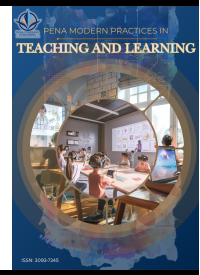




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# Educational Strategies of Muhammadiyah Cadre Development in Producing Progressive Leaders

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### ABSTRACT

This study explores the relationship between Muhammadiyah cadre development, cadre loyalty, and the formation of progressive leadership using a structural equation modeling approach based on partial least squares (SEM-PLS). The study aims to understand how development dimensions, such as organizational spirit, knowledge and insight, and Islamic values, influence cadre loyalty and progressive leadership. Cadre loyalty is also analyzed as a mediator to identify indirect relationships within this model. The research involved 141 respondents who are Muhammadiyah cadres. Data were analyzed using SEM-PLS 4.0 to evaluate the direct and mediated relationships among variables, as well as to validate the measurement model. The results show that the development of organizational spirit and knowledge and insight significantly influence cadre loyalty. Additionally, the development of knowledge and insight directly affects the formation of progressive leadership. Cadre loyalty is proven to be an important mediator that strengthens the relationship between development and leadership. However, the direct influence of Islamic values development on progressive leadership is not significant, although the indirect effect through cadre loyalty demonstrates relevance. This study highlights the importance of structured cadre development programs to support loyalty and cultivate progressive leaders within Muhammadiyah. Practical implications include enhancing the significance of programs based on ideological values, strategic innovation, and the integration of Islamic principles. This study contributes to the literature by emphasizing the role of loyalty in leadership development. Future research should use longitudinal approaches and multi-level analyses to further expand these findings.

## 1. Introduction

In the modern era, the Muhammadiyah movement navigates the intersection of ideological shifts and complex social dynamics, undertaking educational and societal programs with both national and global implications. Since its inception, Muhammadiyah has strived to develop a cadre system that not only prioritizes intellectual advancement but also preserves Islamic values within an ever-evolving social framework. Despite a historical commitment to building a strong foundation through

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Al-Islam and Muhammadiyah Studies (AIK) courses, regular study groups, and integrated educational initiatives [1], questions persist regarding the effectiveness of these methods in cultivating cadres with profound loyalty and dedication to the organization's goals and principles.

The Muhammadiyah cadre system has traditionally been viewed as the principal mechanism for embedding the organization's values and objectives. As highlighted by Nastain *et al.*, [2], cadres play a pivotal role in transmitting Muhammadiyah's core values. The concept of "progressive education," which integrates secular and religious teachings [3], lies at the heart of Muhammadiyah's approach to inspiring and educating its members. This model reflects a broader vision that harmonizes modern knowledge with Islamic teachings, aligning with the movement's aspirations for social reform and spiritual development. According to Rahayuningsih *et al.*, [4], Muhammadiyah's unique educational system serves as a tool for ideological reinforcement, empowering individuals to make meaningful contributions to Indonesian society.

However, as socio-political contexts evolve, the effectiveness of Muhammadiyah's cadre education faces challenges from increasing individualism, pragmatism, and diverse ideological perspectives within its membership. These shifts necessitate a re-evaluation of traditional values and pedagogical strategies, particularly within the framework of Derrida's deconstruction theory, which advocates for rethinking conventional paradigms to incorporate more global and pluralistic perspectives [5]. This process of reconstruction is vital for Muhammadiyah cadres in the postmodern era, where emerging ideologies and socio-political dynamics demand cadres to act as creative, proactive agents capable of navigating multifaceted environments (Giddens' Structuration Theory) [5].

From a structural standpoint, the emergence of hedonistic and pragmatic tendencies among cadres presents an ideological challenge, threatening to erode Muhammadiyah's foundational principles. In this context, cadre development must extend beyond traditional knowledge transfer to foster resilience and ideological commitment aligned with Muhammadiyah's core values. Such measures are critical to safeguarding the movement's mission amidst social and ideological pluralism [6]. To address these challenges, Muhammadiyah has proactively enhanced its educational framework through initiatives such as establishing Muhammadiyah Preacher Schools, optimizing the Baitul Arqam program, and promoting family roles alongside digital da'wah. These efforts represent a holistic approach to cadre development, aiming to cultivate well-rounded individuals capable of leading with integrity and insight [6].

Education's central role in Muhammadiyah's strategy has strong historical roots, as emphasized by its founder, KH Ahmad Dahlan, who asserted that a leader must comprehend and respect the cultural and social contexts of those they lead to foster genuine community engagement [7]. This foundational perspective continues to shape Muhammadiyah's educational and cadre development programs, underscoring the necessity for leaders who can bridge diverse viewpoints while upholding Islamic principles. Modern scholars, such as Burhanuddin *et al.*, [8] argue that robust leadership capital is crucial in enabling individuals to inspire collective action toward shared objectives, emphasizing the importance of nurturing these competencies within Muhammadiyah's leadership development framework.

