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# Enhancing Moral Behavior: The Role of Religious Habituation and Technology-Assisted Supervision in Islamic Secondary Schools

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**ABSTRACT.** The erosion of students' moral values in the digital era has emerged as a critical challenge for Islamic secondary education, particularly in *pesantren*-based schools. Moral health, characterized by discipline, responsibility, honesty, and empathy, represents a crucial dimension of health behavior that supports a safe and conducive learning environment. Traditional supervision and religious habituation, while valuable, have proven insufficient to counter external negative influences without complementary approaches. This study aims to explore how the integration of *pesantren*-based religious values with Technology-assisted monitoring (IoT-Digital-Based Monitoring) can promote health behavior and strengthen moral health among students in Islamic schools. Using a qualitative case study design, research was conducted at Muhammadiyah Senior High School, Kasihan, Bantul, Yogyakarta, Indonesia. Data were collected through in-depth interviews, participatory observation, and school document analysis, and analyzed using the Miles and Huberman model with triangulation techniques. Findings indicate that the IoT-Digital-Based Monitoring significantly enhances students' health behavior through improved discipline, responsibility, honesty, and empathy. The integration fosters a safer and more supportive school environment, reinforces moral norms, and facilitates behavioral self-awareness. Teachers and students reported positive perceptions of this synergy, with technology complementing traditional religious instruction. The Technology-assisted monitoring model offers an innovative intervention strategy for promoting moral health as part of broader health promotion efforts in Islamic schools. By combining formal technological control with informal religious guidance, this approach aligns with health promotion frameworks while preserving Islamic educational values. Broader adoption of such integrative strategies is recommended to adapt character education to the demands of the digital era.

**Keywords**: *Enhancing Moral behavior, IoT-Digital-Based Monitoring, Islamic Schools, Character Education.*

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## INTRODUCTION

The global digital era has raised concerns over the erosion of students' moral values. The shift to online learning during the pandemic contributed to the fading of academic moral values such as discipline, responsibility, and honesty (Muassomah et al., 2022). The negative effects of social media on younger generations, showing that it can foster ethical decline and facilitate the spread of intolerant content and sectarianism (Al Ketbi et al., 2025). School students who spend more than three hours per day in digital environments have a lower perception of moral values compared to those with moderate online engagement (Altınsoy & Boyraz, 2024). These global findings are relevant to the national context, as Indonesia also faces serious challenges in shaping the character and morality of children and adolescents in the high-tech era.

This situation raises both academic and practical urgency related to weak moral control and the limitations of conventional supervision in *pesantren* (Islamic boarding schools) or Islamic schools. In *pesantren* environments, for example, incidents of bullying among students still occur due to insufficient supervision by caretakers (Maulana et al., 2024). Traditional supervision patterns, such as religious habituation, student discipline, and the exemplary role of religious teachers, have proven insufficient to counter the intense external influences of the digital age. Thus, from both academic and educational practice perspectives, innovation in character building is needed beyond conventional methods, as traditional approaches alone struggle to control moral deviations without the aid of more advanced supervision.

The issue can be understood through several key theories. Social Control Theory (Hirschi) posits that strong social bonds and supervision foster individual self-control and prevent deviant behavior (Saracanlao et al., 2024). Indicating that the presence of Digital-Based Monitoring in schools increases students' self-awareness and orderliness due to the perception of being monitored (Saracanlao et al., 2024). Bandura's Social Learning Theory emphasizes that behaviors and values are learned through observation and imitation of models within the surrounding environment (Wang, 2021). In other words, teachers and religious role models in *pesantren* play a critical role in shaping students' ethical behavior. Meanwhile, the concept of Moral Quotient (MQ) underscores the importance of individual moral intelligence as the foundation for making right, wrong decisions. MQ as the level of a person's intelligence, ethics, and morality (Sunan, 2015), which contributes to the formation of good citizenship. The development of ethical intelligence (moral intelligence) is an integral part of holistic education that enhances students' awareness, conscience, and character (Prasertsin et al., 2024).

