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The Influence of *Kiai* Leadership, *Pesantren* Culture, and Information Technology on *Santri* Loyalty

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ABSTRACT: *The loyalty of students in Pesantren (Islamic Boarding School) is influenced by the leadership of the Kiai, religious culture, and information technology. The purpose of this study is to understand the influence of the leadership style of the Kiai and the culture of the Islamic boarding school on the loyalty of students with information technology as a moderator variable. This study combines quantitative and qualitative approaches with a mixed method and a multi-case study. Data were collected through questionnaires, semi-structured interviews, and documentation. Quantitative analysis used moderate regression analysis (MRA), while qualitative analysis was conducted using thematic analysis. Data triangulation and member checks ensured the validity of the results. The study results indicate that kiai leadership and pesantren culture significantly influence students' loyalty at the Nurul Jadid Probolinggo and Al-Hikam Malang pesantren. With a personal approach, Kiai's inspiring and humanistic leadership builds a strong emotional bond with students. In addition, the pesantren culture that emphasises religious values and character forms student loyalty. Information technology also supports communication, operational efficiency, and more enjoyable learning. Regression analysis shows that pesantren culture has a more significant influence than leadership style, with an R² of 0.670 indicating a moderate relationship between the independent and dependent variables. The implications of this study indicate that Kiai's leadership and the pesantren's culture play an important role in building the loyalty of the students, which is strengthened by the application of information technology. The limitations of this study lie in the scope, which is limited to two pesantren, so the results cannot be generalised to other pesantren.*

Loyalitas santri di pondok pesantren dipengaruhi oleh kepemimpinan Kiai, budaya religius, dan teknologi informasi. Tujuan penelitian ini adalah untuk mengetahui pengaruh gaya kepemimpinan kiai dan budaya pesantren terhadap loyalitas santri dengan teknologi informasi sebagai variabel

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moderator. Penelitian ini menggunakan metode campuran dengan studi kasus, menggabungkan pendekatan kuantitatif dan kualitatif. Pengumpulan data dilakukan melalui angket, wawancara semi terstruktur, dan dokumentasi. Analisis kuantitatif menggunakan *Moderate Regression Analysis* (MRA), sedangkan analisis kualitatif dilakukan dengan analisis tematik. Triangulasi data dan member check memastikan keabsahan hasil. Hasil penelitian menunjukkan bahwa kepemimpinan kiai dan budaya pesantren memiliki pengaruh yang signifikan terhadap loyalitas santri di Pesantren Nurul Jadid Probolinggo dan Al-Hikam Malang. Kepemimpinan kiai yang inspiratif dan humanis, dengan pendekatan personal, membangun ikatan emosional yang kuat dengan santri. Selain itu, budaya pesantren yang menekankan nilai-nilai agama dan karakter membentuk loyalitas santri. Teknologi informasi juga memegang peranan penting, mendukung komunikasi, efisiensi operasional, dan pembelajaran yang lebih menarik. Hasil analisis regresi menunjukkan bahwa budaya pesantren memiliki pengaruh yang lebih besar dibandingkan gaya kepemimpinan, dengan nilai R² sebesar 0,670 yang menunjukkan hubungan yang sedang antara variabel bebas dan variabel terikat. Implikasi dari penelitian ini menunjukkan bahwa kepemimpinan kiai dan budaya pesantren berperan penting dalam membangun loyalitas santri yang diperkuat dengan penerapan teknologi informasi. Keterbatasan penelitian ini terletak pada ruang lingkup yang terbatas pada dua pesantren, sehingga hasil penelitian tidak dapat digeneralisasikan ke pesantren lainnya.

Keywords: *Kiai Leadership, Pesantren Culture, Information Technology, Santri Loyalty.*

I. INTRODUCTION

The loyalty of *santri* in *pesantren* is crucial in determining the sustainability and quality of religious education. This loyalty can be formed through various factors, including the leadership of the *kiai* and the religious culture applied in *pesantren* (Apud et al., 2020; Muhamad et al., 2019; Susanto et al., 2023). Social facts show that although many *pesantren* have influential clerics and a strong religious culture, not all students show high loyalty. This raises questions about the factors that impact student loyalty in *pesantren*.

The loyalty of *santri* in *pesantren* is an important factor in the success of religious education. The leadership of the *kiai*, as a spiritual leader and role model, plays an important role in shaping this loyalty. According to Bass and Avolio's theory of transformational leadership in Hoppe & Namdar, charismatic and inspirational leaders can encourage changes in the behaviour and commitment of followers (Hoppe & Namdar, 2024). In *pesantren*, *kiai* with a clear vision, spiritual motivation, and role model, builds the loyalty of students through the introduction and internalisation of the values taught.

