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Original Researcher Article

Bridging Tradition And Technology: Administrative It Systems In Islamic Boarding Schools Through Bibliometric Lens During 1997-2025.

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ABSTRACT
This study examines the implementation of administrative information technology in Islamic boarding schools from 1997 to 2025, focusing on modernizing their administrative systems while preserving their cultural heritage and religious values. The research uses data from Scopus, Web of Science, and Lens databases, revealing a rapidly maturing field with a 12.92% annual growth rate and an average document age of 3.54 years. Key contributors include Indonesia, China, and Saudi Arabia as leading research hubs. The study employs advanced analytical methods to map the scholarly landscape, revealing that early research focused on user acceptance constructs, particularly the Technology Acceptance Model (TAM), examining perceived usefulness and ease of use among staff and students. Recent work has expanded into digital transformation strategies, artificial intelligence applications, cloud computing, and comprehensive governance frameworks. The systematic literature review identified five major thematic clusters: foundational acceptance and higher education contexts, technology acceptance and usability modeling, information systems and digital transformation, engineering education and decision-making, and emerging learning platforms. Despite significant progress, persistent gaps remain in long-term impact assessments, cultural integration of IT solutions within Islamic educational ethos, digital inequality stemming from infrastructure constraints, and standardized stakeholder training. The research concludes with actionable recommendations emphasizing community-driven implementation approaches, capacity building programs, infrastructure development for digital equity, longitudinal action research designs, and interdisciplinary international partnerships. These findings provide a conceptual framework for positioning future studies and bridging policy-practice gaps in administrative information technology implementations across Islamic boarding schools globally
Keywords: Administrative Information Technology, Islamic Boarding School, School Administration.
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1. INTRODUCTION:

The development of information technology has revolutionized human life by reshaping educational systems and multiple other sectors. Educational institutions including Islamic boarding schools implement digital technology systems which combine IoT and big data as well as AI and cloud computing to transform their administrative work and teaching approaches and their interactions with stakeholders (Liu et al., 2025). The research evaluates the need for Islamic boarding schools to update their administrative Information Technology systems (Amzat, 2022) which must address social problems while upholding their cultural heritage (Lundeto et al., 2021). As an example, some traditional Islamic educational institutions throughout Indonesia serve as vital institutions which teach knowledge and develop student character through the culture (Azra, 2017; S. A. Karim et al., 2024; Shiddiq et al., 2024). According to Mujahid (2021), an Islamic boarding school maintain outdated manual administrative systems which create operational problems and data inaccuracies. The traditional Islamic boarding schools encounter operational problems because they do not have effective data management systems and unit coordination functions. The implementation of information technology systems in Islamic boarding schools enables better operational management and transparency which produces better educational outcomes (Buanaputra et al., 2022).

The Islamic boarding school curriculum requires revision because its present structure fails to fulfill modern educational standards of the community. According to Wasehudin et al. (2023), the different types of Islamic boarding schools demonstrate their ability to adapt to changing social values through their expanding institutions and multiple educational approaches. Karami

and Dahlan (2022) identified four ways Islamic boarding schools adapt to modernization through educational content updates with general and vocational subjects and methodological changes and institutional reforms and functional renewal for socio-economic purposes. Therefore, the *kiai* maintains a crucial role in Islamic boarding school transformation because they function as the core leadership of these educational institutions. The Islamic boarding school system encounters new difficulties because it lacks proper information management capabilities. Akour and Alenezi (2022) state that the educational system based on tradition no longer fulfills the needs of modern society because the world has become more complex and dynamic. Thus, the implementation of technology in educational processes and administrative work enables Islamic boarding schools to enhance their educational standards and operational performance. The staff members of Islamic boarding schools continue to use outdated practices because they do not understand how technology can enhance their operational efficiency (Amzat, 2022; A. Karim et al., 2025).

The research investigates how Islamic boarding schools deployed administrative information technology systems between 1997 and 2025 to enhance educational quality and meet contemporary social needs. The need for technological progress requires Islamic boarding schools to use digital learning systems (Hanafi et al., 2021) and mobile applications for distributing modern educational content (Bajari et al., 2021). Therefore, the information technology implementation at Islamic boarding schools enables them to build sophisticated administrative systems which offer clear data access for error reduction in their information management processes. Chanifah et al. (2021) investigate how technology enables students to develop their character and religious education at Islamic boarding schools since these schools focus on these educational priorities. Mujahid, (2021), Sargiotis (2024), and Zhao et al. (2023) explore different approaches to enhance current governance systems through information Technology deployment which results in better administrative oversight and precise data management and superior service delivery to stakeholders and protection of fundamental organizational values. Qizam et al. (2025) and Zhao et al. (2023) investigate different governance systems which unit digital technology with local knowledge to show how modern management systems differ from existing Islamic boarding school requirements through an integration of contemporary and traditional approaches.

The educational institutions of Islamic boarding schools play an essential role in developing student character and knowledge acquisition but they encounter difficulties with administrative management and data openness and governmental standards for digital education and accountability systems. As recommended by Almaiah et al. (2022), Habib et al. (2021), Mahmood et al. (2023), Scalabrin Bianchi et al. (2021), the implementation of administrative information technology systems will solve these problems while it advances scientific knowledge in educational management and information technology. Therefore, this research helps Islamic boarding schools understand the importance of administrative information technology in improving efficiency and effectiveness of governance. The optimization of administrative systems and the academic operations and services enable Islamic boarding schools to deliver enhanced learning quality and improved academic resource accessibility. The results of this research may direct policy makers to establish rules which support Islamic boarding schools in their effective use of information technology. The implementation of administrative information technology in Islamic boarding school governance can provide direct benefits for students and the community, such as improved learning quality and faster, more transparent services.

This research focuses on the administrative information technology implementations in Islamic boarding schools as a pre-liminary study by bibliometric analysis and systematic literature review (SLR) during 1997-2025. It examines publication trends, geographic distribution, conceptual themes, and collaboration networks. Those aspects were examined in 2 sections which have the results in the frameworks of annual scientific production, citation and H-index, factorial multiple correspondence, co-authorship and country citation networks, key findings which highlight persistent policy–practice gaps, and comprehensive mapping which provides a conceptual framework for positioning future studies, recommends action research to bridge implementation divides, and calls for interdisciplinary and multilingual scholarship to advance the contexts of administrative information technology implementations in Islamic boarding schools.

The bibliometric analysis and systematic literature review of 1997-2025 data serves as a preliminary study to determine how Islamic boarding schools should implement administrative information technology with measurable outcomes. The study requires evidence-based strategies because it needs to identify successful administrative information technology implementation methods and obstacles in Islamic boarding schools through bibliometric analysis and systematic literature review (SLR). The study investigates these obstacles to support better educational administrative information technology systems which will adapt to modern educational requirements. The research presents a preliminary framework to create and assess efficient administrative information technology systems for Islamic boarding schools. The research results present actionable recommendations for administrative information technology implementation in Islamic boarding schools which serve as a starting point for related leaders and students and lecturers. The research results contribute to the complete development of elementary school curriculum management systems. In order to address the following research questions (RQs), aims, urgencies, and analysis approaches, which is presented in Table 1.

