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Integrating Religious Values and Modern Quality Standards: A Multi-Site Inquiry into SDG 4 Achievement in Pesantren-Based Schools

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ABSTRACT

Objective: To analyze and describe: (1) quality planning; (2) quality control; (3) quality improvement; (4) supporting factors; and (5) inhibiting factors in the implementation of quality management in pesantren-based schools. **Method:** The study employed a qualitative approach using a multi-site case study design. Data were collected through in-depth interviews, observations, and documentation involving principals, vice principals, teachers, educational staff, students, and parents. Data analysis was conducted through data condensation, data display, conclusion drawing and verification, single-site analysis, and cross-site analysis. Data trustworthiness was ensured through source triangulation, technique triangulation, theory triangulation, member checking, and audit trails. **Results:** The findings revealed that: (1) quality planning was carried out through stakeholder needs identification, the development of programs and an integrated curriculum, and the strengthening of pesantren values in educational quality planning; (2) quality control was implemented through instructional supervision, discipline monitoring, program evaluation, academic achievement evaluation, and the development of students' religious character; (3) quality improvement was achieved through human resource development, instructional innovation, educational technology enhancement, infrastructure development, and a culture of continuous improvement; (4) supporting factors included visionary leadership, pesantren culture, human resource competence, stakeholder support, and commitment to quality; and (5) inhibiting factors included rapid technological changes in education, the need for continuous human resource development, the complexity of managing both school and pesantren programs, and the challenge of balancing educational modernization with pesantren traditions. **Novelty:** The novelty of this study lies in the development of a quality management model for pesantren-based schools that positions pesantren culture as the foundation for the formation of a quality culture. This quality culture strengthens the implementation of quality planning, quality control, and quality improvement based on Juran's Trilogy, thereby producing educational quality that is academically excellent, religiously grounded, and globally competitive for SDG 4.

INTRODUCTION

Education is the primary foundation of national development because it plays a role in developing students' knowledge, skills, character, and moral values, while simultaneously developing competitive, innovative, and globally competitive human resources. In this context, education is not solely oriented toward academic achievement, but also toward character development, social awareness, and civic responsibility. This aligns with the mandate of Article 3 of Law Number 20 of 2003 concerning the National Education System, which affirms that national education functions to develop capabilities and shape the character and civilization of a dignified nation. To support this goal, the government established eight National Education Standards (SNP) as a reference for education implementation through Government Regulation Number 57 of 2021 to realize a quality and sustainable education system (Law Number 20 of 2003; Government Regulation Number 57 of 2021).

Despite the implementation of various quality improvement policies, the quality of education in Indonesia still faces numerous challenges. The 2025 Indonesian Education Report Card shows that literacy, numeracy, learning quality, and the climate of diversity and inclusivity in schools at various levels of education are still in the moderate category, necessitating the strengthening of governance and continuous quality assurance (Ministry of Primary and Secondary Education, 2025). This condition is also reflected in the results of the 2022 Programme for International Student Assessment (PISA), where Indonesia scored 383 in science, 359 in reading, and 366 in mathematics, still below the average for OECD countries, ranking 68th out of 81 countries (Organisation for Economic Co-operation and Development, 2023). Furthermore, Indonesia's Human Development Index (HDI) of 75.90 in 2025 still indicates a gap in the education dimension, while its Human Development Index (HDI) of 0.728 places Indonesia in 113th place out of 193 countries (Central Bureau of Statistics, 2025; United Nations Development Programme, 2025).

These various achievements demonstrate that educational quality issues are not solely related to learning outcomes but also closely related to the effectiveness of educational institution management. According to Deming, quality issues are fundamentally management issues (Sallis, 2014). This view is reinforced by research showing that good planning, effective leadership, school environment management, and teacher reward systems contribute significantly to improving educational quality and student achievement for SDG 4 (Kalogiannidis et al., 2022). Therefore, implementing quality management is a crucial strategy for creating continuous improvement in education delivery.

