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Dynamics of Inclusive Education Policy in Rural Indonesia: A Comparative Study of Central Java, East Nusa Tenggara, and Papua

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Abstract

Inclusive education policies in Indonesia face significant challenges due to spatial, socioeconomic, and institutional capacity disparities between urban and rural areas. This study aims to analyze the dynamics of implementing inclusive education policies in rural Indonesia through a comparative study across three distinct regions: Central Java, East Nusa Tenggara (NTT), and Papua. Utilizing a qualitative approach with a secondary comparative study design, the data were analyzed thematically through comparative synthesis and interpreted using Social Transformation Theory. The results reveal substantial variations in policy effectiveness across regions. Central Java successfully implemented structured planning enhanced by blended learning training and active volunteer participation. In NTT, physical infrastructure limitations were offset by strong social capital and local traditional deliberative forums (awiq-awiq). Meanwhile, Papua faced severe barriers, including geographic isolation, a digital infrastructure crisis, and a high reliance on external interventions due to minimal engagement of local community leaders. This study concludes that the success of inclusive education policies in rural areas depends not only on macro-level regulations but also on the synergy between national policy structures, the active role of local agents, and the equitable distribution of physical and digital infrastructure.

Keywords

Inclusive Education, Education Policy, Rural Indonesia, Comparative Study, Social Transformation Theory, Educational Equity.

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1. Introduction

Inclusive education has become a leading global paradigm for achieving social equity and structural transformation. However, within Indonesia's educational landscape, the implementation of this concept is confronted by the reality of acute spatial and socioeconomic disparities between urban and rural areas. As an archipelagic nation characterized by high socio-cultural heterogeneity, students in rural areas of Indonesia continue to face multifaceted barriers. These disparities manifest in the form of limited access to quality educational institutions, a shortage of qualified educators, a lack of basic infrastructure, and socio-economic barriers that perpetuate a cycle of marginalization. These conditions not only hinder the vertical social mobility of students in rural areas but also widen the development gap between regions.

Given Indonesia's vast and diverse geographical landscape, the implementation of a one-size-fits-all (top-down) inclusive education policy often fails to accommodate local complexities and dynamics. Policies designed centrally without considering variations in institutional capacity and regional sociocultural conditions risk being ineffective at the grassroots level. Therefore, a comparative approach across regions is crucial. Through comparative analysis, policymakers and practitioners can understand how the interaction between national policy structures and local actors (such as local governments, educators, and community leaders) shapes the successes and challenges of implementing inclusive education in various regions.

This article focuses on a comparative analysis of the dynamics of inclusive education policy implementation in three rural regions in Indonesia that have contrasting geographic, institutional capacity, and sociocultural characteristics: Central Java, East Nusa Tenggara (NTT), and Papua. The uniqueness and novelty of this study lie in its in-depth exploration of why inclusive education policies rooted in the same national regulations produce different impacts and varying degrees of effectiveness in each of these regions.

For example, rural areas in Central Java demonstrate relatively sound planning by integrating inclusive policies into long-term programs and leveraging volunteer participation and blended learning. In contrast, regions such as NTT and Papua still face significant physical infrastructure challenges, with approximately 60% of schools in remote areas lacking inclusive classrooms. Nevertheless, NTT has been able to foster community participation through local deliberative forums such as awiq-awiq to promote inclusivity. Meanwhile, Papua tends to experience institutional capacity constraints and a reliance on external interventions due to the suboptimal involvement of local traditional leaders and limited digital infrastructure.

2. Literature Review and Research Methods

2.1. Literature Review

2.1.1. The Concept of Inclusive Education

Inclusive education is no longer interpreted narrowly as merely the physical placement or integration of students with special needs into regular schools. Conceptually, inclusive education is an ongoing process aimed at providing quality education for all students while valuing diversity, socioeconomic backgrounds, individual characteristics, and varying learning needs. This concept involves restructuring school culture, policies, and practices to better respond to student diversity and connect educational institutions with the broader community.

In the context of rural Indonesia, inclusive education broadens its scope to ensure equal learning opportunities for groups that are marginalized both geographically and socio-economically. Inclusive education is focused on removing the institutional and social barriers that have long limited students' access to and participation in education in remote areas.

2.1.2. Social Transformation Theory

To analyze how inclusive education policies can promote equity in rural areas, this study uses Social Transformation Theory as its primary theoretical framework. This theory emphasizes that social change occurs through the dialectical interaction between structure and agency. Within this framework, inclusive education policies function as structural interventions that regulate access, resource allocation, and the quality of education. Meanwhile, teachers, local governments, community leaders, and civil society organizations act as agents who drive and adapt these policies at the local level.

Social transformation through inclusive education occurs in an evolutionary manner. This process begins with policy adjustments and social acceptance (such as the deconstruction of stigma against marginalized groups) and culminates in the creation of a new social equilibrium that strengthens vertical social mobility and social cohesion within society. Therefore, the success of social transformation depends heavily on the extent to which the national policy framework can adapt to socio-cultural realities and the capacity of local agents.

2.2. Research Methodology

This study employs a qualitative approach with a secondary comparative study design. This method was chosen to explore in depth the variations in the implementation of inclusive education policies and their impact on educational

equity in rural areas without conducting direct field interventions. The primary data analyzed in this paper are drawn from a comparative study and empirical findings published by Syafii et al. (2025) regarding the implementation of inclusive education in rural Indonesia, specifically in three case study regions: Central Java, East Nusa Tenggara (NTT), and Papua. Data analysis was conducted using qualitative thematic content analysis and multiple-case comparative analysis.

