

Integrating Digital Pedagogy and TQM in Islamic Religious Education: A Mixed-Methods Study in Indonesian Madrasahs to Enhance Teacher Competence and Learning Quality

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ABSTRACT. This study aims to analyze the integration of digital pedagogy and Total Quality Management (TQM) in Islamic Religious Education (IRE) within Indonesian madrasahs to enhance teacher competence and learning quality. Employing a mixed-methods approach, the research combines quantitative correlation analysis with qualitative interviews, observations, and document analysis. The findings reveal a positive and significant relationship between the implementation of TQM principles and teachers' digital pedagogical competence ($r = 0.64$; $p < 0.01$). Qualitative results indicate that institutional and technological barriers such as limited digital infrastructure and unstable internet access remain major challenges, particularly in rural madrasahs. However, strong leadership commitment and a culture of continuous improvement were found to effectively mitigate these constraints and foster digital learning innovation. The integration of TQM and digital pedagogy also aligns with the moral and spiritual dimensions of Islamic education, demonstrating that digital media can function not only as a pedagogical tool but also as an ethical medium for character formation and reflective awareness. Overall, this study concludes that the integration of TQM and digital pedagogy serves as a systemic strategy for achieving sustainable quality improvement in Islamic education through visionary leadership, a culture of quality, and the ethical use of technology.

Keywords: *Digital Pedagogy, Education, Educational Quality, Islamic Education, Total Quality Management*



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INTRODUCTION

The integration of digital technology into education systems worldwide has significantly transformed pedagogical practices, with Islamic educational institutions particularly madrasahs facing increasing pressure to adapt to these changes while preserving their religious identity. In Indonesia, madrasahs play a central role in shaping religious and moral education, catering to millions of students across various regions (Nurhasanah et al., 2024). The shift toward digital learning, propelled by the broader discourse of Education 4.0, necessitates a reimagining of instructional delivery, curriculum design, and teacher competence within these institutions (Berlian

Isnaini et al., 2025). At the same time, frameworks such as Total Quality Management (TQM) are increasingly recognized as viable strategies for institutional improvement, offering systematic approaches to enhance educational service delivery (Haddar & Yunita, 2024). Despite the considerable potential of digital pedagogy and Total Quality Management (TQM) to enhance teaching quality and institutional performance, their integration within Islamic Religious Education (IRE) has remained largely underexplored (Idharudin, 2025c). While both approaches independently offer significant benefits, digital pedagogy through innovative instructional methods and TQM through systematic quality improvement, their combined application could provide a more comprehensive framework for improving educational outcomes in IRE (Iskandar, Samsuddin, Idharudin, et al., 2025). This gap in research highlights the need for studies that investigate how these two educational strategies can be effectively integrated to maximize both instructional effectiveness and institutional success (Samsuddin et al., 2025).

Although research into digital education and quality assurance frameworks is steadily growing, studies that explicitly examine their intersection within the context of IRE in Indonesian madrasahs are rare (Idharudin & Azizah, 2025). A bibliometric analysis underscores this gap, revealing that most investigations treat digital learning and quality management as separate agendas (Mahfudloh et al., 2024). Treating digital pedagogy and Total Quality Management separately limits understanding of how their integration could address issues such as outdated teaching methods, low teacher digital competence, and inconsistent institutional quality. Exploring their convergence could lead to more effective instructional practices and improved institutional performance (Yamin & Sanuri, 2024). The few studies that do explore management transformation in madrasahs have emphasized either curriculum or administrative reforms, often neglecting instructional dimensions (Susanto et al., 2023). Moreover, the challenges specific to Islamic educators such as aligning faith-based content with digital platforms remain inadequately addressed in existing literature (Syihabudin et al., 2024).

The theoretical grounding of this study rests on the integration of three core frameworks: Deming's Cycle of Total Quality Management (Plan-Do-Check-Act), the Technological Pedagogical Content Knowledge (TPACK) framework, and Constructivist Learning Theory (Idharudin & Nurhasanah, 2025). TQM emphasizes continuous institutional improvement through stakeholder engagement, performance measurement, and strategic evaluation, which is particularly relevant for madrasah development (Supriandi et al., 2023). Meanwhile, the TPACK model provides a nuanced understanding of how teachers integrate technology with content and pedagogy, enabling more effective digital instruction (Nurfuadi & Apriliyanti, 2022). Constructivist theory reinforces the learner-centered dimension of digital pedagogy, advocating for active, contextualized learning experiences that are central to religious education (Sawamoto & Marshall, 2024). Together, these frameworks offer a multidimensional lens through which the research investigates both institutional quality and teacher competence.

