Research Article

Knowledge Development Through Information Technology in Salaf *Pesantren*

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Article Info	Abstract
 	As major institutions, Pesantren Sidogiri and Pesantren Langitan have long been developing information technology (IT) within their *pesantren* environments. At Pondok Pesantren Sidogiri in Pasuruan, the Agency for System and Information Technology Development (BPSTI) was established in 2013 to manage all information system needs (software) and oversee website services (Sidogiri.net) as well as pesantren administration. Meanwhile, at Pondok Pesantren Langitan in Tuban, a similar initiative led to the launch of the Majalahlangitan.com website in 2013. Over time, Langitan formed the Media Dakwah Langitan, an umbrella organization managing Majalah Langitan (print), Langitan TV (YouTube channel), radio streaming, and various social media platforms. This study examined the role of IT in the development of Islamic scholarship at these two *pesantren* through a qualitative study approach, presenting findings in a narrative-descriptive format. Using a multisite study method, it focuses on two renowned *pesantren* in Java. The results highlight that IT plays a crucial role in advancing the academic aspects of both *pesantren*. Generally, its implementation falls into three main categories: *pesantren* governance, dissemination of Islamic knowledge, and support for educational references.

To Cite this article:

INTRODUCTION

Ghufron (2018: 6) stated that the rapid advancement of digital technology and the internet, as part of the 4.0 Revolution, has had a significant impact on the field of education. Ja'far (2019: 17) emphasized that digital literacy has become essential, requiring individuals to utilize digital technology to expand their knowledge. Similarly, Suharto (2014: 55) highlighted how the shift from conventional face-to-face learning to virtual platforms (such as email, blogs, social media, and video-sharing platforms) has transformed educational models.

Zulhimma (2013: 163) observed that technological advancements have also influenced religious practices. The unrestricted flow of information allows individuals to access Islamic teachings and fatwas on religious matters instantly via their gadgets, without physically attending religious gatherings. Qudsy dan Muzakky (2021: 15) reported that, according to Tekno Kompas, in 2019, at least 171 million internet users in Indonesia accessed online religious studies through various social media platforms. This trend has been recognized by traditional Islamic boarding schools (*pesantren salaf*) as both an opportunity and a challenge for expanding their educational outreach. However, much of the Islamic literature available online is dominated by certain groups, such as Wahhabism, often presented in simplified and popular formats.

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Lidwina (2020) explained that the integration of information technology in *pesantren* became inevitable during the COVID-19 pandemic. When the Indonesian government imposed large-scale social restrictions (PSBB) in March 2020, nearly 26,000 *pesantren* across the country were forced to send their *santri* home and restrict entry. As a result, traditional Islamic studies (*pengajian kitab kuning*) were temporarily halted. In response, many *pesantren* began offering online religious studies through live-streamed sessions on social media. This shift opened Islamic education to a global audience. El-Saha (2021: 52) noted that, during Ramadan 1441 H (2020), online religious studies gained higher viewership ratings than traditional Ramadan religious programs led by celebrity preachers.

Alongside the widespread enthusiasm for online religious studies, there is growing concern that virtual learning may gradually replace traditional *pengajian kitab kuning* (classical Islamic studies) conducted face-to-face. Putri (2018: 12) argued that, given the convenience and accessibility of online religious learning, many individuals are more inclined to study from home rather than attend *pesantren* in person. However, online sessions (typically conducted via live streaming on social media) eliminate direct interaction between *kiai* (Islamic scholars) and *santri*, reducing the learning process to a mere knowledge transmission tool rather than a dynamic and interactive educational experience. Dhofier (1981: 52) highlighted this as a major concern, as one of the hallmarks of *pesantren* education is not only preserving classical traditions but also allowing improvisation and exploration in learning.

Helland (2005) further emphasized the loss of *barakah* (spiritual blessings) in online learning, as one of its key elements—the physical interaction between kiai and santri—is removed. If such a shift occurs, it would be deeply regrettable. Madjid (1997: 13) stated that *pesantren*, besides being one of Indonesia's indigenous educational institutions, also serves as the guardian of Islamic scholarly traditions, which have been preserved since the earliest generations of Muslims.

