Determinants Of Graduate Quality: Entrepreneurial Competence, Religious Culture, And Pedagogical Competence In Madrasah

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ABSTRACT*:*
This research aims to analyse and demonstrate the influence of entrepreneurial competence, religious culture, and pedagogical competence on graduate quality, as well as to describe an implementation model based on interview results. Employing a mixed-methods approach with an explanatory sequential design, this study involved State Madrasah Aliyah teachers in eight cities/regencies of Banten Province, Indonesia. A sample of 349 teachers was selected through proportional stratified random sampling. The results indicate that the entrepreneurial competence of Madrasah Principals (X1), religious culture (X2), and pedagogical competence (X3) significantly and simultaneously influence graduate quality (Y), with a p-value of .000 (p < .05). The R-squared value of 0.844 suggests that 84.4% of the variance in graduate quality can be explained by these three independent variables. Among these, pedagogical competence (X3) exhibits the strongest and most significant influence on graduate quality, as indicated by its t-value. To optimize the influence of these variables, the study recommends a transformational leadership approach to foster synergy between entrepreneurial leadership, religious culture, and teacher pedagogy. This approach can facilitate the development of innovative programs and policies that create meaningful learning experiences, ultimately producing graduates who are not only academically proficient and spiritually grounded, but also possess strong character and relevant skills to meet societal needs.

ABSTRAK:

Tujuan penelitian adalah menganalisis dan membuktikan adanya pengaruh kompetensi kewirausahaan kepala madrasah, budaya religius dan dan kompetensi pedagogi tenaga pendidik terhadap mutu lulusan, serta mendeskripsikan model implementasi berdasarkan hasil wawancara. Metode dalam riset ini adalah mix method dengan desain explanatory sequential mix method. Populasi dalam penelitian ini adalah guru-guru Madrasah Aliyah Negeri di Wilayah Provinsi Banten, Indonesia, yang tersebar di delapan Kota/Kabupaten. Dalam riset ini, peneliti menggunakan proportional stratified random sampling, dengan jumlah sampel 349 orang. Hasil penelitian menunjukkan bahwa variabel kompetensi kewirausahaan kepala madrasah (X1), budaya religius (X2), dan kompetensi pedagogi tenaga pendidik (X3) secara bersamaan berpengaruh kepada peningkatan mutu lulusan (Y). Berdasarkan hasil kuantitatif pada nilai signifikansi = .000, yaitu lebih kecil dari probabilitas 0,05. Nilai R-Square yang sebesar 0,844, yang berarti 84,4% varians mutu lulusan dapat dijelaskan oleh variabel independen, yaitu kompetensi kewirausahaan kepala madrasah (X1), budaya religius (X2), dan kompetensi pedagogi tenaga pendidik (X3). Sedangkan berdasarkan tabel distribusi t, variabel X3 (kompetensi pedagogi tenaga pendidik) memiliki nilai t yang paling tinggi dan signifikan secara statistik, mengindikasikan pengaruh yang sangat kuat dan positif terhadap mutu lulusan (Y). Hasil penelitian ini menunjukkan bahwa kompetensi kewirausahaan kepala madrasah, penguatan budaya religius, dan pengembangan kompetensi pedagogi tenaga pendidik menjadi faktor penting dalam peningkatan mutu lulusan. Program inovatif dan kebijakan yang dibuat dapat bermuara pada penciptaan pembelajaran yang bermakna bagi siswa madrasah, sehingga menghasilkan lulusan yang tidak hanya cerdas secara intelektual, spiritual tetapi juga memiliki karakter yang kuat dan keterampilan yang relevan dengan kebutuhan masyarakat.

Kata kunci: kompetensi kewirausahaan, budaya religius, kompetensi pedagogi, mutu lulusan, madrasah.

INTRODUCTION

Religiosity is the essence of education in Madrasah. Madrasah graduates are expected to have good personal and religious qualities. These qualities are

manifested through the ability of graduates to gain spiritual Knowledge and understanding, internalize and interpret religious values, and apply them to everyday life in society, both in worship rituals and social worship. An ecological perspective, also called religious culture, is used to achieve the quality standards of these graduates.