Religious culture in *pesantren*, such as congregational prayer, religious studies, and dhikr, as well as social norms, play an important role in shaping loyalty. According to

Luthans in Jahidi, a strong *pesantren* culture creates harmony between individual and *pesantren* goals (Jahidi et al., 2024). Students who feel the harmony of the values of the *pesantren* with themselves tend to show high loyalty. These religious practices and social values become an important foundation in *pesantren's* daily lives, strengthening the students' attachment to the environment.

Although the leadership of the *kiai* and religious culture have a significant influence, other factors such as family environment, social background, and individual preferences also influence. According to customer loyalty theory, loyalty is formed from repeated satisfaction and emotional attachment (He et al., 2017). In *pesantren*, student loyalty comes from satisfaction with the environment and personal relationships with the *kiai* or fellow students, which are influenced by daily experiences and interactions.

Thus, the loyalty of *santri* in *pesantren* results from a complex interaction between the leadership of the *kiai*, the religious culture applied, and the personal factors possessed by the students. Leadership, religious culture, and loyalty theories provide an important framework for understanding how these factors shape loyalty in a permanent environment.

In the era of information technology, students' loyalty to *pesantren* faces challenges and opportunities. Technology enables access to knowledge and broader social relationships through digital media and online learning. *Pesantren* can utilise technology to increase student involvement and strengthen *pesantren* values (Malla et al., 2023). *Kiai*, who are adaptive to technology, have the opportunity to strengthen student loyalty through digital preaching, online classes, and motivational content that is relevant to the demands of the times.

The era of information technology brings risks to the loyalty of students to *pesantren*. Access to external information that is not in line with *pesantren* values can affect the perception and commitment of students. According to Muthohar, consumption of unfiltered information through social media can reduce the closeness of students to traditional values (Muthohar et al., 2023). Therefore, strengthening religious culture through technology, such as implementing Islam and healthy digital supervision, is crucial to maintaining student loyalty and strengthening their identity in the digital era.

Previous studies have shown that *kiai's* transformational leadership style plays an important role in shaping the loyalty of students. Msila and Muthohar found that *kiai* with a clear vision, high motivation, and inspiration can increase students' commitment (Msila, 2019; Muthohar et al., 2023). This finding is supported by Jahidi and Karim, who stated that charismatic *kiai* with strong moral authority can build close emotional relationships with students, thereby strengthening their loyalty to the *pesantren* (Jahidi et al., 2024; Karim et al., 2022).

Meanwhile, research by Latif and Ramdani highlighted the importance of religious culture in *pesantren* as a central pillar in the formation of character and loyalty of *santri* (Latif & Hafid, 2021; Ramdani & Ihsan, 2021). According to them, a strong religious culture manifested through routine religious activities and the instillation of Islamic values creates a collective bond and sense of togetherness that strengthens students' loyalty to the institution. This culture also serves as a tool to instil identity and values that unite the entire *pesantren* community.

Coleman and Ikhwan's research emphasises the role of *kiai* leadership in shaping the character of students (Coleman, 2022; Ikhwan et al., 2023), while Wasehudin and Yusuf

focus on the impact of religious culture on students (Wasehudin et al., 2024; Yusuf, 2024). However, previous studies tend to be limited to one aspect, such as leadership or culture alone, without considering the interaction of the two. This limitation indicates the need for a comprehensive approach to understanding the impact of the interaction of *kiai* leadership and religious culture on student loyalty.

This study aims to determine the influence of *kiai* leadership style and Islamic boarding school culture on the loyalty of students with information technology as a moderator variable at *Pesantren* Nurul Jadid, Probolinggo and *Pesantren* Al-Hikam, Malang. The importance of this study lies in understanding the role of leadership and *pesantren* culture in shaping the loyalty of students in the modern era. With global social, technological, and cultural challenges, the analysis of these two *pesantren* provides insight into their strategies for maintaining relevance, strengthening student loyalty, and adapting to changing times.

II. METHOD

This study uses a mixed method, namely combining quantitative and qualitative approaches, to explore the influence of the *kiai* leadership style and Islamic boarding school culture on the loyalty of students with information technology as a moderator variable (Creswell, 2017). Informants consist of *kiai*, *pesantren* administrators, teachers, and *santri*. The research subjects numbered 155 people, selected by purposive sampling based on the following criteria: *pesantren* in East Java, modern *pesantren*, activities supported by information technology, and *santri* who have lived in the *pesantren* for at least six months (Alam, 2020).