The integration of information technology in Islamic education, particularly within *pesantren*, presents a double-edged sword, offering both benefits and drawbacks. This study aimed to examine the effectiveness and impact of digital platforms as a medium for expanding Islamic scholarship in traditional *pesantren* (*pesantren salaf*). As a case study, this study focused on two of Indonesia's most renowned *pesantren*—Langitan and Sidogiri. These institutions have long been recognized for their commitment to preserving traditional Islamic scholarship, while also actively engaging in digital literacy efforts through various online platforms and social media channels.

The Development Agency for Information Systems and Technology at Pondok Pesantren Sidogiri Pasuruan (2022) reported that since 2013, the institution has established a dedicated body responsible for developing information systems (software) and overseeing website services (Sidogiri.net) and *pesantren* administration.

Similarly, MajalahLangitan.com (2022) stated that Pondok Pesantren Langitan Tuban launched its official website (MajalahLangitan.com) in 2013 to accommodate similar technological needs. Over time, this initiative expanded into a parent media organization, Media Dakwah Langitan, which manages Majalah Langitan (print magazine), Langitan TV (YouTube channel), Radio Streaming, and various social media platforms. These developments highlight a key observation: both Sidogiri and Langitan *pesantren* remain firmly committed to preserving the traditional salaf educational system while actively engaging with modern technology. This balanced approach demonstrates their adaptability in leveraging digital platforms for education, administration, and *dakwah*, ensuring that Islamic scholarship remains accessible in the digital era.

LITERATURE REVIEW

Information Technology in *Pesantren*

Information technology refers to computers and communication networks that facilitate the processing, transmission, and storage of data. Yusril (2014), citing William and Sawyer, defined it as a variant of technology that connects computers via high-speed networks, enabling the transfer of data, voice, and video.

Wardiana (2002) highlighted that technological advancements have unintentionally reshaped human lifestyles, leading to a digital transformation known as e-life, which is marked by the rise of e-commerce, e-government, e-education, e-library, e-journal, e-medicine, and other digital services.

Nurcholis Madjid stated that pesantren, historically, is an institution closely associated with Islamic valuesn. Shiddiq (2015) noted that, as a result, the tradition of knowledge in pesantren encompasses various

aspects of Islamic law. Specifically, he identified four fields of study: fiqh, tasawuf, tauhid, and nahwu-sharaf (Arabic grammar). These fields are studied through texts that are commonly referred to as *kitab kuning* (classical Islamic books).

Kitab kuning is a term that has become deeply associated with the scholarly identity of *pesantren*. It is even said that an institution cannot be considered a *pesantren* unless it teaches *kitab kuning* or incorporates it as part of its curriculum. The term *kitab kuning* refers to religious guidebooks written in Arabic script, authored by Muslim scholars from the Middle East. Azyumardi (1999) noted that over time, *kitab kuning* was also written by Nusantara scholars in local languages, though still using Arabic script, which became known as *huruf pegon*. Van Bruenessen (1999) stated that *kitab kuning* is also referred to as classical or ancient texts, as most were written by scholars between the tenth and fifteenth centuries. Additionally, they are sometimes called *kitab gundul* (bare texts) because they are typically written without diacritical marks or punctuation, making their study highly dependent on the presence of a kiai who reads and explains each word to the *santri*.

Steenbrink (1994) noted that *kitab kuning* (classical Islamic texts) began spreading in Nusantara during the 17th century, introduced by Indonesian students who studied in Haramain (Mecca and Medina). Over time, many of these scholars authored their own works, using the classical texts they had brought as primary references.

The study of *kitab kuning* in traditional *pesantren* (*pesantren salaf*) is conducted through sorogan and bandongan methods, both of which Van Bruinessen describes as integral to the rich intellectual culture of Indonesia. *Sorogan* is a traditional *pesantren* learning method that emphasizes an individualized approach for each *santri*. In this method, the *kiai* or teacher serves as a mentor, providing corrections and feedback on the student's reading and comprehension of *kitab kuning*. Kamal (2020) explained that, in contrast, the *bandongan* method follows a teacher-centered approach, where the *kiai* serves as the central figure of learning. In this approach, *santri* simply listen and take notes on the *kiai*'s explanation.