The ecological perspective and the development of religious culture align with strengthening the role of madrasahs in achieving SDGs (Hidayah et al., 2025). In achieving SDGs4, educational institutions, including madrasahs, are expected to be able to create inclusivity and strengthen students' character through a curriculum that emphasizes moral and social values (Haddade et al., 2024; Sari & Urcy, 2022). The success of madrasahs in achieving SDGs is pursued by integrating religious Knowledge, science, and other global issues so that graduates have a sense of empathy and social responsibility and are ready to contribute to community life (Chabibi et al., 2025). With this perspective, the standardization of graduate quality becomes broader and more holistic, not focused solely on academic achievement.

Previous studies related to the quality of graduates of Madrasah in several regions in Indonesia show that there are problems that require attention. The religious culture that is the main value of Madrasah is generally only in the form of religious rules and traditions and has not touched on the affective side of students (Huda et al., 2024). A study of Madrasahs in West Sumatra province shows that religious culture does not yet appear very attractive and has not become a strong habit among students (Hensold et al., 2020). Regarding skills and character, Madrasahs in Banten still face challenges in instilling a strong religious character and skills relevant to the needs of the times (Fitria et al., 2025). A systematic literature review revealed that 34% of Madrasahs still use a curriculum that does not align with the digital era's demands, so graduates are less competitive in mastering technology and critical analysis (Gusti Gede Diva Pari Sangga & Ahmad, 2022).

Managers, policymakers, and educators must create connections between Islamic high school management, rules, culture, and quality learning in responding to these challenges. The variable that is predicted to be able to connect all of them is pedagogical competence (Rosdiana et al., 2024). Pedagogy is a process and effort that connects education, teaching and learning to develop students' personalities so that they are ready to live. Pedagogy connects teaching actions with culture, structure, and social control mechanisms in the classroom and educational institutions (Mayasari et al., 2024). Pedagogical competence enables educators to provide an engaging and meaningful learning experience for the students, enhancing their teaching quality (Haron et al., 2021).

Pedagogy is very important in advancing religious culture in madrasah because it helps internalize religious values through continuous practice, which ultimately improves the quality of graduates who can effectively fight modern

resistance while upholding the faith of graduates (Mulyadi, 2018). Operationally, pedagogy can develop religious culture, and the quality of graduates is the interaction between teachers and students through oral, facilitating memorization, and didactic approaches to sacred texts (Laura et al., 2020). The main orientation of Islamic education is adab so pedagogy is a process of *ta'dib*, namely the process of training, teaching, disciplining, and getting used to doing positive and correct things spiritually, morally, and intellectually (Memon & Alhashmi, 2018).

The previous study showed that pedagogical competence can influence the strengthening of religious culture and improve the quality of graduates. However, the study is only a theoretical study, so empirical evidence is needed to prove the concept's truth. Therefore, this study will prove it empirically through quantitative and qualitative data collection at leading madrasahs in Banten Province, Indonesia.

METHODS

This study uses an explanatory sequential mixed-methods design to collect and analyze quantitative and qualitative data. Quantitative methods are prioritized in the early stage, while qualitative methods are conducted afterward to support, deepen, and expand the general descriptions derived from the quantitative findings. The population in this study consisted of teachers of State Islamic Senior High Schools in Banten Province, spread across eight cities/regencies, with a total of 1,746 teachers. The sampling technique used was proportional stratified random sampling. In this study, the population was divided based on the status of superior and non-superior madrasahs in each region of Banten Province. After dividing the population into strata, samples were taken randomly from each stratum. Based on this method, the number of samples used in the study was 349 teachers.

The findings are expected to provide strong recommendations for madrasah principals in implementing visionary management to promote a religious culture that is integrated into school practices. This research also involved 13 (thirteen) madrasah principals as additional participants across Banten Province, Indonesia. Since principals were the objects of this research in terms of entrepreneurial competence, the researcher was supported by the Banten Regional Office of the Ministry of Religious Affairs to gain access to the participating madrasahs.

This research used four questionnaires: (1) the teacher pedagogical competence questionnaire, (2) the entrepreneurial competence questionnaire, (3) the religious culture questionnaire, and (4) the graduate quality questionnaire. Each questionnaire required teachers to assess themselves, their leaders, and graduates. The questionnaires used a five-point Likert scale. The explanation of each questionnaire is presented in table 1.