Scientifically, this article offers a novelty in the form of an integrative approach that combines technology and religiosity in character education within *pesantren*. The wise implementation of IoT technology in Islamic educational institutions can prepare academically excellent generations with a strong moral and spiritual foundation (Ridha et al., 2025). Accordingly, the Technology-assisted monitoring (IoT-Digital-Based Monitoring) with the *pesantren* curriculum is expected to create a more effective character-building approach, bridging the demands of the digital era with traditional Islamic values.

Social Control Theory asserts that the strength of individual bonds to norms and social institutions can prevent deviant behavior (Nia & Nasrabadi, 2022). When these social bonds weaken or break, the likelihood of delinquent behavior increases (Nia & Nasrabadi, 2022). The theory emphasizes the importance of attachment (care for parents, teachers, institutions), involvement (engagement in structured activities), commitment (dedication to education or work), and belief (faith in rules) in shaping orderly behavior in children (Nia & Nasrabadi, 2022). Meanwhile, Bandura's Social Learning Theory argues that individuals learn behavior, including moral values, through observation, imitation, and social reinforcement (Yang et al., 2025). People emulate the behavior of models (e.g., teachers, parents, community figures) and internalize what they observe (Yang et al., 2025). In the context of Islamic education, the concept of Moral

Quotient (MQ) refers to one's capacity to understand and apply moral values in real actions. MQ as the level of individual ethics reflected through self-control and the application of moral principles such as honesty, compassion, forgiveness, and social responsibility. In other words, MQ reflects students' ability to internalize moral values and apply them in daily life (being honest, caring, and responsible) (Prasertsin et al., 2024).

Previous studies on *pesantren* education and surveillance technology reveal diverse patterns. *Pesantren*, as traditional Islamic educational institutions, are consistently considered effective in shaping students' character and morality (Firmansyah & Abidin, 2024). The primary goal of *pesantren* education is to cultivate noble character and religious values among students (Firmansyah & Abidin, 2024). Found that integrating technology such as e-*pesantren* management platforms and digital learning improves administrative efficiency and educational quality in *pesantren* without compromising traditional values (Wajdi et al., 2024). The authoritative display of surveillance cameras significantly reduces cheating behaviors among students, affirming the deterrent effect of Digital-Based Monitoring presence (Jansen et al., 2018). Similarly, studies on IoT use in Islamic schools report that IoT-based surveillance systems (e.g., internet-connected Digital-Based Monitoring and attendance sensors) not only enhance physical security but also monitor attendance and discipline in real time (Ridha et al., 2025). In essence, technologies like Digital-Based Monitoring -IoT have the potential to reinforce formal social control in schools while supporting discipline internalization.

Although numerous separate studies highlight either *pesantren* character education (Firmansyah & Abidin, 2024), or the effectiveness of school surveillance technology (Jansen et al., 2018), there is a lack of research integrating both aspects. Most of the literature focuses on a single dimension (e.g., religious education or technological monitoring), resulting in limited studies that explore the synergy between *pesantren* values and Digital-Based Monitoring-IoT innovation in strengthening students' MQ. This research gap is evident from the scarcity of studies evaluating how *pesantren* education and modern surveillance systems jointly shape character. Hence, a study is needed to bridge this gap by combining religious and technological approaches.

This article occupies a unique position in addressing this gap. It aims to integrate the value framework of *pesantren* (informal social control) with the Digital-Based Monitoring-IoT surveillance system formal social control to strengthen students' moral intelligence. Its main contribution lies in presenting an integrated character education model: combining traditional *pesantren* methods with modern technological monitoring. Thus, this study offers a new perspective in the literature on Islamic character education in the digital era. It enriches the discourse on character education by demonstrating that the combination of *pesantren*-based religious instruction and surveillance technology can simultaneously enhance student discipline and morality.

In terms of prior research approaches, several studies have used qualitative methods, while others employed mixed-method designs. Qualitative case study approach through interviews and observations to explore the integration of technology in *pesantren* settings (Wajdi et al., 2024). Developed a moral intelligence scale using a mixed-methods design, combining in-depth interviews with large-scale surveys (Prasertsin et al., 2024). The effects of Digital-Based Monitoring framing using a laboratory experimental design to measure student cheating behavior (Jansen et al., 2018). Theoretically, these studies often draw on social control and social learning theories to explain their findings (e.g., enhanced discipline through supervision and moral behavior modeling). Therefore, the frameworks and methodologies of previous studies provide relevant comparative contexts (qualitative *pesantren* cases, MQ quantitative analysis, or surveillance experiments) for this study.