One form of educational institution that is interesting to study in the context of quality management implementation is the Islamic boarding school. This educational model integrates general education and Islamic education through an integrated curriculum, a boarding system, and an emphasis on character and moral development of students (Azra, 2004; Dhofier, 2019; Nata, 2001). In recent years, Islamic boarding schools have also demonstrated good quality achievements, as reflected in the inclusion of several Islamic boarding schools in the list of best schools based on the results of the national UTBK (LTMPT, 2022). In Jombang Regency, SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang are two Islamic boarding school-based schools with large student populations, high academic and non-academic achievements, and distinct quality management characteristics. These conditions make both schools relevant as research locations to examine the implementation of educational quality management using the Juran Trilogy perspective, which includes quality planning, quality control, and quality improvement (Juran & Godfrey, 1998).

Although the implementation of quality management has been widely studied in various educational contexts, research specifically addressing the application of quality management in Islamic boarding schools remains relatively limited. Most previous research focuses on universities or public schools, while studies on Islamic boarding school-based secondary schools, particularly those that holistically integrate academic, religious, and character-building aspects, are rare. This situation demonstrates the need to develop more comprehensive studies on the implementation of quality management in Islamic boarding schools, while simultaneously enriching the development of educational quality management theory and practice in the context of Islamic educational institutions (Juran & Godfrey, 1998).

This research limitation is further reinforced by a literature search in the ScienceDirect database, which reveals a significant number of publications on quality management and

school quality management, while publications specifically addressing the implementation of quality management in Islamic boarding schools are still very few. In fact, a keyword search linking the implementation of quality management in Islamic boarding schools using the Juran Trilogy perspective has not yet revealed any publications in Scopus-indexed journals. These findings indicate a continuing research gap regarding the implementation of quality management in Islamic boarding schools using the framework of quality planning, quality control, and quality improvement (Juran & Godfrey, 1998).

To strengthen the identification of research gaps, a bibliometric analysis was conducted using Scopus metadata with the assistance of Publish or Perish and VOSviewer software. Publish or Perish is used to search and analyze scientific publications based on various citation indicators, while VOSviewer is used to map relationships between keywords, authors, and research themes to systematically illustrate the development of a scientific field (Harzing, 2013; Van Eck & Waltman, 2010; Donthu et al., 2021; Zupic & Čater, 2015). This bibliometric approach provides a more objective basis for identifying research trends while strengthening arguments regarding the novelty of the research.

The results of the bibliometric analysis indicate that the topic of quality management systems in education still has limited connections to specific themes and has not yet demonstrated a connection to the context of Islamic boarding schools or Islamic boarding schools. These findings indicate that the implementation of quality management in Islamic boarding schools remains an underexplored area of research. Therefore, this study aims to fill this gap by analyzing the implementation of quality management in Islamic boarding schools based on the Juran Trilogy perspective, while also providing theoretical and practical contributions to the development of educational quality management in Islamic boarding schools (Juran & Godfrey, 1998; Van Eck & Waltman, 2010; Donthu et al., 2021).

LITERATURE REVIEW

The concept of educational quality management

Quality is understood as the ability of a product or service to meet the needs and expectations of users. Juran defines quality as fitness for use, Deming emphasizes process consistency and reliability, Crosby views quality as conformity to requirements, while Ishikawa, Taguchi, and ISO 9000 emphasize customer satisfaction, loss reduction, and systematic compliance with standards (Juran & Godfrey, 1998). In the context of education, quality is realized through the involvement of all stakeholders and continuous improvement to produce effective educational services (Deming, 2000).

The function of educational quality is not only to improve student competency but also to support the achievement of national education goals, enhance quality of life, and produce competitive human resources. For schools, quality plays a role in improving the quality of learning, teacher professionalism, student and parent satisfaction, strengthening community participation, encouraging continuous improvement, and building the reputation of educational institutions (Sallis, 2014). Furthermore, educational quality also benefits parents through increased involvement, access to information, well-being, and participation in school decision-making.