In addition to the study of *kitab kuning*, which serves as the primary identity of *pesantren salaf*, these institutions have also improvised knowledge channels based on information technology in various forms. For instance, contemporary Islamic studies are conducted through *bahtsul masail* or *majmaul buhus* online discussions; online-based religious consultation services are provided; and digital d*a'wah* initiatives are developed. Arif (2011) stated that etymologically, salaf refers to the era of Muslims who lived during the first to third centuries of the Hijri calendar, including companions of the Prophet, *tabi'in* and *tabiut tabi'in*. More specifically, the term refers to individuals whose righteousness, faith, and steadfastness in emulating the characteristics and behavior of Prophet Muhammad have been widely acknowledged.

The Indonesian Ministry of Religious Affairs—Directorate General of Islamic Institutional Affairs (2003) stated that, differing from the previous definition, in this study, the term salaf refers to the typology of *pesantren* as classified by the Ministry of Religious Affairs of the Republic of Indonesia. *Pesantren* are categorized into three types: *salaf*, *khalaf*, and a hybrid model that combines both *salaf* and *khalaf* traditions. Furthermore, *pesantren salaf* are defined as educational institutions that provide traditional Islamic education while adhering to classical texts that have been recognized as orthodox (*mu'tabarah*).

METHOD

Based on the study background, this study was conducted using a qualitative approach and belonged to the category of descriptive study. Data were collected through documentation, direct observation, and interviews with key informants. Once the data inventory was completed, the analysis followed Miles and Huberman's model, which consisted of data reduction, data display, and conclusion drawing. To ensure the findings were effectively communicated through research propositions, the analyzed data was generalized through specific phenomena. This methodological approach helped in providing a structured understanding of the role of information technology in the development of Islamic knowledge within Pesantren Sidogiri and Pesantren Langitan.

RESULTS AND DISCUSSION

Pondok Pesantren Sidogiri in Pasuruan

The official website of Pondok Pesantren Sidogiri (2022) stated that the *pesantren* is located at PO BOX 22, Sidogiri Village, Kraton Sub-District, Pasuruan, East Java. The location was chosen after thorough observation and careful consideration by the *pesantren*'s founder, Sayid Sulaiman Basyaiban. Although the land

was once an untouched and mystical wilderness, Sayid Sulaiman perceived it as a place filled with great goodness and blessings, making it highly suitable for establishing a *santri* training center.

Sayid Sulaiman originated from West Java and was the son of Sayid Abdurrahman and Syarifah Khodijah. His father was a preacher from Tarim, Hadramaut, while his mother was a descendant of Sunan Gunung Jati through Sultan Hasanuddin.

There are two versions regarding the founding year of Pondok Pesantren Sidogiri. The first version states that it was established in 1718 AD, based on a document issued by Pancawarga (a consultative forum of Sidogiri consisting of five sons of KH. Nawawie bin Noerhasan). This document was signed by KH. Noerhasan Nawawie, KH. Cholil Nawawie, and KA. Sa'doellah Nawawie on October 29, 1963. The second version appears in a decree signed by KA. Sa'doellah Nawawie in 1971 AD, which declared that the year 1971 marked the 226th anniversary of the *pesantren*. Based on this document, M. Aminullah, in an interview (2022), stated that the school was founded in 1745 AD. This second version is now used as the official reference for the anniversary celebration of Pondok Pesantren Sidogiri, held at the end of each academic year.

It is said that Sayid Sulaiman carried out the land clearing to establish the *pesantren* for forty days. During this period, besides cutting down trees and thick undergrowth, he also performed spiritual cleansing to remove disturbances from unseen entities through inner rituals. In this effort, he was assisted by a *santri* from Bawean named Aminullah. This *santri* later became his son-in-law and successor.

KH. Aminullah is estimated to have passed away around the 1800s. According to an oral tradition, he was succeeded by KH. Abu Dzarrin, a *santri* from Magelang, who was said to be a relative of Sayid Sulaiman. KH. Abu Dzarrin was known as a scholar specializing in linguistic sciences and authored several works in the field. One of the manuscripts attributed to him is the *Kitab Sorof Sono*.