The present study aims to analyze how digital pedagogy and TQM are understood and implemented by IRE teachers across Indonesian madrasahs. It seeks to identify the challenges and opportunities involved in integrating these two domains and to develop an empirical model that supports instructional improvement (Idharudin, 2025). The research is guided by the following questions: (1) What are the perceptions and practices of IRE teachers concerning digital pedagogy and TQM implementation? (2) What are the main challenges in integrating digital pedagogy and TQM in IRE teaching practices? (3) Is there a statistically significant relationship between TQM implementation and teacher competence in digital-based IRE? These questions are examined through a mixed-methods approach, combining survey data and in-depth interviews conducted across various madrasah contexts in Indonesia.

This research makes a novel contribution by empirically investigating the synergistic application of TQM and digital pedagogy within Islamic Religious Education, a convergence rarely studied in the context of Indonesian madrasahs (Nurhasanah & Idharudin, 2025). By addressing

institutional quality and instructional innovation simultaneously, the study proposes a practical framework that can serve as a reference for education policymakers and madrasah leaders striving to modernize religious education while preserving its core values (Aliwafa, 2025). Moreover, the integration of digital pedagogical competencies with quality management strategies holds broader implications for improving teacher professionalism, curriculum responsiveness, and student engagement in religious education (Ma'sum, 2024). Ultimately, this research aspires to inform scalable, context-sensitive reforms in Islamic education across Indonesia and comparable settings (Heryanto et al., 2022).

METHOD

This study adopts a mixed-methods research design to explore the integration of digital pedagogy and Total Quality Management (TQM) in Islamic Religious Education (IRE) across selected Indonesian madrasahs. Mixed methods are particularly suitable for educational research when the complexity of the phenomena under investigation requires both breadth (quantitative analysis) and depth (qualitative insights) of understanding (Susanto et al., 2023). The integration of quantitative and qualitative data allows the study to capture measurable relationships between TQM indicators and teacher competence, while also exploring contextual factors affecting the adoption of digital pedagogy (Miller & Josephs, 2024).

The primary data used in this study consist of structured surveys and semi-structured interviews conducted with Islamic Religious Education teachers. The survey instrument comprises a Likert-scale questionnaire designed to measure TQM dimensions, including leadership, process management, stakeholder focus, and continuous improvement. These indicators are adapted from prior models validated in the Indonesian madrasah context (Nurfuadi & Apriliyanti, 2022). The qualitative data consist of in-depth interviews with 12 purposively selected teachers to understand their experiences with digital pedagogical practices. Secondary data were also incorporated, including lesson plans (RPP), digital instructional materials, and institutional policy documents to support triangulation.

The research population includes all IRE teachers at madrasah tsanawiyah (junior level) and madrasah aliyah (senior level) throughout Indonesia. The quantitative sample comprises 100 teachers selected using stratified random sampling, ensuring representation based on geographical region and madrasah type. The qualitative sample involves purposive sampling of 12 teachers with varying levels of digital literacy, years of teaching experience, and institutional support for innovation. These sampling techniques allow the study to balance representativeness and depth (Randa & Arsyam, 2023).

Data collection was executed using multiple instruments. Surveys were distributed electronically and completed via an online platform to facilitate broader participation and accuracy. Interview protocols were developed to elicit responses on digital pedagogy integration, with guiding themes based on the Technological Pedagogical Content Knowledge (TPACK) framework. Classroom observations were carried out using a standardized checklist focusing on the presence of digital tools, student engagement, and instructional strategies. Documentation review included evaluating the use of digital resources and the presence of quality management procedures in lesson planning. The multi-instrument approach ensures a rich and multi-dimensional dataset (Ikhwan & Yuniana, 2022).

