

## Toward a Conceptual Framework for Resilient EdTech Integration: A Systematic Literature Review on Spiritual Leadership and Risk Management in Islamic Boarding Schools

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Article Info	Abstrak
<p><b>Article history:</b> Received 12-07-2025 Revised 30-07-2025 Accepted 13-11-2025 Published 14-11-2025</p> <p><b>How to cite:</b> Muhlisin, A., Akhirudin, M. T., Suryono, F., &amp; Khusniahadi, N. (2025). Toward a Conceptual Framework for Resilient EdTech Integration: A Systematic Literature Review on Spiritual Leadership and Risk Management in Islamic Boarding Schools. <i>Edcomtech: Jurnal Kajian Teknologi Pendidikan</i>, 10(2), 220–233. <a href="https://doi.org/10.17977/um039v10i22025p220-233">https://doi.org/10.17977/um039v10i22025p220-233</a></p> <p>© The Author(s)  This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.</p>	<p>Artikel ini menyajikan tinjauan literatur sistematis untuk membangun kerangka konseptual integrasi Teknologi Pendidikan (EdTech) yang resilien di pesantren. Penelitian bertujuan mensintesis temuan terkait kepemimpinan spiritual dan manajemen risiko dalam memperkuat ketahanan organisasi pada era digital. Metode yang digunakan adalah Systematic Literature Review (SLR) dengan protokol PRISMA, menganalisis artikel Scopus periode 2019–2024. Hasil kajian menunjukkan dua pilar utama: kepemimpinan spiritual berperan mendorong visi, nilai, serta budaya adaptif, sedangkan manajemen risiko menjadi mekanisme perlindungan operasional terhadap berbagai gangguan. Kedua pilar tersebut terintegrasi melalui EdTech sebagai mediator yang memperkuat kapasitas internal dan buffering eksternal organisasi. Integrasi EdTech memungkinkan pesantren beralih dari respons reaktif menuju strategi proaktif dalam menghadapi disrupsi. Kesimpulannya, ketahanan integrasi EdTech membutuhkan keseimbangan antara nilai spiritual, tata kelola risiko, dan adopsi teknologi strategis..</p> <p>Keywords: <i>Ketahanan Organisasi; Kepemimpinan Spiritual; Manajemen Risiko; Pesantren; Transformasi Digital.</i></p> <p><b>Abstract</b> <i>This article presents a systematic literature review to construct a conceptual framework for resilient Educational Technology (EdTech) integration in Islamic boarding schools (pesantren). The objective is to synthesise insights from spiritual leadership and risk management to formulate a model for organisational resilience in the digital era. The study employs the Systematic Literature Review (SLR) method with a PRISMA protocol, analysing articles published in Scopus between 2019 and 2024. The core findings and discussion identify two key pillars: spiritual leadership drives vision and adaptive culture, while risk management serves as the operational shield. These elements synergise through mediating EdTech, which enables external buffering and internal capacity strengthening. EdTech allows pesantren to shift from</i></p>

	<p><i>reactive practices to proactive strategies, enhancing resilience against disruptions. The review concludes that a resilient EdTech integration framework requires a balance between spiritual values, risk governance, and strategic technology adoption. The practical implication is a guide for pesantren administrators to design digital transformation aligned with their foundational ethos. Future Research should empirically test this framework and explore context-specific implementation models for pesantren.</i></p>
	<p>Keywords: <i>Organisational Resilience, Spiritual Leadership, Risk Management, Islamic Boarding Schools, Digital Transformation.</i></p>

## INTRODUCTION

Organisational resilience is a crucial element for the sustainability of all educational institutions, including Islamic boarding schools (*pesantren*). As value-based educational institutions, *pesantrens* face specific challenges affecting their operations, stemming from both internal and external factors (Alfisuma et al., 2025). In the modern context, one of the most significant external challenges is the accelerated digital transformation and the imperative to integrate Educational Technology (EdTech) (Zh, Sani, et al., 2024). The resilience of a *pesantren* depends not only on its internal fortitude but also on its capacity to adapt to these technological advancements while preserving its spiritual and cultural identity.

Integrating EdTech into the *pesantren* ecosystem is not merely a technical adoption issue but a complex process that touches on pedagogical, managerial, and cultural aspects (Zh, Thaariq, et al., 2024). The challenges include the digital divide, resistance to change, and concerns about the erosion of traditional values. Therefore, a robust conceptual framework is needed to guide meaningful and sustainable EdTech integration. This framework must bridge the demands of modernity with the spiritual foundation that characterises *pesantren* (Amin et al., 2025).