Quality management is a systematic approach encompassing planning, control, assurance, and continuous quality improvement to enable an organization to meet customer expectations and applicable standards (Goetsch & Davis, 2014). This concept was developed by various experts, such as Deming through the PDCA cycle, Juran with his quality trilogy, Crosby with his zero defects concept, and Ishikawa with his quality control, which

emphasizes the involvement of all organizational members in quality improvement (Deming, 2000). The implementation of quality management in education is carried out through curriculum development, teacher competency development, periodic evaluations, stakeholder involvement, and the use of technology (Juran & Godfrey, 1998).

Educational quality management is an integrated process to ensure and improve the quality of educational services through the ongoing involvement of the entire school community (Sallis, 2014). Its implementation includes quality planning, control, assurance, evaluation, and continuous improvement, based on the principles of customer focus, multi-stakeholder involvement, a process approach, a systems approach, and continuous improvement (Hoy & Miskel, 2012). In practice, Juran and Deming's theory is the main foundation because it emphasizes the importance of planning, control, and continuous quality improvement to achieve sustainable educational quality (Deming, 2000).

Juran and Deming's theory

Quality management in education is a systematic approach to improving the quality of educational processes and outcomes. Two theories widely used as a foundation for quality management are Juran and Deming's, which emphasize the importance of planning, controlling, evaluating, and continuous quality improvement (Juran, 1998; Deming, 2000).

According to Juran (1998), quality management consists of three main components (the Juran Trilogy): quality planning, quality control, and quality improvement. Quality planning is carried out by identifying customer needs and designing processes capable of meeting those needs. Quality control is carried out through performance evaluation based on established standards. While quality improvement focuses on continuous improvement through system development, team building, and systematic problem solving (Juran, 1998).

Meanwhile, Deming (2000) emphasizes the application of the Plan-Do-Check-Act (PDCA) cycle as a method for continuous quality improvement, which includes the stages of planning, implementation, evaluation, and follow-up. In addition, Deming put forward 14 management principles that emphasize commitment to continuous improvement, effective leadership, training, cooperation, and the involvement of all members of the organization in realizing a quality culture (Deming, 2000).

Indicators of an Effective (Quality) School

According to Scheerens (2016), a quality school is characterized by an achievement orientation, effective leadership, collaboration among staff, a quality curriculum, a conducive school and classroom climate, ongoing evaluation, structured and adaptive learning, and the provision of feedback that supports improved learning outcomes (Scheerens, 2016). Furthermore, Arcaro (1995) adds that quality schools are also supported by visionary leadership, a quality learning process, parent and community involvement, the use of data for improvement, the availability of facilities, and a relevant curriculum (Arcaro, 1995). These indicators align with the concept of Juran's Trilogy, which encompasses planning, control, and continuous quality improvement, and is supported by a strong organizational culture as the foundation for creating sustainable educational quality (Juran, 1992).

Values, organizational culture, and educational management

Organizational values and culture are essential foundations in educational management because they shape the way school members think, behave, and act in achieving educational goals (Schein, 2010). Shared values encourage consistent organizational behavior (Hofstede

et al., 2010), serve as a control mechanism through the internalization of commitment and loyalty (Ouchi, 1981), and contribute to school effectiveness by creating an academic culture that supports quality (Hoy & Miskel, 2012). Furthermore, leadership plays a role in instilling values and building a quality-oriented organizational culture (Bush, 2003), making school culture a crucial factor in the successful implementation and sustainability of educational reform (Cheng, 2022; Deal & Peterson, 2016).

Islamic boarding schools as a values and culture-based education system

Islamic boarding schools are formal educational units that integrate the national curriculum with the values, traditions, and educational system of Islamic boarding schools in terms of curriculum, leadership, organizational culture, and student character development (Law of the Republic of Indonesia Number 18 of 2019). This educational model combines formal and Islamic boarding school education by strengthening academic, religious, moral, and spiritual aspects, supporting the holistic development of students (Hargreaves & Fullan, 2012). Key characteristics include curriculum integration, boarding school life, values-based leadership, and a religious organizational culture that strengthens school effectiveness (Dhofier, 2019). Throughout their development, Islamic boarding schools have been able to adapt to educational modernization without abandoning their Islamic identity, thus becoming a crucial foundation for implementing educational quality management that emphasizes continuous improvement based on the institution's culture and values (Azra & Thaha, 2012; Sallis, 2014).

