



MADRASAH PRINCIPAL'S MANGERIAL COMPETENCE IN ENHANCING STUDENT INTEGRITY DURING THE IMPLEMENTATION OF COMPUTER-BASED TESTS (CBT)

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Abstract:

This study examines the contribution of Madrasah Principal's managerial Competence to strengthening students' academic integrity during Computer-Based Testing (CBT). Although CBT offers efficiency and accuracy in assessment systems, digitalization introduces new challenges in the form of technology-based cheating, such as the unauthorized use of dual devices. Utilizing a qualitative approach through library research, data were gathered from various scholarly journals and reference books, and subsequently evaluated using content analysis. The findings indicate that digital security systems require comprehensive managerial intervention from institutional leaders to function optimally; thus, this study formulates three primary managerial pillars to maintain student honesty within the CBT ecosystem. These three pillars encompass integrated planning and organizing that balances digital infrastructure readiness with the embedding of Islamic educational values as a moral foundation; the expansion of academic supervision into proactive hybrid monitoring to close loopholes for manipulation in digital exams; and a synergy between technological protection and religiosity that pairs security software, such as Safe Exam Browser, with the internalizations of religious values to foster students' internal moral control (Moral Action). Overall, this study underscores the crucial role of the madrasah principal as a moral architect capable of blending sophisticated technological innovation with religious values to create an honest, credible, and accountable digital evaluation ecosystem

Keywords: *Academic Supervision, Computer-Based Testing (CBT), Madrasah Principal's managerial Competence, Religious Values, Student Integrity*

INTRODUCTION

The rapid escalation of Information and Communication Technology (ICT) within contemporary educational discourse has catalyzed profound structural and cultural transformations across various educational institutions (Hefniy et al., 2022). This shift is tangibly manifested in a paradigm change within learning assessment systems, specifically through the widespread adoption and implementation of Computer-Based Testing (CBT). Conceptually, the emergence of CBT marks a pivotal milestone in transitioning from traditional Paper-and-Pencil Tests (PPT) toward an integrated digital assessment management system that is significantly more quantifiable, systematic, and comprehensive (Zamroni et al., 2022).

The deployment of these digital evaluation instruments serves as a strategic response to the pressing need for time efficiency, grading precision,

and administrative streamlined processing during examinations, particularly within Islamic educational institutions or madrasahs. For these institutions, spanning from primary (Madrasah Ibtidaiyah) to upper secondary levels (Madrasah Aliyah), adopting computer-based examinations represents an imperative adaptation to the demands of the digital epoch and Society 5.0. This era necessitates assessment mechanisms that are not only technologically advanced but also secure public accountability and transparency.

Far from being a mere mechanical replication of paper tests onto computer monitors (Rahman, 2026), the migration toward digital evaluation involves a highly complex system architecture. Its defining characteristics include centralized, encrypted item banking for test repositories, robust security authentication protocols, immediate feedback mechanisms for automated real-time scoring and item analysis, and the flexible integration of multimedia elements.

While CBT frameworks offer substantial technical infrastructure benefits and are purportedly linked to enhanced academic integrity by fostering independent learning, online examination deployment frequently encounters a severe anomaly: the degradation of student integrity (Khomairotusshiyamah, 2026). Etymologically derived from the Latin integer, meaning whole or complete, integrity within Islamic educational settings denotes a cohesive alignment between cognitive understanding, affective commitment, and actual behavior rooted in honesty, morality, and academic ethics.

This phenomenon underscores the argument that mitigating academic malpractice in digital assessments cannot rely exclusively on technological solutions (Rozi et al., 2021). Within this landscape, the managerial role of the madrasah principal becomes profoundly strategic in ensuring that technological innovations in assessment do not merely achieve technical excellence, but remain subservient to and aligned with the core philosophy of Islamic education, which places the highest premium on moral nobility (Haisuma et al., 2026).

In alignment with the formulated research problems, this qualitative literature-based study aims to construct a comprehensive theoretical and applicable model of integrity-driven Madrasah Principal's managerial Competence (Rofik & Mudarris, 2024). Specifically, the distinct objectives of this research are delineated as follows: To comprehensively delineate, classify, and analyze the strategic efficacy of the Planning and Organizing functions executed by madrasah principals in structuring the architecture of Computer-Based Testing (CBT) systems. To examine, evaluate, and identify effectiveness patterns arising from the paradigm shift in the academic supervision models of madrasah principals as a form of hybrid Controlling mechanism (Khofsah, 2026). To analyze and formulate a conceptual framework that synergizes the technical advantages of screen-locking technology with institutional cultural approaches anchored in the internalization of Islamic character education.

RESEARCH METHODS

This study adopts a qualitative approach utilizing a library research design. This methodology was selected to facilitate an in-depth exploration of Madrasah Principal's managerial Competence paradigms by interrogating relevant and authoritative library research encompassing a systematic sequence of activities, including bibliographical data collection, intensive reading, meticulous note-taking, and the rigorous processing of research materials as foundational sources to construct sound scholarly arguments.