A conceptual synthesis from this literature review provides a theoretical foundation for the

research method employed in this article. From the perspective of social control, the integration of *pesantren* and Digital-Based Monitoring-IoT combines informal control mechanisms (religious values, spiritual caregiving) with formal controls (visual surveillance), thereby maximizing student behavior monitoring (Nia & Nasrabadi, 2022). Meanwhile, the social learning approach implies that students will internalize moral behavior both from role models (e.g., *pesantren* teachers) and from environmental observation and feedback. This combination is expected to result in higher MQ, as students are not only taught moral values but also observe their practical application in the school context. Authoritative camera presence reduces cheating, support the assumption that technology-based surveillance can promote discipline. Meanwhile, *pesantren* reinforces students' intrinsic motivation to act morally (Jansen et al., 2018). Therefore, this synthesis becomes the conceptual basis of this study: the combination of social control and social learning theories in the *pesantren*-IoT context serves as the analytical framework and the justification for employing qualitative methods to understand the phenomenon of value–technology integration in shaping students' MQ.

This study explicitly aims to examine the contribution of integrating *pesantren*-based education with Digital-Based Monitoring, Internet of Things (Digital-Based Monitoring-IoT) technology in shaping students' moral development. The case study is centered on Muhammadiyah Senior High School, Kasihan, Bantul, Yogyakarta, Indonesia. It addresses the central research question: how does the integration of religious instruction grounded in *pesantren* traditions and IoT-based surveillance influence students' Moral Quotient (MQ)? Specifically, the study explores the following questions: (1) In what ways does Digital-Based Monitoring -IoT integration affect the development of student discipline and responsibility? (2) How does this technological implementation enhance or complement traditional character education practices in *pesantren* settings? (3) What are the perceptions of teachers and students regarding the synergy between religious pedagogy and surveillance technology in the learning environment?

Unlike public schools that typically utilize CCTV solely for physical security, this research repurposes CCTV monitoring as a proactive medium for moral habituation through the concept of *muraqabatullah*. This transformation of social control into the strengthening of Moral Quotient (MQ) offers a replicable model to align character education with the realities of the digital era.

## METHOD

This study adopted a qualitative case study approach to comprehensively examine the phenomenon of strengthening students' Moral Quotient (MQ) within a *pesantren*-based school context. The fieldwork was conducted at SMA Muhammadiyah Kasihan, Bantul (Islamic Secondary School), over three key phases: October 18, 2024; March 17, 2025; and June 25, 2025. The overall data collection spanned eight months, from October 2024 to June 2025. The qualitative case study design was chosen as it allows for an in-depth analysis of one or more cases within their real-life context (Renjith et al., 2021). Primary data were collected through in-depth interviews and participatory observation at SMA Muhammadiyah (Islamic Secondary School), Kasihan, Bantul, Yogyakarta, Indonesia. Semi-structured interviews were used to facilitate detailed information gathering while maintaining investigative flexibility (Mashuri et al., 2022). Primary data sources included key informants (school personnel) interviewed, as well as observations of daily learning activities and supervision practices, including classroom interactions and monitoring via Digital-Based Monitoring. Meanwhile, secondary data were obtained from school documentation (daily reports, evaluation records, curriculum archives) and literature related to MQ and technology integration, serving to validate the field findings (Renjith et al., 2021).

Data collection was conducted through several systematic stages. First, in-depth interviews were carried out individually with each informant using a pre-designed semi-structured interview

guide. This technique was effective in obtaining rich and detailed insights into the informants' perceptions and experiences (Mashuri et al., 2022). Second, participatory observations were conducted during daily school activities, such as teaching and learning processes, communal worship, and Digital-Based Monitoring-IoT operations, to capture behavior and the environment firsthand. Third, documentation was gathered by reviewing written school records, such as activity reports, observation logs, and *pesantren* learning materials. These documentary data were used to complement and verify interview and observation results, following the principle of data triangulation (Creswell & Creswell, 2018).

This study was conducted in accordance with ethical principles for educational research, particularly in non-clinical and low-risk settings. As the research did not involve vulnerable populations, medical procedures, or psychological interventions, formal institutional ethical clearance was not required. Nevertheless, the researchers adhered strictly to ethical standards, including informed consent, voluntary participation, and the protection of participant confidentiality.