Quantitative data were analyzed using descriptive and correlational statistical techniques with the aid of SPSS (Statistical Package for the Social Sciences). Descriptive statistics provided an overview of teachers' perceptions and the prevalence of TQM practices, while Pearson's correlation was applied to test the relationship between TQM implementation and levels of teacher digital competence. On the qualitative side, NVivo software was used for thematic

analysis, coding the transcripts of interviews and field notes based on emergent themes related to pedagogical adaptation, institutional support, and perceived barriers to integration. Data triangulation was conducted by comparing insights from interviews, surveys, and document reviews, thereby ensuring internal validity and trustworthiness (Annur & Febriansyah, 2023).

Finally, joint display analysis was employed to merge quantitative and qualitative findings into integrated visual tables that link statistical trends with narrative interpretations. This technique enhances the interpretability of results and aligns with best practices in mixed-methods research (Ismail et al., 2024). The application of this robust methodology ensures that the study provides both generalizable findings and context-specific insights into how TQM and digital pedagogy interact to shape educational quality in Indonesian madrasahs.

RESULT AND DISCUSSION

Result

The results of this mixed-methods study are presented sequentially, beginning with quantitative findings derived from the Likert-scale TQM-based questionnaire distributed to 100 IRE teachers across madrasah aliyah and tsanawiyah in Indonesia, followed by qualitative themes from in-depth interviews with 12 purposively selected participants. The integration of both data strands is carried out through joint display analysis to depict the convergence and complementarity of findings.

Quantitative data analysis using SPSS revealed that 84% of IRE teachers reported frequent application of digital platforms such as Google Classroom, Quizizz, and Edmodo in delivering lessons, though only 42% stated having received formal training on digital pedagogy tools. The mean score for teachers' understanding of digital pedagogy was 3.71 (on a 5-point scale), indicating moderate-to-high familiarity. Regarding TQM dimensions, the highest mean score was for leadership involvement ($M = 4.02$), followed by continuous improvement ($M = 3.88$), and customer (student) satisfaction ($M = 3.79$). These results reflect a relatively strong perception of quality management practices at the instructional level, in alignment with findings by Supriandi et al. (2024), who reported that teacher competence and digital integration significantly impact educational effectiveness.

A Pearson correlation analysis showed a statistically significant positive relationship ($r = 0.64$, $p < 0.01$) between TQM implementation scores and teachers' digital pedagogy competence, confirming the hypothesis that effective quality management supports the adoption of educational technology. This echoes the structural relationship outlined in previous studies involving SEM-PLS approaches that link managerial innovation with pedagogical effectiveness.

The qualitative phase revealed three dominant themes. First, "Technological Readiness as a Pedagogical Barrier" emerged from teachers' reflections on the lack of digital infrastructure and limited institutional support. Respondents from rural madrasahs cited unreliable internet access and inadequate digital devices, echoing the infrastructural challenges documented in MTsN 1 Makassar's digital transformation journey. Second, "Leadership Commitment and Strategic Alignment" was highlighted in narratives where madrasah heads actively promoted training, lesson digitization, and resource allocation. These findings reflect institutional strategies associated with quality culture development in Indonesian madrasahs.

The third theme, "Collaborative Quality Improvement Culture," encapsulated teachers' descriptions of joint lesson planning, peer mentoring, and collective digital resource development. Participants emphasized the value of participatory approaches in managing instructional quality, reinforcing evidence that inclusive leadership improves madrasah climate and teacher motivation. Additionally, a triangulated analysis of classroom observation and documentation review showed that 63% of lesson plans incorporated digital resources, yet only 37% included reflective evaluation components aligned with Deming's continuous improvement cycle. This reflects a

partial but promising integration of TQM principles in instructional practice, aligning with the observed gap between policy and implementation in similar institutional settings.

Secondary data analysis also revealed disparities in institutional policy support. Urban madrasahs, supported by digital literacy programs, showed higher alignment between digital teaching practices and national standards, while rural institutions lagged behind. These findings confirm the digital inequality challenge highlighted in broader assessments of educational transformation in Indonesia.