After the passing of KH. Abu Dzarrin, the *pesantren* was led by KH. Noerhasan. He was the fourth-generation descendant (*canggah*) of Sayid Sulaiman, with the following lineage: KH. Noerhasan bin KH. Noerkhotim bin KH. Asror bin KH. Abdullah bin Sayid Sulaiman. KH. Noerhasan was known to have studied under Sayid Abu Bakar Syatha, the author of Kitab I'ânat al-Tâlibîn. He was one of the pioneers in developing Pondok Pesantren Sidogiri. He initiated the recitation of *shalawat* after Maghrib, a practice that continues to this day. Additionally, he was the founder of Surau Daerah. According to H. Qusairi Ismail in an interview (2022), the leadership of the *pesantren* was subsequently passed down in the following order: KH. Bahar and KH. Nawawie (both sons of KH. Noerhasan), KH. Abdul Adzim bin Oerip (the first son-in-law of KH. Nawawie), KH. Abdul Djalil bin Fadhil (the second son-in-law of KH. Nawawie and the founder of Madrasah Miftahul Ulum), KH. Cholil Nawawie, KH. Abdul Alim bin Abdul Djalil, and KH. A. Nawawie bin Abdul Djalil.

Pondok Pesantren Langitan in Tuban

Pondok Pesantren Langitan (hereinafter referred to as PP Langitan) was established around the year 1852 AD. No documents have been found that confirm the exact day, month, or date of its founding. PP Langitan was founded by KH. Muhammad Nur, a prominent Islamic scholar from Tuyuhan Village, Rembang, Central Java.

Administratively, PP Langitan is located in Mandungan Hamlet, Widang Village, Widang Sub-District, Tuban Regency. The *pesantren* is situated right on the banks of the Bengawan Solo River, approximately 400 meters south of the Widang District Hall and more than 30 kilometers south of the Tuban Regency Hall. To the north, it borders Babat Village, Babat Sub-District, Lamongan Regency. The location of PP Langitan is considered strategic, as it is situated directly beside the Pantura Highway (Semarang–Surabaya route) and is only about 3 kilometers from Babat Train Station.

The exact time when the school officially adopted the name PP Langitan is also unknown. The word "Langitan" is believed to have originated from the Javanese words *plang* and *wetan*. *Plang* means signboard, while *wetan* means east, referring to a signboard located in the east. KH. Abdullah Munif, one of the caretakers of PP Langitan, explained that in the past, there were two signboards in the area: one near the *pesantren* and another located far to the west of the *pesantren*. There is no clear explanation about these signboards, but it is highly likely that they were directional signs indicating the boundary of Tuban Regency. This assumption is based on the fact that Widang Village is a border area adjacent to Lamongan Regency.

Over time, the phrase "Plang Wetan" was frequently pronounced in daily conversation, gradually evolving into "Plangitan", and eventually becoming "Langitan".

According to www.Langitan.Net (2019), the accuracy of the above story is supported by a stamp bearing the word "Plangitan" in *Pegon* Arabic script, which was found on the last page of the handwritten manuscript *Fathul Mu'in* by KH. Ahmad Sholeh. This manuscript is dated Tuesday, 29 Rabi' al-Thani 1297 Hijri.

Buku Pedoman Santri PP. Langitan (2004) stated that, according to oral tradition, PP Langitan initially started as a small prayer house (*surau*) where KH. Muhammad Nur devoted himself to worship and taught his knowledge to his family and nearby neighbors. Over time, as the number of *santri* grew beyond the capacity of the *surau*, small huts were built to serve as *santri* dormitories. In addition to religious studies, KH. Muhammad Nur also taught kanuragan (mystical martial arts) and self-defense. This was common for *pesantren* at the time, as they not only served as centers for Islamic learning but also functioned as bases of resistance against colonial forces.

The development of PP Langitan over different periods can be categorized into three phases:

1) The Pioneering Phase

This phase began with KH. Muhammad Nur (1852–1870 AD), the founder of the Islamic boarding school. It is referred to as the pioneering phase because, at that time, there were no dedicated *santri* dormitories. The only available facility was a small prayer house (*surau* or *mushala*), where KH. Muhammad Nur performed worship and taught Islamic studies to his family and local residents.

