation to Local Culture indicators were deemed suitable for factor analysis. Subsequently, the Measure of Sampling Adequacy (MSA) was examined to assess the extent to which the items exhibited sufficient intercorrelations. Of the six items comprising this dimension, all items demonstrated MSA values above the recommended threshold (> 0.50). Therefore, no items were removed, and no re-analysis was required to meet the MSA criteria. The total variance was explained by components with eigenvalues greater than 1.00, resulting in the extraction of at least two factors exceeding this threshold. Specifically, the first factor yielded an eigenvalue of 1.673, followed by the second factor with an eigenvalue of 1.562. The cumulative variance explained by these two factors accounted for 61.928% of the total variance.

The results of the factor analysis for the Accommodation to Local Culture dimension indicate that the construct of the religious moderation instrument items within this dimension comprises two factors, with six items meeting the required criteria. Empirically, these items can be considered appropriate for measuring the construct of the religious moderation instrument. Subsequently, factor membership was confirmed, and the factors were labeled as presented in the following table.

Table 6. Distribution and Factor Loadings Dimension of Accommodation to Local Culture

Factor	Item Distribution	Factor Names
1	D33, D34, D36, D37	Preserving Cultural Sustainability
2	C35, D38	Respecting Cultural Diversity

Confirmatory Factor Analysis

The t-test criterion was used to assess the items' validity with respect to the latent variable of the *Religious Moderation* (Subhash Sharma, 1997) (Izzah & Wardani, 2024). Based on the LISREL analysis shown in table, all indicators across the four dimensions have loading factor greater than 0.5. Consequently, all items were deemed valid. Based on the results of the confirmatory factor analysis, the output data generated using the LISREL program are presented as follows:

Table 7. Loading Factor and Measurement Model

No	Dimensions	Manifest	Loading Factor			Description
			SLF	t-Value	Error	
1	National Commitment	X_1	0.54	17.76	0.71	Valid
		X_2	0.57	18.92	0.68	Valid
		X_3	0.11	3.42	0.99	Invalid
		X_4	0.50	16.26	0.75	Valid
		X_5	0.52	17.20	0.73	Valid
		X_6	0.66	23.01	0.56	Valid
		X_7	0.69	24.20	0.52	Valid
		X_8	0.66	22.94	0.56	Valid
		X_9	0.11	3.25	0.99	Invalid
		X_{10}	0.47	15.23	0.78	Valid
		X_{11}	0.28	8.76	0.92	Invalid
		X_{12}	0.21	6.33	0.96	Invalid
2	Tolerance	X_{13}	0.46	14.70	0.79	Valid
		X_{14}	0.33	10.39	0.89	Valid
		X_{15}	0.40	12.65	0.84	Valid
		X_{16}	0.63	21.28	0.61	Valid
		X_{17}	0.72	25.32	0.48	Valid
		X_{18}	0.25	7.62	0.94	Invalid
		X_{19}	0.06	1.93	1.00	Invalid
		X_{20}	0.23	6.99	0.95	Invalid
		X_{21}	0.51	16.59	0.74	Valid
		X_{22}	0.21	-6.32	0.96	Invalid
		X_{23}	0.13	3.82	0.98	Invalid
3	Anti Violance	X_{24}	0.53	17.10	0.72	Valid
		X_{25}	0.62	20.71	0.62	Valid
		X_{26}	0.37	11.40	0.87	Valid
		X_{27}	0.46	14.59	0.79	Valid
		X_{28}	0.31	9.45	0.91	Valid
		X_{29}	0.22	6.66	0.95	Invalid
		X_{30}	0.35	10.84	0.88	Valid
		X_{31}	0.63	17.21	0.72	Valid
		X_{32}	0.24	21.63	0.59	Invalid
4	Accommodation to Local Culture	X_{33}	0.13	3.69	0.98	Invalid
		X_{34}	0.48	14.39	0.77	Valid
		X_{35}	0.38	11.44	0.85	Valid
		X_{36}	0.60	18.21	0.64	Valid
		X_{37}	0.16	4.77	0.97	Invalid

Based on the table above, it can be concluded that, with reference to the standardized loading factor (SLF), *t*-values, and error estimates, 24 items of the religious moderation instrument are considered valid, as they exhibit factor loadings greater than 0.30. The remaining 13 items were excluded because their values fell below this threshold. Accordingly, it can be concluded that the construct of religious moderation demonstrates an adequate model fit and can be appropriately employed to measure religious moderation among Islamic Higher Education students in Indonesia.