Data were collected through questionnaires, interviews, and documentation. The questionnaire contained statements about the leadership style of the *kiai*, the pesantren's culture, the *santri's* loyalty, and information technology, with a 5-point Likert scale. The questionnaire included four statements about leadership, six about religious culture, five about loyalty, and three about information technology. Interviews were conducted with *kiai*, teachers, and *pesantren* administrators using semi-structured techniques to dig deeper into information (Krosnick, 2018). Documentation was conducted to describe the condition of the *pesantren* and support the research data.

Quantitative data analysis was performed using Moderate Regression Analysis (MRA) via SPSS 20, testing the impact of independent variables (*kiai* leadership style, religious culture) on the dependent variable (student loyalty), with information technology as a moderating variable. Before MRA testing, classical assumption tests (normality, multicollinearity, heteroscedasticity, autocorrelation) were conducted (Mertens et al., 2017). Qualitative data analysis involved thematic analysis, including transcription, coding, and theme categorisation (Miles et al., 2014). To ensure validity, data triangulation and member checks were performed. Research ethics were upheld by obtaining informed consent and ensuring confidentiality.

III. RESULT AND DISCUSSION

Kiai Leadership

The leadership of the Nurul Jadid *Pesantren* in Probolinggo serves as the director and highest decision-maker. As conveyed by *Ustaz* A, every strategic policy is discussed by

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management and decided upon through deliberation. "Even though the management has approved the policy, it will not be implemented if they do not approve it. For example, even though there is an agreement to expel students who violate, if the management does not agree and decides that the students should stay, the management's decision will be taken." (Personal interview *Ustaz* A, 2024).

This statement illustrates the importance of hierarchical structure in decision-making in *pesantren*, where even though the *santri* administrators approve policies, the final decision remains with the supervisor who has the highest authority. His approach that prioritises guidance over punishment reflects the principle of rehabilitation. The consultation process between administrators and supervisors represents effective communication in finding solutions. This policy supports creating an educational environment that prioritises human rights and provides opportunities to do good. An interview with *Ustaz* N, an *Ustaz* at the *Pesantren* Al-Hikam in Malang, confirms this. (Personal interview *Ustaz* N, 2024).

At *Pesantren* Nurul Jadid, decision-making is done through deliberation to ensure fair and comprehensive decisions, without unilateral decisions from the management, as explained by *Ustaz* YH. *Ustaz* N also emphasised the importance of deliberation in the *pesantren* culture, where the management gathers monthly to discuss various problems and find the best solutions. This process strengthens leadership, communication, and collaboration skills, creating an environment of mutual respect and allowing each individual to contribute. This is also applied at *Pesantren* Al-Hikam (Personal interview *Ustaz* YH & *Ustaz* N, 2024).

The caretakers and administrators of the *Pesantren* Nurul Jadid in Probolinggo are trying to develop the *Pesantren* so that it continues to exist amidst competition with the new *Pesantren*. One of the steps is to delegate the handling of technical problems to a team of experts, especially alums who have proven their loyalty and dedication in the field of information technology and independent economy. *Ustaz* F conveys, "We understand the importance of adaptation and innovation to compete while maintaining traditional values so that the *pesantren* remains rooted in ancestral heritage and can adapt to the needs of the times."

Pesantren Nurul Jadid Probolinggo develops various formal educational units from elementary to higher levels and autonomous scientific support institutions, such as LPBA, PPIQ, and the Yellow Book Study Institute. This boarding school also has business units such as NJ Mart and NJ Print. Meanwhile, *Pesantren* Al-Hikam Malang develops education, management, and technology by involving alums as a team of experts. Loyal alums provide innovative ideas, strengthen the boarding school, and answer challenges to continue to develop and contribute to society (Personal interview *Ustaz* NC, 2024).

The leadership of the *kiai* at the *Pesantren* Nurul Jadid in Probolinggo and the *Pesantren* Al-Hikam in Malang plays an important role in shaping the loyalty of students. This leadership is characterised by a) Charisma and moral authority that is appreciated by students and administrators (Novianto et al., 2020); b) Personal and humanistic approach to students; c) Transformational leadership that motivates students to achieve personal and collective goals (Lede et al., 2024). This study reveals that the inspirational leadership of *kiai*, as explained by Marini, can increase the commitment and loyalty of students (Marini et al., 2023).