Table 1. Research Questions (RQs)

No	Research Question	Aim	Urgency	Approach

1.	Which **authors** and **journals** lead the literature on administrative information technology implementations in Islamic boarding schools which **articles are cited** the most?	To identify the most prolific authors, journals, and the cited articles.	To figure out which scientific research related to the authors, journals, cited articles is considering.	Bibliometric Analysis
2.	What are the **primary topics** of research, which **countries** make the most significant contributions to scientific production, and which **terms** are employed most frequently in the literature regarding the administrative information technology implementations in Islamic boarding schools?	To address the primary topics, the countries of significant contributions to the scientific production, and the most frequent terms.	To find out which words scientific research is discussing.	Bibliometric Analysis
3.	What are the bibliographic maps, diagrams, and tables in administrative information technology implementations in Islamic boarding schools?	To perform an in-depth analysis of the bibliographic maps, diagrams, and tables in administrative information technology implementations in Islamic boarding schools.	To provide an enhanced understanding of where the research of administrative information technology implementations in Islamic boarding schools is right now.	
4.	What are the scopes of conceptual structure and conceptual framework as the knowledge foundation for the administrative information technology implementations in Islamic boarding schools?	To emphasize the importance the scopes of conceptual structure and conceptual framework as the knowledge foundation for the administrative information technology implementations in Islamic boarding schools.	To highlight the necessity of a strong knowledge foundation for effective educational design and implementation of administrative information technology in Islamic boarding schools.	Systematic Literature Review
5.	What is the major research works related to administrative information technology implementations in Islamic boarding schools from an inductive analysis point of view?	To acknowledge the major works, employed methods, utilized applications and acquired results	To assist the scientific community to enhance its productivity	Systematic Literature Review

This research framework consists of five interconnected research questions (RQs) focused on administrative information technology implementations in Islamic boarding schools. The first question identifies the most frequently cited authors and journals in the literature of administrative information technology implementations in Islamic boarding schools, with bibliometric analysis as the primary methodological approach. The second question examines the primary research topics and significant contributions to scientific productivity in the field, identifying which countries are currently discussing contributions to the scientific production field. The third question explores the use of bibliographic maps, diagrams, and tables in administrative information technology implementations in Islamic boarding schools, with bibliometric analysis continuing as the analytical framework. The fourth question investigates the scope of conceptual structure and framework as the foundational knowledge for administrative information technology implementations in Islamic boarding schools, emphasizing the importance of establishing a strong knowledge foundation for effective educational design and implementation of administrative information technology in Islamic boarding schools. The fifth question identifies major research works related to administrative information technology implementations in Islamic boarding schools from a bibliometric analysis perspective, aiming to acknowledge the major works employed in these applications and acquired results. The framework provides a robust mixed-methods framework for investigating the contexts of administrative information technology implementations in Islamic boarding schools.

METHOD

The research uses bibliometric analysis as a quantitative method to achieve three objectives which involve (1) analyzing academic papers regarding authors and journals and their citation patterns and (2) examining core subjects in elementary school curriculum management research and (3) assessing the current condition of curriculum management studies. The research performs a Systematic Literature Review (SLR) to conduct qualitative analysis which investigates how intellectual and social frameworks affect elementary school curriculum management and proves the need for strong knowledge bases in curriculum development and implementation (research question 4) and scientific community productivity enhancement (research question 5). These investigations include in 2 sections to identify and evaluate the literature regarding curriculum management in elementary schools. Scientific mapping and performance analyses comprise the first analysis section of the study. In this section, the scientific cartography illustrates the connections between various authors, journals, citations, primary topics, productive countries, key terms, specializations, and disciplines. In the second analysis section, the articles are arranged in descending order by subsequent investigations. The research establishes core theoretical frameworks for managing elementary school curricula and identifies crucial studies along with their methodologies and demonstrates their practical uses and resulting results. This section of the investigation is finalized in accordance with the recommendations provided by. The research methodology appears in Figure 1. Numerous phases are depicted in the graphic. The data cleansing process occurred after researchers applied the inclusion criteria which are listed in Table 2 and the search string and indicator elaboration for article classification.

Table 2. Search string during 1997-2025

Database	Search Strings	Results
Scopus	("information system" OR "information technology" OR "management information system" OR "academic information system" OR "education management information system" OR "technology adoption" OR "technology acceptance" OR "digital transformation" OR "e-report" OR "e-payment" OR "cloud based" OR "application system" OR "student information system")	512
Web of Science	(administrate* OR manage* OR operational OR financial OR service* OR registrant* OR report* OR efficiency* OR transparency* OR accountably* OR governance)	134
Lens.com	("Islamic boarding school*" OR pesantren OR madrasah OR "educational institution*")	97

The database features all the necessary attributes for our needs. The researchers used Scopus and Web of Science databases to search for scientific journal articles (ASJC) which were categorized into a systematic framework of subfields and areas. The Scopus database was chosen because it provides quality metrics through its SJR index. Conversely, the Web of Science was implemented as a result of its capacity to facilitate the simultaneous downloading of an extensive quantity of references. We collaborated with the academic meta-search engine Lens for this investigation, as it is compatible with the data analysis program biblioshiny. The only articles that were taken into account were those with the titles "Islamic boarding school administration," "information technology," or "Islamic boarding school education." We locate all the articles that contain that precise combination of terms in their titles by enclosing it in quotation marks. Additionally, it encompasses all feasible combinations. At the of the data inclusion from the chosen database, namely Scopus, Web of Science, and Lens, we extracted the data in the format of .csv. We derived 512 papers from Scopus, 134 from Web of Science, and 97 from Lens.

administrative information technology implementations in islamic boarding schools: a preliminary study by bibliometric analysis and systematic literature review (slr) during 1997-2025

Dataset Selection

The research examined how Islamic boarding schools use administrative information technology systems. The data was gathered from field-based research articles published between 1997-2025, with exclusion criteria for non-administrative information technology fields, non-Islamic boarding school fields, and non-Islamic boarding school administrative management fields. The study focused on a specialized area of Islamic boarding school administrative management to provide an overview of its applications in education. The data was valuable for researchers as it provided information on current and future research lines investigating the usefulness of Islamic boarding school administrative management in various aspects such as learning, teaching, training, studying.

Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) (2020) for Dataset Load

The study utilized the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) (2020) framework for a bibliometric analysis and systematic literature review (SLR). Document identification involved both direct searches in databases like Scopus (n=512) and Web of Science (n=134), alongside a manual search via the Lens database (n=97). After excluding 134 irrelevant documents, 443 were consolidated in an .xlsx file, with 501 eliminated for being non-field-focused. Subsequent screenings led to the elimination of documents based on specific criteria, resulting in 170 full-text articles eligible for analysis—138 from Scopus/Web of Science and 32 from manual identification. Figure 1 illustrates the PRISMA flowchart for this process.

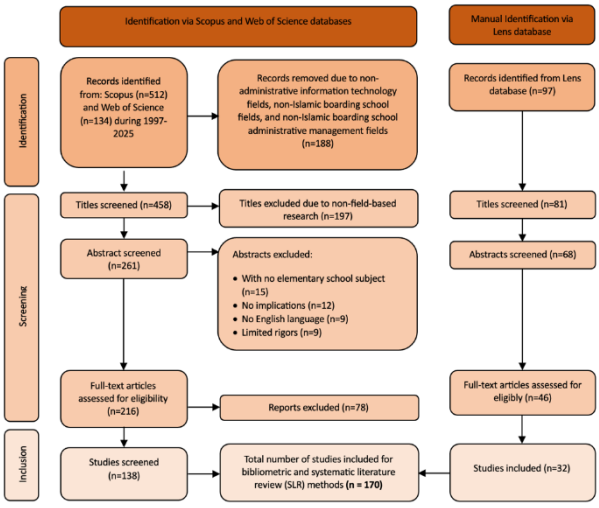

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) (2020) chart flow

The PRISMA flow diagram is a systematic literature search and selection process for research on administrative information technology implementations in Islamic boarding schools from 1997-2025. The research started with two independent search methods that retrieved 512 records from Scopus and Web of Science databases and 97 records from the Lens database. The research strategy employed two methods to search for all relevant studies which were distributed across various academic databases. The screening process started with 458 titles from Scopus/Web of Science but researchers eliminated 197 studies because they did not focus on the field of interest. 81 titles were extracted from the Lens database by eliminating duplicate records and irrelevant papers. 261 abstracts from the Scopus/Web of Science pathway underwent detailed examination, with 68 abstracts from the Lens database being screened at this stage. The full-text assessment during the inclusion phase analyzed 216 articles from the main pathway until researchers discarded 78 reports because they did not study administrative IT implementations in Islamic boarding schools. 46 full-text articles from the Lens database pathway were similarly assessed. The final analysis included 32 studies which underwent the complete screening process from both pathways. The diagram shows several key methodological advantages through its 72% exclusion rate and multiple screening stages and clear documentation and dual database approach. The systematic method creates a strong research framework for bibliometric analysis and literature review which selects only high-quality studies about administrative technology adoption in Islamic boarding schools for the final evaluation.