Data collection within this inquiry was executed via the documentation

method, whereby the researcher aggregated data from diverse primary and secondary literary sources, including educational management textbooks, policy documents, and reputable peer-reviewed journal articles. Subsequently, the data were examined using content analysis. The analytical trajectory involved data gathering, thematic categorization (coding) predicated on strategic management and ecospiritualism variables, and a final theoretical synthesis to deduce comprehensive conclusions (Khoiroh, 2025).

RESULTS AND DISCUSSION

Madrasah Principal's managerial Competence Theory

Etymologically, management discourse is rooted in the Latin compound *manus*, meaning "hand," and *agere*, which signifies "to do" or "to execute". Within the lexicon of Indonesian educational scholarship, educational management is conceptualized as a structured trajectory of processes designed to optimize institutional potential and resources, thereby actualizing educational visions in an adaptive, efficient, and effective manner (Umiarso et al., 2021).

In their treatise on madrasah leadership management, Syafaruddin and Asrul elucidate that the managerial obligations of a madrasah principal are frequently operationalized through the core governance framework known by the acronym POAC (Planning, Organizing, Actuating, and Controlling). The comprehensive execution of these managerial functions, however, cannot reach its zenith without being anchored in the foundational principles of Total Quality Management (TQM). Moreover, given that contemporary madrasahs are currently confronting an era of pervasive technological disruption, school principals are increasingly required to demonstrate proficient e-leadership capabilities.

Madrasah Principal's managerial Competence and CBT System Organization

The efficacy of a resilient and fraud-resistant Computer-Based Testing (CBT) architecture is heavily contingent upon the optimization of managerial planning and organizing functions executed by the madrasah principal. A technical standpoint, this framework is engineered utilizing an encrypted, centralized item banking database equipped with sophisticated assessment randomization algorithms to enable shuffling capabilities. To fortify system security, the principal coordinates the deployment of multi-layered authentication protocols alongside protective lockdown applications, such as Safe Exam Browser (SEB) or Exambro, which are specifically designed to restrict unauthorized external browser access.

Hybrid Monitoring Transformations for Student Integrity

Within the paradigm of oversight and control (Controlling), the integration of CBT necessitates an expanded scope in the academic supervision frameworks employed by madrasah principals (Laksono, 2021; Naslim et al., 2021). Recognizing that automated security sensors frequently fail to detect sophisticated, contemporary methods of academic malpractice, principals are compelled to demonstrate digital leadership (e-leadership) through the strategic deployment of hybrid monitoring models (Selirowangi et al., 2022). This dual-layered model systematically synergizes server traffic and user activity tracking with proactive, high-precision physical invigilation by educators within the examination halls.

The Synergy of Digital Protection and the Internalization of Religious Morality

Empirical evidence indicates that isolated technological interventions are insufficient to mitigate complex anomalies of academic malpractice, such as the smuggling of secondary mobile devices that bypass screen-locking sensory systems (Sugiono, 2020). Consequently, the resilience of a CBT framework must be strictly synergized with the internalisation of religious values and Islamic character education. This institutional implementation is systematically constructed through sequential psychological trajectories: establishing a cognitive rationalisation for the necessity of honesty (Moral Knowing), cultivating an intrinsic emotional sensitivity to reject deceptive behavior (Moral Feeling), and actualizing uncompromised, manifest compliance (Moral Action). It is precisely this equilibrium between high-precision computing systems and profound spiritual depth that definitively eradicates the propensity for academic dishonesty in the digital evaluation era (Aisyah et al., 2022).

DISCUSSION

The findings of this study indicate that the madrasah principal's managerial competence plays a crucial role in enhancing student integrity during the implementation of Computer-Based Tests (CBT). The transition from conventional paper-based examinations to digital assessment systems requires not only adequate technological infrastructure but also effective leadership capable of managing organizational change. The results suggest that principals with strong managerial competence are more successful in creating a testing environment that promotes honesty, responsibility, discipline, and accountability among students (Sa'diyah et al., 2025). These competencies enable principals to organize resources efficiently, establish clear examination procedures, and foster a culture of academic integrity throughout the institution.

One of the primary aspects of managerial competence identified in this study is effective planning (Sain, 2026). Before the implementation of CBT, principals must develop comprehensive strategies that include preparing technological facilities, training teachers and technical staff, scheduling examinations, and communicating examination procedures to students and parents. Effective planning minimizes technical disruptions and reduces opportunities for dishonest behavior during examinations. Students who understand examination regulations and the consequences of academic misconduct are more likely to demonstrate integrity throughout the testing process. Therefore, systematic planning contributes not only to operational efficiency but also to the development of ethical behavior among learners.