2) The Development Phase

This phase took place under the leadership of KH. Ahmad Sholeh (1870–1902 AD) and KH. Muhammad Khozin (1902–1921 AD). During this period, *santri* dormitories began to be constructed, allowing the school to accommodate *santri* from distant regions in larger numbers. It is believed that during this time, Hadratus Syaikh KH. Hasyim Asy'ari studied at PP Langitan.

3) The Renewal Phase

According to KH. Abdullah Munif Marzuki in an interview, this phase started during the leadership of KH. Abdul Hadi Zahid (1921–1971 AD), KH. Ahmad Marzuqi Zahid (1971–2000 AD), and KH. Abdulloh Faqih (1971–2012 AD). It is called the renewal phase because, during this period, PP Langitan introduced new educational models that had not been implemented before. One significant reform was the introduction of the madrasah system, which had previously been considered unconventional.

The Implementation of Information Technology for Knowledge Development in Salaf *Pesantren*

As one of the oldest *pesantren* in Indonesia, Pondok Pesantren Sidogiri has remained committed to preserving and advancing the scholarly traditions of Salaf scholars since its establishment. Its consistency in this regard is undeniable, considering that the institution has existed since the 18th century. The educational spirit of Pondok Pesantren Sidogiri remains the same as it was hundreds of years ago, despite significant physical transformations. While the *pesantren* has undergone continuous changes and developments, certain principles have been steadfastly maintained over the years. Alil Wafa, a teacher and administrator at PPSP, stated that despite upholding the Salaf traditions, Pesantren Sidogiri has never rejected modernization. In an interview (2022), Alil Wafa remarked (2022)

"Pondok Pesantren Sidogiri, which is committed to preserving Salaf traditions, does not blindly reject technological advancements. Especially considering the increasing need for systems and facilities that can support the ever-growing programs and activities."

According to him, *pondok pesantren salaf* must respond to the demands of the times, particularly concerning advancements in information technology. Today, this has become an inevitable necessity. "*As the saying goes, every era has its people, and every person has their era. We are now in a time where it is no longer possible to ignore this reality,*" he said

In an interview (2022), Sadoellah stated that developing knowledge within *pesantren* is now almost impossible without utilizing information technology. Dwi Sadoellah explained that at Pondok Pesantren Sidogiri, the demand for telecommunication and information facilities, including voice and internet services, is quite high due to the many educational institutions affiliated with the *pesantren*. "*Every year, we send over 600 teachers and preachers to various regions, and they are required to submit monthly reports to us,*" he said.

Pondok Pesantren Sidogiri strives to ensure that its systems operate efficiently, quickly, and accurately, particularly in managing *pesantren* data and handling administrative needs for students, parents, and other related parties.

Apart from bringing benefits, the advancement of information technology also has negative effects that are felt by everyone. However, the implementation of information technology at Pondok Pesantren Sidogiri appears to have been carefully considered, with measured risk management in place. Dwi Sadoellah stated that the *pesantren* does not focus on the negative effects but rather on how to maximize its benefits for the greater good of the *pesantren*.

> "It all goes back to the initial intention. Information technology is merely a tool, and any tool is neutral. It is us, humans, who assign value to it. The key is to instill a proper environment (*bi'ah*) for the *santri*. There must be regulations and responsibility. As long as these two aspects are upheld, inshaAllah, the outcome will be positive."

Ismail in an interview (2022) stated that Pondok Pesantren Sidogiri has already implemented nearly all available forms of information and electronic technology, using them solely for educational development. All these resources are accessible to *santri*, except for mobile phones, whose use remains restricted to teachers and administrators who genuinely require them for communication purposes. Qusairi Ismail explained: "*For santri, only the computers in the laboratory are available. Their focus is not yet on that area. Their primary responsibility is to study and deepen their knowledge by reviewing the literature taught in the pesantren.*"

Achievements in the Implementation of Information Technology for Knowledge Development at Pesantren Sidogiri and Pesantren Langitan

In general, the achievements of information technology implementation for scientific development at Pondok Pesantren Sidogiri in Pasuruan and Pondok Pesantren Langitan in Tuban can be categorized into three areas: *pesantren* governance, dissemination of Islamic information, and reference support for learning.