RESULTS

Scientific mapping and performance analyses comprise the first analysis section of the study. In this section, the scientific cartography illustrates the connections between various authors, journals, citations, primary topics, productive countries, key terms, specializations, and disciplines. In the second analysis section, the articles are arranged in descending order by subsequent investigations. The analysis creates essential conceptual frameworks for administrative information technology implementations in Islamic boarding schools, highlights key works, methods, applications, and results achieved in this area. This section of the investigation is finalized in accordance with the recommendations provided by. Table 1 presents the main information about the data.

Table 3. Main information about the data

Description	Results
Timespan	1997:2025
Sources (journals)	128
Documents	170
Annual Growth Rate %	12.92
Document Average Age	3.54

Average citations per doc	10.26
References	5333
Keywords Plus	458
Author's Keywords	867
Authors	567
Authors of single-authored docs	19
Single-authored documents	20
Co-authors per document	3.39
International co-authorships %	10
Article	170

The research investigates how Islamic boarding schools have adopted administrative information technology from 1997 until 2025 by using bibliometric methods. According to Table 3, the research covers 28 years (1997 to 2025) of data which demonstrates a 12.92% annual growth rate showing continuous substantial growth in research output for this field. The research appears in various academic publications which show how the subject unites Islamic education with information systems and administrative management. The 3.54-year average document age shows that most publications in the dataset appeared during the recent years which indicates ongoing development in this field. The research incorporates 5333 cited references which are spread across the entire corpus to draw from a broad spectrum of existing literature. The research field has 567 authors who actively participate in scholarly work according to the dataset. The research patterns show that individual work continues to be present in the field. The research focuses on digital solutions which handle student data management and financial administration and academic record-keeping and parent communication and institutional governance. The research field shows emerging status because of its young average document age and fast annual growth rate which addresses modern problems. The Islamic boarding school institutions encounter multiple obstacles which include insufficient technological resources and unskilled staff members and traditional resistance to change and worries about protecting Islamic values through technological adoption. Future research should focus on three main areas: it should expand international partnerships to learn about technology implementation methods across different cultures and it should conduct long-term studies to evaluate digital transformation effects on Islamic boarding school management and student learning results and it should create technology solutions that respect Islamic values and it should work to reduce digital inequality by building infrastructure and training programs.

First Section Analysis

Scientific Mapping Analysis (Maps)

Authors

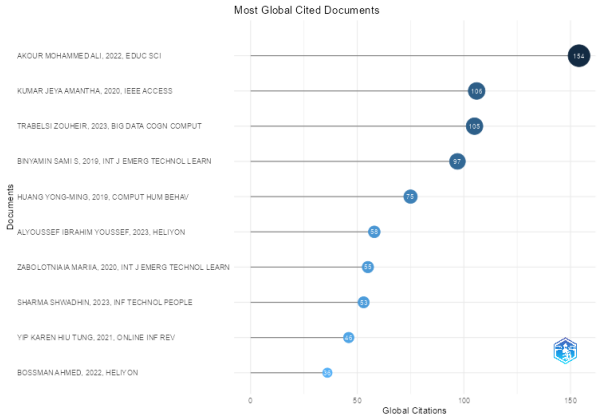

Figure 2. Most Global Cited Documents

Figure 2 displays the ten most often referenced studies about administrative IT system implementations in Islamic boarding schools throughout the period from 1997 to 2025 according to a bibliometric analysis. The study "Aklour Mohammed Ali, 2022, Educ Sci" leads the list with 154 citations because it functions as the main source for IT adoption research in Islamic boarding schools. The two recent studies "Kumar Jeya Amantha, 2020, IEEE Access" and "Trabelsi Zouheir, 2023, Big Data Computing" show an increase in research about state-of-the-art technologies since 2018. The research by "Binyamin Sami S., 2019, Int J Emerg Technol Learn" and "Huang Yong-Ming, 2019, Comput Hum Behav" demonstrates that user behavior and emergent learning systems have been central research subjects since 2019. The research of Alyoussef Ibrahim Youssef (2023) in Heliyon and Zabolotniaia Mariia (2020) in Int J Emerg Technol Learn demonstrates sustained influence through their analysis of specific case studies and their application to particular geographic locations. Figure 2 presents a structured approach to understand how Islamic boarding schools use administrative information technologies through their foundational theories and methodological trends and developing subjects.

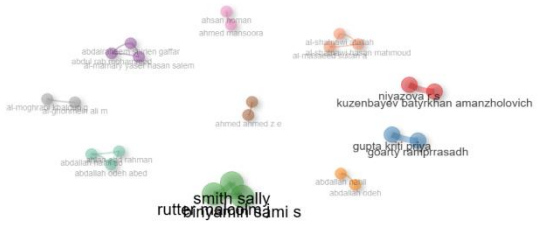

Figure 3. Author Collaboration Network

Figure 3 reveals the co-authorship relationships among researchers publishing on administrative information technology implementations in Islamic boarding schools (1997-2025). Sally Smith, Sami Binyamin and Karli Rutter are the key researchers in this field. The research groups form distinct clusters which include the Red Cluster for regional case studies and the Blue Cluster with Gupta K.P. and Gorty Namprasadh and the Green Cluster with Sally Smith and Sami Binyamin for international collaboration on theoretical and empirical research. Narrower, more insular groups suggest niche collaborations. The study shows how authors who link different research clusters act as knowledge transfer agents between thematic and regional research groups and shows the extent of author collaboration. The central cluster produces fundamental new theoretical and methodological approaches which the peripheral clusters introduce fresh or specialized research domains.

Journals

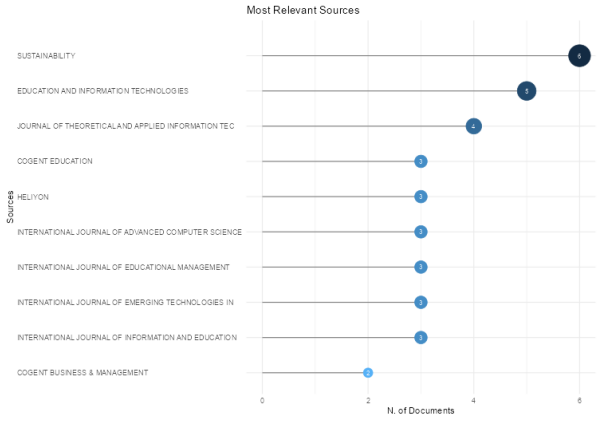

Figure 4. Most Relevant Source

Figure 4 shows the leading ten journals and publication outlets that have published the most documents about administrative information technology implementation research in Islamic boarding schools from 1997 to 2025. The six documents at the beginning of the paper demonstrate that Islamic boarding school administrative settings prioritize sustainable IT practices and environmental sustainability. The five documents in Education and Information Technologies demonstrate its position as the main academic publication for research about teaching methods and technological systems in education. The Journal of Theoretical and Applied Information Technology ranks as the third most important source with four documents because it enables researchers to build theoretical frameworks and execute applied case studies. The multidisciplinary journals Cogent Education and Heliyon and International Journal of Advanced Computer Science and International Journal of Educational Management and International Journal of Emerging Technologies in Learning and International Journal of Information and Education publish three documents that demonstrate various research methods and educational contexts through management approaches and new e-learning systems. The two documents in Cogent Business & Management demonstrate focused research about governance and organizational change and business-process integration in Islamic boarding school IT implementations.