The analysis process involved several key stages. First, mapping of Comparative Indicators: Grouping data into a comparison matrix based on key dimensions, such as institutional capacity, infrastructure conditions, community participation, and educator competencies. Second, Comparative Synthesis: Systematically comparing the strengths, obstacles, and policy outcomes in Central Java, NTT, and Papua to identify patterns of cause-and-effect relationships. Third, Theoretical Interpretation: Linking the comparative findings to indicators from Social Transformation Theory to explain the phenomenon of differences in policy effectiveness across regions.

This study focuses on the integration of pesantren ethical values and the implications of that integration. The values upheld by pesantren—such as honesty, responsibility, and discipline—are expected to make a positive contribution to quality control efforts in the manufacturing industry. The integration of these values is not merely a technical approach to minimizing product defects but also encompasses ethical and moral aspects that can enhance employee job satisfaction and performance. In a modern context that often focuses on efficiency and profitability, it is important to explore how the cultural values of Islamic boarding schools can provide a more humane and sustainable holistic approach. A paradigm shift from mere technical improvements toward a more inclusive and values-based approach is expected to create a more harmonious and productive work environment. Pesantren possess distinctive values that set them apart from other institutions, including educational institutions. Thus, integrating pesantren values into defect management will not only improve quality but also build employees' character—fostering high integrity and commitment—which are essential for navigating increasingly complex industry dynamics.

To examine the integration of pesantren values into defect management, the researcher employed a qualitative approach using a case study design. The case study was chosen because it provides an in-depth, contextual, and holistic understanding, consistent with the objective of exploring the essence of integrating pesantren values into defect management. This type of research allows for an in-depth exploration of how pesantren values are manifested in managerial practices and the factors that drive this integration, including the underlying reasons, motivations, and forces. Thus, in this study, the researcher seeks to understand the

individuals who subjectively experience and assign meaning to the integration of pesantren values into product defect management.

To uncover the research focus on the integration of pesantren values into product defect management and its implications, the researcher explored information sources from individuals and parties with a deep understanding of how these values are applied in an industrial context. The data in this study are classified into two main categories: first, data on the integration of pesantren values into managerial practices for defect management, covering the practical and ethical aspects of applying values such as honesty, responsibility, and discipline in product defect management; and second, data on the implications of integrating these values for improving product quality. Therefore, in this research process, the primary data sources include pesantren leaders, relevant offices, parents, alumni, and students. This approach ensures that the data collected goes beyond a superficial description, offering an in-depth analysis of how pesantren values are integrated into defect management strategies, as well as providing deeper insights into the implications of integrating these values.

Data collection in this study utilized observation, in-depth interviews, and documentation. In this context, observation was used to directly examine how pesantren values are applied in defect management practices and how this influences the process and its outcomes. In-depth interviews were used to provide insights into the perceptions, knowledge, and experiences of stakeholders regarding the integration of pesantren values into defect management—aspects that might not be apparent through observation alone. Meanwhile, documentation served to provide important secondary data, such as process records, defect management reports, and policy documents, which supported the analysis and verification of data from observations and interviews. Thus, data collection in this study employs observation, in-depth interviews, and documentation to obtain a comprehensive picture of the application and impact of pesantren values in defect management practices, with observation to directly observe the application of these values, in-depth interviews to uncover stakeholders' perceptions and experiences, and documentation to provide secondary data that supports the analysis and verification of the data.

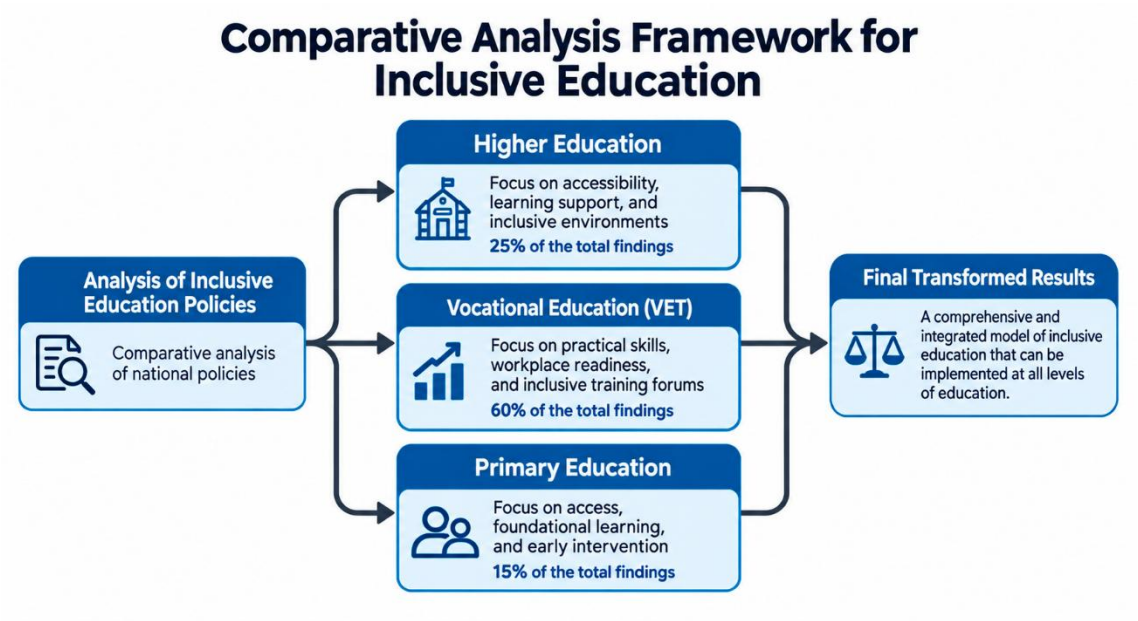
The collected data were analyzed using the data analysis techniques described by Miles, Huberman, and Saldana (2014), which consist of data condensation, data display, and verification. Using these analytical techniques, the researcher managed, analyzed, and verified the data in a systematic and transparent manner, ensuring the accuracy and reliability of the findings regarding the integration of pesantren values into defect management and its implications. Data management was conducted through interviews, observations, and documentation, which were then condensed and grouped based on key themes such as honesty, discipline, and responsibility. Data analysis