Despite substantial investments in Muhammadiyah's cadre system, its effectiveness in instilling ideological commitment remains underexplored. Existing literature has identified gaps, particularly regarding the extent to which training modules, study programs, and organizational initiatives contribute to long-term cadre loyalty to Muhammadiyah's goals [9]. Furthermore, current educational strategies are primarily descriptive, lacking empirical evaluations of their impact on ideological loyalty and cadre commitment. This study seeks to bridge these gaps by assessing the role

of Muhammadiyah's educational and ideological training programs in fostering cadre loyalty while equipping them with managerial leadership capabilities.

The relevance of this research transcends Muhammadiyah itself, addressing broader issues of maintaining ideology within religion-oriented social organizations. Utilizing Jacques Derrida's deconstruction theory, modern cadre systems must deconstruct outdated paradigms to embrace global, pluralistic, and humanistic values while remaining firmly rooted in Islamic principles [5]. This postmodern approach requires Muhammadiyah cadres to act as active and creative agents who can critically engage with dominant political, economic, and social structures, and their interactions across temporal and spatial dimensions (Giddens' Structuration Theory) [5].

Moreover, the urgency for cadres with a strong ideological foundation is amplified by Muhammadiyah's role in fostering civil society and promoting social justice in Indonesia. As Rahayuningsih *et al.*, [4] note, Muhammadiyah's commitment to education and social reform is integral to its mission of alleviating poverty and empowering marginalized communities. Strengthening its cadre system allows Muhammadiyah to preserve its ideological integrity while enhancing its ability to contribute to societal welfare, particularly in supporting marginalized groups in line with Islamic values.

This research hypothesizes that integrating AIK courses, regular Muhammadiyah study sessions, and Muhammadiyah content into cadre training significantly enhances cadre loyalty while preparing them with managerial leadership skills. It also seeks to identify specific elements that reinforce the internalization of Muhammadiyah's values among cadres. Additionally, this study reviews how innovative strategies, such as optimizing the Baitul Arqam program, contribute to effective cadre development [6].

Ultimately, this study contributes to understanding how Muhammadiyah can adapt its cadre development strategies to remain effective in an increasingly pluralistic society. The findings aim to offer insights into best practices for ideological training within Islamic organizations, providing a model for similar movements seeking to foster loyalty and commitment among members in a rapidly changing world. The significance of this research lies in its potential to guide future cadre development initiatives, enhancing Muhammadiyah's capacity to produce ideologically committed leaders who are resilient to social changes and capable of realizing the organization's vision for a progressive Islamic society.

## **2. Literature Review and Hypotheses**

### ***2.1 Cadre Development in Muhammadiyah***

Cadre development within Muhammadiyah serves as a strategic mechanism to cultivate loyal members while shaping progressive leaders. As a modern Islamic organization, Muhammadiyah emphasizes structured and integrated development programs to support its organizational vision [10]. Muhammadiyah's cadre education aims to prepare future leaders who are excellent, competitive, and loyal. This is achieved through revitalizing cadres and members with ideological frameworks that address value and identity crises [11]. The three main dimensions of cadre education Islamic values development, organizational spirit development, and knowledge and insight development play pivotal roles in fostering cadre loyalty and preparing progressive leaders.

### ***2.2 Islamic Values Development***

Islamic values development focuses on internalizing Al-Islam and Muhammadiyah values. Intensive programs, such as Darul Arqam and Baitul Arqam, are designed to produce cadres who are

both intellectually capable and morally committed to the organization's mission [12]. Gusliana *et al.*, [13] highlight that internalizing Islamic values strengthens religious identity and loyalty to Muhammadiyah [14]. These programs establish a solid moral and spiritual foundation, further enhancing cadre loyalty.

According to Khoirudin *et al.*, [15] and Olii *et al.*, [16], effective Islamic values development must incorporate community-based approaches, where member interactions reinforce collective understanding of Islamic principles. These principles lay the foundation for ethical leadership prioritizing societal well-being [7]. Ismunandar [17] adds that holistic Islamic values development must integrate moderation-oriented education to address globalization challenges. Beyond rituals, Islamic values development also aims to shape character, enabling cadres to drive societal change [18]. As a result, this dimension serves as a cornerstone for building integrity among cadres and leaders.

### *2.3 Organizational Spirit Development*

Organizational spirit development enhances cadres' emotional attachment to Muhammadiyah's values and objectives. Wahyud *et al.*, [19] emphasize its role in fostering organizational solidarity, ideological commitment, and a sense of belonging—key factors in creating loyal cadres. Cahyo *et al.*, [11] note that this development also strengthens a culture of innovation and collaboration, enabling cadres to apply Muhammadiyah's values in dynamic social contexts.