Spiritual leadership emerges as a critical factor in this adaptation process (Amin et al., 2025). In the context of EdTech, the role of *pesantren* leaders transcends traditional religious functions; they become change facilitators who articulate a vision for technology integration within a narrative of Islamic values. This type of leadership directly influences organisational culture and creates a solid foundation for accepting innovation while managing potential anxieties. However, the empirical relationship between spiritual leadership and successful, resilient EdTech integration remains unclear.

Conversely, EdTech integration introduces a new set of risks, ranging from data security and financial risks to pedagogical and organisational culture risks. Effective risk management practices thus become a vital supporting pillar. In this context, risk management must encompass the identification, mitigation, and monitoring of EdTech's potential negative impacts, enabling *pesantren* to adopt innovation without compromising operational stability and core values (Arisona et al., 2025).

Although studies on spiritual leadership and risk management in *pesantren* exist, literature specifically integrating both concepts to build a framework for resilient EdTech integration remains limited. Most research focuses on individual aspects, such as pedagogical integration or the role of the kiai, without integrating them into a coherent model for navigating digital disruption (Suprpto et al., 2020). Therefore, this systematic review seeks to bridge this gap.

This article makes a significant contribution to the literature by proposing a preliminary conceptual framework for resilient EdTech integration in *pesantren*. By synergising the lenses of spiritual leadership (as the driver of vision and culture) and risk management (as the operational shield), this framework enriches leadership and management theory in Islamic education and offers practical guidance for *pesantren* administrators.

Based on this rationale, this systematic literature review is formulated to answer three main questions: (1) How is the concept of spiritual leadership constructed in the literature, and what are its potential mechanisms for facilitating resilient EdTech integration in *pesantren*? (2) How can risk management principles and practices be adapted to address the specific challenges arising from EdTech integration? (3) How can the interaction between spiritual leadership and risk management shape a coherent conceptual framework for the organisational resilience of *pesantren* in the digital era?

This article aims to conduct a systematic literature review to identify, analyse, and synthesise current findings on spiritual leadership and risk management in *pesantren*, and subsequently to formulate initial propositions for a conceptual framework for resilient EdTech integration. This in-depth understanding is expected to provide new insights for policymakers, *pesantren* managers, and future researchers in designing digital transformation strategies aligned with the *pesantren*'s foundational ethos (khittah), ensuring their continued relevance and sustainability amid rapid change.

## **METHOD**

This study employs a Systematic Literature Review (SLR) approach to construct the proposed conceptual framework (Moher et al., 2009). SLR was chosen because it provides a structured, transparent, and replicable methodology for collecting, analysing, and synthesising findings from diverse, relevant studies (Siddaway et al., 2019). This approach enables the identification of knowledge gaps and the integration of insights from spiritual leadership, risk management, and organisational resilience within a specific context.

### **Search Strategy and Data Sources**

During the identification phase, the literature search focused on three primary domains: educational technology (EdTech) integration, spiritual leadership, and risk management in the context of *pesantren* (Islamic boarding schools). The primary database platform used was Scopus, a leading index of high-quality scholarly work. The publication timeframe was limited to the last five years (2019–2024) to ensure the findings' relevance to contemporary technological and management developments. Keywords used included combinations such as: ("*spiritual leadership*" OR "*ethical leadership*") AND ("*risk management*" OR "*organisational resilience*") AND ("*Islamic boarding school*" OR "*pesantren*"), as well as ("*EdTech integration*" OR "*educational technology*") AND ("*Islamic education*"). Employing these keyword combinations aimed to capture literature at the intersection of these three topics.

### **Selection Criteria and Screening Process**

The selection process adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, comprising three main stages: identification, screening, and eligibility (inclusion) (Page et al., 2021). Following deduplication, articles were screened based on their titles and abstracts. Inclusion criteria consisted of: (1) empirical or conceptual Research articles published in English; (2) a focus on one or more of the study's core elements (spiritual leadership, risk management, organisational resilience, EdTech integration) within the context of Islamic education or *pesantren*; and (3) offering insights that

could be integrated into the conceptual framework. Articles without available full text, general reviews without specific analysis, or entirely outside the educational context were excluded. Articles that passed this stage underwent an eligibility assessment via full-text reading to ensure the depth and validity of their contribution to the conceptual synthesis.