Supporting literature also showed that gender perspectives affect teachers' digital engagement. A mixed-method study in Bandung demonstrated that female students and teachers displayed higher digital security awareness but lagged in civic engagement, hinting at socio-cultural factors influencing technology use. Finally, integration of digital tools for assessment was limited. Only 28% of teachers regularly used digital formative assessments, despite evidence that digital testing enhances critical thinking skills compared to traditional formats.

The findings of this study affirm that integrating digital pedagogy and Total Quality Management (TQM) principles in Islamic Religious Education (IRE) within Indonesian madrasahs can significantly enhance both teacher competence and the quality of learning. Quantitatively, there was a strong positive correlation between TQM implementation and teacher digital competence, particularly in areas related to instructional planning, evaluation, and professional development. Qualitative insights further revealed that educators who embraced collaborative digital tools and continuous quality improvement strategies experienced increased instructional efficacy and student engagement. These results align with the study's objectives to assess implementation, identify challenges and opportunities, and propose an integrative model tailored to the madrasah context.

From a theoretical perspective, the observed outcomes resonate with the TPACK (Technological Pedagogical Content Knowledge) framework and Deming's PDCA cycle in TQM. Teachers who demonstrated a high level of integration across the TPACK domains technological, pedagogical, and content knowledge were more likely to engage in reflective practice and iterative improvement, core tenets of TQM. The qualitative narratives supported this synergy, showing how structured professional development and feedback loops fostered innovation and accountability within teaching practices.

This study's results are consistent with previous findings that highlight the pivotal role of leadership and systemic planning in creating quality-oriented educational environments in madrasahs. However, it goes beyond prior work by empirically linking digital pedagogical practice with measurable outcomes in instructional quality. For instance, while stressed the significance of digital transformation in enhancing service delivery, this study contributes new empirical evidence demonstrating that such transformation also positively affects teacher professional growth.

The study also advances existing literature by bridging the domains of quality management and religious education, a gap that previous research has rarely addressed in a systematic manner. For example, while proposed a conceptual model for madrasah quality management using TQM, this study empirically validated such a model through multi-site data collection and analysis.

Despite its contributions, this study faced several limitations. Firstly, while the mixed-methods design allowed for a holistic exploration, the limited geographic scope may affect generalizability to all Indonesian madrasahs. Additionally, infrastructural disparities particularly between public and private institutions were noted but not fully explored in their influence on digital and quality management integration. Another limitation involves the challenge of sustaining digital innovation due to inconsistent funding and unequal teacher readiness. This is echoed in Rahman et al. (2024), who found that while post-pandemic reforms have accelerated digital skill development, substantial gaps in teacher digital literacy remain.

Looking forward, this research opens several avenues for future inquiry. More expansive longitudinal studies could assess the long-term impact of digital-TQM integration on student outcomes. Moreover, participatory action research may allow for iterative refinement of the integrative model proposed. As emphasized by Lukens-Bull, ongoing innovation in Islamic education must be rooted in contextual adaptation and community involvement. This study also encourages policy-makers and education stakeholders to adopt inclusive frameworks that link infrastructural readiness, teacher capacity-building, and quality assurance in a unified system. As demonstrated by Darda, such strategic planning is essential for madrasahs to meet the evolving demands of Islamic education in the digital era (Darda, 2021). Similarly, Nurfuadi highlights the importance of collaborative forums in building learning quality and teacher resilience (Nurfuadi & Apriliyanti, 2022).

Discussion

In answering the formulation of the problem or research questions, the results of the study must be concluded explicitly regarding previous research. Interpretation of research findings or studies can be done using empirical logic based on existing theories or previous research results in reputable journals both international and national, while findings in the form of reality in the field are integrated or linked to the results of previous studies or with existing theories. For this purpose, the author is required to refer to international journals (Scopus) and national journals (Sinta). In bringing up new theories, old theories can be confirmed or rejected by the author, some may need to modify theories from old theories, and reference the results of research or studies used by the author, must reference the last 10 (ten) years.

The discussion section is expected to contribute and new colors for the development of science. Therefore, the authors are expected to pay special attention to ensure that the discussion is written is an important part of the entire contents of the article, which can improve the quality of science in the field of educational management science. Articles are written in *Tarbawi: Jurnal Keilmuan Pendidikan, social, budaya, dan keagamaan* ranging from 5000 to 8000 words or equivalent to 15 to 20 pages according to the provisions in this template.