Research by Ertsås *et al.*, [20] highlights the importance of organizational spirit development in building collective awareness of cadres' contributions to organizational activities. This can be reinforced through training and education that emphasizes Muhammadiyah's history, vision, and mission [21]. High levels of unity and solidarity further strengthen cadre loyalty. Additionally, Wahyud *et al.*, [19] argue that fostering intergenerational communication ensures leadership continuity, making this dimension vital for leadership regeneration.

### *2.4 Knowledge and Insight Development*

Knowledge and insight development focuses on enhancing cadres' intellectual competencies and skills. Olii *et al.*, [16] emphasize its importance in preparing cadres to address contemporary challenges and contribute positively to the organization and society. According to Arlini *et al.*, [23], this dimension requires a multidisciplinary approach that integrates modern knowledge with Islamic principles, equipping cadres with technical skills and holistic perspectives.

Septiadi *et al.*, [22] stress the role of digital technology in competency-based training, highlighting skills such as information technology, project management, and data analysis as essential for effective cadre contributions. Moreover, mentoring and coaching programs ensure continuous learning and development [24]. Knowledge and insight development also supports the formation of visionary leaders capable of making strategic decisions rooted in sustainability and societal welfare [25,55]. Thus, it remains integral to Muhammadiyah's cadre development process.

### *2.5 Cadre Loyalty and Leadership Development*

Cadre loyalty is both an endogenous variable and a mediator in leadership development. Nassani *et al.*, [26] describe loyalty as a combination of allegiance, emotional commitment, and organizational support. High cadre loyalty significantly enhances organizational effectiveness,

including the development of progressive leaders. Progressive leaders, as defined by Eaton *et al.*, [27], exhibit vision, integrity, and the ability to drive meaningful social change.

This study employs Structural Equation Modeling Partial Least Squares (SEM-PLS) to analyze causal relationships among variables. SEM-PLS enables rigorous analysis of complex structural relationships and mediation effects [28]. These hypotheses in Table 1 will be tested using the SEM-PLS approach to provide deeper insights into how cadre development influences the formation of progressive leaders in Muhammadiyah.

**Table 1**  
Research hypotheses

Hypothesis	Statement
Direct effects	
Hypothesis 1	Organizational spirit development positively affects cadre loyalty.
Hypothesis 2	Knowledge and insight development positively affect cadre loyalty.
Hypothesis 3	Knowledge and insight development positively affect the formation of progressive leaders.
Hypothesis 4	Islamic values development positively affects cadre loyalty.
Hypothesis 5	Islamic values development positively affects the formation of progressive leaders.
Hypothesis 6	Cadre loyalty positively affects the formation of progressive leaders.
Indirect effects	
Hypothesis 7	Cadre loyalty mediates the effect of organizational spirit development on the formation of progressive leaders.
Hypothesis 8	Cadre loyalty mediates the effect of knowledge and insight development on the formation of progressive leaders.
Hypothesis 9	Cadre loyalty mediates the effect of Islamic values development on the formation of progressive leaders.

### 3. Methodology

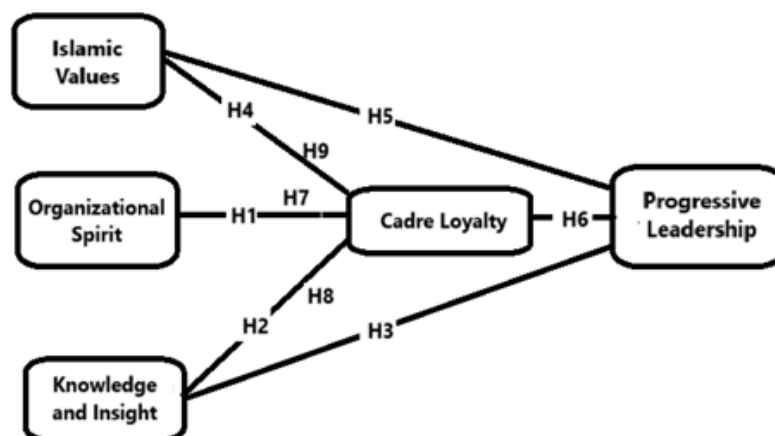
This study employed a quantitative approach using an ex post facto design to analyze the relationships between cadre development patterns, cadre loyalty, and the formation of progressive leadership [29,30]. Partial Least Squares Structural Equation Modeling (PLS-SEM) was adopted due to its ability to simultaneously estimate measurement and structural models, even when the data set is small or non-normally distributed [31].

The research sample consisted of 141 students from Muhammadiyah Higher Education Institutions (PTM), selected using purposive sampling based on specific eligibility criteria [32,33]. Data were collected through a five-point Likert scale questionnaire distributed via Google Forms over the course of one month [34].

The questionnaire was developed based on the official Muhammadiyah cadre development guidelines, encompassing the dimensions of Islamic nurturing, organizational spirit cultivation, scientific knowledge and insight development, and leadership formation [10].

