Managería: Jurnal Manajemen Pendidikan Islam
2025 Volume 10, Nomor 2, 343-358 | DOI: https://doi.org/10.14421/manageria.2025.102-10

Optimizing Digitalization of Islamic School Administration with Cloud Storage: A Socio-Economic Review in The Perspective of Social Studies Education

Najwa Azka Khairani[1]*, Syamsul Hadi [1]
[1]Tazkia University, Indonesia
**corresponding author*: 2110308017.najwa@student.tazkia.ac.id

ABSTRACT*:*
The digitalization of school administration using cloud storage has emerged as an innovative solution to enhance data management efficiency in Islamic schools. This study aims to analyze the social and economic impacts of digitalized administration while identifying key challenges in its implementation. A mixed methods approach was employed, integrating quantitative surveys and qualitative interviews with school administrators and staff in Islamic schools in Bogor. In this study, ethical aspects were strictly observed. Respondents were explained the purpose of the study and given the option to participate voluntarily. Informed consent was obtained in writing prior to data collection, and data confidentiality was maintained. Findings reveal that most Islamic schools are still transitioning to digital systems, while only a small number have fully implemented digitalization. Google Drive is the preferred platform, highlighting its accessibility and collaboration features. From a social perspective, digitalized administration improves work efficiency, communication, and reduces manual workload. However, challenges such as limited internet access, data security concerns, and lack of staff training remain significant obstacles. Economically, digitalization contributes to operational cost savings, particularly in reducing paper and stationery expenses. However, cost savings are perceived as moderate, suggesting that long-term financial benefits require further optimization. To address these challenges, Islamic schools must invest in internet infrastructure, enhance data security, and allocate budgets for staff training to ensure effective implementation. With the right strategies, cloud-based digital administration holds great potential to improve operational efficiency, management transparency, and educational service quality in Islamic schools.

ARTICLE HISTORY:
Received: 29 Sep 2025
Accepted: 30 Sep 2025
Published: 30 Nov 2025

KEYWORDS*:*
Administration Digitization, Cloud Storage, Islamic Schools, Operational Efficiency, Education Economy, Data Security

P-ISSN : 2502-9223; E-ISSN : 2503-4383

ABSTRAK:

Digitalisasi administrasi sekolah berbasis cloud storage menjadi solusi inovatif dalam meningkatkan efisiensi pengelolaan data di sekolah Islam. Penelitian ini bertujuan untuk menganalisis dampak sosial dan ekonomi digitalisasi administrasi serta mengidentifikasi tantangan dalam implementasinya. Pendekatan mixed methods digunakan dengan metode kuantitatif melalui kuesioner dan kualitatif melalui wawancara mendalam. Dalam penelitian ini, aspek etika diperhatikan secara ketat. Para responden diberikan penjelasan mengenai tujuan penelitian dan diberikan pilihan untuk berpartisipasi secara sukarela. Informed consent diperoleh secara tertulis sebelum pengumpulan data, dan kerahasiaan data dijaga. Hasil penelitian menunjukkan bahwa sebagian besar sekolah Islam masih dalam tahap transisi ke sistem digital, sementara hanya sejumlah kecil yang telah sepenuhnya terdigitalisasi. Google Drive menjadi platform utama yang digunakan, menunjukkan preferensi terhadap sistem yang mudah diakses dan kolaboratif. Dari aspek sosial, digitalisasi administrasi meningkatkan efisiensi kerja staf dan guru, kemudahan komunikasi, serta mengurangi beban kerja manual. Namun, kendala seperti keterbatasan akses internet, masalah keamanan data, dan kurangnya pelatihan staf masih menjadi hambatan utama. Dari perspektif ekonomi, digitalisasi administrasi berkontribusi terhadap penghematan biaya operasional, terutama dalam pengurangan penggunaan kertas dan alat tulis. Namun, penghematan biaya yang dirasakan masih terbatas, menunjukkan bahwa manfaat ekonomi jangka panjang perlu dioptimalkan. Untuk mengatasi tantangan ini, diperlukan peningkatan infrastruktur internet, penguatan keamanan data, dan alokasi anggaran untuk pelatihan sumber daya manusia (SDM) guna memastikan implementasi sistem administrasi digital yang lebih efektif. Dengan strategi yang tepat, digitalisasi administrasi berbasis cloud storage berpotensi meningkatkan efisiensi operasional, transparansi manajemen, dan kualitas layanan pendidikan di sekolah Islam.