All informants were selected through purposive sampling based on their direct involvement in student character education or the management of surveillance technologies. Verbal consent was obtained from all participants after a clear explanation of the research objectives and procedures. Anonymity was ensured by using pseudonymous initials in all research documentation and reporting. The full list of informants is provided in Table 1.

**Table 1.** Research Informants and Their Roles

| No. | Code | Role/Position | Description |
|---|---|---|---|
| 1. | P01 | Principal | Holds authority over school policies and student character development. |
| 2. | P02 | Vice Principal for Curriculum | Responsible for integrating character values into the learning process. |
| 3. | P03 | Vice Principal for Student Affairs | Oversees student discipline and behavioral development. |
| 4. | P04 | Vice Principal for Public Relations | Manages internal and external school communications. |
| 5. | P05 | Vice Principal for Facilities and Infrastructure | Oversees technological infrastructure, including the Digital-Based Monitoring-IoT system. |
| 6. | P06 | Ismuba Teacher 1 | Teaches religious and character education based on *pesantren* values. |
| 7. | P07 | Ismuba Teacher 2 | Facilitates the internalization of spiritual and moral values |
| 8. | P08 | Technology Operator | Manages technical aspects and Digital-Based Monitoring -IoT monitoring |
| 9. | S01 | Grade XI Student | Actively involved in religious activities and student organizations |
| 10 | S02 | Grade XI Student | Received disciplinary guidance through the Digital-Based Monitoring system |
| 11. | S03 | Grade XII Student | Demonstrated positive behavioral changes after integration of the Ismuba program |
| 12. | S04 | Grade X Student | Experienced internalization of moral values since the beginning of schooling |
| 13. | S05 | Grade XII Student | Provided critical insights regarding the use of surveillance technology in schools |

Data analysis was carried out qualitatively model, which consists of three main stages: data reduction, data display, and conclusion drawing/verification (Miles & A. Michael Huberman, 1994). In the data reduction stage, the researcher selected and filtered relevant information from interview transcripts, observation notes, and documents. The filtered data were then presented in descriptive narratives, tables, or diagrams to facilitate the identification of main themes. Preliminary findings were then verified through source triangulation: comparing results from interviews, observations, and documentation (Miles & A. Michael Huberman, 1994). This triangulation approach enhances the study's credibility by testing the consistency of data across various sources (Stahl & King, 2020). The qualitative case study method has been widely applied in educational research to understand complex phenomena within real-life contexts. Semi-structured in-depth interviews and participatory observations are standard techniques for uncovering meaning from informants' experiences. The Miles and Huberman analysis model provides a systematic framework (reduction, display, and verification) for interpreting qualitative data. Data validity is maintained through source triangulation, namely, verifying findings using multiple data types. All these stages were carried out systematically to ensure the robustness of the research findings.

## RESULT AND DISCUSSION

### Result

Field data analysis revealed several key themes related to the enhancement of students' Moral Quotient (MQ) in *pesantren* through the integration of Digital-Based Monitoring -IoT systems and Islamic values. Interview and observational data indicated an improvement in student discipline since the implementation of Digital-Based Monitoring -IoT. Daily attendance records documented a decrease in student absenteeism and tardiness. For instance, headmaster stated, "Now they don't dare be late to class because they know the camera is recording". The guidance counselor added that students "have become more responsible toward school rules thanks to this supervision." This finding aligns with Purnomo et al.'s report that Digital-Based Monitoring effectively improves student discipline (Purnomo, 2016). Indeed, responsibility the trait of fulfilling tasks properly became more apparent, in line with the definition of responsible character. Field observations showed that students were more willing to report minor infractions, as they felt "monitored."

The second theme was the internalization of moral values such as honesty and empathy. Many informants reported positive behavioral changes in peer interactions. Dwi Said "Previously, there were cases of cheating or borrowing assignments without permission. Now, students are more honest and brave enough to apologize because they feel watched". A subject teacher reported a sharp decline in cheating incidents. This finding is consistent with the concept of moral intelligence, which emphasizes the ability to distinguish right from wrong and to apply ethical reasoning (Hafsah & Afni, 2021). For example, most students now voluntarily collaborate and help peers in difficulty, reflecting increased empathy. Extracurricular activity documentation showed more active participation in discussions on moral values, supporting interview narratives that honesty and mutual assistance have become more visible in the school environment.