Table 1. Research instrument

No	Questionnaire	Indicators	n-item	Validity	Reliability
1	Teacher pedagogical competence	1. Mastering the characteristics of students 2. Curriculum development 3. Designing learning activities 4. Developing student potential 5. Communication 6. Assessment and evaluation	30	0.637	0.919
2	Principal entrepreneurial competence	1. Ideas and opportunities 2. Resources 3. Into action	30	0.677	0.941
3	Graduate quality	1. Academic Quality 2. Personal and Social Quality 3. Religious Quality	30	0.656	0.901
4	Religious culture	1. Artifacts 2. Values 3. Basic Assumptions	30	0.682	0.947

The path analysis was conducted in this study to analyze how influential the principal's entrepreneurial competence (X1), religious culture (X2), and

teacher pedagogical competence (X3) are in improving graduate quality (Y). This analysis can measure one variable's direct and indirect effects on another. Similar to multiple regression, path analysis is conducted on interval data from the total score of the variable, which is the sum of the scores of the dimensions or items of the research instrument, and both, therefore, path analysis and multiple regression are only conducted at the latent variable level (unobserved).

In this study, path analysis was conducted using LISREL 8.8. Analysis with LISREL involves two main stages: building a measurement model to ensure the validity and reliability of the latent variables; and building a structural model to test hypotheses regarding the causal relationship between latent variables. The study conducted an analysis based on the Path Diagram processed by LISREL to visualize the relationship between variables and facilitate interpretation of the analysis results. Qualitative data gained from observation, interview and documentation, as the data supported to previous data (quantitative). The qualitative data was arranged into dedicated table to find out the gap of the finding between quantitative and qualitative. Further, the qualitative data was drawn into coding relating to the indicator of the instruments. The data was analyzed through NVivo Apps to produce Word-cloud which represent the cue card specifically described.

FINDINGS AND DISCUSSION

FINDINGS

The main objective of this study is to identify the influence of the entrepreneurial competence of the madrasah principal, religious culture, and pedagogical competence on the quality of graduates. These variables are selected based on the assumption that strong leadership, a religious learning environment, and a teacher's ability to teach significantly contribute to student success. The research results began with identifying the portrait of the principal's entrepreneurial competence level of madrasah. The researcher conducted a survey regarding the principal's entrepreneurial competence of in the context of educational management, which was obtained through a questionnaire filled out by madrasah teachers. In general, the entrepreneurial competence of madrasah's principals are measured based on three dimensions: ideas and opportunity, resources, and into action. An overview of

entrepreneurial competencies based on teacher assessment in the sample group is presented in the descriptive analysis table 2.

Table 2. Descriptive Analyses each Variable

			Statistic	Std Error
X1	Mean of *entrepreneurial competence of madrasah's principals*		123.69	.546
	95% Confidence Interval for Mean	Lower Bound	122.61	
		Upper Bound	124.74	
X2	Mean of *pedagogical competence*		128.82	.502
	95% Confidence Interval for Mean	Lower Bound	127.84	
		Upper Bound	129.81	
X3	Mean of *religious culture*		133.86	.484
	95% Confidence Interval for Mean	Lower Bound	132.91	
		Upper Bound	134.82	
X4	Mean of *madrasah's graduate quality*		137.08	.417
	95% Confidence Interval for Mean	Lower Bound	136.26	
		Upper Bound	137.90	

It is known that the average score of the entrepreneurship competence of the madrasah principals is 123.69. Based on the average score, in general, the research sample assesses that the entrepreneurial of madrasah's principals is very competent in entrepreneurship in the context of managing educational services (Mufid et al., 2025). The high assessment indicates that the sample believes their entrepreneurial competence of madrasah's principals have been able to effectively implement the dimensions of entrepreneurship, capable in identifying new opportunities in the madrasah environment well, such as developing innovative extracurricular programs or establishing collaborations with external parties.