Kata kunci: *Digitalisasi Administrasi, Cloud Storage, Sekolah Islam, Efisiensi Operasional, Ekonomi Pendidikan, Keamanan Data*

INTRODUCTION

The development of digital technology has brought major changes in various aspects of life, including in the field of education. One innovation that is increasingly being used in education is cloud storage, an internet-based storage technology that allows users to store, access and manage data virtually without having to use physical storage devices (Lin Na Huang & Liu, 2013; Kun Liu & Dong, 2012) . This technology has been adopted in various sectors, including business, government, and education, due to its ability to provide more flexible, fast, and secure data access (Gajjam & Gunasekhar, 2021). With cloud storage, educational institutions can store administrative documents, academic data, and financial information more efficiently, reduce dependence on physical storage, and improve the effectiveness of information management (Wu, 2020).

According to (Dananier et al., 2024), the Islamic education system in Indonesia can be classified into several main categories. First, there is the pesantren category, which includes educational institutions that organize madrasas or implement a non-tiered learning system. This group includes both traditional and modern pesantren. Second, there is the madrasah category, which consists of both public and private formal education institutions. Finally, there is the Islamic School category, which is a modern Islamic education model that generally develops among urban Muslim communities, with a more contextual approach and integrated with the national education system.

In Islamic educational institutions, administrative management is still one of the major challenges, especially in terms of archiving physical documents, managing student data, and synchronizing academic information. Manual data storage or using local servers often requires a lot of physical space, human resources, and is vulnerable to the risk of document loss or damage (Putra et al., 2021). This causes the administration process to be slow and inefficient, especially if the data must be accessed or updated in a fast time. Therefore, digitizing administration by utilizing cloud storage is an ideal solution to improve the efficiency of document management and accelerate access to information in Islamic educational institutions (Ashraf Ali, 2020; Eri Rustamaji et al., 2020).

To achieve the expected educational goals, Islamic educational institutions need quality resources and optimal utilization. Proper management of resources, be it educators, infrastructure, or technology, can be a determining factor in encouraging the effectiveness of education in each type of institution (Nurhikma, 2019). Cloud storage offers various benefits to educational

institutions, such as flexible data storage, reduced operational costs, and better information security compared to conventional storage methods (Ouda & Yas, 2021). With this technology, schools can manage student data, academic schedules, academic reports, and financial documents more securely and easily accessible anytime and anywhere (Oleksiuk & Oleksiuk, 2021). In addition, cloud technology also provides additional layers of security, such as data encryption, automatic backups, and disaster recovery, which reduce the risk of data loss due to hardware failure or human error (Ning et al., 2022). Thus, the adoption of cloud storage in Islamic school administration systems not only improves work efficiency but also provides protection to the data being managed.

Despite its many advantages, the implementation of cloud storage-based administration digitization in Islamic educational institutions still faces various challenges. One of the main obstacles is the lack of adequate human resource training in operating digital systems. Based on research by (Akim et al., 2024), While awareness of the importance of cloud storage is high among school administrators, their level of digital competency is still low, especially before the COVID-19 pandemic. This suggests that the use of more advanced technologies must be accompanied by continuous training to be implemented optimally. In addition, data security is also a challenge that needs attention. According to (Usman et al., 2024), Islamic educational institutions often manage sensitive data related to students and staff, requiring a strong security system to prevent information leakage and data misuse. Therefore, the selection of cloud storage services that have high security standards is a step that must be considered by Islamic education institutions (Rina & Sugiarto, 2022).

In addition to human resources and data security, another challenge is the suboptimal integration of digital systems. Many schools still use a variety of different platforms, resulting in unsynchronized data and difficulties in coordination between school divisions. According to research (Grepon et al., 2022) developing an integrated school management system based on a centralized database will improve the quality of school services. Other research by (Lestari et al., 2023) at SMK Negeri 1 Tanjung Jabung Timur shows that the use of Google Drive in managing school documents has increased efficiency, reduced the use of physical archives, and saved storage space. This proves that good digital system integration can help schools optimize administrative data management.

In the context of economics in education, the digitalization of cloud storage-based administration has the potential to reduce school operational costs, especially in the aspects of paper use, hardware, and local server maintenance. The use of technology in the education system is believed to improve the efficiency of school resource management and allow for a more optimized budget allocation (Bharathi Murthy et al., 2020). In addition, research by (Ouda & Yas, 2021) shows that the adoption of cloud storage can help educational institutions reduce expenses related to physical storage and data management, so that available funds can be allocated to the development of other educational programs.