The integration of Digital-Based Monitoring-IoT also contributed to a safer school atmosphere. Participatory observations revealed that the presence of cameras in classrooms and dormitories made students calmer and more orderly. A homeroom teacher remarked that "with this advanced device, we can quickly detect any disturbances and respond immediately." This aligns with research stating that IoT can monitor student activities in real time to enhance safety (Adhicandra et al., 2024). For instance, AI-based smart cameras have been reported to recognize suspicious movement patterns (Rusdiana, 2025), enabling teachers to intervene before bullying escalates. Documentation from the monitoring system also showed integration with motion

alarms and access control, supporting informants' claims that learning spaces became more controlled. The use of IoT in schools has been cited as increasing the effectiveness of surveillance and response to threats, thus creating a safe learning environment (Rusdiana, 2025).

Most informants believed this technological integration to be beneficial for character education. A guidance counselor noted that parental involvement increased, as parents could now participate in monitoring their children in the dormitory, fostering shared social control. Students also became "more cautious in their behavior, both in class and in the dormitory, because they felt they were being watched." These field data are consistent with findings that the majority of schools in the U.S. have adopted Digital-Based Monitoring for school security (around 86% of students reported the presence of cameras), indicating a global trend in the adoption of surveillance systems in schools. The school concluded that the installation of Digital-Based Monitoring served character-building purposes; as stated in their program, "one of the positive functions of Digital-Based Monitoring is as a medium for character formation" (Fitriati et al., 2021). This is reflected in student behavioral patterns: for example, teaching activity documentation showed that virtually no teacher left the classroom without reason during lessons, and students no longer loitered in the canteen during class hours. Overall, field Findings Indicate That The Integration Of Religious-Based Pesantren Education With Digital-Based Monitoring-IoT surveillance strengthens students' moral values, honesty, discipline, and responsibility, while creating a school environment conducive to character development (Hafsah & Afni, 2021).

**Table 2.** Thematic Matrix: Observation and Interview Findings on Students' Moral Quotient Development

| MQ Theme | Data Source | Quote/Finding | Interpretation |
|---|---|---|---|
| Discipline | Leader interview | "Now they don't dare to be late to class because they know the camera is recording." | Digital-Based Monitoring enhances students' awareness of time-related rules. |
| | Attendance records | Significant decrease in student tardiness and absenteeism. | Evidence of improved discipline following Digital-Based Monitoring installation. |
| | Classroom observation | Students go directly to class without lingering in the cafeteria. | External control reinforces disciplined behavior. |
| **Responsibility** | Teacher interview | "They are more responsible to school rules thanks to this monitoring." | Increased responsibility due to the psychological effect of surveillance. |
| | Daily observation | Students report even minor misbehavior. | Signs of growing accountability and self-awareness. |
| **Honesty** | Student interview | "I used to cheat, but now I try to be honest because I feel watched." | Surveillance triggers self-control against academic dishonesty. |
| | Subject teacher | Cheating cases have dropped significantly. | Students' honesty has improved considerably. |
| **Empathy** | Student interview | "Now I help my friends more when they're struggling." | Internal moral values are developed through social habits. |
| | Moral education documentation | Increased participation in moral value discussions. | Empathy grows within a structured and positive environment. |
| **Sense of Safety** | Participatory observation | Cameras create a calmer, more orderly atmosphere in the dormitory. | IoT fosters a sense of safety and helps prevent bullying. |
| | Homeroom teacher interview | "We quickly know when there's trouble and can respond right away." | Rapid response reduces conflict and learning disruption. |
| | Security system documentation | Integration of motion sensors and access control. | A more controlled and secure environment is established. |

## Discussion

The study findings demonstrate that the integration of pesantren religious values with a Digital-Based Monitoring IoT-based surveillance system significantly contributes to the enhancement of students' Moral Quotient (MQ). Through the use of Digital-Based Monitoring combined with Internet of Things technology, students are trained to consistently exhibit behavior aligned with religious teachings. For instance, stated that the presence of surveillance cameras constantly reminded them of being observed and motivated them to act honestly and respectfully, by religious guidance. This finding aligns with the research objective, which examined the effectiveness of combining religious values and surveillance technology in student character formation. These positive results are supported by a study by Rusdi et al. (2023), which found a positive correlation between strengthening religious values, the use of educational technology, and students' moral character development (Rusdi et al., 2023). It also aligns with other literature indicating that sustained moral education enhances students' moral awareness and social responsibility (Tian & Tang, 2025).