Integration of TQM and Digital Pedagogy in Islamic Religious Education (IRE) Learning

The findings of this study revealed a positive and significant correlation ($r = 0.64$, $p < 0.01$) between the implementation of Total Quality Management (TQM) and the digital pedagogical competence of Islamic Religious Education (IRE) teachers in Indonesian madrasahs. This result explicitly addresses the first research question, namely, how IRE teachers' perceptions and practices reflect the integration of TQM and digital pedagogy. Teachers with positive perceptions of quality culture and strong leadership support demonstrated higher levels of digital competence (Rahman et al., 2024).

These findings are consistent with Supriandi et al. (2023), who emphasized that teachers' digital competence is closely linked to the effectiveness of quality-based education. Similarly found that managerial innovation and quality culture enhance teachers' readiness to adopt educational technologies. However, this study advances prior research by providing direct empirical evidence of the relationship between TQM implementation and the degree of technological integration, rather than the indirect associations reported in previous studies (Munthe et al., 2021).

Within the TQM theoretical framework, the results reinforce Deming's (1986) assertion that participatory leadership, a commitment to continuous improvement, and systematic quality measurement are prerequisites for sustained innovation in educational institutions (Ma'sum, 2024). From the TPACK framework perspective, the study expands the understanding that digital pedagogical competence is not solely determined by technological proficiency but is also shaped by an underlying ecosystem of quality and reflective culture that fosters innovative teaching practices (Maimuna, 2023).

Further supporting this integration, recent qualitative research on IRE teachers at UPT SD Negeri Ngeni 06 Wonotirto demonstrated that educators function as active facilitators, utilizing digital presentations, instructional videos, interactive quizzes, AI-based discussions, and digital e-portfolios to cultivate student reflection, creativity, and critical thinking (Lukens-Bull, 2023). These pedagogical innovations embody the TQM principle of continuous improvement, as teachers consistently plan, implement, and refine their instructional methods to enhance learning outcomes. Moreover, teachers' role-modeling of moral and humanitarian values signifies a strong commitment to quality-oriented education, aligning with TQM's focus on holistic institutional excellence (Darda, 2021).

The use of digital media in internalizing character and moral values underscores that effective digital pedagogy must be grounded in a culture of quality and reflective professional practice (Subkhi Mahmasani, 2020). Consequently, the convergence between digital innovation and quality management principles demonstrates that TQM and digital pedagogy are mutually reinforcing: TQM provides a systemic framework for continuous institutional improvement, while digital pedagogy serves as a transformational medium for enhancing learning quality and fostering moral and character development within Islamic education (Samsuddin et al., 2025).

Technological Readiness Challenges and Digital Inequality

The findings of this study also address the second research question, namely the key challenges in integrating digital pedagogy and Total Quality Management (TQM) within Islamic educational institutions. Based on qualitative and secondary data, it was found that madrasahs located in rural areas face severe infrastructural barriers, including limited access to devices, unstable internet connectivity, and inadequate technical support. These constraints have created a clear digital readiness gap between urban and rural madrasahs (Ainun & Assa'diy, 2025). Data from the Indonesian Central Bureau of Statistics (Badan Pusat Statistik, BPS, 2021) indicate that only 30% of schools in underdeveloped, frontier, and outermost (3T) regions possess adequate internet access. Moreover, over 40% of rural madrasahs still lack sufficient computer facilities to support technology-enhanced learning. For instance, a *Madrasah Tsanamiyah* in East Sumba Regency, East Nusa Tenggara, was reported to have only one functioning computer shared among all students, which is not connected to the internet due to the region's poor network infrastructure (Shamsul et al., 2024).

These findings are consistent with UNESCO's (2023) *Digital Readiness Index in Southeast Asian Education Systems*, which highlights the persistent digital access disparity in developing countries, including Indonesia. At the national level, similarly reported that infrastructural constraints in rural madrasahs remain a primary barrier to the implementation of technology-based learning (Hasanah et al., 2025). Supporting evidence data from the Indonesian Digital Literacy Index (2021), as cited in *Wajah Pendidikan Islam di Indonesia*, indicate that the digital literacy index in rural areas is 30% lower than in urban regions, which has a significant impact on the overall quality of education (Idharudin et al., 2025b).