utilized matrices and graphs to visualize key findings, while verification was conducted through source triangulation and member checking to ensure the consistency and validity of the findings. In this way, the researcher ensures that the findings regarding the integration of pesantren values into defect management are accurate and reliable. Thus, at this stage, the researcher systematically and transparently manages, analyzes, and verifies the data to ensure the accuracy and reliability of the findings regarding the integration of pesantren values into defect management.

3. Results And Discussion

3.1. Potret dan Aksesibilitas Pendidikan Inklusif di Perdesaan Indonesia: Studi Komparatif

Implementasi kebijakan pendidikan inklusif di Indonesia menunjukkan dinamika dan kompleksitas yang bervariasi antarwilayah perdesaan. Meskipun diikat oleh payung hukum dan regulasi nasional yang sama, efektivitas pencapaian aksesibilitas dan kesetaraan pendidikan di Jawa Tengah, Nusa Tenggara Timur (NTT), dan Papua dipengaruhi secara signifikan oleh kapasitas kelembagaan lokal, kondisi geografis, serta tingkat partisipasi masyarakat di masing-masing daerah.



3.1.1. Rural Central Java: Structured Planning, Educational Innovation, and Social Movements

Rural areas in Central Java have shown a relatively high level of success in adopting and implementing inclusive education policies. This is largely due to the strong institutional capacity of local governments, which have been able to integrate inclusion programs into long-term education development plans.

One crucial aspect in Central Java is the adaptive strategy for enhancing educators' capacity. To address the limitations of conventional face-to-face training in rural areas, a blended learning-based training program was developed. This approach has proven effective in improving teachers' competencies and inclusive pedagogy by up to 25% in managing diverse classrooms. Furthermore, the educational ecosystem in Central Java is supported by high levels of civil society participation, such as the active involvement of education volunteers who accelerate the adoption of innovations and provide support to schools in rural areas. The harmonious interaction between well-planned policy frameworks and the presence of these local agents fosters the creation of a more adaptive and inclusive learning environment.

3.1.2. Rural Areas of East Nusa Tenggara (NTT): Infrastructure Challenges vs. Community Capital

In contrast to Central Java, rural areas in NTT face starkly contrasting limitations in physical facilities and infrastructure. Data show that approximately 60% of schools in remote areas of NTT do not yet have inclusive classrooms or adequate physical accessibility for students with special needs. Poor road access and disparities in budget allocation are the main obstacles to the equitable provision of educational infrastructure.

Nevertheless, the limitations of physical infrastructure in NTT are offset by the high level of social capital among local communities. The implementation of inclusive education in NTT receives strong support through the optimization of traditional and community deliberative forums, such as awiq-awiq. These deliberative forums serve as spaces for public advocacy to erode negative stigmas against children with special needs and marginalized groups, while simultaneously strengthening collective awareness of the importance of education for all children. Additionally, local innovations such as the "mobile schools" model help bridge accessibility gaps in hard-to-reach areas. The case of NTT demonstrates that when physical infrastructure is weak, local agents who leverage traditional wisdom can become the primary pillars supporting the sustainability of inclusive education.

3.1.3. Rural Papua: A Combination of Geographic Isolation, Institutional Limitations, and External Dependence

Rural and remote areas of Papua face the most complex set of barriers among the three regions studied. Extreme geographic isolation, challenging topography, and a digital infrastructure crisis are the main challenges hindering equitable access to education. Schools in remote areas of Papua recorded a percentage of inadequate inclusive facilities equivalent to that of NTT (60%), but this situation is exacerbated by a lack of network connectivity to support distance learning innovations (e-learning).

From a sociological and institutional perspective, Papua faces challenges stemming from the still-limited capacity of local governments and policy approaches that tend to be top-down and lack adaptability to local realities. Unlike NTT, which has successfully engaged traditional forums, in Papua the involvement of traditional leaders and local officials in promoting an inclusive paradigm remains very minimal. As a result, rather than a self-driven paradigm shift occurring at the community level, the implementation of inclusive education in rural Papua remains heavily dependent on interventions and assistance from external parties (such as the central government or nongovernmental organizations). The lack of strong participation by local actors causes social transformation to proceed slowly and makes it vulnerable to unsustainability.