#### **Data Analysis and Synthesis**

The selected articles were then analysed thematically to identify patterns, mechanisms, and propositions regarding the relationships between variables. The analysis focused on how principles of spiritual leadership (such as values of role-modelling, meaning, and membership) can shape an organisational culture that supports adaptation and collective learning, and on how risk management practices (identification, mitigation, recovery) can strengthen an institution's capacity to face both technological and non-technological disruptions. The synthesis from this analysis was used to formulate the propositions of a conceptual framework linking spiritual leadership and risk management as foundational pillars supporting resilient EdTech integration in *pesantren*.

#### **Methodological Conclusion**

The application of SLR with a PRISMA protocol is deemed highly appropriate for the article's objective. This method enables a comprehensive, systematic exploration of literature scattered across various fields, thereby strengthening the foundation for a coherent, evidence-based conceptual framework. The transparent process also enhances accountability and the potential for further empirical Research based on the proposed framework. Here are the detailed steps that the researcher took in selecting and reviewing articles using the PRISMA method:

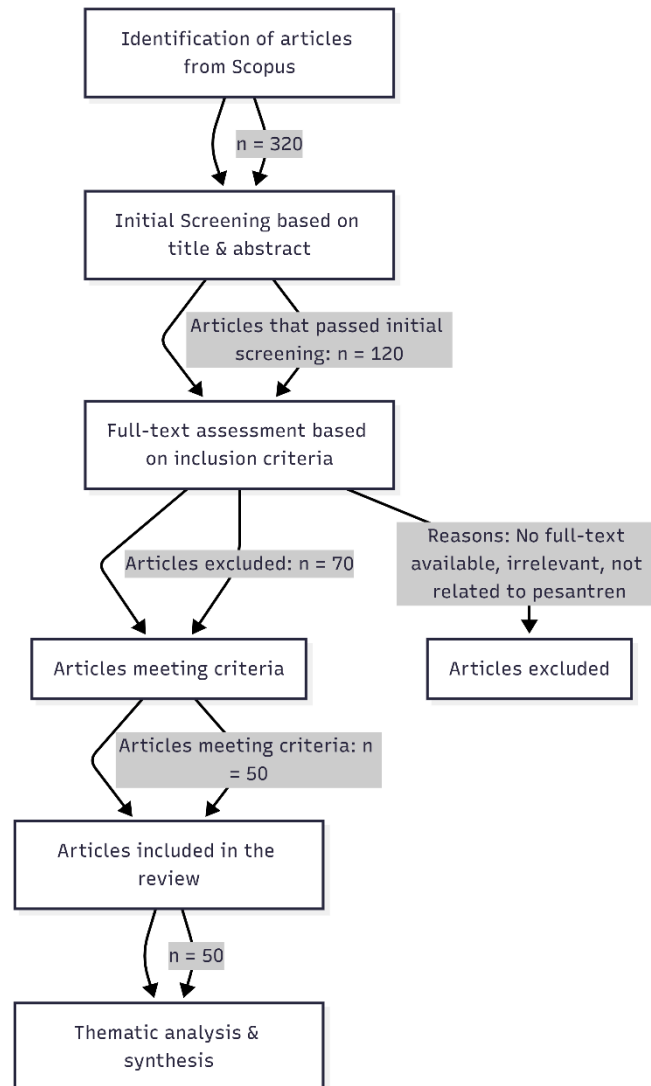


Figure 1. Prisma Flowchart

## RESULT & DISCUSSION

### Integrating Spiritual Leadership in Educational Technology Strategies to Enhance Organisational Resilience in Islamic Boarding Schools

Spiritual leadership in Islamic boarding schools (*pesantren*) plays a role that extends beyond conventional religious teaching, with direct implications for organisational resilience, the ability to survive and develop in the face of internal and external challenges. Although previous research shows that the direct relationship between spiritual leadership and organisational resilience is not always significant, interesting findings reveal its crucial role through the mediation of entrepreneurial innovation and the development of a strong organisational culture (Bustomi et al., 2025; Suryadi et al., 2024). This article explores the mechanisms of spiritual leadership in strengthening *pesantren* resilience, with a specific focus on its impact on organisational culture and risk management, as well as its relevance to integrating educational technology.