DISCUSSION

The results of the instrument development indicate that religious moderation can be operationalized into empirically measurable dimensions. Each developed dimension demonstrates strong theoretical relevance to the concept of religious moderation as articulated in various scholarly studies and national policy frameworks. Overall, the development of this religious moderation

measurement instrument is expected to make both theoretical and practical contributions. From a theoretical perspective, the instrument enriches the study of religious moderation by providing a standardized quantitative approach. From a practical standpoint, the instrument can be utilized by researchers, educators, and policymakers as a basis for program evaluation, mapping of religious attitudes, and the formulation of strategies to strengthen religious moderation across various sectors.

The discussion in this study focuses on the conceptual and empirical analysis of the results of the religious moderation instrument development, particularly with regard to construct clarity, dimensional relevance, and the implications of its application within the socio-religious context of Indonesia. First, the dimension of national commitment demonstrates that religious moderation cannot be separated from positive attitudes toward national values, such as Pancasila, the 1945 Constitution, and the principles of the Unitary State of the Republic of Indonesia (Susiawati et al., 2023). These findings confirm that individuals with a high level of religious moderation tend to integrate their religious identity harmoniously with national loyalty. Consequently, this dimension serves as a key indicator for identifying inclusive and constructive religious attitudes within civic life. The national commitment dimension reflects individuals' orientations in aligning religious values with national principles and the state constitution. These findings reinforce the notion that religious moderation does not contradict religious identity; rather, it strengthens the role of religion in safeguarding national cohesion.

Second, the tolerance dimension empirically represents individuals' capacity to respect differences in beliefs, worship practices, and religious expressions of other groups (Rosydi, 2019). The developed instrument is able to capture variations in tolerant attitudes more objectively, encompassing not only cognitive aspects but also affective tendencies and social behavioral orientations. This is particularly important given that intolerance often serves as an entry point for the emergence of religion-based social conflict. The tolerance dimension reflects individuals' ability to appreciate differences in religious beliefs and practices (Abror Mhd., 2020). Measurement of this dimension is crucial, as tolerance constitutes a primary indicator in preventing religion-based social conflict. The instrument developed is capable of capturing variations in tolerant attitudes in a more objective and standardized manner.

Furthermore, the anti-violence dimension emphasizes the rejection of all forms of violence carried out in the name of religion. The results of instrument testing in this dimension illustrate that moderate attitudes can be identified through individuals' tendencies to resolve differences peacefully and dialogically. Closely related to this, the accommodative dimension toward local culture reflects individuals' openness to religious practices that interact with local traditions and wisdom. This dimension reinforces the view that religious moderation is contextual in nature and capable of adapting to social realities. The rejection of violence in the name of religion further strengthens the position of religious moderation as an antithesis to extremism and radicalism. The findings indicate that moderate attitudes are reflected in individuals' tendencies to reject the legitimization of violence in resolving religious differences. This dimension is particularly relevant as an early indicator for mapping potential extremist attitudes, especially within educational settings and religious communities.

Fourth, the dimension of accommodation toward local culture and wisdom underscores that religious moderation is inherently contextual and inseparable from social realities. Acceptance of religious practices that interact with local traditions indicates flexibility in religious expression without undermining the substantive values of religious teachings. These findings are consistent with the historical and cultural characteristics of religiosity within Indonesian society.

Methodologically, the development of this religious moderation measurement instrument demonstrates that psychometric approaches can be employed to operationalize religious concepts that have traditionally been treated as normative. The resulting instrument has the potential to be used as an evaluation tool for programs aimed at strengthening religious moderation, for mapping religious attitudes among specific target groups, and as a foundation for evidence-based policymaking.

Nevertheless, this study has certain limitations, particularly concerning the scope of the research participants and the context in which the instrument was tested, which remain limited. Therefore, future research is recommended to conduct cross-group and cross-regional testing to ensure construct stability and enhance the generalizability of the instrument. Overall, this discussion affirms that the developed religious moderation measurement instrument possesses not only strong theoretical relevance but also substantial practical value in supporting the sustainable strengthening of religious moderation in Indonesia.

CONCLUSION

The results of the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) provide strong evidence that the construct validity of the religious moderation item indicators is highly satisfactory. The EFA results demonstrate that the Kaiser–Meyer–Olkin (KMO) measure, the anti-image correlation matrix, and the communalities all meet the established criteria, with values exceeding 0.50. Similarly, the CFA results, based on the evaluation of factor loadings, indicate that 24 items of the religious moderation instrument exhibit loading values greater than 0.30. Overall, it can be concluded from the comprehensive analyses that the religious moderation instrument demonstrates robust psychometric properties. Accordingly, the instrument is suitable for use in both assessment and research contexts.

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