Islamic boarding schools (pesantren) are a values-based educational system that integrates religious learning, character development, and collective life through the core elements of the kiai (religious leader), students (santri), pondok (boarding school), mosque, and the teaching of yellow books (kitab kuning), thus shaping the students' personalities holistically (Dhofier, 2019). Internalization of values such as morality, discipline, responsibility, and togetherness is carried out continuously through exemplary behavior, habituation, and the leadership of the kiai as a moral authority figure in Islamic boarding school life (Azra & Thaha, 2012). Furthermore, the Islamic boarding school education system integrates formal, non-formal, and informal education into all aspects of the students' lives, ensuring a holistic learning process (Steenbrink, 1986). Over time, Islamic boarding schools have adopted modern formal education systems without abandoning their distinctive values, thus remaining adaptive while maintaining their identity as values-based educational institutions (Zarkasyi, 2020). Islamic boarding school culture is a system of values, norms, and traditions internalized through role models, habits, and daily life to shape the character and behavior of Islamic boarding school residents (Dhofier, 2019). These values include sincerity, discipline, exemplary behavior, responsibility, noble character, Islamic brotherhood, religiosity, and a learning culture that are characteristic and strengthen the function of Islamic boarding schools as value-based educational institutions and moral formation (Azra & Thaha, 2012). From an organizational culture perspective, Islamic boarding school culture serves as a collective value system that guides behavior and strengthens the commitment of organizational residents in supporting the achievement of educational quality (Schein, 2010).

Quality culture

Quality culture is a system of values, commitments, and habits that places quality as the primary orientation of the organization through the involvement of all members and continuous improvement (Schein, 2010). In education, quality culture is reflected in the

school community's commitment to improving the quality of learning, supportive leadership, collaboration, data-driven decision-making, and continuous human resource development (Arcaro, 1995). In Islamic boarding schools, quality culture is strengthened through the internalization of Islamic boarding school values such as sincerity, discipline, exemplary behavior, responsibility, religiosity, and a culture of learning that supports the success of planning, controlling, and continuously improving the quality of education (Juran & Godfrey, 1998).

RESEARCH METHOD

This research used a qualitative approach with a multi-site case study design to understand the implementation of quality management at two Islamic boarding schools: SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang. The selection of the two sites was based on their distinct characteristics, yet they share similarities as educational institutions under the auspices of Islamic boarding schools. The research was conducted from October 2024 until the entire research process was completed. Informants included the principal, vice principal, teachers, education staff, students, guardians, the school committee, and representatives from the Education Office and the Ministry of Religious Affairs, who were selected purposively based on their relevance to quality management implementation.

Data were collected through interviews, observation, and documentation to obtain in-depth and natural information. Data analysis was conducted in two stages: a single-case analysis at each site and a cross-case analysis to identify similarities and differences in quality management implementation. Data validity was tested using the criteria of credibility, dependability, confirmability, and transferability (Riyanto & Oktariyanda, 2015).

RESULTS AND DISCUSSION

Results

Based on the results of a multi-site case study on the implementation of Islamic boarding school quality management at SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang using the Juran Trilogy perspective, the following findings were obtained.

Quality planning

Quality planning at SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang is implemented through identifying stakeholder needs, developing quality programs, developing curriculums, strengthening a culture of quality, and integrating Islamic boarding school education with formal education. SMA Darul Ulum 2 focuses more on internationalization, ISO 9001:2015, and bilingual learning, while MAN 3 Jombang emphasizes religious culture, academic supervision, and Madrasah Self-Evaluation (EDM). Overall, quality planning is oriented towards improving academic quality while developing students' religious character.