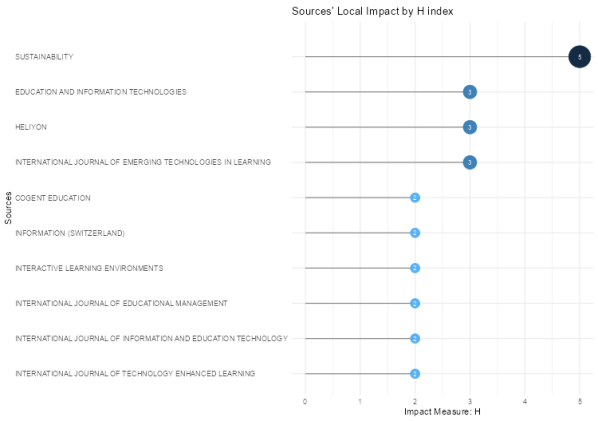

Figure 5. Sources' Local Impact by H Index

Figure 5 ranks the top ten journals by their H-index within the corpus of studies on administrative IT implementations in Islamic boarding schools (1997–2025). The H-index of Sustainability measures 5 because this field has published at least five papers which received five or more citations thus proving its ability to produce numerous publications and achieve significant citation influence. The H-index of Education and Information Technologies, Heliyon and International Journal of Emerging Technologies in Learning stands at 3 which indicates their stable output of research that receives multiple citations in their respective fields. A middle tier—Cogent Education, Information (Switzerland), Interactive Learning Environments, International Journal of Educational Management, International Journal of Information and Education Technology, and International Journal of Technology Enhanced Learning—all share an H-index of 2 (indicating at least two highly referenced papers apiece). The distribution shows a steep drop from the highest source (H = 5) to the most common journals (H = 2 to 3) which shows that many journals participate but only a few of them produce influential publications regularly.

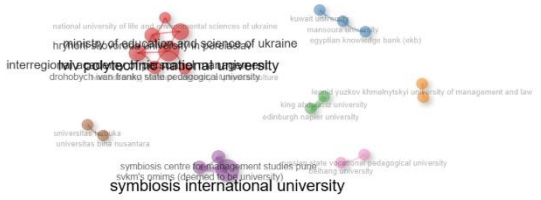

Figure 6. Academic Institution Collaboration Network

Figure 6 illustrates the academic institutions which have participated in research about administrative information technology implementation in Islamic boarding schools throughout the period from 1997 to 2025. Figure 6

displays institutions through nodes which represent their publication output and edges show their collaborative relationships and node colors distinguish institutions based on their collaborative patterns. Symbiosis International University is the most prolific contributor in this research domain. Collaboration clusters are colored by nodes, with red clusters in Central-Eastern Europe, blue clusters in the Middle East, green clusters in the UK and King Abdullah, orange clusters in Southeast Asia, purple clusters in India, and pink clusters in East Asia. The map shows worldwide participation through clusters which extend across Europe and the Middle East and South and East Asia. Symbiosis International University achieves its position as a leading academic partnership hub for future collaborations because of its strategic location. The identification of current clusters enables researchers to discover suitable collaboration partners while gaining insights into the research network structure of administrative IT in Islamic boarding schools.

Cited Articles

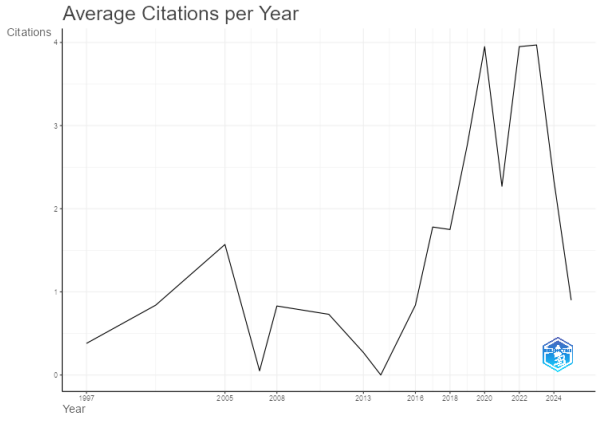

Figure 7. Average Citation per Year

Figure 7 presents a growth substantially since 2018 because researchers have cited these studies at a rate that increased from less than 1.0 per year before 2018 to approximately 4.0 per year during 2021-2022. The number of publications expanded from 0.4 to 1.6 throughout the period from 1997 to 2025 yet experienced a significant decline in 2007 which might indicate reduced research activity or the beginning stages of research. The number of citations between 2008 and 2016 showed a range from 0.7 to 0.0 because of methodological changes and limited access to the first studies. The number of citations started to rise in 2017 when the authors shifted from 0.9 to 1.8 citations per year until they reached 3.9 citations per year in 2019-2020. The 2021-2022 peak reached 3.9 which shows that publications received broad recognition because of bigger datasets and improved research methods and their enhanced value in digital Islamic education settings. The average number of citations reaches 1.0 by 2025 because of the time it takes for publications to generate citations. The research development needs new scholars who will improve current frameworks and data analysis techniques which achieved their maximum potential during the previous years. Academic research conducted today will gain more influence in the upcoming years because it will spread throughout academic discussions.

Primary Topics

Figure 8. Most Frequent Keywords

Figure 8 visualizes the two most important terms which are "user acceptance" and "information-technology" because they show how students and staff and administrators of Islamic boarding schools accept and use IT systems. The research investigates how IT implementations affect student learning experiences and satisfaction through institutional frameworks. The Technology Acceptance Model (TAM) is heavily reliance on established theoretical frameworks to assess determinants of IT adoption. The study incorporates several supporting concepts which include perceived usefulness and ease of use, behavioral intention and continuity intention, e-learning, learning management systems, and decision making, and satisfaction, performance, and impact. The list of emerging and niche topics includes digital transformation and artificial intelligence as well as information management and information systems success and structural equation modeling. The word cloud shows that IT research in Islamic boarding schools relies on user acceptance theories and employs modern digital tools and multiple outcome indicators which include satisfaction and performance metrics. Research teams analyze administrative technology adoption through first phase and extended use by employing advanced statistical models to understand its effects on educational organizations and their students.

Figure 9. Advanced Keywords

Figure 9 concentrates on educational organizations and higher education institutions and information technology systems and e-learning platforms. The current trends show

a move toward digital transformation and artificial intelligence and the adoption of more sophisticated technologies. The study bases its analysis on the Technology Acceptance Model (TAM) through which it applies Structural Equation Modeling (SEM) as its analytical method. Future research needs to create fresh theoretical models which will analyze how AI systems affect organizational change processes. Research studies need to be performed on AI-based administrative systems which include automated scheduling and student analytics. The evaluation process for digital transformation effects on institutional efficiency and educational quality and stakeholder satisfaction should move from short-term acceptance studies to extended long-term assessments.