Based on the above background, this study aims to fill the gap in research by examining in greater depth the application of cloud storage in Islamic educational institutions. This study also aims to analyse how this technology can be optimized to improve administrative efficiency, taking into account existing challenges such as human resource development, data security, and digital system integration. Thus, this study is expected to provide scientific contributions and practical recommendations to enhance the quality of digital-based administrative management in Islamic educational institutions.

METHODS

This study used a mixed methods descriptive design to examine the socio-economic implications of digitizing Islamic school administration through cloud based systems. The research was conducted in Islamic schools in Bogor, Indonesia, that were adopting cloud storage for administrative activities such as student records, financial management, and reporting. Participants consisted of school principals, administrative staff, teachers, and IT personnel who were directly involved in or affected by the digitalization of administrative processes. Participation was voluntary and based on the participants' experience with cloud based administration.

Data were collected using an online questionnaire and semi-structured interviews. The questionnaire contained Likert scale items that measured perceptions of the usefulness of cloud based administration, changes in efficiency and workload, socio-economic benefits for schools and stakeholders, and challenges related to infrastructure, human resources, and data security. Item validity was tested using item total correlations, and items that did not meet the minimum correlation threshold were removed. Reliability was assessed with Cronbach's Alpha to ensure internal consistency before the

questionnaire was distributed to all respondents. Semi-structured interviews were conducted with selected participants who had key roles and sufficient experience in the digitalization process, in order to deepen and clarify the quantitative findings.

Data collection was carried out in two stages. First, the questionnaire link was distributed via email and commonly used messaging applications, and respondents completed it within a specified time. Second, a subset of respondents who agreed to be contacted further participated in interviews conducted face to face at school or online, depending on availability. Quantitative data were analyzed using descriptive statistics in the form of frequencies, percentages, and mean scores to describe patterns of perception regarding the implementation and impact of cloud based administration. Qualitative interview data were transcribed and analyzed thematically to identify recurring themes related to benefits, socio-economic impacts, and implementation challenges, and these themes were compared with the survey results to obtain a comprehensive interpretation.

Ethical principles were observed throughout the study. All participants received information about the purpose and procedures of the research and the voluntary nature of participation, and gave informed consent before data collection. Anonymity and confidentiality were maintained by using codes in place of names and removing personal identifiers from the dataset. All digital data from questionnaires and interviews were stored in encrypted cloud storage that was accessible only to the research team.

FINDINGS AND DISCUSSION

FINDINGS

This study involved respondents from several Islamic schools in the Bogor area, West Java, consisting of 50% administrative staff, 25% school principals, and 25% other administrative support staff. The respondents were evenly split between men and women (50% each), resulting in a balanced gender distribution. This composition provides a fairly representative picture of stakeholders directly involved in administrative processes and in the use of cloud storage technology in Islamic schools. It also ensures that both managerial and operational perspectives are reflected in the findings.

The data show that most Islamic schools participating in this study have begun to adopt digital administration systems, although the majority are still in

a transition phase from manual to digital systems. A total of 87.5% of respondents reported that their schools are currently transitioning to full digitalization, while 12.5% stated that their schools are already fully digitized; none indicated that their schools still rely solely on manual systems or were unaware of the systems used. Regarding the platforms, Google Drive is the dominant choice, used by 87.5% of respondents for administrative purposes, followed by OneDrive at 12.5%, while Dropbox is not used at all. In addition, 25% of respondents reported the use of a school-based administrative system, indicating that some institutions have started to develop or adopt specialised applications tailored to their administrative needs. These results suggest that digitalization has become an emerging norm, although implementation remains uneven across schools.

In terms of utilisation intensity, 12.5% of respondents use cloud storage daily, 37.5% several times a week, 37.5% several times a month, and 12.5% rarely, with none reporting that they never use it. Perceptions of the social impact of administrative digitalization are generally positive, as can be seen in the following table (Table 1). The mean score for ease of communication and coordination between teachers and administrative staff is 3.75, indicating that most respondents feel that digital systems help facilitate internal communication. Work efficiency of staff and teachers obtained an average score of 4.00, while reduction of manual workload scored 4.13, suggesting that cloud-based administration makes work more effective and reduces time-consuming manual tasks. These findings indicate that digital systems are beginning to support more collaborative and efficient administrative practices in Islamic schools.