Theoretically, the findings above can be explained through several frameworks. According to Social Control Theory, strong social bonds with institutions (such as school, family, and religion) deter deviant behavior. The implementation of Digital-Based Monitoring -IoT in pesantren can be seen as a formal control mechanism that reinforces moral norms: students are aware that their actions are being monitored, mirroring the Islamic concept of *muraqabatullah*, or the sense of always being under divine observation. However, cautioned that excessive formal control (surveillance cameras) can weaken informal social control, such as emotional closeness between students and teachers, thus necessitating a balance between formal and informal control (Fisher et al., 2019). On the other hand, Bandura's Social Learning Theory emphasizes that moral behavior is learned through observation and imitation. Digital-Based Monitoring, which records daily interactions, offers real-life examples of both positive and negative behaviors; this observational learning enables students to model commendable conduct they witness (He, 2022).

The concept of Moral Quotient (MQ) itself emphasizes the importance of moral and emotional intelligence as the foundation of ethical behavior. MQ is defined as an individual's level of intelligence, ethics, and morality that underlies virtuous and meaningful conduct (Sunan, 2015). In this context, students' increasing MQ can be interpreted as the growth of values such as honesty, empathy, and responsibility, internalized through religious education and reinforced by technological surveillance. Thus, the combination of moral-religious reinforcement and technological supervision creates a learning environment in which moral norms are internalized through both spiritual motivation and social expectations.

Our findings support and extend the existing literature. For example, The integration of religious values and high-tech learning methods significantly shaped moral character among students in Islamic schools (Rusdi et al., 2023). Society 5.0 study on pesantren, showed that digital technology use can enhance students' understanding of Islamic values and foster virtuous character (Zainuddin et al., 2024). Revealed that long-term moral education positively impacts students' moral awareness and psychological well-being (Tian & Tang, 2025). These consistent findings suggest that technology (including IoT and digital media) can serve as a complement to religious education without compromising moral foundations.

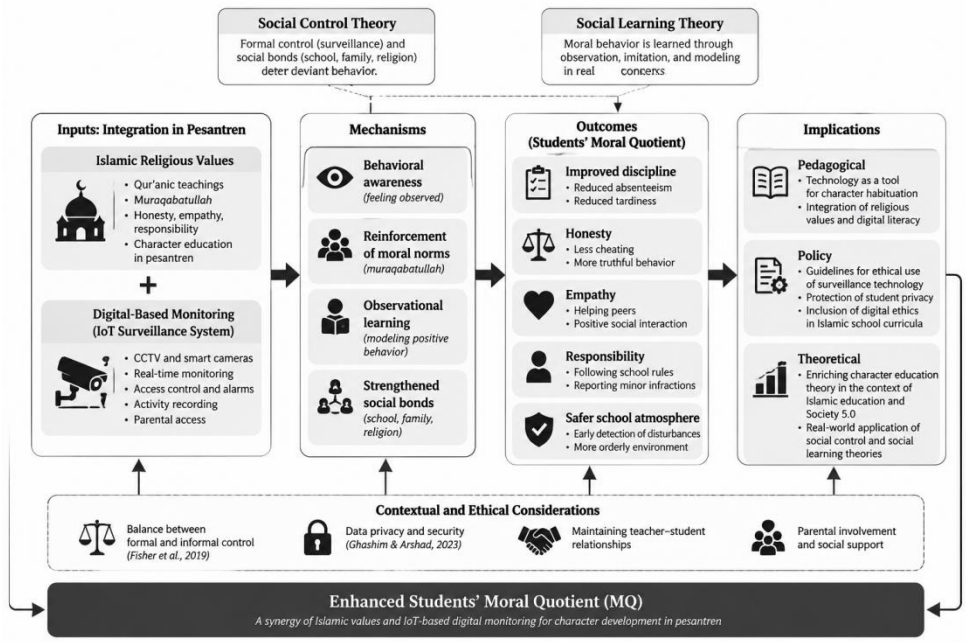
On the other hand, this study also acknowledges findings that appear contradictory. Formal social control mechanisms such as strict security and camera surveillance may erode informal relationships and perceptions of fairness in schools (Fisher et al., 2019). Therefore, while Digital-Based Monitoring can reduce negative behavior, its presence must be balanced by strengthening teacher-student relationships to maintain trust. Additionally, IoT literature highlights ethical challenges: the use of smart devices and surveillance cameras must comply with data privacy and transparency standards (Rusdi et al., 2023). Our findings underscore the importance of these ethical considerations, for example, ensuring student data is secure in line with advocate for privacy policies in educational IoT implementations (Ghashim & Arshad, 2023). Overall, our