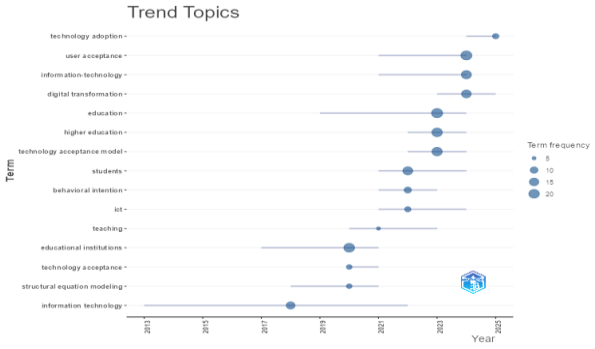

Figure 10. Trend Topics

Figure 10 shows that administrative IT implementations in Islamic boarding schools have developed since 2013 until 2025 when "IT" first appeared as a term in 2013. The three main areas of focus consist of Information Technology and Educational Institutions and Teaching. The research peak of mid-period growth took place between 2019 and 2021 when scientists analyzed student variables and behavioral intention and ICT and structural equation modeling. The Technology Acceptance Model and Technology Acceptance Model received more attention from researchers in 2021 because they continued to build upon TAM frameworks. Organizations accelerated their Technology Adoption sector growth most rapidly from 2023 to 2025 by moving past basic acceptance studies to execute large-scale implementation projects and build innovative storytelling methods. The academic field now focuses on studying widespread technology implementation and organizational transformation because of Digital Transformation and Technology Adoption growth during the last few years. The field keeps its stability through TAM construct research on user acceptance and behavioral intention because scientists now use advanced methods to study different stakeholder groups. Research teams should use this present interest to analyze digital transformation program effects through time by employing advanced analytical tools for complete organizational impact assessment.

Countries

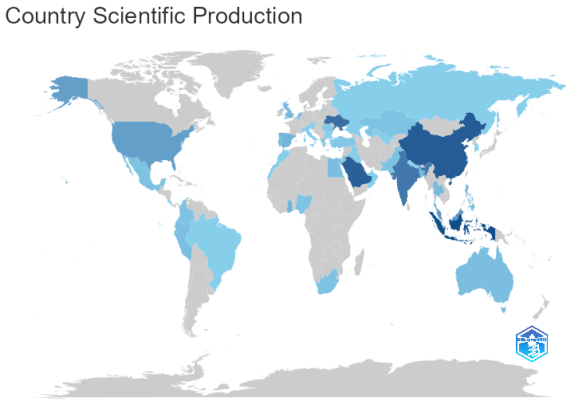

Figure 11. Country Scientific Production

Figure 11 concentrates on China, Indonesia, and Saudi Arabia but Malaysia, the United States, and Turkey have also made contributions. China and Indonesia lead in terms of output while Saudi Arabia demonstrates the deepest color depth which shows its researchers are actively publishing scholarly research. Malaysia, the United States, Turkey, and India have medium-blue hues, with solid but comparatively lower publication counts. The United Kingdom together with Australia and Egypt and Pakistan display light blue colors which represent their developing or specialized contributions to the field. The region of Southeast Asia demonstrates the importance of administrative IT systems for large Islamic boarding schools because of digital transformation needs. The research findings support the educational infrastructure development strategy of Saudi Vision 2030 and show that Egypt has been expanding its academic programs in this subject area. Future research will focus on increasing participant numbers from different areas while creating stronger connections between research and implementation to support national digital education plans.

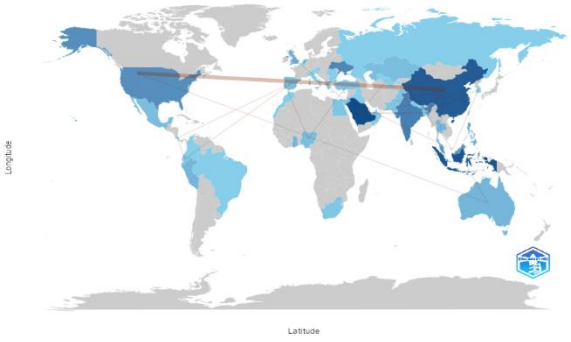

Figure 12. International Collaboration Map

Figure 12 displays country-based publication numbers through lines which represent research co-authorship connections about administrative IT implementations in Islamic boarding schools from 1997 to 2025. The countries with the highest publication counts appear in the deepest blue areas of the map which include China and Indonesia and Saudi Arabia and Malaysia. The main collaboration centers exist between Indonesia and the United States and between China and the United Kingdom and between Saudi Arabia and Egypt and Malaysia and between Malaysia and the United Kingdom and Australia. The new connections between countries consist of

Indonesia and Australia and Turkey and Malaysia and United Kingdom and Australia. Businesses should leverage their present partnerships to establish new regional clusters through strategic networking which helps them access markets where they have no current presence. The institutions of leading nations should develop better ties with methodological leaders through regional alliances to expand their influence across different geographic zones. The figure shows research production sites and worldwide scholarly network connections through co-authorship flow analysis which enables the identification of potential future collaboration possibilities for administrative IT research in Islamic educational contexts.

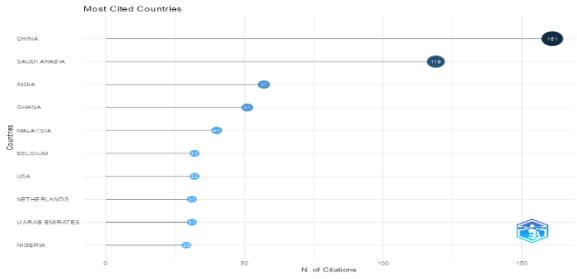

Figure 13. Most Cited Countries

Figure 13 presents that the most cited countries are China (161 citations), Saudi Arabia (119 citations), India (57 citations), Ghana (51 citations), Malaysia (40 citations), Belgium (32 citations), USA (32 citations), Netherlands (31 citations), UAE (31 citations), and Nigeria (29 citations). The academic influence of these nations continues to expand because India releases research about various regional studies and Ghana demonstrates its specialized research influence in West African studies. The strong position of Malaysia in Southeast Asia demonstrates its position as a leading center for Islamic education technology research in the region. The mid-tier countries Belgium and the USA and the Netherlands and UAE and Nigeria produce important work through their collaborative research and comparative studies. The research strategy needs improvement through China and Saudi Arabia partnerships and backing new leaders and multiple international collaborations. The citation distribution demonstrates the significance of Islamic boarding school administrative IT implementation research because it enables strategic partnerships for knowledge sharing.

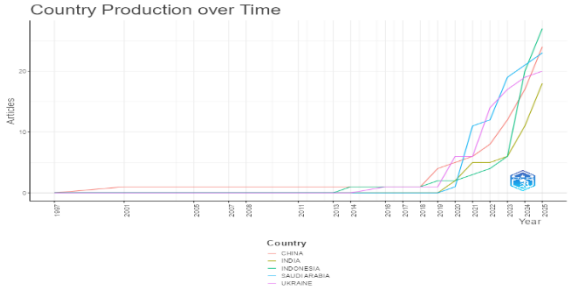

Figure 14. Country Production over Time

Figure 14 shows that research on administrative IT implementations in Islamic boarding schools has experienced rapid growth since 2018, with five countries - China, Indonesia, Saudi Arabia, India, and Ukraine - publishing over 20 articles by 2025. This growth is attributed to pandemic-driven digital transformations and global events like COVID-19. Indonesia and Saudi Arabia began publishing modestly in 2018-2019, signaling the field's emergence. By 2020-2022, China, India, and Saudi Arabia each published around 15-16 articles, while Ukraine and Indonesia reached 10-12 articles. By 2025, Indonesia leads with approximately 27 articles, followed by Saudi Arabia at 26 articles, Ukraine at 25 articles, China at 24 articles, and India at 23 articles. Sustaining growth will require continued funding, advanced methodological approaches, and cross-border collaborations. The sharp post-2018 rise in research highlights the maturing, geographically diverse research community.