Quality control

Quality control is carried out through learning supervision, discipline monitoring, program evaluation, academic achievement evaluation, and continuous improvement follow-up. SMA Darul Ulum 2 implements ISO 9001:2015-based controls, internal audits, and quality indicators, while MAN 3 Jombang prioritizes academic supervision, EDM, learning monitoring, and religious character development. Quality control functions not only as academic oversight but also strengthens a culture of discipline and student character.

Quality improvement

Quality improvement is implemented through human resource development, provision of infrastructure, utilization of technology, learning innovation, and continuous strengthening of a quality culture. SMA Darul Ulum 2 excels in internationalization, bilingual learning, robotics, and foreign language certification, while MAN 3 Jombang excels in teacher workshops, MGMP (Student Leadership Group), educational digitalization, and strengthening religious culture. The implementation of quality improvement reflects a culture of continuous improvement that integrates academic aspects, character, and human resource capacity.

Factors supporting the implementation of quality management

Factors supporting the implementation of quality management include the leadership of the school/madrasah principal, the Islamic boarding school culture, the quality of human resources, a culture of discipline, stakeholder involvement, a culture of evaluation, and a commitment to continuous quality improvement. Islamic boarding school culture is a key factor in shaping a quality culture through the instilling of religious habits, discipline, and the strengthening of students' morals.

Factors inhibiting the implementation of quality management

Inhibiting factors include the development of educational technology, the need to improve human resource competencies, the complexity of program management, and the challenge of maintaining a balance between educational modernization and Islamic boarding school values. Furthermore, the busy schedule of schools and Islamic boarding schools, as well as the demands of digitalization in education, also hinder the implementation of quality management.

Discussion

Quality planning in the implementation of islamic boarding school quality management

Quality planning at SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang is implemented systematically through identifying stakeholder needs, developing an integrated curriculum, developing flagship programs, and translating the plans into school operational activities. This planning is oriented not only towards improving academic achievement but also towards developing religious character, a culture of discipline, and strengthening Islamic boarding school values. This finding aligns with the concept of quality planning, which emphasizes the importance of identifying customer needs, developing appropriate services, and building support systems through to the operational implementation stage (Juran & Godfrey, 1998).

The results also show that both schools translate stakeholder needs into relevant educational services without neglecting the Islamic boarding school identity, as stated by Sallis (2014). Furthermore, quality planning is supported by a vision that integrates academic excellence, religiosity, and global competitiveness, consistent with Arcaro's (1995) view that a clear vision is the foundation for developing a quality school.

Differences in implementation are evident in the focus of each school. Darul Ulum 2 Senior High School, a leading Islamic boarding school (BPPT) in Jombang, emphasizes internationalization through the integration of the national curriculum, the Islamic boarding school curriculum, and Cambridge Assessment International Education (CAIE), bilingual learning, and foreign language certification, in line with Scheerens' (2016) concept of effective

schools. Meanwhile, MAN 3 Jombang develops quality through Madrasah Self-Evaluation (EDM), strengthening Qur'anic culture, character development, and the development of academic and non-academic programs.

These findings also indicate that quality planning is implemented collaboratively, involving leaders, teachers, foundations, Islamic boarding schools, and other stakeholders, in accordance with the planning stage principles of the PDCA cycle proposed by Deming (2000). Furthermore, the religious and cultural values of Islamic boarding schools serve as the foundation for developing quality strategies, in line with Schein's (2010) theory of organizational culture and the characteristics of Islamic boarding school education as proposed by Dhofier (2011) and Mastuhu (1994).

The results of this study reinforce previous research showing that successful quality management is influenced by leadership, organizational culture, and structured planning (Ghaith et al., 2023). These findings also support research by Jasti et al. (2022), Dzimińska (2023), Apud (2018), and Khasanah (2023), which emphasize that stakeholder-based quality planning and a systematic approach are crucial factors in building a culture of quality education.