Table 1. Social Impact of Administrative Digitalization

Number	Impact	Nilai
1	Ease of Communication and Coordination between Teachers and Administrative Staff	3,75
2	Improved Work Efficiency of Staff and Teachers	4
3	Reduction of Manual Workload	4,13

Despite the positive trends, several obstacles to implementation remain, as can be seen in the following table (Table 2). A total of 37.5% of respondents reported no constraints and stated that the system runs smoothly, but 25% identified limited internet access as a constraint and another 25% highlighted data security issues, indicating concerns about connectivity and protection of sensitive information. In addition, 12.5% of respondents cited a lack of staff training, pointing to gaps in digital competence among administrative personnel. These findings underscore that technical infrastructure, security readiness, and human resource capacity are critical factors that influence the effectiveness of digital administration systems.

Table 2. Obstacles in Implementing the Digital Administration System

Number	Constraints	Length in Percent
1	No constraints, the system runs smoothly	37,5%
2	Lack of Training for Staff	12,5%
3	Limited Internet Access	25%
4	Lack of Support from School	0
5	Data Security Issues	25%

From an economic perspective, the digitalization of administration is perceived to contribute to operational cost reduction, although the impact is not yet maximal. The average score of 4.13 for reduced operational costs, such as paper and stationery use, shows that most respondents agree that digital systems help lower routine expenses. However, when asked about the magnitude of cost savings, 37.5% of respondents assessed the savings as quite large, while 62.5% considered them not very large, and none rated them as very large, indicating that the level of savings achieved is still moderate. Budget allocation for digitalization is also limited: only 25% of respondents stated that their schools have a dedicated budget for training and development of digital administrative technology, 50% reported no such budget, and 25% did not know. Regarding the long-term benefits of investing in administrative digitalization, the mean score of 3.63 suggests that respondents are moderately optimistic but still uncertain about the sustainability of economic gains, reflecting the early stage of digital transformation in these Islamic schools.

DISCUSSION

The results of this study show that Islamic schools in Bogor have generally begun the process of digitizing their administration, although most are still in a transition phase from manual to digital systems. The finding that 87.5% of respondents reported their schools as being in this transition stage indicates an early adoption phase in which the importance of digital transformation is recognized, but systems and infrastructure are not yet fully established. This pattern is consistent with the broader literature on technology adoption in education, which emphasizes that new systems require time, adjustment, and organisational learning before reaching stable implementation. The dominance of Google Drive, used by 87.5% of respondents, reflects a preference for cloud storage platforms that are familiar, easy to operate, and well supported, especially in terms of collaboration features and accessibility (Buyya et al., 2009). At the same time, the very low use of alternative platforms such as OneDrive (12.5%) and Dropbox (0%) suggests limited exposure to or support for other options, indicating a need for broader training and platform literacy among administrative staff.

From a social perspective, administrative digitization in these Islamic schools appears to have generated clear benefits for internal interaction and workflow. The mean score of 3.75 for ease of communication suggests that digital systems help teachers and administrative staff coordinate more effectively, in line with educational sociology perspectives that see technology as a tool for strengthening social interaction and collaborative work in learning communities (Wulandari, 2015). The increase in work efficiency, indicated by an average score of 4.0, shows that digital systems contribute meaningfully to productivity, supporting prior findings that digitized administration accelerates data processing, reduces errors, and improves the accuracy and timeliness of information (E. Rustamaji et al., 2020). The average score of 4.13 for reduced manual workload further confirms that cloud storage can automate routine tasks such as document filing, reporting, and data retrieval, allowing staff to focus more on developmental and strategic activities within the school. These quantitative findings were confirmed by interview data, where respondents described administration as more organised, with centralised and easily accessible data, and highlighted improved transparency in communication between teachers, students, and parents.

Despite these positive outcomes, the study also identifies several important challenges that must be addressed for digitalisation to be fully

effective and sustainable. Limited internet access, reported by 25% of respondents, is a serious obstacle given cloud storage's reliance on stable and sufficient connectivity for uploading, synchronising, and accessing data (Al-zoubi, 2017). Data security concerns, also reported by 25% of respondents, reflect anxiety about the confidentiality of student records, financial documents, and other sensitive information, and are consistent with warnings in the cloud computing literature about the need for robust data protection frameworks (Hashem et al., 2015). Interview findings regarding incomplete or fragmented communication point to issues not only in the technical infrastructure but also in the integration of communication systems and the clarity of digital workflows. These challenges indicate that the success of digital administration depends not only on platform availability, but equally on human readiness, organisational procedures, and clear governance of digital practices (Hashem et al., 2015). Without these supporting elements, digital tools risk being used in a partial and inconsistent way that does not fully realise their potential benefits.