The following table summarises the core domains through which spiritual leadership influences organisational resilience, aligned with educational technology integration in *pesantren*:

**Table 1. Framework of Spiritual Leadership's Influence on *Pesantren* Organisational Resilience**

<b>Domain of Influence</b>	<b>Key Mechanism of Spiritual Leadership</b>	<b>Impact on Organisational Resilience</b>	<b>Relevance to Educational Technology</b>
<b>Entrepreneurial Innovation</b>	Motivates creative & initiative-based problem-solving through spiritual values (Karim et al., 2025).	Fosters adaptability and resourcefulness in the face of uncertainty.	Drives adoption and creative use of EdTech tools for learning and institutional development.
<b>Organizational Culture</b>	Builds an inclusive, collaborative culture based on <i>musyawarah</i> (deliberation) & <i>muamalah</i> (ethics) (Hamdanah et al, 2025).	Strengthens internal cohesion and shared commitment, a buffer against change.	Facilitates smoother technology integration through collective buy-in and an ethical digital culture.
<b>Conflict Management</b>	Provides an ethical framework (transparency, accountability) for fair resolution (Amin et al., 2025).	Maintains social harmony and trust, preventing disruptive internal crises.	Manages tensions arising from digital transformation (e.g., access disparities, pedagogical shifts).
<b>Risk Management</b>	Guides decision-making with justice, deliberation, and long-term well-being (Riski et al, 2024; Hamdanah et al, 2025).	Reduces strategic errors and builds a stable, accountable operational environment.	Mitigates risks related to digital infrastructure, data security, and pedagogical effectiveness of EdTech.
<b>Teacher Performance</b>	Inspires higher dedication and integrity through spiritual example (Riski et al, 2024).	Enhances educational quality and institutional reputation, key assets for resilience.	Increases teacher willingness and competence in effectively integrating technology into teaching.

<b>Strategic Integration</b>	Ensures technological decisions align with core values of truth and justice (Karim et al., 2025).	Aligns short-term actions with long-term mission, ensuring sustainable development.	Embeds EdTech within the <i>pesantren's</i> spiritual-educational mission, not as an external add-on.
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In the context of *pesantren*, spiritual leadership plays an important role in encouraging entrepreneurial innovation integrated with technology, a key element in organisational resilience. This innovation is not limited to economic aspects but includes the development of independent and creative character among students through the utilisation of educational technology. The spiritual values applied by the *kyai* (religious leader) can motivate students to think creatively and take initiative in solving problems or managing resources, including through the adoption of educational technology tools (Karim et al., 2025). This spirituality-based leadership serves as a foundation for developing an entrepreneurial attitude that is adaptable to technological advances, thereby contributing to the *pesantren's* resilience in the face of uncertainty.

The influence of spiritual leadership on the organisational culture of *pesantren* is highly significant, especially in integrating educational technology. Leadership grounded in religious values, such as deliberation (*musyawarah*) and ethical interaction (*muamalah*), can foster an inclusive, collaborative work culture among teachers, students, and administrative staff during technology adoption. Hamdanah et al (2025) highlight that when *pesantrens* integrate spiritual values into their organisational culture, internal quality and organisational resilience increase. The culture of togetherness that has been built becomes a primary strength in facing the challenges of change, including in implementing new learning technologies. The integration of these values also shapes students' character, making them more independent and better prepared for the dynamics of the digital era (Subiyantoro et al, 2026).

Conflict within organisations, including *pesantren*, is inevitable, especially during the digital transformation process. Spiritual leadership plays a major role in managing and defusing conflicts that arise, whether among students, between students and administrators, or with the surrounding community. Principles of transparency, accountability, and deliberation, which are part of spiritual values, enable *pesantren* to manage conflicts more wisely (Amin et al., 2025). This leadership acts not only as a mediator but also ensures that decisions related to technology implementation are made fairly and ethically, thereby strengthening relationships among all parties and the organisation's resilience in the face of change.

Risk management is crucial to the sustainability of *pesantren* organisations, including the risks associated with integrating educational technology. Spirituality-based leadership has a significant impact on managing these risks, which include human resources, educational quality, and the ability to adapt to technological change. Leadership that prioritises values of justice and well-being fosters transparency and accountability in organisational management, including in technological decision-making, thereby helping reduce potential risks ( Hamdanah et al, 2025). The application of spiritual principles, such as deliberation before strategic technology decisions, can minimise management errors and create a stable environment (Riski et al, 2024).