Comparative Summary Table of the Implementation of Inclusive Education

Evaluation Dimensions	Rural Areas of Central Java	Rural Areas of East Nusa Tenggara (NTT)	Rural Areas of Papua
Institutional Capacity	High; integrated into long-term regional planning.	Moderate; responsive but constrained by budget.	Limited; tends to be top-down and rigid.
Access and Infrastructure Conditions	Adequate; relatively good accessibility.	Low; 60% of schools in remote areas are not yet inclusive.	Very Low; 60% of schools are not inclusive and are geographically isolated.

Teacher Competence and Training	Adoption of blended learning (25% increase in competency).	Combines blended learning and mobile school innovations.	Limited; adoption of e-learning is hampered by digital infrastructure and access issues.
Social Capital and Participation	Active educational volunteer movement.	High; driven by traditional/local forums (awiq-awiq).	Minimal; engagement of traditional leaders is not yet optimal.
Tingkat Level of Policy Autonomy	Self-reliant and sustainable.	Community based.	Highly dependent on external interventions.

This study will thoroughly investigate how pesantren values can be applied to defect management to improve the effectiveness and efficiency of the process. The results show that principles such as honesty, simplicity, and cooperation taught in pesantren can make a significant contribution to defect management in a more holistic and sustainable manner. These findings align with management theories that emphasize the importance of ethical values and organizational culture in creating innovative and sustainable solutions. The implications of integrating these pesantren values include improved product quality, reduced repair costs, and increased customer satisfaction. In the following discussion, we will delve into the key findings regarding the application of pesantren values in defect management, their implications for managerial practices, and the significance of this approach in the context of effective, value-oriented defect management.

3.1.4. Analysis of Factors Determining the Success of Policy Implementation

Differences in the effectiveness of inclusive education implementation in rural areas of Central Java, NTT, and Papua indicate that the success of a public policy is determined not only by the quality of regulations at the macro level, but also by sociological and technological factors that influence the educational ecosystem at the local level.

a) The Interaction Between Structure (Central Policy) and Agency (Local Actors). Within the framework of Social Transformation Theory, national inclusive education policy functions as a structure that establishes the rules of the game, resource allocation, and the direction of social change. However, the effectiveness of this structure depends heavily on how it is responded to, interpreted, and implemented by local agents such as local governments, educators, traditional leaders, and civil society.

b) Harmonious Dynamics in Central Java: The success of rural communities in Central Java is rooted in a strong synergy between regional policy structures and the responsiveness of local agents. Inclusive policies have been actively embraced by teachers and education volunteers through the creation of a collaborative learning ecosystem. These local agents are not merely passive recipients of central directives but act as catalysts who accelerate the paradigm shift toward inclusion within the community.
c) The Power of Traditional Agents in NTT. The case of NTT reveals an interesting phenomenon in which the limitations of physical infrastructure are offset by the presence of strong social agents. Local deliberative forums (awiq-awiq) serve as instruments through which these agents redefine the values of inclusivity in accordance with local wisdom. Community actors in NTT have been able to utilize traditional forums to erode stigma and build collective support for the education of children with special needs, thereby ensuring that policy effectiveness can still be achieved despite limited resources.
d) Weaknesses of Local Actors and Top-Down Interventions in Papua: Conversely, in rural Papua, there is an imbalance in relationships where national policy structures are implemented without being accompanied by optimal empowerment and involvement of local actors. The minimal involvement of traditional leaders and local community leaders makes inclusion policies feel alien and rigid. Top-down policies that fail to accommodate local agents create a high degree of dependence on external interventions (central government/NGOs). Without ownership by local agents, the process of social transformation in Papua is hindered and struggles to achieve sustainability.

3.2. Integrating Pesantren Values into Defect Management

Another determining factor that widens the gap in effectiveness between regions is the availability of physical infrastructure and disparities in access to digital technology (the digital divide).

3.2.1. etimpangan Sarana Fisik Inequality in Physical Infrastructure

Physical facilities that are disability-friendly and accessible are a basic prerequisite for operating inclusive schools. The fact that 60% of schools in remote areas of NTT and Papua still lack inclusive classrooms underscores that budget allocations and the development of basic infrastructure have not yet reached remote areas equitably. Fiscal disparities between regions directly result in spatial discrimination in the fulfillment of rural children's right to education.

3.2.2. The Digital Access Gap as a Barrier to Innovation

The use of information and communication technology (ICT) actually has the potential to bridge geographical gaps in improving the quality of education. However, the adoption of this technology requires a ready digital infrastructure and human resource capacity. In Central Java, the availability of a stable network has enabled the implementation of blended-learning-based teacher training programs, which have been shown to increase teachers' inclusive pedagogical capacity by 25%. In East Nusa Tenggara (NTT), alternative solutions such as e-learning or mobile schools can be explored to overcome geographical barriers. In Papua, the digital infrastructure crisis and the lack of internet connectivity limit the implementation of e-learning-based solutions or interactive learning technologies. As a result, technology that was intended to be a tool for equity has instead widened the digital divide between rural areas with internet access and isolated regions in Papua.

This analysis underscores that the success of inclusive education policies in rural areas requires an integrated approach: equitable development of physical and digital infrastructure by the government (structure), balanced by a social justice-based approach that involves and empowers local leaders and draws on traditional wisdom (agents).