Data analysis was conducted using SmartPLS version 4.0. The analysis process included evaluating direct and indirect relationships between variables (Figure 1), assessing model validity, and testing the effectiveness of cadre development patterns in fostering cadre loyalty and progressive leadership formation.

This analytical technique provides valuable insights into how structured cadre development initiatives can enhance ideological loyalty and leadership regeneration within Muhammadiyah [35].



**Fig. 1.** Research model and hypothesis design

## 4. Results

### 4.1 Demographic Respondent

The demographic characteristics of respondents (Table 2) were examined to provide contextual understanding of the sample involved in this study.

**Table 2**

Demographic information (n=141)

Category	Sub-category	Frequency	Percentage (%)
Gender	Male (M)	28	19,86
	Female (F)	113	80,14
Duration as Muhammadiyah member	1-3 years	136	96,45
	4-5 years	2	1,42
	>5 years	3	2,13
Muhammadiyah activities	Active	35	24,82
	Inactive	106	75,18
Ortom membership	IMM	30	21,28
	Tapak Suci	1	0,71
	Aisyiyah	2	1,42
	Pemuda Muhammadiyah	1	0,71
	Pengurus Ranting	1	0,71
	Lainnya	106	75,18

### 4.2 Measurement Model Evaluation

This study employed a reflective measurement model for all constructs. Indicator reliability was assessed based on a standardized loading factor threshold of  $\geq 0.708$  [36], with indicators failing to meet this threshold being removed. Construct reliability was evaluated according to Hair and Joe [37], incorporating criteria such as loading factors  $\geq 0.70$ , Composite Reliability (CR)  $\geq 0.70$ , Cronbach's Alpha  $\geq 0.70$ , and Average Variance Extracted (AVE)  $\geq 0.50$ .

Discriminant validity was tested using the Fornell-Larcker criterion and the Heterotrait-Monotrait ratio (HTMT). All HTMT values were found to be below the threshold of 0.90, indicating satisfactory discriminant validity [38]. Additionally, multicollinearity diagnostics showed variance inflation factor (VIF) values below 5, suggesting no multicollinearity issues among indicators.

The results confirmed that all constructs demonstrated good internal reliability and convergent validity, thus providing a robust foundation for further structural analysis. These findings validate the

effectiveness of the Muhammadiyah cadre development instruments in measuring loyalty and progressive leadership formation.

Table 3 shows that all variables in the model demonstrated good internal reliability, with Cronbach's Alpha and CR values exceeding 0.70. Higher CR values compared to Cronbach's Alpha indicate that the model is sensitive to indicators with higher outer loadings, consistent with the PLS-SEM approach. Convergent validity was also achieved, with AVE values above 0.50, showing that more than 50% of the variance in the indicators is explained by their respective constructs.

**Table 3**  
Results model constructs

Variable	Measurement Item	Indicator	Outer Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
Cadre loyalty	Loy_Kdr1	Cadres' commitment to organizational goals	0,815	0,887	0,914	0,639
	Loy_Kdr2	Willingness to actively contribute	0,767			
	Loy_Kdr3	Alignment of personal values with organizational values	0,824			
	Loy_Kdr4	Pride in being part of Muhammadiyah	0,855			
	Loy_Kdr5	Muhammadiyah values remain relevant amidst changes	0,728			
	Loy_Kdr8	Willingness to promote Muhammadiyah to others	0,801			
Islamic values development	Islm_ideo1	Cadres' understanding of Muhammadiyah's core values	0,729	0,816	0,878	0,644
	Islm_ideo3	Relevance of AIK courses	0,831			
	Islm_ideo5	Participation in regular study groups	0,790			
	Islm_ideo7	Relevance of Muhammadiyah's ideological education to modern challenges	0,854			
Organizational spirit development	Syar_Idlgs5	Relevance of Muhammadiyah's ideological education to modern challenges	0,893	0,874	0,923	0,799
	Syar_Org4	Muhammadiyah's activities positively impact society	0,911			

	Syar_Org7	Leadership development capabilities	0,877			
Knowledge and insight development	Wws_Prgs2	Understanding social pluralism	0,872	0,922	0,941	0,763
	Wws_Prgs3	Integrating religious and secular education effectively	0,833			
	Wws_Strg1	Baitul Arqam effectively builds ideological commitment	0,889			
	Wws_Strg3	Holistic approaches to knowledge development	0,877			
	Wws_Strg4	Strategic innovation for global challenges	0,895			
Progressive leadership	KM_Kep1	Leadership ability	0,896	0,909	0,936	0,786
	KM_Kep2	Leadership quality	0,907			
	KM_Kep3	Cadres' capabilities	0,874			
	KM_Kep5	Islamic values in leadership	0,870			

Most indicators had outer loading values above 0.70, except for a few such as Loy\_Kdr5 (0.728) and Islm\_ideo1 (0.729), which were still acceptable as they were close to the minimum threshold.