Quality control in the implementation of islamic boarding school-based quality management

Research results indicate that quality control at SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang is implemented through academic supervision, learning monitoring, program evaluation, quality audits, disciplinary oversight, and follow-up on evaluation results. Quality control focuses not only on academic aspects but also encompasses character development, school culture, and student behavior.

This finding aligns with the concept of quality control proposed by Juran and Godfrey, namely assessing performance, comparing it to targets, and taking corrective action for deviations (Juran & Godfrey, 1998). The principle of conformity to requirements is also reflected in the efforts of both schools to maintain the quality of learning and educational services according to established standards (Crosby, 1979).

Quality control at both schools is implemented collectively, involving the principal, teachers, educational staff, students, parents, and the Islamic boarding school (pesantren). This fosters quality as a shared culture, in line with the concept of total quality control, which emphasizes the involvement of all organizational elements (Feigenbaum, 1991). This approach also aligns with Ishikawa's view that quality control is the responsibility of all members of the organization (Ishikawa, 1985).

SMA Darul Ulum 2 Unggulan BPPT Jombang implements systematic quality control through ISO 9001:2015, internal quality audits, TPMPS (Integrated Learning Implementation Plan), and indicator-based monitoring. MAN 3 Jombang emphasizes academic supervision, Madrasah Self-Evaluation (EDM), and character development based on religious values. Evaluation results at both schools are consistently followed up through program improvements, teacher training, and instructional enhancements, in accordance with the check-act principle of the PDCA cycle (Deming, 2000).

A culture of discipline, respect for teachers, and religious values within the Islamic boarding school environment contribute to strengthening the effectiveness of quality control, making the monitoring process part of character development, not merely an administrative function (Schein, 2010). This finding is also supported by previous research showing that quality management systems, audits, supervision, a culture of quality, and continuous

evaluation contribute to improving educational quality (Martínez-Zarzuelo et al., 2022). The results of this study also corroborate Khasanah's (2023) findings that Juran Trilogy-based quality control is implemented through continuous monitoring, supervision, evaluation, and follow-up.

Quality improvement in the implementation of Islamic boarding school-based school quality management

The research results show that quality improvement at SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang is carried out sustainably through human resource development, teacher training, benchmarking, learning innovation, digitalization of education, development of infrastructure, and strengthening of quality culture. These findings indicate that quality improvement is seen as a continuous improvement process oriented towards meeting students' needs and adapting to changes in the educational environment, in line with the concept of quality improvement proposed by Juran and Godfrey (1998).

Quality improvement practices in both schools reflect the organization's learning culture through the implementation of workshops, MGMP, routine evaluations and continuous learning innovation. This condition supports Deming's (2000) view that superior organizations are organizations that continue to learn and make improvements, and are in line with the learning organization concept put forward by Senge (1990).

The implementation of quality improvement at the two schools has different characteristics. SMA Darul Ulum 2 Unggulan BPPT Jombang places more emphasis on internationalization of education, strengthening foreign languages, robotics, and learning technology, while MAN 3 Jombang focuses on digitizing education, developing learning media, teacher workshops, and strengthening academic culture. These efforts demonstrate the implementation of a system that continues to be refined to produce consistent educational quality as stated by Taguchi et al. (1986).

The success of quality improvement is also supported by transformational leadership that encourages innovation, a culture of learning, and continuous improvement in the school environment (Bush, 2003). The role of the principal as a change agent helps strengthen the organization's quality culture as explained by Leithwood and Sun (2012).

The findings of this research are supported by various previous studies which show that quality management contributes to academic innovation, strengthening organizational culture, developing human resources, and continuously improving the quality of educational services (Cheah et al., 2023). Apart from that, the implementation of quality improvement based on the Juran Trilogy has been proven to be able to strengthen organizational systems, learning innovation and quality culture in educational institutions (Khasanah, 2023).