3.1. Results

3.1.1. Integrating Pesantren Values into Defect Management

The integration of pesantren values into defect management links spiritual and moral principles with technical practices, creating a managerial approach that not only improves defect management but also strengthens work ethics and the sustainability of production processes. By applying principles such as honesty, responsibility, and discipline, managers not only improve defect quality but also foster a work culture that supports continuous improvement and the development of strong ethical values within the organization.

The following research data illustrates the values integrated into defect management:

Table 1: Interview Results
Integration of Pesantren Values into Defect Management

Interview Data	Coding	Sources of Information
"We teach honesty to our students as a core value. Students are taught to report any problems or mistakes without fear, ensuring that any shortcomings are identified and addressed immediately."	Honesty in Reporting	DF, Teacher.
"Honesty is one of the main pillars of our Islamic boarding school. We encourage all staff and students to be honest in all matters, including disability management."	Honesty in Reporting	ZS, Head of the Islamic Boarding School
"Every student has clear responsibilities in their daily activities. We assign specific tasks so that they learn responsibility from an early age."	Responsibilities	IS, Head of the Islamic Boarding School.
"My children have become more responsible since attending the Islamic boarding school. They've learned the importance of completing their assignments and reporting any problems."	Responsibilities	AK, Parents.
"We implement a simple yet effective process in our teaching and learning activities. This ensures that all activities run efficiently."	Simplicity and Efficiency	RS, Office of Education
"Proses belajar yang sederhana dan efisien membantu kami memahami materi dengan lebih baik dan menyelesaikan tugas tepat waktu."	Simplicity and Efficiency	SN, Santri.
"Implementasi SOP yang ketat dalam kegiatan belajar mengajar membantu meningkatkan kedisiplinan di kalangan santri. Hal ini juga diterapkan dalam defect management."	Discipline in Quality Standards	RD, Office of Education.
"Pelatihan kedisiplinan yang kami terima di pesantren membantu kami dalam kehidupan sehari-hari, termasuk dalam menangani masalah dan cacat."	Discipline in Quality Standards	HSL, Alumni

The observational data show that the integration of pesantren values into defect management is clearly evident through the application of the principles of honesty,

responsibility, simplicity, and discipline. Honesty is reflected in transparent and accurate reporting of product defects, in accordance with pesantren teachings regarding honesty as a moral foundation. Responsibility is implemented through a deep commitment to process improvement and preventive measures, reflecting individual accountability in resolving and preventing problems. The principles of simplicity and efficiency are applied by streamlining managerial procedures to make them more effective and results-oriented, in line with pesantren teachings on the importance of minimal processes yielding maximum results. Discipline is demonstrated through the consistent application of quality standards, reflecting the pesantren's value of discipline in maintaining work quality and orderly processes. The overall application of these pesantren values not only improves managerial processes but also creates a more ethical and effective work environment, in line with the goal of integrating pesantren values into defect management.

Tabel 1 sebagaimana diatas terdapat 4 bentuk dari integrasi nilai Pesantren dalam defect management. Dengan demikian, data tersebut menjelaskan temuan sebagaimana berikut:

a) Honesty in Reporting

These findings indicate that in Islamic boarding schools, honesty is taught to students as a core value. Students are encouraged to report any issues or mistakes without fear, so that any shortcomings can be promptly identified and addressed. Honesty is one of the main pillars of this Islamic boarding school, and we encourage all staff and students to always be honest in all matters, including in the management of shortcomings. The successful integration of the value of honesty into defect management at the pesantren is marked by the creation of an open culture where students and staff feel safe to report mistakes without fear, as well as the existence of a reward system that values honesty and strict sanctions for those who attempt to conceal defects.

b) Responsibilities

Research data shows that by assigning specific tasks, Islamic boarding schools strive to shape students' character so they become responsible and disciplined in carrying out their daily duties. These tasks are designed to provide practical experience in managing responsibilities, which—in the context of disability management—teaches students to proactively identify and resolve problems. In Islamic boarding schools, each student has clear responsibilities in their daily activities, with specific tasks assigned to instill a sense of responsibility from an early age. This approach has proven effective, as students become more responsible, understand the importance of completing tasks, and report any problems.

c) Simplicity and Efficiency

The findings above indicate that educational institutions managed by teaching and non-teaching staff implement simple yet highly effective managerial processes in teaching and

learning activities. This approach focuses not only on simplifying procedures but also on optimally achieving educational goals through structured and well-planned methods. Educators emphasize that the simplicity of these processes does not diminish their effectiveness; rather, it enhances operational efficiency and the quality of learning outcomes. In this context, simplicity refers to a process design that is directly targeted, free from unnecessary layers of complexity, which allows for better management of time and resources.

d) Kedisiplinan dalam Standar Kualitas

The research findings emphasize the importance of implementing strict Standard Operating Procedures (SOPs) as a key tool for improving student discipline and effectively managing product defects. By implementing structured and detailed SOPs to regulate educational activities and defect management, educational institutions are expected to strengthen discipline and quality standards. The implementation of strict SOPs has been identified as a managerial strategy that successfully improves student discipline in teaching and learning activities, where clear procedures and firm rules serve as the main pillars in creating an orderly and organized learning environment. With SOPs in place, students are guided to follow the rules, complete their assignments on time, and adhere to established standards, which in turn helps improve the quality of the teaching nd learning process.