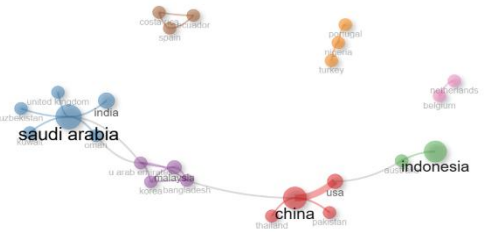

Figure 15. Country Collaboration Network

igure 15 reveals distinct national clusters in research on administrative IT in Islamic boarding schools (1997-2025), with Indonesia, China, and Saudi Arabia being the most prolific contributors and hubs of international collaboration. Indonesia's prominence aligns with its large number of Islamic boarding schools and increasing digitization efforts. China and Saudi Arabia's strong output and diverse partnerships signal growing interest in administrative IT applications within their Islamic education sectors. Middle Eastern and South Asian collaborations form the densest networks, reflecting shared educational goals and possibly funding collaboration. Southeast Asian countries exhibit sub-regional ties, while outlying clusters suggest niche comparative research. This network underscores how administrative information technology research in Islamic boarding schools is both regionally concentrated and globally connected, with clear leaders and notable cross-regional partnerships. The study highlights the importance of regional cooperation in the field of administrative IT in Islamic boarding schools.

Terms

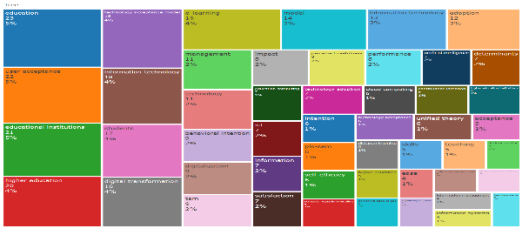

Figure 16. Keyword Tree Map

Figure 16 reveals a predominant focus on educational contexts and user acceptance factors in administrative IT

implementations in Islamic boarding schools from 1997 to 2025. The largest theme is education, followed by user acceptance and educational institutions. The study also highlights the importance of technology adoption models and constructs, such as the Technology Acceptance Model (TAM) and behavioral intention. The study also emphasizes IT infrastructure studies, performance metrics, and outcomes assessment. Emerging topics include cloud computing, ICT, artificial intelligence, digitalization, management, and decision-making. The prominence of TAM and related constructs suggests a need for diversified theoretical frameworks to capture the unique cultural and organizational contexts of Islamic boarding schools. The heavy emphasis on user acceptance and performance metrics emphasizes the importance of stakeholder-centered evaluations and evidence of impact when implementing administrative IT in Islamic boarding schools.

Performance Analysis (Figures)

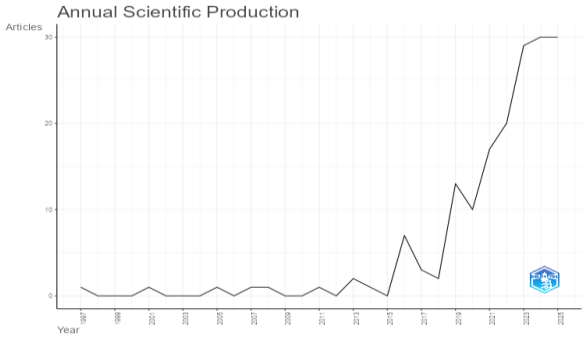

Figure 17. Annual Scientific Production

Figure 17 presents that the research on administrative IT implementations in Islamic boarding schools began as a relatively unexplored topic in 1997. However, it accelerated significantly in the mid-2010s, reaching over 30 articles per year by 2024-2025. The field gained initial momentum in 2015, with a jump to 7 articles. The field then experienced a brief dip and a modest resurgence in 2017, indicating rising interest in digital transformation in education and growing awareness of pesantren administrative needs. The output continued to climb steadily from 2019 to 2020, with a significant increase in 2021, possibly due to the impact of COVID-19 on e-learning and admin IT adoption. The research on Islamic boarding shools' IT administration has become a robust and established subfield, reflecting a classic S-curve of academic interest.

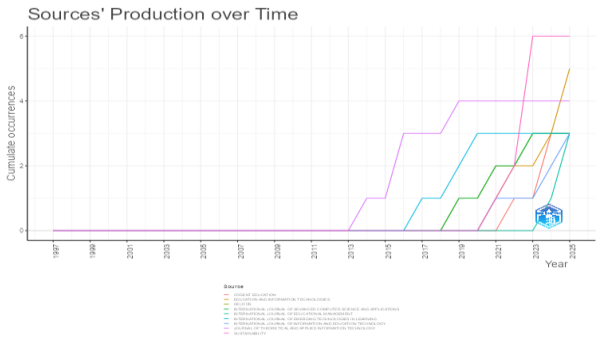

Figure 18. Sources' Production over Time

Figure 18 presents that the majority of publications on administrative information technology in Islamic boarding schools emerged after 2014, with a sharp increase in both the number of studies and the diversity of journals from 2018 onward. From 1997 through 2013, there were no recorded publications in the selected nine journals on this topic. Since 2018, the pace has accelerated, reaching a cumulative total of six different journals by 2025. Journal-by-journal trajectory reveals that sustainability has the most publications, with steady additions in 2016, 2018, and 2020. The International Journal of Information and Education Technology has the most publications, with three in 2019 and 2023. The International Journal of Emerging Technologies in Learning has the most publications, with two further entries in 2021 and 2023. The International Journal of Educational Management has the most publications, with two in 2021 and two in 2022. The rapid rise in publications across multiple journals reflects broader academic interest, with nine distinct journals contributing by 2025. This figure illustrates how scholarly attention to administrative IT in Islamic boarding schools has accelerated and diversified notably over the last decade.

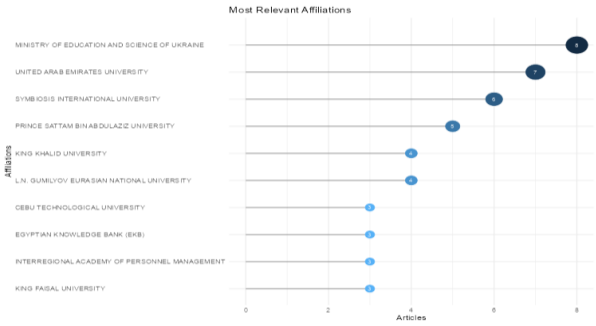

Figure 19. Most Relevant Affiliations Figure 19 presents that the Ministry of Education and Science of Ukraine and United Arab Emirates University have been the top research affiliations in administrative IT in Islamic boarding schools from 1997 to 2025. The majority of these affiliations contributed three publications, indicating emerging interest from Saudi Arabia, Egypt, Ukraine, and the Philippines. Other institutions like King Khalid University, L. N. Gumilyov Eurasian National University, Prince Sattam bin Abdulaziz University, Symbiosis International University, and United Arab Emirates University also contributed to the field. The Ministry of Education and Science of Ukraine, with eight outputs, demonstrates a strategic, policy-driven interest in leveraging IT for school administration. The geographical diversity of the research effort suggests a truly international research effort. Saudi Arabian universities are prominent at multiple tiers, suggesting a regional hub of expertise.

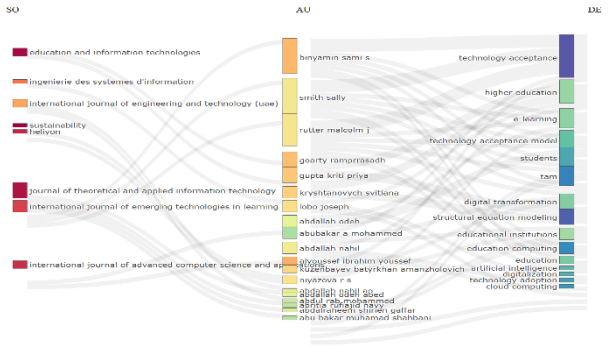

Figure 20. Sankey Diagram of Sources, Authors, and Keywords

Figure 20 illustrates the flow of scholarly contributions from various sources to leading authors, revealing how different journals contribute scholars who focus on specific topics in administrative IT within Islamic boarding schools. The diagram shows that the focus of these studies is on technology acceptance, focusing on how boarding school staff and administrators adopt IT systems. The authors are linked to various academic journals, such as Education and Information Technologies, International Journal of Advanced Computer Science and Applications, Sustainability / Heliyon, Journal of Theoretical and Applied Information Technology, International Journal of Emerging Technologies in Learning, and Engineering des Systèmes d'Information. The authors also focus on the Technology Acceptance Model (TAM), which underscoring theoretical frameworks used to assess IT uptake. The diagram also highlights the shift towards digital transformation and e-learning, as well as the importance of structural equation modeling in evaluating IT interventions. The diagram also highlights the importance of a holistic approach to IT implementation, ranging from students and higher education contexts to institutional and policy levels. Overall, the Sankey diagram provides a comprehensive understanding of administrative IT in Islamic boarding schools.