The implementation of information technology, managed by each *pesantren*'s IT team, has significantly contributed to the smooth operation of learning activities and administration. The development of a *santri* database system has enabled *pesantren* administrators to manage *santri* data more efficiently and accurately. With this system, the administration can map *santri*'s' conditions comprehensively, covering their educational history, health records, achievements, and participation in religious studies at the surau.

These data records are periodically reported to the Pesantren Leadership Council and can also be accessed by *santri*'s parents online through an application. This information plays a crucial role in *santri*'s academic development, as it allows for evaluations that serve as the basis for implementing policies and designing targeted educational programs.

For efficiency and administrative order, both Pesantren Sidogiri and Pesantren Langitan have implemented online *santri* registration. This means that prospective *santri* no longer need to visit the *pesantren* office in person to obtain information about schedules, facilities, and other necessary details. At Pesantren Sidogiri, a special application has even been developed for parents to pay monthly tuition fees (*syahriyah*) and other obligatory contributions. Through this app, they can also monitor their children's attendance and academic progress at the *pesantren*.

Technology has also revolutionized the management of UGT (Urusan Guru Tugas)—a program in which *santri* are assigned to teach in affiliated institutions. Before 2013, managing this program was cumbersome, as each assigned teacher had to submit reports manually via postal mail. At that time, the highest submission rate was only 49%. Now, with digital technology, reports can be submitted online, making the process far more efficient.

In terms of disseminating Islamic information to the public, both *pesantren* have well-managed websites, as well as YouTube channels and social media platforms such as Facebook, Instagram, and TikTok. The media platforms managed by Pesantren Sidogiri include Buletin Sidogiri, Sidogiri.net, and the official Facebook and Instagram accounts of Sidogiri, among others. Meanwhile, Pesantren Langitan operates Majalah Langitan, Langitan.net, Menaralangitan.com, Radio Langitan, Langitan TV, and the official Facebook and Instagram accounts of Menaralangitan. Each account is managed by designated users responsible for regularly updating information. For example, the Langitan.net website has recorded 516,359 visitors to date, with 743,770 page visits. Radio Langitan, which has been broadcasting since 2015, has reached 5,000 downloads. Meanwhile, the Instagram account @menaralangitan has 46.5 thousand subscribers.

Almost all fields of knowledge can be developed using information technology. Through social media, various disciplines taught in *pesantren* can be transformed into valuable content for the wider public. The most tangible contribution of information technology in *pesantren* is the effective dissemination of information, particularly to *santri*'s parents and alumni. Furthermore, these digital platforms serve as educational tools for the broader community, especially through the study of classical Islamic texts (*kitab kuning*) led by scholars and broadcast on YouTube. In terms of *santri*'s academic development, information technology supports the availability of references, particularly for books not found in the *pesantren* library, through the *bahtsul masa'il* forum. Additionally, with web-based library management, *santri* can easily search for and access Islamic books and other literature in the *pesantren*'s collection.

Challenges in Implementing Information Technology in Pesantren

The implementation of information technology for academic development at Pondok Pesantren Sidogiri in Pasuruan and Pondok Pesantren Langitan in Tuban faced several challenges, including human resource readiness, network issues, equipment upgrades, and IT infrastructure limitations. One major challenge is preparing *santri* to serve as users and operators of the available technology. This difficulty arises because formal education in information technology is not included in *pesantren* curricula, as these institutions were not initially designed to produce *santri* with IT expertise. Learning about information technology is not part of the structured curriculum in either *pesantren*, and *santri* typically acquire IT skills through self-learning after joining the IT team. Recruitment for the IT team is primarily based on a *santri*'s willingness to serve and their commitment to learning in this field. Alternatively, some team members are selected from *santri* who already have basic IT knowledge before enrolling in the *pesantren*.