Figure 1. Integration of Islamic Boarding School Values in Defect Management



Based on the findings above, it can be concluded that the integration of pesantren values into disability management has proven effective in various aspects. Honesty, as a core value, encourages students and staff to report mistakes without fear, fostering an open culture with a clear system of rewards and sanctions. Responsibility is taught through specific tasks that shape students' character, enhancing their ability to proactively identify and resolve problems. Simplicity and efficiency in managerial processes enable the optimal achievement of educational goals through procedures designed to be directly on target. The strict implementation of standard operating procedures (SOPs) reinforces discipline and quality standards, creating an orderly and organized learning environment and improving the quality of learning outcomes.

3.1.2. Implikasi Integrasi Nilai Pesantren dalam Defect Management

The integration of pesantren values into defect management combines spiritual and ethical dimensions with technical managerial strategies, resulting in an approach that not only improves product quality but also strengthens integrity and work ethics within the organization. By applying values such as honesty, simplicity, and responsibility, managers can address defects in a more holistic and sustainable manner. This approach not only enhances the effectiveness of defect management but also fosters a work culture that supports continuous improvement, while reinforcing a solid ethical foundation in the production process. The implications of this integration demonstrate that incorporating pesantren values into defect management can yield long-term benefits for product quality, customer satisfaction, and overall organizational performance.

The following research findings highlight the implications of the values integrated into defect management;

Table 2. Data on the Implications of Integrating Pesantren Values into Defect Management

Interview Data	Coding	Sources of Information
"By integrating pesantren values, we have seen significant improvements in managerial processes, which are now more structured and efficient."	Effectiveness in Defect Resolution	Head of the Islamic Boarding School
"Staff members feel more satisfied and motivated because the pesantren values	Effectiveness in Defect Resolution	Pesantren Staff

that are applied create a more harmonious and ethical work environment."		
"With the existing reporting system, the time required to resolve defects has decreased significantly, making the process faster and more efficient."	Improvement of an Ethical and Effective Work Environment	Santri
"We regularly assess the effectiveness of corrective actions that have been taken to ensure that all defects are properly addressed and do not recur. The preventive measures implemented have successfully reduced the number of recurring defects, demonstrating the effectiveness of the actions taken."	Improvement of an Ethical and Effective Work Environment	Teacher
"We provide continuous training and education for staff and santri, ensuring that they understand and apply pesantren values in all aspects."	Human Resource Development	Teacher
"The existing mentoring program helps us, as santri and new staff, understand and internalize pesantren values in management, making us better prepared to face challenges."	Human Resource Development	Pesantren Staff
"We ensure that pesantren values are applied at every level of the organization, from santri to management, to create alignment in actions. Effective cooperation and communication among all relevant parties have been key to implementing these values, ensuring that everyone is on the same page."	Involvement of the Entire Pesantren Community	Head of the Islamic Boarding School
"The entire pesantren community, including santri, staff, and management, actively participates in defect management, making the process more inclusive and effective."	Involvement of the Entire Pesantren Community	Santri

Data Hasil Wawancara	Koding	Sumber Informasi
“Dengan mengintegrasikan nilai-nilai pesantren, kami telah melihat perbaikan signifikan dalam proses manajerial, yang sekarang lebih terstruktur dan efisien.”	Efektivitas dalam Penyelesaian Cacat	Kepala Pesantren
“Staf merasa lebih puas dan termotivasi karena nilai-nilai pesantren yang diterapkan menciptakan lingkungan kerja yang lebih harmonis dan etis."	Efektivitas dalam Penyelesaian Cacat	Staff Pesantren
“Dengan sistem pelaporan yang ada, waktu yang dibutuhkan untuk menyelesaikan cacat telah berkurang secara signifikan, menjadikan proses lebih cepat dan efisien.”	Peningkatan Lingkungan Kerja Etis dan Efektif	Santri
“Kami secara berkala menilai efektivitas tindakan korektif yang telah diambil untuk memastikan bahwa semua cacat ditangani dengan tepat dan tidak terjadi lagi. Langkah-langkah preventif yang diterapkan telah berhasil mengurangi jumlah cacat yang berulang, menunjukkan efektivitas dari tindakan yang diambil.”	Peningkatan Lingkungan Kerja Etis dan Efektif	Guru
“Kami menyediakan pelatihan dan pendidikan yang berkelanjutan untuk staf dan santri, memastikan mereka memahami dan menerapkan nilai-nilai pesantren dalam segala aspek.”	Pengembangan Sumber Daya Manusia	Guru
“Program mentoring yang ada membantu kami para santri dan staf baru memahami dan menginternalisasi nilai-nilai pesantren dalam manajemen, menjadikan mereka lebih siap menghadapi tantangan.”	Pengembangan Sumber Daya Manusia	Staff Pesantren
"Kami memastikan bahwa nilai-nilai pesantren diterapkan di setiap tingkat organisasi, dari santri hingga manajemen, untuk menciptakan keselarasan dalam tindakan. Kerjasama dan komunikasi yang efektif antara semua pihak terkait telah menjadi kunci dalam implementasi nilai-	Keterlibatan Seluruh Komunitas Pesantren	Kepala Pesantren

nilai pesantren, memastikan setiap orang berada di halaman yang sama."		
"Seluruh komunitas pesantren, termasuk santri, staf, dan manajemen, berpartisipasi aktif dalam manajemen cacat, menjadikan proses lebih inklusif dan efektif."	Keterlibatan Seluruh Komunitas Pesantren	Santri

The implications of integrating pesantren values into defect management are clearly reflected in the application of the principles of honesty, responsibility, simplicity, and discipline. Honesty is reflected in transparent defect reporting, in accordance with pesantren teachings on integrity. Responsibility is demonstrated through a commitment to problem improvement and prevention, reflecting individual accountability. The principle of simplicity is applied by streamlining procedures for maximum effectiveness, while discipline is demonstrated through the consistent application of quality standards. The integration of these values improves managerial processes while creating a more ethical and efficient work environment.

a) Effectiveness in Defect Resolution.