Specifically, the constructs of Islamic nurturing, organizational spirit cultivation, and scientific knowledge and insight demonstrated very good reliability and convergent validity, with scientific knowledge and insight achieving the highest CR (0.941) and strong outer loadings across all indicators. Cadre loyalty also fulfilled reliability standards, although some indicators showed relatively lower contributions.

**Table 4**  
Discriminant validity results

Variable	Organizational spirit	Knowledge and insight	Islamic values	Cadre loyalty	Progressive leadership
Method: Fornell-Larcker					
Organizational spirit	0.894				
Knowledge and insight	0.793	0.873			
Islamic values	0.732	0.711	0.803		
Cadre loyalty	0.762	0.706	0.731	0.800	
Progressive leadership	0.758	0.806	0.687	0.717	0.887
Method: HTMT (Heterotrait-Monotrait Ratio)					
Organizational spirit					
Knowledge and insight	0.884				
Islamic values	0.860	0.818			
Cadre loyalty	0.842	0.763	0.836		
Progressive leadership	0.849	0.878	0.782	0.786	

Overall, these results indicate that the instruments used in this study have adequate measurement quality, providing a strong foundation for further structural analysis.



These findings support the effectiveness of Muhammadiyah's cadre development programs in fostering cadre loyalty and progressive leadership. The success of development programs based on ideological reinforcement and scientific competence enhancement suggests that these programs are relevant for shaping progressive cadres capable of adapting to global challenges.

Discriminant validity was tested using two main methods, namely the Fornell-Larcker Criterion and the Heterotrait-Monotrait Ratio (HTMT). The Fornell-Larcker results indicated that the square root of the AVE of each construct was greater than its correlations with other constructs, confirming satisfactory discriminant validity. For example, the square root of the AVE for Organizational Spirit (0.894) was higher than its correlation with Scientific Knowledge and Insight (0.793). This pattern was consistent across all constructs, including Islamic Nurturing (0.803), Cadre Loyalty (0.800), and Progressive Leadership (0.887).

The HTMT results also showed that all values were below 0.90, confirming adequate discriminant validity according to Henseler *et al.*, [39]. For instance, the HTMT between Scientific Knowledge and Insight and Islamic Nurturing was 0.818, and between Cadre Loyalty and Scientific Knowledge and Insight was 0.763.

The combined results from both the Fornell-Larcker Criterion and HTMT analysis confirmed that discriminant validity requirements were fully met, ensuring that the constructs were distinct and reliable for subsequent structural model analysis.

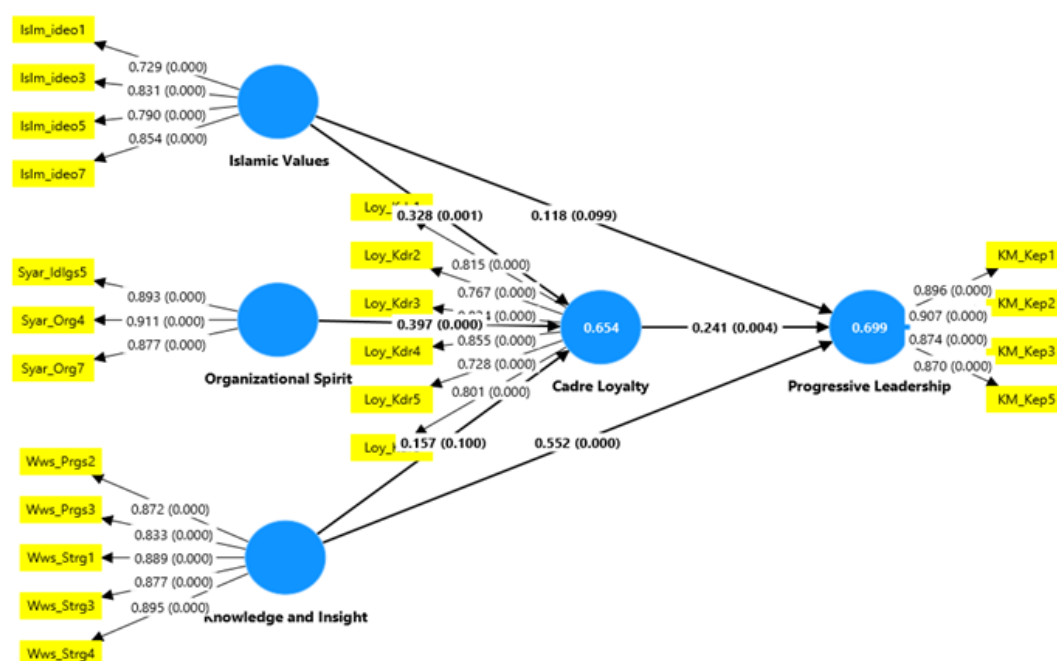


Fig. 2. Outer loading model, path coefficients, and P value

#### 4.3 Structural Model Evaluation

The evaluation of the structural model began with testing for multicollinearity. All inner VIF values were below 5, indicating no multicollinearity issues [38].