Supporting factors for the implementation of Islamic boarding school quality management

Research results indicate that supporting factors for the implementation of quality management at SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang include visionary leadership, Islamic boarding school culture, human resource competency, a culture of discipline, stakeholder involvement, infrastructure support, and a commitment to continuous quality improvement. These findings demonstrate that the success of quality management is determined not only by the formal system, but also by the organizational culture and commitment of the entire school community.

The principal's leadership plays a role in driving the quality culture through exemplary behavior, communication, motivation, and consistency in realizing the vision of Islamic boarding school-based schools. These findings align with the opinions of Bush (2003), Leithwood and Sun (2012), and Arcaro (1995), who emphasized that leadership is a key factor in the success of educational organizations.

Islamic boarding school culture is a supporting factor that strengthens quality implementation through the internalization of the values of sincerity, discipline, responsibility, and brotherhood in school life. A strong organizational culture can increase organizational commitment and effectiveness (Schein, 2010; Hofstede et al., 2010; Deal & Peterson, 2016). These values also align with the character of Islamic boarding school education, which fosters a quality culture based on moral and spiritual values (Dhofier, 2011; Mastuhu, 1994).

The adaptive competence of teachers and education personnel in learning innovations, supported by the involvement of parents, foundations, Islamic boarding schools, the government, and the community, contributes to the successful implementation of quality management. These findings support the views of Sallis (2014) and Feigenbaum (1991) regarding the importance of human resource development and the involvement of all stakeholders in improving educational quality.

The results of this study also align with the findings of Salleh et al. (2018), who stated that leadership commitment, a culture of quality, human resource training, and the involvement of all organizational members are key factors in the successful implementation of Total Quality Management. Research by Mehta et al. (2014) also showed that leadership, human resource development, stakeholder involvement, and infrastructure support contribute to the successful implementation of educational quality. Furthermore, Sarvitri et al. (2020) emphasized that quality culture, organizational communication, leadership commitment, and human resource empowerment are important factors in improving educational quality. These findings are supported by Guteres (2018), who stated that academic culture, academic community commitment, and a conducive educational environment influence the successful implementation of TQM. Furthermore, Apud (2018) explained that leadership commitment, teacher quality, school culture, and facilities are determinants of the successful implementation of educational quality. Similarly, González Bravo et al. (2022) emphasized that effective leadership and the organization's ability to adapt to technological developments play a crucial role in improving educational quality.

Factors inhibiting the implementation of Islamic boarding school-based quality management

Research results indicate that the implementation of quality management at SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang faces several obstacles, including the rapid development of educational technology, the need to improve human resource competency, the complexity of managing school and Islamic boarding school programs, time constraints, and the challenge of maintaining a balance between educational modernization and Islamic boarding school values.

These findings indicate that Islamic boarding school-based schools are required to adapt to changes in the educational environment without losing their identity. This condition aligns with Deming's (2000) opinion, which states that quality improvement requires a continuous process of learning and adaptation. Similarly, Scheerens (2016) emphasized that effective schools are those with the capacity to adapt to change.

Another challenge is improving educator competency in facing the digitalization of education. According to Schein (2010), organizational change requires support in the form of communication, training, and human resource development to reduce resistance to change.

On the other hand, the complexity of managing Islamic boarding schools requires the simultaneous integration of academic programs, character development, dormitory activities, and religious culture. Nevertheless, Islamic boarding school culture remains the moral foundation that maintains the direction of change, ensuring that modernization can proceed in harmony with Islamic educational values.

The findings of this study support the findings of Salleh et al. (2018), who identified resistance to change and limited resources as barriers to TQM implementation. Gu et al. (2016) also emphasized that environmental changes and the need to improve human resource competencies are key challenges in implementing quality management. Furthermore, Sarvitri et al. (2020) demonstrated that weak organizational communication and a culture of quality also hinder improvements in educational quality. Donkoh et al. (2023) stated that the complexity of institutional management demands a high level of organizational adaptability. Meanwhile, González Bravo et al. (2022) and Matalka and Zoubi (2023) emphasized that developments in educational technology must be balanced with strengthening organizational culture and human resource competencies for effective quality management implementation.