The research findings show that by integrating pesantren values, pesantren stakeholders have observed significant improvements in managerial processes, which are now more structured and efficient. The application of these values has also created a more harmonious and ethical work environment, contributing to increased staff satisfaction and motivation. Staff members feel more motivated because they work in an environment that supports moral and ethical values. This change indicates that the integration of pesantren values not only improves efficiency but also enhances work quality and the well-being of all stakeholders within the pesantren.

b) Improvement of an Ethical and Effective Work Environment.

The research data show that, with the existing reporting system, the time required to resolve defects has decreased significantly, making the process faster and more efficient. Santri regularly assess the effectiveness of corrective actions that have been taken to ensure that all defects are properly addressed and do not recur. The preventive measures implemented have successfully reduced the number of recurring defects, demonstrating the effectiveness of the actions taken.

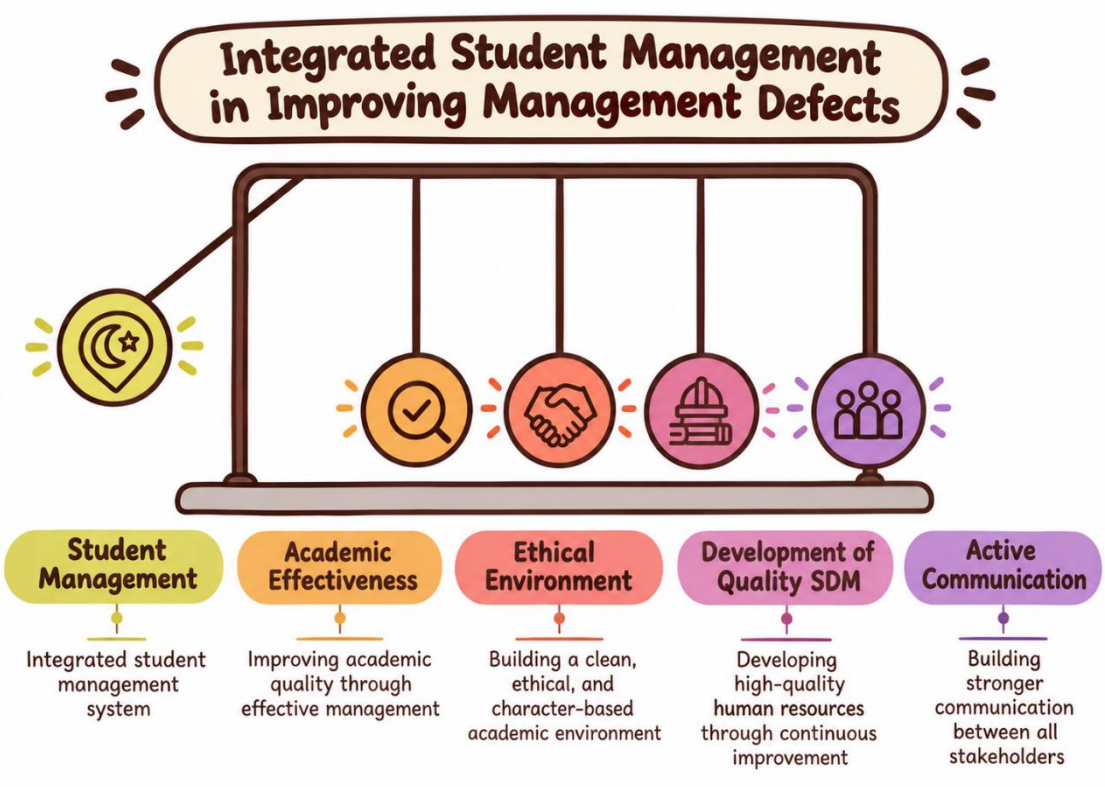
c) Human Resource Development.

The research findings reveal that the Head of the Islamic boarding school provides continuous training and education for staff and santri, ensuring that they

understand and apply pesantren values in all aspects. The existing mentoring program helps santri and new staff understand and internalize pesantren values in management, making them better prepared to face challenges. Through continuous training and mentoring, we strive to create an environment in which. pesantren values serve as the foundation for every action and decision. This ensures that the entire pesantren community can contribute effectively and ethically to all activities.

The findings presented above show that the integration of pesantren values into defect management has four main implications. First, effectiveness in defect resolution increases, making managerial processes more structured and efficient while creating a harmonious and ethical work environment. Second, a more ethical and effective work environment is created through a reporting system that accelerates defect resolution and preventive measures that successfully reduce recurring defects. Third, human resource development through training and mentoring programs ensures that santri and staff understand and apply pesantren values in every action and decision. Fourth, the involvement of the entire pesantren community in defect management, guided by effective cooperation and communication, creates alignment in actions and maintains the integrity of pesantren values.