In *pesantren*, the *kiai* not only acts as a leader in religious and academic activities but also as a paternal figure who provides moral and emotional guidance. This approach forms a strong emotional bond between the students and the boarding school, which is important for long-term loyalty. The *kiai* knows the students personally, understands their challenges, and provides advice according to the situation, strengthening mutual respect and togetherness. The *kiai* becomes a role model who teaches moral and spiritual values, creating an environment that supports the students' loyalty and commitment to the boarding school (Arifin et al., 2024; Azyumardi Azra, 2019; Gidi et al., 2024; Latif & Hafid, 2021).

Pesantren Culture

The culture of the *Pesantren* Nurul Jadid Probolinggo Islamic boarding school includes customs, values, and behaviours developed by the entire academic community, including administrators, teachers, and students. These values colour the culture and life of the Islamic boarding school and are reflected in various aspects of life.

Moderation

"Our *pesantren* develops the values of religious moderation based on the *Ahlu Sunnah wal Jama'ah* tradition, which emphasises tolerance, balance, and harmony. Tolerance is manifested through respect for differences of opinion, ethnicity, and social background, creating a *pesantren* life that is free from conflict and fanaticism". As conveyed by *Ustaz* A: "At the *Pesantren* Nurul Jadid Probolinggo, we teach religious moderation according to the *Ahlu Sunnah wal Jama'ah* tradition, which emphasises tolerance and mutual respect between students from different backgrounds" (Personal interview *Ustaz* A, 2024).

Cooperation

At the *Pesantren* Nurul Jadid Probolinggo, the *ro'an* tradition reflects the spirit of cooperation between administrators, *asatid*, and students in cleaning the boarding school environment without special officers. This tradition also includes various other activities at the boarding school. Students and alums, in an organised manner, contribute to each other according to their expertise, such as in the fields of entrepreneurship and information technology, to support the boarding school's programs. As explained by *Ustaz* YH, this activity strengthens cooperation and supports the development of the boarding school in various aspects (Personal interview *Ustaz* YH, 2024).

Respect (Takzim)

Respecting teachers is a tradition that is characteristic of traditional *pesantren*. The students show respect by bowing their heads and kissing the teacher's hand as a symbol of obedience. This tradition teaches that respecting teachers is the key to blessing knowledge, while a bad attitude towards teachers is considered to reduce the benefits of knowledge (*kualat*). This value is deeply embedded in the students as a moral and spiritual guideline in everyday life. As expressed by *Ustaz* D, this respect is the core of moral education in *pesantren* (Personal interview *Ustaz* D, 2024).

Pesantren tradition

Daily routines at the *Pesantren* Nurul Jadid Probolinggo, such as congregational prayers and prayers at certain times, are an important part of the development of students. This tradition is maintained by active students and alumni and supported by technology through the *Bekal Santri EnJe* application. This application makes it easy for students

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to access worship practice guides, which can be downloaded from the Play Store. The use of this technology reflects the efforts of the *pesantren* to preserve religious culture and ensure that traditions continue, both inside and outside the *pesantren* environment (Personal interview *Ustaz* A, 2024).

Furthermore, at the *Pesantren* Al-Hikam Malang, several values and behaviours that are developed and colour the *pesantren* culture and life of *pesantren* include:

Independence

At *Pesantren* Al-Hikam Malang, independence is taught as a core value that includes skills, knowledge, and responsibility for oneself and the environment. Students are encouraged to think critically, take initiative, and face life's challenges with an independent attitude. This development includes spiritual, social, and intellectual aspects, hoping students can develop their potential and interact positively with society. As expressed by *Ustaz* N, "We believe that independent students will be better prepared to face life's challenges, make decisions, and be useful to society" (Personal interview *Ustaz* N, 2024).

Leadership development

At *Pesantren* Al-Hikam Malang, the formation of leadership is the main focus of teaching. Students are trained to develop the ability to lead themselves and others wisely through *pesantren* activities, discussions, and group assignments. Moral and ethical aspects are also taught, such as setting a good example, empathy, and understanding social responsibility. *Ustaz* NC stated, "We emphasise the importance of leadership to students so that they can become inspiring community leaders by fostering the values of initiative, cooperation, and social responsibility" (Personal interview *Ustaz* NC, 2024).

Community service

At *Pesantren* Al-Hikam Malang, community service programs are important values taught to students. This activity invites students to contribute to education, health, and economic empowerment. This program develops empathy, concern, and social responsibility attitudes and trains students to apply the knowledge gained at the *pesantren*. *Ustaz* AR stated, "Community service is an inseparable part of students' education, which involves theory and practice to help the community, and prepares students to become useful agents of change"(Personal interview *Ustaz* AR, 2024).