Second Section Analysis

Conceptual Framework (by Factorial Analysis)

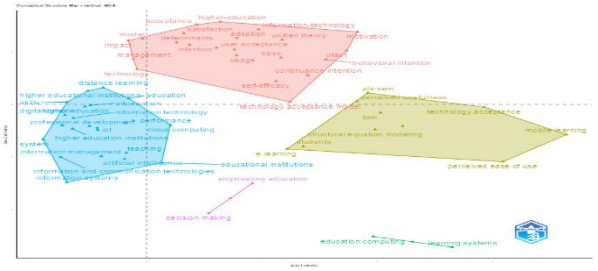

Figure 21. Multi-Dimensional Correspondence Analysis (MCA) Map

Figure 21 identifies five thematic clusters in the literature on administrative IT implementations in Islamic boarding schools. These clusters reveal distinct but interrelated topic areas, from foundational information-systems constructs to advanced technology-acceptance and AI-driven approaches. The red cluster (foundational acceptance & higher-education context) applies classic acceptance theories to understand administrators' and educators' attitudes, intentions, and satisfaction levels when adopting IT systems in Islamic boarding contexts. The yellow cluster (technology acceptance model & usability) focuses on end-user perceptions and mobile or e-learning platforms as administrative tools. The blue cluster (information systems & digital transformation) encompasses broad ICT infrastructure, digital transformation processes, and AI/cloud solutions, highlighting system-level design, data management, and staff training aspects. The purple cluster (engineering education and decision making) focuses on technical training programs and administrative decision frameworks, possibly reflecting specialized curricula within boarding schools. The green cluster indicates nascent interest in bespoke learning platforms. The MCA map illustrates how research on administrative IT in Islamic boarding schools spans foundational acceptance frameworks, rigorous usability modeling, broad ICT infrastructures, and emerging computing-driven learning systems

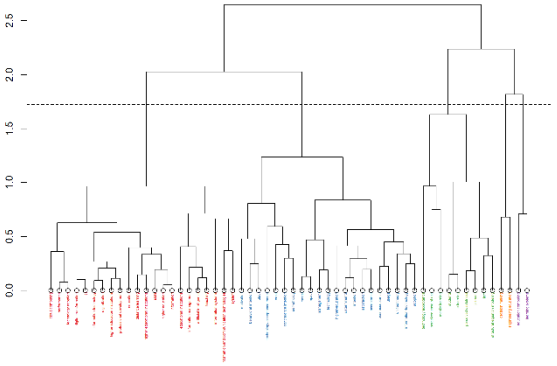

Figure 22. Hierarchical Clustering Dendrogram

Figure 22 reveals the thematic architecture of research on administrative IT in Islamic boarding schools. The clusters are based on four major themes: acceptance and usability, higher education and e-learning, management and decision support, and analytical methods. The clusters focus on user-centric vs. systemic themes, with Cluster A and B stressing individual user perceptions and educational applications, while Cluster C emphasizes organizational strategy and managerial outcomes. Cluster D stands out, highlighting rigorous SEM-based analysis as a foundational approach across studies. Inter-cluster linkages show that acceptance themes merge gradually with educational applications, suggesting that usability research often intertwines with pedagogical contexts. Management themes bridge to both user-centered and methodological clusters at broader distances. This dendrogram illustrates the thematic architecture of research on administrative IT in Islamic boarding schools, mapping how acceptance theories, educational applications, managerial concerns, and analytical methods interrelate.

An Inductive Analysis Point of View

Understanding User Acceptance and Technology Acceptance in Islamic Boarding Schools

This study examines user acceptance in Islamic boarding schools, focusing on attitudes, intentions, and behaviors towards new administrative information technologies. The Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) are used to assess the adoption of IT systems. Determinants, such as performance expectancy, effort expectancy, social influence, facilitating conditions, and self-efficacy, are identified as antecedent factors driving technology acceptance. Adoption refers to the actual uptake and sustained use of an IT system, while satisfaction reflects users' overall contentment with the system. Ease of use is a strong predictor of both acceptance and satisfaction, especially in environments with varying levels of digital literacy. Self-efficacy, shaped by prior experience, training quality, and peer support, influences how quickly staff overcome initial learning hurdles and how resilient they are in troubleshooting problems. These constructs form the theoretical backbone of the bibliometric and SLR analysis, guiding researchers in evaluating and interpreting factors that enable or hinder administrative IT implementation in Islamic boarding schools.

Administrative Information Technology Systems in Islamic Boarding Schools

This study explores the acceptance and use of administrative IT systems in Islamic boarding schools, focusing on factors from the Technology Acceptance Model (TAM), advanced analytical methods (PLS-SEM/SEM), and the roles of students engaging in e-learning and mobile learning environments. The study reveals that perceived usefulness and ease of use are key factors in determining the adoption of these technologies. Structural Equation Modeling (SEM) is used to test these factors, while Partial Least Squares SEM (PLS-SEM) is a variance-based alternative to covariance-based SEM. Students are the primary end-users of administrative IT and e-learning/mobile learning platforms, and their characteristics, such as digital literacy, learning motivations, and socio-religious context, shape their perception and use of these technologies. E-learning, which is delivered over the internet or intranet via a browser, supports remote religious instruction, administrative training modules, and resource sharing among students and teachers. Mobile learning, which involves accessing educational content through smartphones or tablets, offers flexible, on-the-go learning opportunities. This framework provides a robust lens for understanding and improving administrative IT adoption in Islamic boarding schools.

Islamic Boarding School Information Technology Implementations

This research examines the implementation of advanced IT solutions in Islamic boarding schools, focusing on higher educational institutions, distance learning, digitalized education, cloud computing, artificial intelligence, information management, and information and communications technology (ICT). Higher educational institutions include universities, colleges, and academies that provide tertiary-level instruction and confer academic degrees. Distance learning involves instructional processes where teachers and learners are separated geographically or temporally, relying on telecommunications and online platforms to deliver content, facilitate interactions, and assess learning outcomes. Digitalized education transforms teaching and learning activities through the integration of digital tools, such as learning management systems, multimedia resources, and analytics dashboards. Cloud computing enables on-demand network access to a shared pool of configurable computing resources, while artificial intelligence performs tasks typically requiring human intelligence. Information management involves the systematic capture, storage, retrieval, distribution, and disposal of information assets, while ICT encompasses devices, networking components, applications, and systems that facilitate the creation, processing, sharing, and exchange of information in digital form. Teaching in Islamic boarding schools integrates traditional religious pedagogy with modern IT-enabled methods to support administrative tasks and student learning.

Islamic Boarding Schools' Adoption of Computing and Learning Systems

The research investigates how Islamic boarding schools use computing and learning systems to enhance their administrative operations and educational outcomes. Educational computing refers to the practice of using technology to enhance learning through the development and management of suitable learning tools and resources with ethical considerations. Learning systems include two main categories of software platforms which are Learning Management Systems (LMS) and Education Management Information Systems (EMIS. These systems provide educational content delivery and tracking and management of learner data. Technical system development in this context follows a systems development life cycle, which includes requirements analysis, system design, implementation, testing, deployment, and maintenance and evaluation. Islamic boarding schools implement open-source LMS systems that operate on cloud-based infrastructure to support their technical growth and customized religious curriculum management needs. The framework provides a method for Islamic boarding schools to create and maintain computing and learning systems which will enhance administrative efficiency and educational quality through detailed technical development procedures.