From an economic perspective, the digitization of administration in Islamic schools shows encouraging but still moderate financial benefits. The average score of 4.13 for reduced operational costs, particularly related to paper and stationery use, indicates that most respondents perceive tangible cost savings in daily operations. This supports educational economic theory that digital technology can improve efficiency and help schools allocate resources more effectively by reducing waste and repetitive tasks (Hasna, 2023). However, when asked about the scale of savings, 62.5% of respondents considered the cost reductions to be not very large, and none indicated that the savings were "very large". This discrepancy suggests that while some operational efficiencies are visible, they may be offset by initial investment and ongoing expenses for hardware, software subscriptions, and system maintenance, especially in the early stages of implementation. It also indicates that schools may need a longer time horizon to feel the full economic impact of digitalization, particularly if investments are not accompanied by careful planning and monitoring of cost structures.

Another important economic factor is the absence of structured budgeting for digital administration. Only 25% of respondents reported that their schools have a dedicated budget for training and developing digital administrative technology, while 50% stated that no such budget exists and 25% did not know. This lack of dedicated funding makes it difficult to conduct regular training, update infrastructure, and support system development, thereby

limiting the potential economic and organisational benefits of digitalisation (A. Ali, 2020). The average score of 3.63 for perceived long term benefits shows that respondents are cautiously optimistic, but still unsure about the sustainability of economic gains over time. According to Ali (2020), long term benefits in the adoption of digital technology in education require continuous investment in human resource capacity and supportive budgeting. The present findings suggest that schools will need more systematic financial strategies if they are to move beyond short term efficiencies towards durable economic advantages.

The qualitative data enrich this picture by showing how digitalisation is experienced by staff on a daily basis and by highlighting the centrality of human resource development. Respondents frequently emphasised that human resource training is a key requirement for optimising digital administration, echoing research that positions ongoing training and mentoring as essential to sustaining the benefits of educational technology (A. Ali, 2020). Without adequate training in cloud storage, digital document management, and data security practices, staff may struggle to use systems correctly and consistently, which can lead to inefficiencies and new sources of error rather than improvements. Suggestions from respondents to use a single integrated platform underscore the need for standardisation, so that data are not scattered across multiple applications and administrative processes can be monitored more effectively. From an educational economics perspective, targeted training that enables staff to exploit digital tools fully can also help schools maintain efficiency gains over the long term and ensure that investments in technology translate into genuine productivity improvements (Hasna, 2023). Interview narratives therefore confirm that digitalisation is as much a matter of human and organisational change as it is of technological adoption.

The study also underlines the importance of data security, system integration, and infrastructure as strategic priorities for Islamic schools moving forward. Respondents' concerns about data privacy and the sensitivity of student and financial information highlight the need for encryption, multi factor authentication, and regular backups, which have been widely recommended in the cloud computing literature to mitigate the risk of data breaches and cyberattacks (Hashem et al., 2015). Many schools still rely on multiple, non integrated platforms, leading to unsynchronised data and coordination difficulties; developing a centralised database or school management system that connects administrative, academic, and financial functions could minimise duplication and errors while improving access to information. At the same time,

schools face budget constraints that require careful optimisation, including allocating specific funds for infrastructure, training, and system development, seeking grants or CSR support from technology companies, and exploring collaborations with other institutions to share resources. Improving internet quality through network upgrades, partnerships with service providers, or hybrid solutions that combine cloud storage with local servers is also critical, especially for schools in areas with weak telecommunications infrastructure. Finally, regular evaluation of system performance, user satisfaction, and service quality, along with socialisation and education for all stakeholders, will be necessary to ensure that administrative digitisation continues to develop in a way that is efficient, inclusive, and sustainable for Islamic schools.

CONCLUSION

Based on the results of this study, the digitalization of Islamic school administration through cloud storage has strengthened the capacity of schools to manage data more effectively and transparently. Cloud storage has become a flexible, fast and relatively secure solution compared to conventional systems that still rely on paper based documents and scattered local files. In general, respondents perceived that digital administration supports better decision making and improves the quality of educational services in Islamic schools.