The findings also demonstrate that the implementation of Juran's Quality Trilogy contributes to the achievement of Sustainable Development Goal 4 (SDG 4), which emphasizes inclusive, equitable, and high-quality education. By integrating systematic quality planning, participatory quality control, and continuous quality improvement within a strong pesantren quality culture, both schools have strengthened educational governance, enhanced teacher professionalism, fostered organizational learning, and promoted sustainable school improvement. These findings suggest that educational quality management embedded in institutional values and collaborative organizational practices provides an effective strategy for sustaining educational excellence and supporting the long-term realization of quality education in faith-based educational institutions.

CONCLUSION

Fundamental Finding: This study found that the implementation of quality management in Islamic boarding school-based schools is effectively carried out through the integration of Quality Planning, Quality Control, and Quality Improvement within the framework of the Juran Trilogy, supported by the internalization of pesantren values. Quality planning emphasizes stakeholder needs, integrated curriculum development, and religious character formation; quality control is implemented through supervision, evaluation, and continuous monitoring; while quality improvement focuses on human resource development, educational innovation, digital transformation, and continuous improvement. The findings further reveal that pesantren culture functions as the foundation of quality culture, strengthening sustainable quality management and contributing to academic excellence, religious values, and institutional competitiveness. **Implication:** This study extends the application of Juran's Quality Trilogy by demonstrating that the success of quality management in pesantren-based schools is influenced not only by formal management systems but also by an organizational culture rooted in pesantren values. The findings contribute theoretically by proposing a conceptual model linking pesantren culture, quality culture, and Juran's Quality Trilogy in achieving sustainable educational quality. Practically,

the study highlights the importance of quality leadership, stakeholder collaboration, continuous professional development, and the integration of religious values with modern quality management systems to strengthen school governance and improve educational quality. Furthermore, the findings support the achievement of Sustainable Development Goal 4 (SDG 4) by showing that a strong quality culture, continuous organizational learning, and collaborative quality management can promote inclusive, equitable, and high-quality education while fostering sustainable school improvement in faith-based educational institutions. **Limitation:** This study was conducted only at SMA Darul Ulum 2 Unggulan BPPT Jombang and MAN 3 Jombang using a qualitative multisite case study approach. Therefore, the findings are context-specific and may not be generalizable to other pesantren-based schools with different organizational characteristics, educational systems, and cultural backgrounds. **Future Research:** Future studies are recommended to validate the proposed conceptual model in different educational contexts, including primary, secondary, and higher education institutions based on pesantren. Quantitative or mixed-methods approaches are also suggested to examine the relationships among pesantren culture, quality culture, quality leadership, digital transformation, and the implementation of the Juran Trilogy in improving educational quality.

AUTHOR CONTRIBUTIONS

Matnasir contributed to the conceptualization of the study, literature review, research design, methodology development, data collection, field investigation, formal analysis, data interpretation, visualization, preparation of the original manuscript draft, project administration, and final approval of the manuscript. **Sujarwanto** contributed to the literature review, manuscript review and editing, critical revision of the manuscript, academic supervision, research guidance, validation of the research findings, theoretical refinement, and final manuscript approval. **Nunuk Hariyati** contributed to the literature review, manuscript review and editing, critical revision of the manuscript, academic supervision, research guidance, validation of the research findings, conceptual refinement, and final manuscript approval.

CONFLICT OF INTEREST STATEMENT

The authors state that no financial or personal conflicts of interest exist that may have affected the content or findings of this research.

STATEMENT ON THE USE OF AI OR DIGITAL TOOLS IN WRITING

The authors declare that no artificial intelligence (AI) tools or other digital writing assistants were used in the preparation, analysis, or writing of this manuscript. All stages of the research process, including data analysis, interpretation, and manuscript writing, were conducted solely by the authors. The authors take full responsibility for the originality, accuracy, and integrity of the content presented in this article.

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