The study's results, which were gathered through interviews, observations, and documentation, show that religious culture in *pesantren* greatly influences students' daily lives. Some significant elements of religious culture include: (a) routine religious activities such as congregational prayer, religious studies, and dhikr, which strengthen faith and togetherness among students; (b) religious values and norms such as discipline, honesty, and togetherness, which are applied in the teaching and learning process and social interactions; and (c) focus on religious and moral learning through a curriculum based on the Qur'an, hadith, and classical books.

A strong religious culture in *pesantren* plays an important role in shaping the character and increasing the loyalty of students. In addition to being a religious practice, this culture instils values that guide students' daily behaviour (Anam et al., 2019; Kumar N et al., 2024). Activities such as congregational prayer, religious studies, and dhikr create an atmosphere that supports students' spiritual and moral development. According to

Yusuf, religious culture also functions as a unifying tool that instils values of togetherness, obedience, and responsibility in forming a solid *pesantren* community (Yusuf, 2024).

Research by Fua, Gusmian, and Abdullah shows that a strong religious culture in *pesantren* can strengthen the sense of togetherness among students and build a collective identity that strengthens their loyalty to the *pesantren* institution (Fua et al., 2018; Gusmian & Abdullah, 2022). This identity increases the students' commitment to the *pesantren*, manifested in compliance with the rules and dedication to advancing the institution. Thus, religious culture becomes the central pillar in religious education and character development, as well as increasing the loyalty of students through formal education and ongoing spiritual transformation.

Santri Loyalty

The loyalty of students at the *Pesantren* Nurul Jadid Probolinggo is well-maintained among active students and alumni. Active students show loyalty by being involved in activities such as *ro'an* (cooperation) and obeying the rules of the *pesantren*, which are considered part of *Riyadoh* by *Kiai* Zuhri, the caretaker of the *pesantren*. Alumni show loyalty by playing a role in the P4NJ organisation, which helps with *pesantren* programs, such as returning students and *Haul* and *Harlah* events. They also support the idea by sending their children to the *pesantren* and recommending it to others, ensuring the continuity of the *pesantren*. Alumni loyalty remains strong thanks to organisations such as Nurul Jadid In Campus (NIJC), the Nurul Jadid Jember Chinese Alumni Association (IKAT NJ), and the Nurul Jadid University Alumni Family Association (IKA UNUJA), which support the development of the *pesantren* until its 74th year.

The loyalty of students at the *Pesantren* Nurul Jadid in Probolinggo is almost similar to that at the *Pesantren* Al-Hikam in Malang, with a strong emotional bond between students and alumni. This bond is formed through shared experiences and ongoing support, strengthening a sense of belonging to the values of the *pesantren*. The involvement of students in academic and social activities shows their commitment to learning and developing as caring and responsible individuals. Active alumni organisations in various cities strengthen this network, opening opportunities to share experiences and contribute through social programs. The instillation of *Ahlus Sunnah wal Jamaah* values in *pesantren* education requires students to practice religion moderately and avoid extremism. This creates an ecosystem that supports the formation of quality individuals and builds a harmonious and tolerant society. The loyalty of alumni of the *Pesantren* Al-Hikam in Malang remains strong due to organisations such as Sahabat Al-Hikam Pasundan and the Al-Hikam Alumni Association in Malang.

The study results show that students' loyalty is greatly influenced by their perceptions of the leadership of the *kiai* and the quality of religious culture in the *pesantren*. Based on observations and interviews, the loyalty of students is reflected in a high commitment to continuing education, active participation in *pesantren* activities, and a strong sense of pride and identity as part of the *pesantren*. Effective *kiai* leadership and a strong religious culture create an educational environment that supports spiritual and moral development, thereby increasing the loyalty of students. These findings provide important insights for *pesantren* management to improve the quality of education and student loyalty, focusing on the role of *kiai* and religious culture in shaping the character and commitment of students.

Training programs for *kiai* and *pesantren* administrators in developing transformational and humanist leadership styles are critical. Kiai, who implements this leadership, can motivate students to commit to the values of the *pesantren* and improve communication skills, conflict management, and personal relationships with students (Bashori, 2019; Dacholfany et al., 2024; Wasehudin et al., 2024). In addition, strengthening religious culture through structured programs that support students' spiritual and moral development is a priority (Pribadi, 2013; Steć & Kulik, 2021; Taufik, 2020; Wasehudin et al., 2024). Programs such as religious studies and social activities can internalise religious values in everyday life. Finally, the development of programs that strengthen the identity and emotional attachment of students to *pesantren* through joint activities and mentoring by *kiai* will strengthen the loyalty and commitment of students (Dacholfany et al., 2024; Jahidi et al., 2024; Jakavonytė-Staškuvienė & Barkauskienė, 2023; Karim et al., 2020; Supriani et al., 2023).