The applied spiritual leadership strongly influences the religious performance of teachers and staff in *pesantren*. Teachers inspired by spiritual values show higher dedication in carrying out their duties, including in integrating technology to improve learning quality. Leadership that emphasises exemplary values and discipline can motivate teachers to act with high integrity in using educational technology (Riski et al., 2024). This performance improvement impacts not only educational quality but also strengthens the resilience and reputation of *pesantren* as educational institutions relevant to contemporary developments.

*Pesantrens* that can integrate spiritual leadership into their organisational strategies, particularly in the planning and implementation of educational technology, have greater potential to survive and thrive. This integration ensures that every technological decision considers not only operational benefits but also upholds the values of truth and justice that are the core of *pesantren* education. This approach prepares *pesantrens* to face external and internal challenges and to achieve long-term goals effectively (Karim et al., 2025).

Spiritual leadership has proven to play an important role in enhancing the organisational resilience of *pesantren*. Through its impact on technology-based entrepreneurial innovation, adaptive organisational culture, digital conflict management, and technology risk management, spiritual leadership helps *pesantren* remain resilient. Although the direct relationship may not always be visible, this indirect role of spiritual leadership is crucial in shaping organisational resilience (Suryadi et al., 2024). Therefore, *pesantren* needs to continue developing and implementing spiritual leadership as an integral part of organisational management and educational technology integration strategies. This research provides a valuable contribution to the literature by highlighting the relationship among spiritual leadership, organisational resilience, and educational technology and offers useful recommendations for the development of *pesantren* in the digital era.

### **Challenges and Opportunities in Implementing Risk Management in Islamic Boarding Schools: An Educational Technology Perspective**

Implementing risk management in Islamic boarding schools (*pesantren*) is crucial for enhancing organisational resilience and ensuring sustainability amid growing global complexity. These traditional educational institutions have significant growth potential through effective risk management, yet they face considerable barriers. Interestingly, emerging opportunities, particularly in educational technology, entrepreneurial innovation, and strategic partnerships, offer pathways to overcome these challenges. This analysis examines the hurdles in adopting risk management practices, explores leveraging opportunities to strengthen resilience, and evaluates the impact on the educational and social sustainability of *pesantren*.

A primary challenge is the limited access to adequate technology and educational infrastructure. *Pesantren*, especially in remote areas, frequently lack sufficient technological resources, hindering efficient data management and informed decision-making. This issue is compounded by resistance to change and a technology skills gap among administrators (Misdah et al., 2025). Despite these hurdles, the strategic adoption of educational technology presents a significant opportunity. Implementing data management systems, for instance, can streamline administrative tasks, improve transparency, and enhance accountability, all of which are foundational to robust risk management (Siregar et al., 2025; Tantowi et al., 2025).

**Table 2. Challenges and Opportunities**

<b>Aspect</b>	<b>Key Challenges</b>	<b>Potential Opportunities &amp; Tech-Based Solutions</b>
<b>Technology &amp; Infrastructure</b>	Limited access to tech tools; resistance to change; digital skills gap among staff (Misdah et al., 2025).	Adoption of EdTech tools (e.g., data management apps); digital training for staff; improved transparency and accountability (Tantowi et al., 2025; Siregar et al., 2025).
<b>Resources</b>	Financial constraints, lack of trained human resources, and difficulty funding risk management projects.	Strategic partnerships with government/private sectors; knowledge-sharing networks; grant opportunities for EdTech integration (Darwanto et al., 2024).
<b>Data &amp; Decision-Making</b>	Poor data organisation; inaccurate data validation leading to flawed decisions.	Implementation of digital data management systems; real-time analytics for informed decision-making (Lutfiyah et al., 2024).
<b>Leadership &amp; Management</b>	Lack of administrative and managerial training; unclear risk governance.	Integration of innovative management practices; leadership development programs; structured governance models (Basori et al., 2023; Darwanto et al., 2024).
<b>Social &amp; Mental Well-being</b>	Bullying and mental health issues are often overlooked; lack of structured support systems.	Holistic risk frameworks that include psychosocial support, training for staff in mental health awareness (Arisona et al., 2025).
<b>Innovation &amp; Entrepreneurship</b>	Financial dependency; low entrepreneurial orientation.	Development of sharia-based enterprises; EdTech-integrated business training; sustainable income-generating activities (Abubakari et al., 2024).