The model's predictive power was confirmed through  $R^2$  values of 0.654 for Cadre Loyalty and 0.699 for Progressive Leadership, indicating substantial explanatory capacity. Predictive relevance ( $Q^2$ ) values were also positive, strengthening the model's validity.

The model fit was assessed using the Standardized Root Mean Square Residual (SRMR), yielding a value of 0.077, which is below the threshold of 0.08, thus confirming good model fit [40].

Moreover, the PLS Predict analysis indicated that the model had superior predictive performance compared to linear regression models, with lower RMSE and MAE values. Robustness checks using FIMIX-PLS further confirmed that the model was stable and free from issues of nonlinearity and heterogeneity [41].

These results collectively demonstrate that the structural model is reliable, valid, and robust for explaining the relationships among Cadre Development, Loyalty, and Progressive Leadership.

**Table 5**

Hypothesis testing and structural model results

Hypothesis	Path coefficient	P-value	95% Confidence interval (Path coefficient)		Result /Significance	VIF	f square /Upsilon V	Robustness	
			Batas Bawah	Batas Atas				R square	Q square
Direct Effects									
Organizational spirit → Cadre loyalty	0.397	0.000	0.195	0.600	Sig	3.184	0.143	0.654	0.622
Knowledge and insight → Cadre loyalty	0.157	0.100	-0.036	0.335	No	2.994	0.024	0.654	0.622
Knowledge and insight → Progressive leadership	0.552	0.000	0.383	0.712	Sig	2.383	0.424	0.699	0.676
Islamic values → Cadre loyalty	0.328	0.001	0.149	0.519	Sig	2.391	0.130	0.654	0.622
Islamic values → Progressive leadership	0.118	0.099	-0.026	0.257	No	2.567	0.018	0.699	0.676
Cadre loyalty → Progressive leadership	0.241	0.004	0.085	0.411	Sig	2.528	0.077	0.699	0.676
Indirect effects									
Organizational spirit → Progressive leadership	0.096	0.010	0.030	0.175	Sig	-	0.008	-	-
Knowledge and insight → Progressive leadership	0.038	0.179	-0.008	0.101	No	-	0.001	-	-
Islamic values → Progressive leadership	0.079	0.054	0.019	0.177	No	-	0.006	-	-

Note: Bootstrapping based on 5,000 samples. Direct, indirect, and the hypothesized effects assessed by applying a one-tailed test at 5% of significance level [5%, 95%]. VIF: variance inflation factor

#### Direct Effects.

The results of the SEM-PLS analysis in Table 5 indicate that:

- i. H1: Organizational spirit development has a significant positive effect on cadre loyalty ( $\beta = 0,397$ ;  $p = 0,000$ ; CI: 0,195-0,600) with a medium effect size ( $f^2 = 0,143$ ) and VIF = 3,184.

- ii. H2: Scientific knowledge and insight development does not have a significant effect on cadre loyalty ( $\beta = 0.157$ ;  $p = 0.100$ ; CI:  $-0.036-0.335$ ) with a small effect size ( $f^2 = 0.024$ ).
- iii. H3: Scientific knowledge and insight development has a significant positive effect on progressive leadership ( $\beta = 0.552$ ;  $p = 0.000$ ; CI:  $0.383-0.712$ ) with a large effect size ( $f^2 = 0.424$ ).
- iv. H4: Islamic nurturing has a significant positive effect on cadre loyalty ( $\beta = 0.328$ ;  $p = 0.001$ ; CI:  $0.149-0.519$ ) with a medium effect size ( $f^2 = 0.130$ ; VIF = 2.391).
- v. H5: Islamic nurturing does not have a significant effect on progressive leadership ( $\beta = 0.118$ ;  $p = 0.099$ ; CI:  $-0.026-0.257$ ).
- vi. H6: Cadre loyalty has a significant positive effect on progressive leadership ( $\beta = 0.241$ ;  $p = 0.004$ ; CI:  $0.085-0.411$ ) with a small to medium effect size ( $f^2 = 0.077$ ).
- vii. Indirect Effects (Mediation)
- viii. H7: Organizational spirit development has a significant indirect effect on progressive leadership through cadre loyalty ( $\beta = 0.096$ ;  $p = 0.010$ ; CI:  $0.030-0.175$ ).
- ix. H8: Scientific knowledge and insight development does not show a significant indirect effect ( $\beta = 0.038$ ;  $p = 0.179$ ; CI:  $-0.008-0.101$ ).
- x. H9: Islamic nurturing demonstrates a near-significant indirect effect on progressive leadership through cadre loyalty ( $\beta = 0.079$ ;  $p = 0.054$ ; CI:  $0.019-0.177$ ).