Madrasah's religious culture occurred in integrating spiritual and intellectual aspects in teacher practicing. The average score of religious culture is 128.82. It can be understood that the teachers assess that the madrasah has a very good religious culture (Fitria et al., 2025). The results of this survey indicate

the teachers' perception that the madrasah has successfully created a learning environment that is strongly infused with religious values. It showed the value of teachers assess that the Madrasah has a very good religious culture. The results of this survey indicate the teachers' perception that the madrasah has successfully created a learning environment that is deeply infused with religious values. Meanwhile, madrasah's graduate quality as the reflection of any Islamic education institution and the purposed outcome of the practicing (Afidah et al., 2022). It indicated by the quality of madrasah graduates. The table 3 shows as (X^4) the average score from the teachers' assessment regarding the quality of graduates is 137.08. Based on this score, it indicated that the teachers observe that the graduates of the madrasah have a good understanding of the teachings of Islam. They are able to apply religious values in their daily lives, both in social interactions and in worship. In the social aspect, graduates are also assessed to have social skills that enable them to interact with others. In addition to religious and social aspects, teachers also observe an improvement in academic diploma achievements. This shows that graduates not only have a strong religious knowledge but also possess sufficient academic abilities to continue their studies at a higher level.

Then, before the path analysis, a regression analysis was conducted first to measure the simultaneous and partial influence of several independent variables on the quality of madrasah graduates. The test results can be seen in table 3.

Table 3. Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig. F Change
1	.919a	.844	.842	3.091	.844	621.392	3	345	.000

a. Predictors: (Constant), X3, X1, X2

Table 3 shows that the regression model built has a reasonably good ability to explain the variation in the quality of graduates (Y). This can be seen from the

R-Square value of 0.844, which means that 84.4% of the variance in the quality of graduates can be explained by the independent variables, namely the entrepreneurial competence of the madrasah principal (X1), Religious culture (X2), and pedagogical competence (X3). In other words, the three independent variables together significantly contribute to improving graduates' quality. Table 4 shows the partial influence of each variable on the quality of graduates.

Table 4. Multiple Linear Regression Test

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	31.069	2.461		12.625	.000
X1	-.128	.048	-.162	-2.649	.008
X2	.112	.068	.134	1.642	.102
X3	.803	.051	.933	15.856	.000

 a. **Dependent Variable: Y**

When viewed from the t value, variable X3 (Pedagogical Competence) has the highest and statistically significant t value, indicating a powerful and positive influence on the dependent variable. This means that the higher the value of X3, the higher the value of the dependent variable. Conversely, variable X1 also has a statistically significant t value but with a negative direction of influence, indicating an inverse relationship between the two variables. Meanwhile, variable X2 has an insignificant t value, meaning there is no firm evidence of its influence on the dependent variable. Thus, it can be concluded that pedagogical competence is a key variable of the three independent variables in improving the quality of graduates. A path analysis was carried out on the three latent variables to ensure this conclusion. The results of the analysis are presented in figure 1.

Figure 1. Path analysis
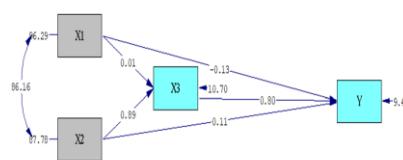
Chi-Square=0.00, df=0, P-value=1.00000, RMSEA=0.000

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Based on the path analysis diagram shown in figure 1, the model shows the relationship between variables X1, X2, X3, and Y. It appears that X1 (entrepreneurial principal competence) and X2 (religious culture) directly affect X3 (pedagogical competence) with path coefficients of 0.01 (positive) and 0.89 (very positive), respectively. Furthermore, X1 has an adverse direct effect on Y (graduate quality) of -0.13, and X2 has an adverse direct effect on Y of -0.11. Meanwhile, X3 (pedagogical competence) has a powerful and positive direct effect on Y of 0.80. Although the Chi-Square, df, p-value, and RMSEA values indicate a perfect model fit. Based on the path analysis, it can be concluded that the pedagogical competence of educators is the most influential mediator factor in improving the quality of madrasah graduates.

The researcher analyzed the results of interviews with the principal of the madrasah regarding the implementation of teacher pedagogical competence in supporting the quality of graduates. The interview results are mapped using the word cloud in figure 2.