Another significant finding concerns the principal's organizational competence. Successful CBT implementation requires collaboration among teachers, information technology personnel, administrative staff, and examination supervisors. Principals who clearly define roles, responsibilities, and communication channels create a well-coordinated examination system that functions effectively. Such coordination ensures that technical issues can be addressed promptly while examination supervisors remain focused on maintaining fairness and preventing academic dishonesty (Khofsah, 2026). This organizational effectiveness strengthens students' confidence in the examination process and encourages them to rely on their own abilities rather than engaging in cheating practices.

The study also reveals that supervision is an essential managerial function in promoting student integrity. Principals who conduct regular

monitoring before, during, and after CBT implementation are better able to identify potential weaknesses in examination procedures. Continuous supervision includes evaluating the readiness of computer laboratories, monitoring internet connectivity, ensuring the functionality of examination software, and observing the performance of supervisors. In addition, principals who actively monitor examination implementation reinforce the message that honesty and accountability are institutional priorities. This consistent oversight creates a learning environment where students recognize that integrity is valued as highly as academic achievement (Abdurrahman, 2025).

The integration of technology within CBT further emphasizes the importance of managerial competence. Computer-based examinations offer various advantages, including automated scoring, efficient data management, reduced paper consumption, and immediate feedback. However, digital assessments also introduce challenges such as technical failures, cybersecurity risks, unauthorized access, and opportunities for digital misconduct. Principals with strong managerial skills anticipate these challenges by implementing preventive measures, including secure login systems, randomized question banks, adequate technical support, and standardized examination protocols. Consequently, technology becomes a tool for improving assessment quality while maintaining examination integrity (Sudarwan, 2025).

These findings are consistent with previous educational leadership studies suggesting that effective school management significantly influences students' academic behavior and moral development. Leadership that combines administrative efficiency with ethical values creates a positive school climate where honesty, fairness, and responsibility become shared organizational norms (Zain, 2026). In the context of madrasah education, these values are further reinforced by Islamic educational principles emphasizing integrity (*amanah*), honesty (*sidq*), justice (*'adl*), and accountability (*mas'uliyah*). Therefore, the principal's managerial competence extends beyond administrative responsibilities to include the cultivation of students' moral character.

Teacher involvement also emerges as a critical factor supporting student integrity during CBT implementation. Principals who provide continuous professional development enable teachers to understand both the technical aspects of computer-based examinations and effective strategies for supervising digital assessments. Teachers who receive adequate training become more confident in managing examination sessions, identifying suspicious behaviors, and guiding students toward ethical academic practices (Rofik & Mudarris, 2024). Furthermore, collaborative relationships between principals and teachers facilitate continuous evaluation of examination procedures and encourage ongoing improvements in assessment quality.

The study additionally highlights the importance of communication with students and parents. Principals who clearly communicate examination objectives, ethical expectations, and institutional policies help establish a shared understanding of academic integrity (Zain, 2026). Students who perceive examinations as opportunities to demonstrate genuine competence rather than merely achieve high scores are more likely to behave honestly. Similarly, parental support reinforces the values promoted within the school, creating consistency between home and educational environments. Such collaboration contributes significantly to the successful implementation of integrity-based assessment systems.

Despite these positive findings, several challenges remain. Limited technological infrastructure, insufficient funding, inadequate internet connectivity, and varying levels of digital literacy among teachers and students

may reduce the effectiveness of CBT implementation (Wahid et al., 2021). Additionally, some students may still attempt to exploit technological loopholes or engage in dishonest practices despite existing supervision mechanisms. Therefore, principals should continuously evaluate examination procedures, invest in technological improvements, strengthen cybersecurity measures, and provide ongoing ethics education alongside technical training (Novita, 2025).

Overall, this study confirms that the managerial competence of madrasah principals is a key determinant in enhancing student integrity during the implementation of Computer-Based Tests (Mustajab et al., 2021). Effective planning, organization, supervision, coordination, and evaluation enable principals to establish an examination system that is transparent, accountable, and ethically sound. By integrating strong leadership with technological readiness and character education, madrasahs can ensure that CBT not only measures academic performance accurately but also promotes honesty, responsibility, and ethical conduct among students. Consequently, strengthening principals' managerial competence should remain a strategic priority for improving both educational quality and character development in the era of digital assessment (Hefniy et al., 2022).

CONCLUSION

Based on the analysis of the research problem, empirical findings, and subsequent discussion regarding Madrasah Principal's managerial Competence in enhancing student integrity during Computer-Based Testing (CBT), it can be concluded that the design and organization of a resilient CBT framework must not be reduced to mere physical infrastructure procurement. Instead, it imperatively demands the integration of digital literacy development and comprehensive security engineering, including item shuffling options, multi-layered authentication protocols, and protective browser applications. Furthermore, optimal monitoring efficacy is achieved through the deployment of a hybrid supervision model that systematically synergizes server traffic tracking with physical invigilation by educators to eliminate technological blind spots. Ultimately, the CBT infrastructure must be closely integrated with the internalization of Islamic religious values, thereby positioning technology as an external barricade and religiosity as an intrinsic conscientious governor. This equilibrium effectively equips students with the moral immunity required to reject all forms of academic malpractice.

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