#### 4.4 Model Fit Evaluation (Robustness Check)

As part of enhancing methodological rigor, a robustness check was conducted to evaluate the potential presence of non-linear relationships, based on the recommendations of Ghasemy *et al.*, [36] and Sarstedt *et al.*, [41]. Although linear relationships are generally sufficient in the PLS-SEM approach, this test ensures that no significant non-linear deviations compromise the model's validity [37,42].

The evaluation results show that the  $R^2$  value for cadre loyalty was 0.654 and for progressive leadership was 0.699, indicating that the model is capable of explaining more than 65% of the variability in each construct. The  $Q^2$  values for cadre loyalty (0.622) and progressive leadership (0.676) also support the model's strong predictive relevance. Overall, these findings suggest that the model possesses substantial predictive adequacy and supports the reliability of the hypothesis testing, including the mediation effect of cadre loyalty.

**Table 6**

SRMR and GoF Index

SRMR	Average communality	Average R square	GoF index
0,077	0,717	0,676	0,696

The PLS Predict analysis demonstrated that the model possesses adequate predictive capability. The Root Mean Square Error (RMSE) and Mean Absolute Error (MAE) values from the PLS model were better than those from the linear regression (LM) model, supporting the relevance of using PLS-SEM to model the complex relationships among cadre development, cadre loyalty, and progressive leadership.

Performance evaluation using the CVPAT LV Summary showed that the PLS approach had significantly lower loss compared to the Internal Assessment (IA) across all constructs ( $p < 0.001$ ). Compared to the linear model, PLS demonstrated a significant advantage in modeling Cadre Loyalty ( $p = 0.041$ ), although the advantage was not statistically significant for Progressive Leadership ( $p =$

0.417). The Goodness-of-Fit Index (GoF) value of 0.696, calculated from the average communality (0.717) and average  $R^2$  (0.676), confirms that the model exhibits a strong overall fit, balancing indicator measurement reliability and latent variable predictive strength.

Overall, these results support the validity and reliability of the model in explaining the relationships between cadre development, cadre loyalty, and the formation of progressive leadership within Muhammadiyah.

## 5. Discussion

This study highlights the importance of cadre development in supporting the formation of cadre loyalty and progressive leadership within Muhammadiyah. Based on the SEM-PLS analysis, it was found that organizational spirit cultivation, scientific knowledge and insight development, and Islamic nurturing had significant relationships with both cadre loyalty and the formation of progressive leadership. Cadre loyalty was also proven to play a crucial role as a mediator between development initiatives and the formation of progressive leadership. This discussion compares the research findings with relevant literature, evaluates theoretical and practical contributions, and discusses the study's limitations.

In this context, adding an organizational psychology perspective strengthens the understanding of the cadre loyalty variable. The Three-Component Model of Commitment by Meyer *et al.*, [58] divides organizational commitment into three dimensions: affective (emotional), normative (moral obligation), and continuance (cost-benefit considerations). The affective and normative dimensions appear most relevant to Muhammadiyah's context, where emotional attachment to ideological values and a sense of obligation to remain within the organization form the foundation of cadre loyalty. Therefore, development programs that can foster emotional affiliation and value internalization are likely to be more effective than merely delivering ideological information [43].

Moreover, from a sociological perspective, particularly through Bourdieu's theory of habitus it can be argued that cadre development must be transformative and contextual [44,45]. Habitus is a system of dispositions formed through ongoing social and cultural experiences. In Muhammadiyah's framework, cadre development is not merely about doctrinal transfer but about shaping a new habitus that reflects progressive Islamic values. This means that cadres must internalize organizational values as part of their cognitive and affective structures in responding to a changing social world.

Philosophically, it is also essential to refer to the thought of Syed Muhammad Naquib al-Attas [14], who emphasizes that Islamic education should aim for *ta'dib*—the formation of individuals who are intellectually, spiritually, and morally civilized. Within this perspective, Muhammadiyah's cadre development should not merely strengthen leadership competencies but should also be a process of "internalizing adab" as the basis for Islamic leadership morality. This broadens the view that leadership is not just about administration, but about embodying values.

The findings show that organizational spirit cultivation had a significant effect on cadre loyalty (path coefficient = 0.397,  $p < 0.001$ ). This aligns with the findings of Wahyud *et al.*, [19], which demonstrate that developing interpersonal relationships and engaging with organizational values can strengthen individual commitment. Dimensions such as the relevance of Muhammadiyah's ideological education to modern challenges and the positive societal impact of organizational activities contributed substantially to this result. A practical implication is the need to strengthen cadre development programs that actively involve cadres in community-based activities to enhance their sense of organizational attachment [46].