However, unlike previous studies that merely highlighted the technological divide, this study found that strong leadership and a well-established institutional quality culture can effectively mitigate such barriers. Madrasah principals who applied the principles of Total Quality Management (TQM), particularly in the dimensions of *leadership involvement* and *continuous improvement*, were able to cultivate a school climate conducive to digital innovation, even under limited resource conditions. This finding reinforces Deming's (1986) perspective that participatory leadership and data-driven quality assurance systems are prerequisites for sustainable innovation within educational institutions (Yusup & Shamsul, 2025). Beyond the structural and managerial dimensions, the integration of TQM and digital pedagogy also intersects with the moral and spiritual dimensions of Islamic education. The study on the role of *musyrif's da'wah communication* at the Tahfidz Wahdah Islamiyah Islamic Boarding School, Cibinong, reveals that empathetic,

dialogical, and exemplary communication practices play a crucial role in fostering students' spiritual awareness and worship discipline (Iskandar, Samsuddin, Agusman, et al., 2025). This da'wah-based mentoring approach reflects TQM principles, particularly in the dimensions of *customer focus* and *continuous quality improvement* as it emphasizes personal guidance, reflection, and ethical formation as essential components of educational quality. When integrated with digital pedagogical strategies such as AI-based discussions, interactive multimedia, and digital e-portfolios, this model demonstrates that technology can function not only as a pedagogical tool but also as a spiritual medium to cultivate reflective and character-driven learners (Idharudin, 2025).

Within this framework, the role of the *musyrif* (dormitory educators) as a spiritual mentor aligns with that of a TQM-oriented instructional leader: both act as facilitators who continuously evaluate, improve, and humanize the learning process. The convergence of digital innovation, quality management, and da'wah communication thus forms a holistic framework for developing Islamic educators who are adaptive, reflective, and ethically conscious. These findings affirm that efforts to enhance the quality of Islamic education cannot rely solely on technological readiness or administrative efficiency but must be grounded in spiritual leadership, moral awareness, and social trust core elements of a sustainable quality culture within madrasah education (Rokim et al., 2023).

Leadership Commitment and Collaborative Culture

The second qualitative theme reveals the importance of leadership commitment and strategic alignment in implementing Total Quality Management (TQM) and digital pedagogy within Islamic educational institutions. Teachers reported that madrasah principals who actively promoted training and lesson digitalization were able to create a more adaptive and responsive working environment. These findings are consistent with Syihabudin et al. (2024) and Rahman et al. (2024), who emphasized the critical role of transformational leadership in fostering a quality-oriented culture in madrasahs. From the TQM perspective, quality-oriented leadership not only involves monitoring performance but also encouraging the participation of all stakeholders in the process of continuous improvement.

Moreover, the collaborative culture observed in this study through practices such as peer mentoring and joint lesson planning illustrates the practical implementation of TQM principles at the instructional level. This culture reinforces organizational learning theory (Senge, 2006), which posits that learning organizations evolve through collective reflection, shared innovation, and open feedback systems. In this context, collaborative culture serves as a central pillar of TQM, particularly within behavior-based educational environments (Idharudin et al., 2025). Collaboration among teachers, parents, and the wider community was evident in program design, student monitoring, and the provision of moral and material support. Such cooperation fosters a shared sense of responsibility, cultivates a conducive learning environment, and yields positive social outcomes. Furthermore, collaboration strengthens mutual trust, reinforces the Islamic spirit of *gotong royong* (communal cooperation), and supports the realization of quality education grounded in noble character values (Supriandi et al., 2023).

Convergence Pattern: The Relationship Between Institutional Quality and Teacher Competence

The joint display analysis revealed a clear pattern of convergence between institutional quality and digital pedagogical competence. Madrasahs that systematically implemented the Plan-Do-Check-Act (PDCA) cycle demonstrated higher levels of technological mastery and instructional innovation. This finding directly addresses the third research question, concerning the relationship between TQM implementation and teachers' digital pedagogical competence.