Figure 2. Word cloud Pedagogical Competence
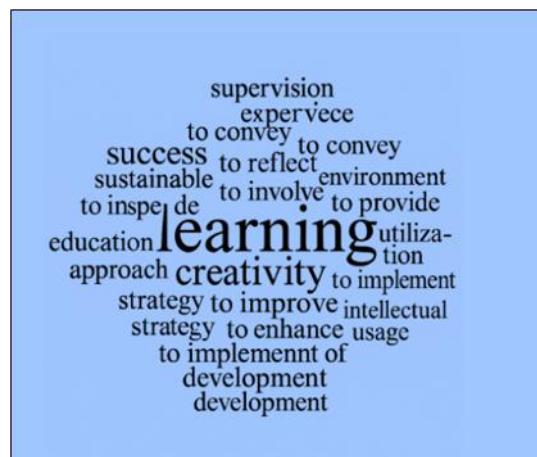
The word cloud describes the implementation of pedagogical competence as an effort to design active and meaningful learning. Keywords such as "learning," "approach," and "involve" refer to student involvement in the learning process. Implementing this pedagogical competence is seen in selecting various learning methods, including project-based learning, group discussions, and problem-based learning. Teachers also use information and communication technology to create a more interactive and engaging learning environment. Thus, students are involved in developing knowledge; learning becomes more meaningful and relevant to the daily lives of prospective graduates.

Next, the words often expressed in the interviews were "experience" and "learning experience." Both refer to the role of teacher pedagogical competence in developing learning experiences. Teachers are encouraged and given the freedom to use innovative and effective teaching methods to enhance students' learning and creativity. The creative process stimulates students to explore and solve challenging problems, even integrating religious values into everyday problem-solving. With the development of these learning experiences, it is hoped that students will be able to develop original ideas and innovative solutions when they graduate.

DISCUSSION

Pedagogical competence is the primary foundation for designing and implementing an effective learning process in madrasahs. Educators with good pedagogical competence can design meaningful learning experiences so that students are more motivated and involved in learning (Rahmannisa Juita Usmar & Santosa, 2022). The expected result of applying good pedagogical competence is the achievement of learning objectives, both in terms of mastery of the material and the development of student competence in critical thinking skills, problem-solving, and creativity. Thus, prospective madrasah graduates not only gain knowledge but also relevant skills to face challenges in the real world. The framework of thought related to the conclusion and the results of qualitative analysis is presented in the flowchart in figure 3.

**Figure 3. Pedagogical competence model as a mediator of the quality of madrasah graduates**
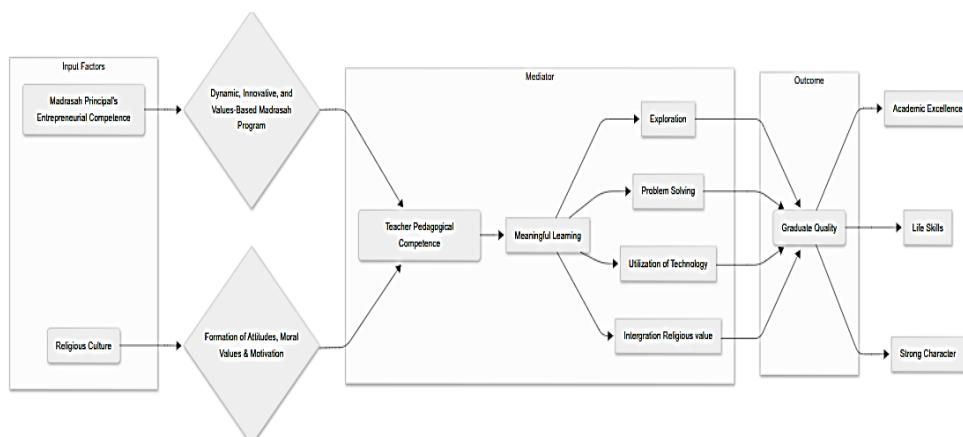
Figure 3 shows that the teacher's pedagogical competence is a mediator between the entrepreneurial competence of the madrasah principal and religious culture with the quality of graduates. The entrepreneurship of the madrasah principal encourages the creation of programs to improve the quality of learning that are valuable and relevant to the needs of the times and can increase the competitiveness of graduates. Meanwhile, religious culture is related to a learning environment that holistically supports the growth of religiosity, values, and character of students. Pedagogical competence in teachers and madrasah principals plays a role in transforming the vision and values of the madrasah into concrete and meaningful learning experiences for students through exploration, problem-solving, the utilization of technology, and the integration of religious values in learning. Thus, prospective graduates have good academic quality, life skills, and characters (Isa et al., 2024).

Pedagogical competence allows teachers to develop engaging and varied learning experiences, which positively impact the quality of Islamic education (Mayasari et al., 2024). Teachers' pedagogical competence directly affects the quality of madrasah graduates by ensuring effective teaching methods and curriculum alignment, ultimately improving educational outcomes and meeting quality standards (Mufid et al., 2025). Another study stated that pedagogical competence helps teachers implement character education based on religious culture, which is reflected in students' academic achievement (Sueca & Karmini, 2020).