Despite these challenges, the IT team's programs can still be implemented, but a significant issue arises in the form of generational gaps. The regeneration process is not optimal, especially when the IT team consists entirely of active *santri* who may leave the *pesantren* at any time. This rapid turnover disrupts continuity and hinders the smooth transition of responsibilities between generations.

Another major challenge is network stability, particularly at Pesantren Sidogiri in managing the reporting system for the Urusan Guru Tugas (UGT). Since UGT participants are assigned to various institutions, some are located in areas with weak internet access, causing delays in report submissions. Additionally, the large volume of reports sent to the central server requires a strong and stable network to ensure efficient data processing.

At Pesantren Langitan, network stability became a major issue during large virtual events, especially during the pandemic when in-person gatherings were restricted by the government. Events had to be conducted via Zoom, often involving thousands of participants, including those from abroad. The IT team had to ensure a strong internet connection and implement security measures to prevent disruptions from irresponsible parties attempting to interfere with the system.

Meanwhile, both Pesantren Langitan and Sidogiri faced infrastructure limitations, particularly in providing access to digital books and scholarly references. With thousands of *santri* relying on a limited number of computers available in the computer lab and library, long waiting times became inevitable. *Santri* often had to wait for hours just to access digital resources, which was highly inefficient given their already packed schedules.

Solution

To address the issue of regeneration, Pesantren Sidogiri had implemented an unwritten but well-established practice where each departing administrator was responsible for finding and training their replacement before leaving the *pesantren*. This organic system ensures leadership continuity within the organization. Additionally, both Pesantren Sidogiri and Pesantren Langitan conducted open workshops on information technology to identify potential candidates for their IT teams. There were no restrictions on participation, allowing all interested students to apply. From these workshops, administrators could select individuals who demonstrated the capability and willingness to contribute to the *pesantren*'s IT development.

In addition to general workshops, the IT team also conducted regular training sessions tailored to the organization's specific needs. These sessions were led by senior administrators and occasionally featured external experts. At Pesantren Sidogiri, besides hosting workshops, the IT team had developed user manuals for applications used by various departments. This initiative is crucial, as the IT team is responsible for

providing technology solutions across all *pesantren* institutions. The manuals ensure that each operator can efficiently use the applications designed for their respective departments. To address network issues, particularly regarding the *santri* database and the Urusan Guru Tugas (UGT) report submissions, Pesantren Sidogiri has collaborated with a telecommunications provider since 2013. This partnership has significantly improved network stability, at least for the central server at the *pesantren*'s secretariat.

To address network issues at Pesantren Langitan, particularly during large-scale international virtual events, the pesantren collaborated with IT experts from Jakarta. These experts provided backup support, ensuring network security and availability throughout the event. Meanwhile, to overcome infrastructure limitations, both Pesantren Sidogiri and Pesantren Langitan have systematically assessed their IT needs and planned acquisitions in collaboration with various networks, including alumni, to fulfill these requirements. Additionally, they organize various activities to generate operational funds and support the procurement of IT equipment.

CONCLUSION

From the explanation above, several conclusions can be drawn. The implementation of information technology at Pondok Pesantren Sidogiri is managed by BPSTI, which specifically provides software and hardware for all institutions within the *pesantren*. Meanwhile, at Pondok Pesantren Langitan, each institution independently manages its IT needs. Both *pesantren* have integrated various types of information and electronic technology for educational and administrative purposes, with dedicated teams overseeing IT implementation.

In general, the use of information technology in both *pesantren* falls into three categories: *pesantren* governance, dissemination of Islamic knowledge, and learning resources. However, challenges remain, including human resource readiness, network issues, equipment upgrades, and IT infrastructure limitations. To address these, both *pesantren* have implemented structured regeneration programs to ensure continuity in IT management. They have also partnered with external network providers to ensure stable connectivity. Additionally, Pesantren Sidogiri and Pesantren Langitan have assessed their IT needs and sought support from various networks, including alumni, to facilitate procurement and development.

RECOMMENDATION

This study can be further developed for other studies using the same variable, namely Islamic education programs based in mosques. This is because studies on the implementation of such programs still need to be expanded to enhance and strengthen Islamic education for *santri* through teachings delivered within the mosque.

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