This strategy creates a *pesantren* environment that supports students' academic and religious development while strengthening the emotional bond between students and the *pesantren*. Loyalty formed from respect for the values of the *pesantren* encourages students' commitment while at the *pesantren* and after graduation. This contributes to the desire and reputation of the *pesantren* as an educational institution that produces individuals with strong character and high integrity.

The Influence of *Kiai* Leadership, Religious Culture, and Information Technology on *Santri* Loyalty

The following are the results of the validity and reliability tests of the questionnaire:

Table 1. Validity Test Result

	Variable	Sig. Value	Conclusion
Leadership	Indicator 1	0,000	Valid
	Indicator 2	0,000	Valid
	Indicator 3	0,000	Valid
	Indicator 4	0,000	Valid
Pesantren Culture	Indicator 1	0,000	Valid
	Indicator 2	0,000	Valid
	Indicator 3	0,000	Valid
	Indicator 4	0,000	Valid
	Indicator 5	0,000	Valid
	Indicator 6	0,000	Valid
	Indicator 7	0,000	Valid
	Indicator 8	0,000	Valid
	Indicator 10	0,000	Valid
Santri Loyalty	Indicator 1	0,000	Valid
	Indicator 2	0,000	Valid
	Indicator 3	0,000	Valid
	Indicator 4	0,000	Valid
	Indicator 5	0,000	Valid
Information Technology	Indicator 1	0,000	Valid
	Indicator 2	0,000	Valid
	Indicator 3	0,000	Valid
	Indicator 4	0,000	Valid

Table 1 shows the validity test results for several variables, with a sig. Value of 0.000 for all indicators tested. All indicators in leadership, *pesantren* culture, *santri* loyalty,

and the information technology era are valid. This shows that all indicators used in this study are reliable and relevant to measure each variable tested.

Table 2. Reliability Test

Variable	Reliability Statistics	
	Cronbach's Alpha	**N of Items**
Leadership	.814	4
Pesantren Culture	.860	10
Santri Loyalty	.698	5
Information Technology Era	.878	4

Table 2 shows the results of the reliability test for the four variables. The Cronbach's Alpha value for leadership is 0.814 (good reliability with four items), *Pesantren* Culture 0.860 (excellent reliability with ten items), *Santri* Loyalty 0.698 (fair reliability with five items), and Information Technology Era 0.878 (excellent reliability with four items). The reliability test shows that the measurement instrument has adequate internal consistency.

Normality Test

Table 3. Normality Test Results

One-Sample Kolmogorov-Smirnov Test		
N		**Unstandardised Residual**
		155
Normal Parameters[a,b]	Mean	0E-7
	Std. Deviation	2.25911999
Most Extreme Differences	Absolute	.060
	Positive	.032
	Negative	-.060
Kolmogorov-Smirnov Z		.748
Asymp. Sig. (2-tailed)		.630
a. Test distribution is Normal.		
b. Calculated from data.		

The normality test results using One-Sample Kolmogorov-Smirnov show that the residual data is not significantly different from the normal distribution. The Kolmogorov-Smirnov Z value is 0.748 with a significance value (Asymp. Sig.) of 0.630 greater than 0.05, which indicates that the residual data is usually distributed. This means that the assumption of normality in this regression model is acceptable.

Multicollinearity Test

Table 4. Multicollinearity Test Results

Coefficients[a]		
Model	**Collinearity Statistics**	
	Tolerance	**VIF**
Leadership	.792	1.263
1 *Pesantren* Culture	.554	1.804
Information Technology	.663	1.508

a. Dependent Variable: Loyalty

Table 4 shows the results of the multicollinearity test. A Tolerance value higher than 0.1 and a VIF (Variance Inflation Factor) value lower than 10 indicate no significant multicollinearity problem between the independent variables. Variables such as leadership, *pesantren* culture, and information technology have tolerance of 0.792, 0.554, and 0.663, respectively, with a VIF of 1.263, 1.804, and 1.508, all of which are within normal limits. This indicates that there is no overly strong correlation between these variables.