Agustina et al. emphasized that the factor that most influences the low quality of madrasah graduates academically is the low quality of teachers regarding qualifications and competence, especially pedagogical competence (Agustina et al., 2019). Educators not only need to master the subject matter but also be able to instill religious values in students effectively. Strong pedagogical competence enables teachers to create a learning atmosphere conducive to students' spiritual development(Iman et al., 2022). Teachers with pedagogical competence are expected to be able to develop learning methods that can help students achieve a higher level of awareness and meaning in life (Ellis et al., 2013; Rahmatika et al., 2024). In Indonesian education's current context, which emphasizes deep learning, teachers strive to ensure that students are fully involved (mindful) in tasks and enjoyable learning experiences (Gufron & Suryahadikusumah, 2024). The experience in question integrates information and knowledge obtained by students into their own experiences to produce a deep understanding in students, also called a reflective experience (Dwi Mulyani & Suardiman, 2019; Hiğde & Aktamış, 2022).

Pedagogical competence enables teachers to develop engaging and varied learning experiences, which positively impact the quality of Islamic education(Firdaus et al., 2022). The emphasis on education in madrasahs requires two main things. First, the teaching method must follow Islamic

teachings and values, which means that all learning activities must be designed so that students can achieve learning objectives. Islamic education is a process of ta'dib, namely training, teaching, disciplining, and getting used to doing positive and correct things spiritually, morally, and intellectually (Memon & Alhashmi, 2018). Second, the learning must also align with the vision and goals of national education (Moulin-Stożek, 2020). Thus, the learning process is focused on stimulating students to explore and solve challenging problems, even integrating religious values into solving everyday problems.

Although pedagogical competence is emphasized in the teacher factor, the Head of the Madrasah needs to ensure that religious values are taught separately and integrated into all aspects of learning and conduct regular evaluations of the program's effectiveness(Mariani et al., 2022). The implication for the head of the madrasah is to carry out a re-educational strategy that is persuasive, strong, and normative to strengthen the religious culture. The Head of the Madrasah ensures that practicing religious values in everyday life is carried out consistently. This process includes forming a religious environment, changing attitudes, influencing behavior, forming routines, and encouraging the integration of values in learning (Wahib, 2024).

The head of the madrasah also needs to apply a transformational leadership model (Aldhaheri & Ahmad, 2024). A transformational head of the madrasah creates a supportive and adaptive school culture for teachers' continuous improvement and professional growth and fosters teacher empowerment to develop their pedagogical effectiveness (Alzoraiki et al., 2023; Danasasmita, 2024). The transformational leadership model can increase teachers' sense of ownership and responsibility for their teaching practices (Wang et al., 2024). The expected transformation is a cultural change that supports the growth of educator innovation (Astuty et al., 2024).

CONCLUSION

Teacher pedagogical competence is a key factor in determining the quality of madrasah graduates. Although the entrepreneurial principal competence and religious culture also play a role, their positive influence on student quality is primarily mediated through improving the teacher's pedagogical competence. Teachers' practices that undergo religious culture inserted in teaching learning processes was strongly recommended. Teachers, students and the staff as key respondents assessed that visionary madrasah principal and a religious school environment will be most effective in improving the quality of graduates if they are translated into innovative, active, and relevant teaching practices by teachers. Therefore, investment in teacher

professional development, especially in pedagogical competence, is significant to producing quality madrasah graduates academically, spiritually, and in life skills.

This study provides valuable insights into the management of the Teacher Leadership Development Program at the Educational Quality Assurance Agency (BGP) in Jambi Province. However, it is important to acknowledge that this study is limited to a single province and employs a descriptive design. Future studies should consider using comparative or longitudinal methods to assess the sustainability and long-term impacts of the program.

Practical implications: the findings offer practical insights for optimizing teacher development management at regional institutions, highlighting the importance of stakeholder collaboration and context-specific adaptations to ensure the success of educational programs.Theoretical Implications: The study contributes to the education management literature, particularly within decentralized systems, by strengthening the understanding of how national educational policies can be effectively implemented at the regional level, considering local challenges and opportunities theor

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