Figure 2. Implications of Integrating Pesantren Values into Defect Management



3.2. Discussion

3.2.1. Integration of Pesantren Values into Defect Management

The research findings show that the integration of pesantren values can transform defect management from a rigid procedural approach into a comprehensive quality culture. The four main internalized values—honesty in reporting, individual and collective responsibility, simplicity of operational processes, and discipline in adhering to Standard Operating Procedures (SOPs)—demonstrate that quality control does not depend solely on technical tools and controls. These findings strengthen and extend the Total Quality Management (TQM) theory developed by W. Edwards Deming, which emphasizes the importance of continuous quality improvement through cultural transformation and the involvement of all organizational elements. By internalizing pesantren values, defect management practices acquire ethical and spiritual dimensions that encourage the self-awareness of staff and santri to maintain quality standards without excessive supervision.

The main implication of integrating these values directly addresses a crucial issue in modern quality management, namely the high operational costs caused by hidden defects. A culture of openness grounded in honesty and responsibility allows errors to be detected earlier without creating fear of sanctions. This is consistent with Philip Crosby's (1979) Zero Defects principle, which emphasizes that preventing and correcting problems at an early stage is far more efficient and less costly than correcting errors that have already accumulated. Thus, the application of pesantren ethical values not only develops the moral character of individuals but also directly improves managerial efficiency and prevents resource waste.

The mechanism underlying the success of this integration is rooted in a distinctive model of spiritual and cultural habituation within the pesantren environment. Unlike conventional manufacturing industries, which tend to rely on rigid regulations and external supervision, pesantren utilize moral motivation based on personal accountability to God and to others. This condition explains why individuals within the pesantren ecosystem have strong intrinsic motivation to comply with SOPs and report errors transparently. This analysis confirms Edgar Schein's organizational culture theory, which states that ethical values deeply embedded in leadership and the organizational environment consistently shape members' behavioral patterns, thereby producing a sustainable and internally robust management system.

3.2.2. Implikasi Integrasi Nilai Pesantren dalam *Defect Management*

The implications of integrating pesantren values are manifested in four main domains: increased effectiveness in defect resolution, the creation of an ethical and efficient work environment, the strengthening of character-based human resources

(HR), and the inclusive involvement of the entire pesantren community. These findings provide a new perspective that expands the conventional defect management framework, which has traditionally tended to be technocratic and often overlooked human factors. These findings are consistent with the framework of Critical Theory in management pioneered by Max Horkheimer, which criticizes the dominance of mechanical efficiency alone and emphasizes the importance of restoring social, ethical, and moral dimensions to managerial practices. Thus, this integration demonstrates that effective quality management can be achieved without sacrificing human values and justice.

The practical impact (so what?) of these findings is the formation of a harmonious, transparent, and sustainable operational ecosystem. The handling of defects or operational errors is no longer perceived as a frightening threat or a burden that triggers internal conflict, but is instead transformed into a means of collaborative learning. This condition confirms the ethical leadership theory developed by James Kouzes and Barry Posner, which states that working relationships built on trust, openness, and shared moral values increase integrity, engagement, and long-term commitment among all organizational elements. The ultimate outcome is not limited to a reduction in operational errors but also extends to increased stakeholder satisfaction and trust.

The fundamental reason (why) this approach succeeds in going beyond the effectiveness of technical fixes is that technical improvements alone merely treat surface symptoms without addressing the root causes originating from human mentality and behavior. As criticized by Rhenald Kasali (2017), complete dependence on technical instruments without organizational cultural improvement will fail to address complex and rapidly changing operational dynamics. Pesantren values—such as simplicity, discipline, and responsibility—directly target improvements in individual mindsets and morality. When the fundamental character of human resources has been firmly established, the implementation of quality management techniques and tools can operate optimally, precisely, and sustainably.

4. Conclusions And Suggestions

This study concludes that the integration of Educational Technology (EdTech) into Indonesian language learning in secondary schools in Banyuwangi, Bondowoso, and Jember has brought about a significant transformation from conventional approaches toward an interactive, flexible, and student-centered digital learning ecosystem. This integration takes three main forms:

First, Self-Directed Language Learning Applications (Duolingo, Babbel, Rosetta Stone), which effectively facilitate the flipped classroom model, increase classroom time efficiency, and strengthen students' vocabulary and grammar

retention. Second, Digital-Based Collaborative Projects (Google Docs and Microsoft Teams), which encourage a shift toward social constructivism, strengthen communicative writing and speaking skills, and facilitate teachers' formative assessment through real-time feedback. Third, Immersive Media (AR/VR), which offer considerable potential for contextual teaching and learning in language and literature, although their implementation still faces challenges related to limited infrastructure and educator readiness in the regions.

The findings of this study have important implications for Indonesian language educators, who should not position technology merely as a presentation aid, but rather design it as a means of social interaction and student learning autonomy. For school managers and education policymakers, the findings emphasize the importance of providing equitable digital infrastructure facilities and continuous pedagogical digital competence training for teachers so that the digital divide in the regions can be minimized.

This study has limitations in its qualitative scope, focusing on the subjective perceptions and experiences of teachers and students in specific areas. Therefore, future research is recommended to apply quantitative or mixed-methods approaches with a broader sample size to empirically measure the impact of combined EdTech on learning outcomes and students' digital literacy skills.

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