Resource limitations, spanning financial and human capital, further obstruct effective risk management. Institutions in underserved regions struggle to allocate funds to risk initiatives or advanced educational technology, while a lack of administrative training complicates these efforts. Strategic partnerships with government, private entities, and donors offer a viable solution, providing not only essential funding but also technical expertise and capacity-building support (Darwanto et al., 2024).

Ineffective data management directly threatens operational integrity, as poor data validation can lead to misguided decisions with negative repercussions. Deploying integrated digital data systems, including IoT-based solutions, presents a clear remedy. Such technologies enhance data accuracy and facilitate real-time, evidence-based decision-making, thereby strengthening the institution's overall risk framework (Lutfiyah et al., 2024).

The quality of leadership and governance is another critical determinant. A common shortfall is insufficient training in administrative and managerial best practices, which can result in ambiguous risk protocols and suboptimal decision-making. Models that blend exemplary leadership with structured, innovative management approaches can fortify

internal systems, improve educational quality, and build long-term resilience (Basori et al., 2023; Darwanto et al., 2024).

Social dynamics within the learning environment, including bullying and mental health concerns, constitute significant yet often neglected risks. The traditional emphasis on spiritual development can sometimes overshadow these psychosocial aspects, despite their profound impact on student welfare and the institutional climate. A comprehensive risk management strategy must therefore incorporate student well-being and environmental safety, supported by staff training to proactively address these issues, thereby ensuring a supportive and holistic educational environment (Arisona et al., 2025).

Beyond mitigating challenges, a forward-looking risk management approach unlocks opportunities for innovation and entrepreneurship. *Pesantren* that cultivate an entrepreneurial mindset can achieve greater financial autonomy and competitiveness. Innovations in both educational delivery, such as AI-enhanced teaching methods, and sharia-compliant business ventures allow these institutions to evolve into centres of sustainable community development (Abubakari et al., 2024). Developing internal, sharia-based enterprises not only alleviates financial constraints but also enhances the institution's economic resilience by reducing its dependency on external funding.

Ultimately, strategic collaboration is key to addressing resource gaps. Partnerships provide essential capital, knowledge, and technical support, enhancing the capacity for effective risk management (Darwanto et al., 2024). Furthermore, by embracing this integrated approach and navigating the balance between tradition and modernity, *pesantren* can position themselves as hubs for sustainable sharia-based economic and educational development, amplifying their positive impact on the broader community (Misdah et al., 2025; Amin et al., 2025).

In conclusion, while significant challenges exist in implementing risk management in *pesantren*, substantial opportunities arise through the deliberate integration of educational technology, entrepreneurial innovation, and collaborative partnerships. By embracing these opportunities, *pesantren* can significantly enhance organisational resilience, ensure sustainability, and strengthen their vital role in the evolving educational landscape.

### **Integrating Educational Technology for Resilience and Risk Mitigation: A Strategic Discussion for Islamic Boarding Schools**

The sustainable operation of Islamic boarding schools (*pesantren*) hinges on a dynamic interplay between external pressures and internal capacities, and strategic risk management is essential to fostering organisational resilience. This discussion posits that educational technology (EdTech) serves as a critical mediating force, enabling *pesantren* to navigate this complexity. By integrating digital tools, *pesantren* can transform traditional reactive practices into proactive, systemic strategies that buffer external volatility, strengthen internal foundations, and address community well-being, thereby securing their long-term relevance.

The proposed relationship between these core constructs can be visualised in the following framework:

**Table 3: Framework for EdTech-Mediated Resilience and Risk Management in**

<i>Pesantren</i>			
Key Dimension	Challenges & Factors	Role of Educational Technology (EdTech) as Mediator	Outcome for Organisational Resilience