Heteroscedasticity Test

Table 5. Heteroscedasticity Test

Coefficients[a]					
Model	**Unstandardised Coefficients**		**Standardised Coefficients**	**t**	**Sig.**
	B	**Std. Error**	**Beta**		
1 (Constant)	.065	1.390		.046	.963
Leadership	.059	.074	.072	.798	.426
Pesantren Culture	.031	.042	.080	.745	.457
Information Technology	-.118	.070	-.167	-1.688	.094
Dependent Variable: LN_RES					

This table shows the results of the heteroscedasticity test with the dependent variable LN_RES. The regression coefficient for each independent variable (leadership, *pesantren* culture, and information technology) is insignificant, with a p-value greater than 0.05, indicating no substantial influence on heteroscedasticity. The information technology variable shows a p-value of 0.094, close to the significant limit but insufficient to be considered significant at the 0.05 level. This indicates that the regression model is not affected by significant heteroscedasticity problems.

Autocorrelation Test

Table 6. Autocorrelation Test

Runs Test	
	Unstandardised Residual
Test Value[a]	.17901
Cases < Test Value	77
Cases >= Test Value	78
Total Cases	155
Number of Runs	62
Z	-2.659
Asymp. Sig. (2-tailed)	.083
a. Median	

This table shows the results of the autocorrelation test using the runs test on the unstandardised residuals. The median value is 0.17901. With 155 total cases, there are 62 runs, and the Z value is -2.659. The asymptotic significance value (2-tailed) is 0.083, greater than 0.05, indicating no significant autocorrelation, meaning that the data does not show a strong systematic pattern.

F Test Analysis (Anova)

Table 7. F Test Analysis (Anova)

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	501.970	2	250.985	43.096	.000b
	Residual	885.230	152	5.824		
	Total	1387.200	154			

The table shows the results of the F-test (ANOVA) analysis for the regression model. The F value of 43.096 with a significance of 0.000 (p < 0.05) indicates that the regression model significantly affects the dependent variable. The independent variables in this model significantly affect the dependent variable, indicating a strong relationship. The total Sum of Squares is 1387.200, with most of the variation explained by the regression model (501.970) compared to the residual (885.230).

Table 8. Results of Determination Coefficient Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.602[a]	.362	.353	2.41327

a. Predictors: (Constant), *Pesantren* Culture, Leadership

Table 8 shows the results of the determination coefficient analysis (R^2) for the model involving *pesantren* culture and leadership as predictors. The R-value = 0.602 indicates a moderate relationship between the predictor and dependent variables. R^2 of 0.362 means that 36.2% of the variation in the dependent variable can be explained by *pesantren* culture and leadership. The Adjusted R^2 value of 0.353 corrects R^2 for the number of predictors, with a standard error estimate of 2.41327.

Table 9. Results of Regression Analysis

	Model	Unstandardised Coefficients		Standardised Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	5.587	1.535		3.640	.000
	Leadership	.249	.084	.215	2.951	.004
	Pesantren Culture	.258	.040	.473	6.503	.000

This table shows the regression analysis results that test the influence of leadership and *pesantren* culture on the dependent variable. The unstandardised coefficient shows that leadership (B = 0.249) and *pesantren* culture (B = 0.258) have a significant positive influence. The standardised coefficient shows that *pesantren* culture (Beta = 0.473) has a greater influence than leadership (Beta = 0.215). The significance value (Sig.) for both independent variables shows a significant influence at the 0.05 level.

This study found that the leadership of the *kiai* had a significant effect on the loyalty of the students. The *kiai* provided motivation, advice, and guidance in implementing relevant religious and cultural values, such as honesty, patience, and sincerity. This is in line with Hu & Widtayakornbundit, who stated that students are loyal to the *kiai*'s program because of their sense of belonging to the *pesantren* (Hu & Widtayakornbundit, 2024). This study also supports the findings of Jena et al., which state that leadership affects employee loyalty (Jena et al., 2024).

The loyalty of students to the *kiai* and the *pesantren* programs is influenced by a strong sense of belonging and the relationship between the *kiai* and the students. Tiani said this relationship is similar to a father-child relationship, emphasising affection (Tiani, 2019). In addition, blessing and kualat also strengthen loyalty, where obedience to the *kiai* brings blessings, while disobedience has terrible consequences. Cooper added that the culture of the *pesantren* is formed through the role of the *kiai* as an ideal democratic and transformational leader who maintains good traditions while developing positive values (Cooper, 2022).

Students often internalise positive culture while living in *pesantren*, such as simple living, helping each other, and discipline. Research shows that *pesantren* culture has a significant influence on students' loyalty due to the paternalistic culture and free-rein leadership of the *kiai*, who acts as a father figure who provides space for students to be creative but remains firm in making decisions (Hu & Widtayakornbundit, 2024). Arifin explains that students' loyalty is formed through three primary roles of *pesantren*: knowledge development, morals, and social fields (Lutfauziah et al., 2024). Other supporting factors are the role model of the *kiai*, the interaction between students, and the rules of the *pesantren* (Muhith et al., 2023).