The findings also show that the use of cloud storage increases work efficiency by simplifying data access, reducing duplication of tasks and facilitating coordination between principals, administrative staff, teachers and IT personnel. From an economic perspective, digitalization helps schools optimize operational costs, allocate budgets more strategically and open up opportunities for collaboration with external partners. At the same time, the study identifies important challenges, especially uneven internet infrastructure, limited digital skills among staff and teachers, and concerns about data privacy and security.

These benefits and challenges have direct implications for the development of Islamic education. To ensure that digital transformation runs effectively, schools need to strengthen human resource capacity through continuous training, improve infrastructure and internet connectivity, and develop clear policies and procedures for data management and security. The use of affordable or subsidized educational platforms, as well as the integration

of administrative and academic systems, will further support the sustainability of digitalization programs.

In conclusion, cloud storage based administration has significant potential to build an education ecosystem that is more efficient, accountable and inclusive in Islamic schools. If supported by adequate infrastructure, competent human resources and strong security governance, digital administration will not only simplify school management but also prepare Islamic education institutions to face the growing demands of the digital era.

REFERENCES

Akim, U. A., Rosli, M. S., & Saleh, N. S. (2024). Toward Digital School: The Level of Usage, Competency and Awareness for Digital Storage Among School Administrators Pre to the Covid-19 Era. *Journal of Advanced Research in Applied Sciences and Engineering Technology*, *34*(1), 249–256. https://doi.org/10.37934/ARASET.34.1.249256

Ali, Ashraf. (2020). Cloud computing adoption at higher educational institutions in the KSA for Sustainable Development. *International Journal of Advanced Computer Science and Applications*, *11*(3), 413–419. https://doi.org/10.14569/ijacsa.2020.0110352

Ali, A. (2020). Cloud computing adoption at higher educational institutions in the KSA for Sustainable Development. *International Journal of Advanced Computer Science and Applications*, *11*(3), 413–419. https://doi.org/10.14569/ijacsa.2020.0110352

Al-zoubi, A. M. (2017). The Effect of Cloud Computing on Elements of Accounting Information System. *Global Journal of Management and Business Research: D Accounting and Auditing*, *17*(3), 9.

Bharathi Murthy, C. H. V. N. U., Shri, M. L., Kadry, S., & Lim, S. (2020). Blockchain based cloud computing: Architecture and research challenges. *IEEE Access*, *8*, 205190–205205. https://doi.org/10.1109/ACCESS.2020.3036812

Buyya, R., Yeo, C. S., Venugopal, S., Broberg, J., & Brandic, I. (2009). Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility. *Future Generation Computer Systems*, *25*(6), 599–616. https://doi.org/10.1016/j.future.2008.12.001

Dananier, N., Hadi, S., & Dwisatria, R. (2024). A Review of the Research in Islamic Education in Indonesia Through the Vosviewer Application. *International …*, *3*(1), 445–457. https://doi.org/10.55299/ijec.v3i1.825

Gajjam, Mr. N. S., & Gunasekhar, Dr. T. (2021). WITHDRAWN: Key challenges and research direction in cloud storage. *Materials Today: Proceedings*, (xxxx). https://doi.org/10.1016/j.matpr.2021.01.609

Grepon, B., T.Baran, N., Migan Vincent C. Gumonan, K., Lester M. Martinez, A., & Liel E. Lacsa, M. (2022). Designing and Implementing e-School Systems: An Information Systems Approach to School Management of a Community College in Northern Mindanao, Philippines. *International Journal of Computing Sciences Research*, *6*, 792–808. https://doi.org/10.25147/ijcsr.2017.001.1.74

Hashem, I. A. T., Yaqoob, I., Anuar, N. B., Mokhtar, S., Gani, A., & Khan, S. U. (2015). The rise of "big data" on cloud computing: Review and open research issues. *Information Systems*, *47*, 98–115. https://doi.org/10.1016/j.is.2014.07.006

Hasna, M. (2023). *Digitalisasi Pengelolaan Sekolah Dasar Negeri Kota Banjarmasin: Tinjauan Analisis SWOT Dalam Strategi Pengembangan Sekolah Digital*.