The results indicate that scientific knowledge and insight development showed a positive but not statistically significant relationship with cadre loyalty (path coefficient = 0.157,  $p = 0.100$ ). This contrasts with some literature stating that strategic insight development enhances individual commitment to organizations. This discrepancy may be explained by the fact that the majority of respondents were new members, leading to a bias in the loyalty variable, as their organizational attachment had not yet fully developed [47]. In the context of this study, the low significance may suggest the need for personalized development programs better tailored to the needs and aspirations of cadres. According to Cannon-Bowers *et al.*, [48], programs such as individualized workshops or direct mentoring could be effective strategies for increasing the relevance of development initiatives.

Meanwhile, scientific knowledge and insight development was found to have a significant impact on the formation of progressive leadership (path coefficient = 0.552,  $p < 0.001$ ). This finding is consistent with Dechuan ang Teng [49], who emphasizes the importance of innovation-driven and strategic insight-based leadership approaches in enhancing cadre perspectives. Dimensions such as strategic innovation for global challenges and the integration of religious and secular education significantly contributed to this result. A practical implication is the need to expand development programs based on strategic innovation to enhance cadres' leadership capabilities in the modern era [50,51].

The findings also show that Islamic nurturing had a significant relationship with cadre loyalty (path coefficient = 0.328,  $p < 0.01$ ). This supports previous literature emphasizing the importance of integrating Islamic values into organizational commitment development [48,52]. Dimensions such as participation in regular Islamic study sessions and the understanding of Muhammadiyah's core values play critical roles in strengthening individual alignment with the organization [10]. Thus, Muhammadiyah could further enhance loyalty through strengthening Islamic study and value discussion programs.

Although a positive direction was observed, Islamic nurturing did not show a statistically significant effect on progressive leadership (path coefficient = 0.118,  $p = 0.099$ ). This differs from findings by Isman [53] and Salamun *et al.*, [54], who emphasized the role of religious values in shaping leadership styles. This study suggests that the impact of Islamic nurturing on progressive leadership may occur indirectly through cadre loyalty. Therefore, a closer integration of Islamic values and leadership training is necessary to enhance the effectiveness of cadre development [55]. Low cadre activeness and participation rates may pose obstacles to leadership formation, thus highlighting the critical mediating role of cadre loyalty [56].

Furthermore, cadre loyalty was found to have a significant relationship with the formation of progressive leadership (path coefficient = 0.241,  $p < 0.01$ ). This supports literature suggesting that individual commitment to an organization contributes to the development of progressive leadership [14]. Dimensions such as cadres' commitment to organizational goals and pride in being part of Muhammadiyah significantly contributed to these findings. A practical implication is the importance of strengthening the alignment between cadres' individual goals and organizational values to reinforce loyalty.

These findings can also be understood through the broader perspective of Islamic educational philosophy, particularly within the *insan kamil* framework, which emphasizes the total development of individuals spiritually, intellectually, and socially. In this regard, Muhammadiyah's cadre development reflects an integrative approach to forming complete individuals who can actively contribute to society [57].

Finally, cadre loyalty was found to mediate the relationship between organizational spirit cultivation and progressive leadership formation (path coefficient = 0.096,  $p = 0.010$ ). However, the

mediating role of cadre loyalty was not significant in the relationship between scientific knowledge and insight development and Islamic nurturing with progressive leadership. These results support the literature suggesting that the mediating role depends on the relevance and effectiveness of development programs [48]. To enhance the mediating effect, it is necessary to strengthen more relevant and targeted cadre development programs.

## 6. Conclusions

This study provides empirical evidence on the role of cadre development-which encompasses Islamic nurturing, organizational spirit cultivation, and scientific knowledge and insight development-in strengthening cadre loyalty and forming progressive leadership within Muhammadiyah.

The findings indicate that organizational spirit cultivation and Islamic nurturing significantly contribute to increasing cadre loyalty. However, scientific knowledge and insight development directly contributes more significantly to the formation of progressive leadership than to loyalty. Loyalty itself serves as a crucial mediating variable that strengthens the relationship between organizational spirit cultivation and progressive leadership.

The robustness analysis and goodness of fit tests confirm that the proposed model possesses substantial explanatory and predictive power. The integration of ideological, organizational, and scientific development dimensions is proven to be an effective strategy for fostering progressive cadres capable of driving Muhammadiyah's future transformation.

This research contributes to the theoretical development in cadre education by empirically reinforcing the importance of loyalty as an intermediary factor linking cadre education initiatives with leadership outcomes. Practically, these findings offer insights for Muhammadiyah to continuously optimize cadre development programs, balancing the strengthening of values with intellectual empowerment to create progressive leaders responsive to global challenges.

Future research can explore longitudinal approaches or experimental designs to further strengthen the causal understanding of cadre development dynamics in religious organizations.

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