The loyalty of students to the *kiai* and the *pesantren* is firmly established through three domains: intellectual, emotional, and spiritual. Intellectually, the *kiai* provides knowledge and motivation; emotionally, social interaction occurs through daily activities at the *pesantren*; and spiritually, joint prayer strengthens the bond. This is in line with the research of Tiani, which states that the relationship between students and *kiai* is like a father and child relationship maintained throughout life (Tiani, 2019). The *kiai* acts as a charismatic leader, inspiration, intellectual stimulation, and listener to aspirations to develop the *pesantren* (Bashori, 2019).

Table 10. Results of Regression Analysis

Model	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.946	1.499		2.633	.009
Leadership	.268	.080	.231	3.350	.001
Pesantren Culture	.151	.045	.276	3.349	.001
Information Technology	.328	.075	.328	4.367	.000
Leadership and Information Technology	.016	.005	.366	2.954	.004
Pesantren and Information Technology	.011	.003	.628	3.758	.000

Table 10 shows the regression analysis results that test the influence of independent and moderating variables on student loyalty. Leadership style and *pesantren* culture have a significant influence with a p-value of 0.001 each. Information technology also has a significant influence (p-value 0.000). The interaction between leadership style and information technology (Leadership and Information Technology) shows a significant positive influence (p-value 0.004). At the same time, the interaction between *pesantren* culture and information technology (*pesantren* and information technology) is also significant (p-value 0.000).

Table 11. Results of Determination Coefficient Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.670[a]	.448	.430	2.26642

a. Predictors: (Constant), *Pesantren* Culture and Information Technology, Leadership, *Pesantren* Culture, Information Technology, Leadership and Information Technology

Table 11 shows the results of the coefficient of determination (R^2) analysis for the regression model. The R-value = 0.670 indicates a moderate relationship between the independent and dependent variables. R^2 of 0.448 indicates that the *pesantren* culture, information technology, and leadership style variables can explain 44.8% of the variation in the dependent variable. Adjusted R^2 of 0.430 indicates that this model explains the data well. The standard error of the estimate of 2.26642 indicates the level of model prediction error.

The application of information technology in *pesantren* facilitates communication between *kiai* and *santri* in academic and daily matters. In addition, this technology supports operational and cost efficiency and increases the competitiveness of *pesantren* (Fathullah et al., 2023; Riski et al., 2024). Technology also makes religious learning more engaging and flexible, with various media such as text, images, audio, and video (Perdani et al., 2022). Information technology facilitates administration, payment of *sahriya*/SPP, and efficient access to information, supporting the culture of efficiency in *pesantren* (Ghufron, 2024; Zafi et al., 2021). Technology also improves the accuracy and security of data and the quality of education in *pesantren*.

IV.   CONCLUSION

The leadership of the *kiai* at the *Pesantren* Nurul Jadid in Probolinggo and the *Pesantren* Al-Hikam in Malang has a strategic role in decision-making, which is carried out through deliberation to reach a fair decision. As the highest leader, *kiai* emphasises coaching and rehabilitation with a personal and humanist approach, strengthening the students' loyalty. The charisma and moral authority of the *kiai* strengthen the emotional bonds and commitment of the active and alumni students. Religious culture, such as religious moderation, cooperation, and leadership values, shape the students' character, increasing their faith, togetherness, and collective identity. The results of the study showed that the culture of the *pesantren* has a greater influence on the loyalty of the students compared to the leadership style, with the regression coefficient of the *pesantren* culture (B = 0.258) higher than the leadership (B = 0.249). The inspirational leadership of the *kiai*, including intellectual, emotional, and spiritual teachings, strengthens the students' bonds with the *pesantren* and the *kiai* as an authority figure. Information technology also plays a role in improving communication, operational efficiency, and learning flexibility in *pesantren*. The application of this technology improves data accuracy and quality of education, supporting student loyalty. The regression analysis results show that information technology significantly influences student loyalty, with the interaction between information technology and leadership style and *pesantren* culture strengthening the relationship. The implications of this study indicate that *kiai* leadership and *pesantren* culture are critical in building student loyalty, which is strengthened by the application of information technology. The limitation of this study is the limited scope of two *pesantren*, so the results cannot be generalised.

Further research is recommended to involve more *pesantren* and other factors influencing student loyalty, such as social and economic aspects.

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