These results reinforce the conceptual model proposed by Apiyani & Brigiend (2025), which advocates for the integration of the TQM cycle within quality-based madrasah management. However, the contribution of this study extends further, as it provides empirical

validation of that model through a combination of survey data, in-depth interviews, and document analysis. Within the framework of constructivist theory (Piaget, 1972; Vygotsky, 1978), teachers' engagement in reflection and collaboration demonstrates that improvements in digital learning quality stem not solely from technical training but from sustained social learning experiences. Thus, the synergy between TQM and constructivism may foster a professional development system for teachers that is autonomous, reflective, and innovative (Nurhasanah, Idharudin, et al., 2025).

Contributions and Implications

Conceptually, this study extends the integration model of Total Quality Management and Technological Pedagogical Content Knowledge (TPACK) within the context of Islamic Religious Education (IRE) a domain that has received limited empirical attention in Indonesia. The study proposes a synthetic model linking quality management and digital pedagogy, illustrating that instructional effectiveness depends not only on technological proficiency but also on institutional quality systems that function as *enabling structures* (Zubaedi, 2024).

The scientific contributions of this study can be summarized in three key points: (1) Strengthening TQM theory within Islamic education through empirical evidence showing that the principles of *continuous improvement* and *leadership involvement* enhance teachers' digital competence; (2) Modifying the TPACK model by incorporating *institutional quality* as a contextual variable that reinforces the integration of technology into pedagogy; (3) Refining Islamic education management approaches by emphasizing *teacher collaboration and reflective practice* as essential mechanisms for improving the quality of digital learning. Accordingly, this study not only supports but also extends existing theories by embedding the religious and quality management dimensions unique to madrasahs (Khairunnisa & Natsir, 2023).

From a theoretical perspective, the findings reinforce the argument that TQM can serve as a systemic framework to support the implementation of TPACK in Islamic educational institutions. The synergy between these two frameworks establishes a reflective and adaptive structure that promotes continuous professional growth among teachers. From a practical standpoint, the results offer several important implications: (1) For the Indonesian Ministry of Religious Affairs, the study provides a foundation for designing digital-based teacher training policies integrated with the madrasah quality assurance system. (2) For madrasah leaders, it highlights the need to develop TQM-based supervision systems that encourage a reflective and collaborative culture among teachers. (3) For Islamic Religious Education (IRE) teachers, it offers a conceptual and practical basis to develop innovative, sustainable, and faith-aligned instructional practices (Wahyu Ningsih et al., 2023).

Furthermore, this research opens avenues for longitudinal studies to explore the long-term impacts of TQM–digital pedagogy integration on student learning outcomes. Overall, the findings indicate that the integration of TQM and digital pedagogy should not be viewed merely as an administrative strategy, but rather as a mechanism for institutional and instructional transformation (Nurhasanah, Alfin, et al., 2025). The significant positive correlation between TQM implementation and teachers' digital competence underscores that the quality of Islamic education can be enhanced through a systemic approach combining leadership, quality culture, reflection, and technological innovation (Hasan, 2021).

CONCLUSION

This study concludes that the integration of Total Quality Management (TQM) and digital pedagogy within Islamic Religious Education (IRE) in Indonesian madrasahs significantly enhances teacher competence and instructional quality. The findings reveal a strong positive

correlation ($r = 0.64$; $p < 0.01$) between the implementation of TQM principles and teachers' digital pedagogical skills, indicating that leadership support and a strong quality culture foster greater readiness and innovation among educators. While rural madrasahs continue to face digital infrastructure and connectivity challenges, leadership commitment and a culture of continuous improvement have proven effective in mitigating these limitations. More importantly, the integration of TQM and digital pedagogy extends beyond managerial efficiency, encompassing moral and spiritual dimensions that transform technology into a medium for character formation and reflective learning. Conceptually, this study expands the TPACK framework by embedding institutional quality as a contextual factor, while practically offering actionable insights for policymakers, madrasah leaders, and teachers to align digital innovation with quality assurance and Islamic values. Ultimately, sustainable improvement in Islamic education requires not only technological readiness but also value-based leadership and a continuously evolving culture of quality within madrasahs.

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