Huang, L. N., & Liu, F. H. (2013). Data storage technology and its development based on cloud computing. *Advanced Materials Research*, *756–759*, 1275–1279. https://doi.org/10.4028/www.scientific.net/AMR.756-759.1275

Huang, Lin Na, & Liu, F. H. (2013). Data storage technology and its development based on cloud computing. *Advanced Materials Research*, *756–759*(Iccia), 1275–1279. https://doi.org/10.4028/www.scientific.net/AMR.756-759.1275

Lestari, A., Idrus, A., Setiyadi, B., Pratama, L., & Handoko, Y. (2023). Pelatihan Pengelolaan Administrasi Sekolah Berbasis Teknologi Cloud Storage Google Drive di Smk Negeri 1 Tanjung Jabung Timur. *BERNAS: Jurnal Pengabdian Kepada Masyarakat*, *4*(4), 3012–3017.

Liu, K., & Dong, L. J. (2012). Research on cloud data storage technology and its architecture implementation. *Procedia Engineering*, *29*, 133–137. https://doi.org/10.1016/j.proeng.2011.12.682

Liu, Kun, & Dong, L. J. (2012). Research on cloud data storage technology and its architecture implementation. *Procedia Engineering*, *29*, 133–137. https://doi.org/10.1016/j.proeng.2011.12.682

Ning, J., Huang, X., Susilo, W., Liang, K., Liu, X., & Zhang, Y. (2022). Dual Access Control for Cloud-Based Data Storage and Sharing. *IEEE Transactions on Dependable and Secure Computing*, *19*(2), 1036–1048. https://doi.org/10.1109/TDSC.2020.3011525

Nurhikma, A. P. (2019). Strategi Kepala Sekolah Dalam Meningkatkan Kompetensi Profesional Guru. *Manajer Pendidikan: Jurnal Ilmiah Manajemen Pendidikan Program Pascasarjana*, *13*(2), 203–206. https://doi.org/10.33369/mapen.v13i2.9678

Oleksiuk, V., & Oleksiuk, O. (2021). The practice of developing the academic cloud using the Proxmox VE platform. *Educational Technology Quarterly*, *2021*(4), 605–616. https://doi.org/10.55056/etq.36

Ouda, G. K., & Yas, Q. M. (2021). Design of Cloud Computing for Educational Centers Using Private Cloud Computing: A Case Study. *Journal of Physics: Conference Series*, *1804*(1). https://doi.org/10.1088/1742-6596/1804/1/012119

Putra, M. R. E., Marianita, M., & Prananosa, A. G. (2021). Information Management Database System Managerial Supervision of School Supervisors. *Jurnal Iqra' : Kajian Ilmu Pendidikan*, *6*(1), 154–163. https://doi.org/10.25217/ji.v6i1.1264

Rina, L., & Sugiarto, A. (2022). Assistance in management of network-based school administration e-archives (cloud). *Abdimas: Jurnal Pengabdian Masyarakat Universitas Merdeka Malang*, *7*(3), 487–497. https://doi.org/10.26905/abdimas.v7i3.7340

Rustamaji, E., Adhiazni, V., Helfira, F., Dian, A., Qomariah, T. J., & Setiadi, F. (2020). Evaluation of the Use of Cloud Storage on Academic Website Using SWOT Analysis and Balanced Score Card. *Advances in Social Science, Education and Humanities Research*, *408*, 110–116. https://doi.org/10.2991/assehr.k.200220.020

Rustamaji, Eri, Adhiazni, V., Helfira, F., Dian, A., Qomariah, T. J., Setiadi, F., Zaenal, S., & Nurbojatmiko. (2020). *Evaluation of the Use of Cloud Storage on Academic Website Using SWOT Analysis and Balanced Score Card*. *408*(Iconist 2019), 110–116. https://doi.org/10.2991/assehr.k.200220.020

Usman, H., Sahraini, S., & Yusuf, M. (2024). Towards Industry 4.0: Innovation of Digital-Based Academic Administration System in Islamic Religious Universities. *AL-ISHLAH: Jurnal Pendidikan*, *16*(1), 179–193. https://doi.org/10.35445/alishlah.v16i1.4168

Wu, S. (2020). *Analysis of Big Data Cloud Storage Technology Based on Information Fusion Technology*. (Iccia), 295–298. https://doi.org/10.23977/iccia2020050

Wulandari, S. (2015). Teori Belajar Konstruktivis Piaget Dan Vygotsky. *Indonesian Digital Journal of Mathematics and Education*, *2*, 191–198.