<b>External Environment</b>	Socio-political volatility; Unpredictable government policy & funding.	Digital Buffering: E-learning platforms ensure continuity; Digital advocacy & crowdfunding reduce dependency.	Enhanced adaptive capacity to maintain core operations despite external shocks.
<b>Risk Management Process</b>	Identifying, assessing, and responding to financial, operational, and social risks.	Data-Driven Decisions: MIS & analytics for real-time monitoring; Digital management of waqf/assets.	Proactive, precise, and strategic risk mitigation strengthens institutional stability.
<b>Internal Capacity</b>	Leadership vision, Human resource (HR) digital literacy, Organisational culture.	Capacity Building Tool: Platforms for leader & teacher training; Collaborative tools (e.g., Slack, Trello) for agile culture.	Strengthened core capabilities for continuous innovation and effective EdTech utilisation.
<b>Community Well-being</b>	Student mental health; Socio-psychological dynamics within the <i>pesantren</i> .	Support Ecosystem: Online counselling portals; Social-emotional learning (SEL) modules; Well-being monitoring apps.	A healthier, more supportive environment reduces internal risks and fosters student development.

As illustrated in Table 3, EdTech's primary role is to buffer external uncertainties digitally. Platforms for blended learning, such as the Lab Rotation Model, ensure the educational process continues amid socio-political or policy disruptions (Adiwisastra et al., 2020). Concurrently, strategic digital literacy initiatives empower *pesantren* to engage in policy advocacy and explore alternative, sustainable online funding models, thereby reducing over-reliance on a single external entity (Saepurohman et al., 2025).

Concurrently, technology fundamentally reengineers the risk management process from an administrative to a strategic approach. The implementation of Management Information Systems (MIS) and data analytics optimises administration and operations, enabling real-time tracking of indicators and shifting from intuition-based to evidence-based decision-making (Tantowi et al., 2025). For instance, insights from environmental disaster mitigation models highlight how digital tools can provide transparent oversight and strategic insights, turning traditional assets into a cornerstone of long-term economic resilience and risk mitigation (Arisona et al., 2025).

However, the efficacy of these technological tools depends on internal capacity. Leadership must evolve to synergise spiritual authority with technological and managerial insight, championing digital transformation (Amin et al., 2025). Furthermore, targeted training programs are essential to elevate the digital pedagogical competencies of teachers, as seen in efforts to optimize ICT integration for specific learning contexts, ensuring tools are used effectively (Alfisuma et al., 2025). This human capital development, supported by collaborative technologies that foster an agile culture, ensures that EdTech integration is deep and effective rather than merely superficial.

Finally, a holistic resilience strategy must address community well-being, an area where EdTech offers innovative solutions. Digital portals can provide discreet access to mental health resources, while integrated apps, including IoT-based monitoring systems, can help monitor student welfare, allowing for early intervention (Lutfiyah et al., 2024). This application of technology demonstrates how risk management extends beyond operational logistics to encompass the psycho-social health of the educational community, directly contributing to a stable and productive learning environment.

In conclusion, achieving sustainability in *pesantren* requires a model where resilience and risk management are interconnected through the strategic adoption of educational technology. This discussion highlights that EdTech is not merely a set of tools but a transformative mediator that enables *pesantren* to insulate themselves from external shocks, strengthen their internal core, and nurture their community. By embracing this integrated approach, *pesantren* can honour their rich traditions while confidently navigating the demands of the modern era, ensuring their enduring legacy as centres of learning and character building.

## CONCLUSION

This systematic literature review constructs a conceptual framework demonstrating that spiritual leadership and strategic risk management are pivotal in fostering resilient Educational Technology (EdTech) integration within Islamic boarding schools (*pesantren*). Spiritual leadership serves as the cultural and visionary driver, embedding technological change within the institution's ethical and spiritual values, thereby mitigating resistance and aligning innovation with the institution's core identity. Concurrently, adaptive risk management practices enhanced by digital tools provide the necessary operational safeguards against financial, pedagogical, and data-related threats. The interplay between these two pillars fosters an organisational resilience that is not merely reactive but proactive, enabling *pesantren* to navigate digital transformation while preserving its foundational ethos.

Future Research should empirically test and refine this proposed framework through mixed-methods case studies across diverse *pesantren*. Specific investigations could examine: 1) the efficacy of different digital tools in mediating between leadership style and risk mitigation outcomes; 2) the development of context-specific metrics for assessing "spiritually-aligned" EdTech integration; and 3) longitudinal studies on how this integrated model impacts long-term educational quality and institutional sustainability. Furthermore, comparative studies with other faith-based educational institutions could enhance the framework's generalizability. Ultimately, advancing this line of inquiry is crucial for developing evidence-based strategies that ensure Islamic educational institutions not only survive but thrive in an increasingly digital future.

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