Islamic Boarding Schools' Information Technology Administration

In the context of administering IT in Islamic boarding schools, decision-making and engineering education intersect in designing, developing, and deploying technological systems that support informed administrative choices and cultivate technical expertise among students and staff. Decision-making is the cognitive process of selecting a course of action from a set

of alternatives based on values, preferences, and beliefs. In IT administration, it encompasses identifying system requirements and priorities, evaluating vendor solutions or open-source platforms, balancing cost, scalability, security, and user needs, and refining choices through user feedback and performance metrics. Effective decision-making relies on data captured by IT systems, such as usage logs and performance dashboards. Engineering education focuses on teaching knowledge and principles for professional engineering practice, including initial degrees and advanced specializations. By intertwining decision-making processes with engineering education activities, Islamic boarding schools can enhance administrative IT adoption and empower students with practical skills in technical system design and governance.

2. DISCUSSION

The literature review on administrative information technology (IT) implementations in Islamic boarding schools (1997-2025) shows that this is a field that is growing quickly, with an average document age of 3.54 years and a steady annual growth rate of 12.92%. However, some critics argue that this growth may not reflect the actual effectiveness of IT implementations in enhancing educational outcomes. They say that many schools still have trouble with integration and training, which could keep these technologies from reaching their full potential. Early studies focused on user acceptance constructs, such as perceived usefulness and ease of use within the Technology Acceptance Model (TAM), to

understand staff and student attitudes towards new administrative systems. The field has since broadened to encompass advanced analytical methods, digital transformation strategies, and AI-enabled solutions.

While proponents point out the power of IT implementations to revolutionize education, critics argue that the overemphasis on technology can overshadow fundamental teaching practices and critical thinking skills. Additionally, some educators express concern that reliance on digital tools may exacerbate existing inequalities, leaving under-resourced schools at a disadvantage in the technological race. Collaboration networks highlight distinct regional clusters in Southeast Asia, the Middle East, and Europe, with Indonesia, China, and Saudi Arabia emerging as prolific contributors and knowledge hubs. While these regions are indeed making strides in educational technology, there are voices that caution against viewing technology as a panacea for educational challenges, emphasizing that the effectiveness of any IT implementation ultimately hinges on teacher training and curriculum integration. Furthermore, critics point out that without careful consideration of local contexts and needs, these initiatives may fail to address the unique barriers faced by diverse communities, potentially widening the gap they aim to close.

International co-authorship remains limited, indicating an opportunity to foster cross-border partnerships. Journals such as Education and Information Technologies and Sustainability lead in both volume and H-index, underscoring their pivotal roles in disseminating theoretical and applied research. However, proponents argue that standardized teacher training can create a cohesive educational framework that enhances overall teaching quality, regardless of local variations. Additionally, the rise of digital platforms enables greater accessibility to international research, promoting collaborative efforts that can bridge gaps and enrich educational practices globally. The landscape of education is increasingly shaped by cross-border partnerships and standardized teacher training, which together elevate teaching quality across the globe. With education and information technologies journals at the forefront of research dissemination, educators now have unprecedented access to innovative strategies and findings.

The implementation of standardized training not only ensures that teachers are well-equipped with the necessary skills but also fosters consistency in educational practices worldwide. Furthermore, digital platforms play a pivotal role in breaking down geographical barriers, making research accessible to a broader audience. Collectively, these collaborative efforts not only bridge existing gaps but also enrich global educational practices, ultimately contributing to a more interconnected and effective learning environment for students everywhere. The evolution of global education hinges on a multifaceted approach that embraces innovative strategies to enhance learning experiences worldwide. By implementing standardized training programs for teachers, we not only elevate the skill sets of educators but also cultivate consistency across diverse educational landscapes.

Furthermore, the rise of digital platforms serves as a powerful tool to transcend geographical limitations, ensuring that quality education is accessible regardless of location. These collective efforts—uniting educators, institutions, and communities—are instrumental in bridging existing gaps and enriching educational practices on a global scale. As we continue to explore and refine these strategies, the potential for a more equitable and interconnected educational future becomes increasingly attainable. As we navigate the evolving landscape of education, digital platforms emerge as powerful tools that not only ensure consistency across various learning environments but also bridge geographical divides, making quality education accessible to all. These platforms foster collaboration among educators, institutions, and communities worldwide, enriching the educational experience through shared resources and diverse perspectives.

By prioritizing equity and interconnectedness, digital technologies are paving the way for a more inclusive future where every learner has the opportunity to thrive, regardless of their background or location. Embracing these innovations is essential for building a global educational framework that can adapt to the needs of an ever-changing world. However, significant gaps persist, such as long-term impact assessments of digital transformations on academic outcomes and administrative efficiency, little research addressing the cultural integration of IT solutions within the Islamic boarding school ethos, and digital inequality stemming from infrastructure constraints and disparate staff training. Future research should pursue action research designs that

evaluate IT interventions longitudinally, interdisciplinary collaboration between IT specialists, educational psychologists, and Islamic studies scholars, and partnerships with policymakers and funding agencies to develop scalable infrastructure and targeted capacity-building programs.

Focusing on IT solutions can improve academic results, but it's just as important to use traditional teaching methods that fit with the Islamic boarding school's cultural values. Moreover, addressing digital inequality may require a more grassroots approach, emphasizing community engagement and local resources rather than solely relying on external partnerships and funding. The journey toward addressing digital inequality in Islamic education demands a multifaceted strategy that integrates the expertise of IT specialists, educational psychologists, and scholars in Islamic studies. By forging strong partnerships with policymakers and funding agencies, educational institutions can create scalable infrastructures and capacity-building programs tailored to their unique needs. While embracing technological advancements is essential, it is equally important to prioritize traditional teaching methods and utilize local resources to preserve cultural integrity and accessibility.

Ultimately, a grassroots approach will empower communities to take ownership of their educational initiatives, ensuring that digital tools enhance rather than hinder the pursuit of knowledge in Islamic education. Through these collaborative efforts, we can pave the way for a more equitable future where every learner has the opportunity to thrive in a digitally connected world. The landscape of Islamic education is shaped by a commitment to traditional teaching methods that not only preserve cultural integrity but also enhance accessibility for diverse learners. By advocating for a grassroots approach, communities are empowered to take ownership of their educational practices, fostering a sense of belonging and relevance in the learning process. Furthermore, the integration of digital tools serves to expand horizons and facilitate knowledge acquisition in innovative ways. Together, these elements create a holistic framework that aspires to build an equitable future for all learners in an increasingly interconnected world, ensuring that the rich legacy of Islamic education continues to thrive while adapting to contemporary challenges.

CONCLUSION AND IMPLICATION

The bibliometric and systematic literature review of administrative IT implementations in Islamic boarding schools from 1997–2025 reveals a rapidly maturing research field characterized by a 12.92% annual growth rate and a young average document age of 3.54 years. Early studies centered on user acceptance constructs—particularly the Technology Acceptance Model—while recent work has expanded into advanced digital transformation strategies, AI-enabled solutions, and comprehensive governance frameworks. Despite this growth, persistent gaps remain in long-term impact assessments, cultural integration of IT solutions, digital inequality, and standardized training for stakeholders. A grassroots approach that empowers local communities to lead their own digital initiatives is essential to ensure that technology enhances rather than hinders educational objectives, preserves cultural integrity, and promotes equitable access to quality learning across diverse contexts.

The findings carry practical and policy implications, including community-driven implementation, capacity building and training, infrastructure and digital equity, longitudinal and action research, and interdisciplinary and international partnerships. By implementing these recommendations, Islamic boarding schools can leverage administrative information technology to enhance operational management, educational outcomes, and transparency, contributing to a more equitable and culturally attuned educational future.

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