findings fully support the literature emphasizing the synergy between religious values and technology in students' moral development, while acknowledging cautionary insights on balancing control and ethical use of technology.

Theoretically, this article enriches the understanding of character education by combining religious and technological perspectives. The use of Digital-Based Monitoring-IoT in pesantren serves as a real-world illustration of social control and social learning theories in a modern context: surveillance technology functions as a manifestation of formal social control aligned with religious teachings (*muraqabatullah*), while student interactions in digital environments support observational learning of moral values. Thus, this study contributes to the growing body of research on technology-based character education (Society 5.0) within Islamic education (He, 2022). Practically, these findings encourage a new paradigm in which technology (Digital-Based Monitoring systems) can serve as tools for character habituation, not merely surveillance. The study also contributes to the development of modern pedagogical theory by showing how traditional religious values can be internalized through technological innovation, while ensuring that pesantren remain comprehensive "laboratories of character." The policy implications are also clear: the findings support the Ministry of Religious Affairs' directives to balance technological innovation with spiritual value preservation and promote the inclusion of technology literacy and digital ethics in Islamic school curricula.

Although this single case study focuses specifically on SMA Muhammadiyah Kasihan Bantul to provide an in-depth and detailed analysis, the findings succeed in capturing authentic, real experiences. This intentional focus on integration processes, rather than quantitative measurements or external variables, establishes a centralized framework that provides a foundation for future researchers to expand these findings through mixed methods or larger scales. In terms of Islamic education policy, guidelines, and ethical standards for the use of surveillance technology in school or *pesantren* environments should be established. For example, ensuring student privacy and transparent data use (Ghashim & Arshad, 2023). Religious curricula can be expanded to include technology literacy and digital contexts in value instruction, aligned with current digital madrasah initiatives. Overall, policy must facilitate technological innovation as a tool to support character education without neglecting Islamic values, allowing the younger generation to grow with a high MQ in the digital age.

**Figure 1.** Theoretical Integration of Islamic Values and IoT-Based Digital Monitoring in Students' Moral Quotient Development



This framework illustrates the integration of Islamic religious values and IoT-based digital monitoring in supporting students' Moral Quotient (MQ) development in pesantren. Drawing on Social Control Theory and Social Learning Theory, it explains how moral norms, behavioral awareness, and observational learning may contribute to improved discipline, honesty, empathy, responsibility, and school safety. The framework also highlights the importance of continuous moral habituation, parental involvement, teacher-student relationships, and ethical safeguards, particularly regarding data privacy and transparency. Together, these elements provide a conceptual basis for understanding the role of technology as a complement to religious education and character formation.

## CONCLUSION

The rapid advancement of information and communication technology has driven swift social change across various fields. One important phenomenon that warrants attention is the erosion of religious, cultural, and national values. People often disregard moral principles in social media interactions, prioritizing virality and profit instead. In education, teachers experiencing technological lag will struggle to guide and educate their students. In the economic sphere, many members of society fall prey to online loan applications (*pinjol*) and online gambling. At the same time, public trust in religious leaders, particularly among Generation Z has decreased, with many seeking their own references from the digital world. All these factors pose potential risks to the religious harmony of society.

It is essential for religious leaders to embrace the digital world to fulfill their sacred role in delivering moral messages and goodness so that religious harmony remains strong. In this effort, it is crucial to involve and provide space for the younger generation to play a role.

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