



## Enhancing Accessibility and Inclusivity of Digital-Based Hajj-Umrah Services for Muhammadiyah KBIHU Hajj-Umrah Guides in Semarang City

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### ABSTRACT

*This community service program aims to enhance the competencies of Hajj-Umrah instructors through the utilization of digital service solutions that improve accessibility and effectiveness of guidance. The program was implemented using the Kurt Lewin Classroom Action Research (CAR) model, consisting of planning, action, observation, and reflection stages, and involved 125 instructors and participants from KBIHU Muhammadiyah Kota Semarang. The evaluation results indicate consistent improvement in participants' abilities. Initial observations showed a comprehension level of 56%, which increased to 76% after the first action using conventional learning. In the final post-test following digital service-based instruction, participants' understanding further improved to 86%. These findings demonstrate that digital service effectively strengthens learning through more accessible and interactive material delivery. Overall, the program confirms that integrating digital technology into Hajj-Umrah guidance enhances instructor competence and supports KBIHU's transformation toward more adaptive and inclusive service delivery.*

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## A. INTRODUCTION

The organization of Hajj and Umrah pilgrimages is one of the most strategic religious services for Muslims, as it is closely related to the fulfillment of the pillars of Islam (Bashir, 2024). Following the COVID-19 pandemic, the Hajj and Umrah sector has experienced significant changes, particularly in terms of policy adjustments, health protocol adaptations, and the increasing demand for service innovation (Basahel et al., 2021). These conditions require all stakeholders, including Kelompok Bimbingan Ibadah Haji dan Umrah (KBIHU), to develop adaptive capacities in digital administration, quota system management, and technology-based service mechanisms (Mashohih & Rozaq, 2026).

From the perspective of service innovation theory, organizations are required to continuously adapt their services to environmental changes and evolving user expectations (Dayan et al., 2025). Service innovation emphasizes the importance of organizational flexibility, technological integration, and user-oriented approaches in improving service effectiveness and quality. In the context of Hajj and Umrah services, innovation is reflected



through the implementation of digital registration systems, online guidance services, and technology-based communication to facilitate pilgrims in accessing information and administrative services (Ibad, 2026).

In practice, the need for inclusive services has become increasingly critical. Many prospective pilgrims, especially the elderly, persons with disabilities, and individuals with low digital literacy, still face difficulties accessing up-to-date information regarding Hajj and Umrah procedures (Hammad & Felemban, 2025). Limited technological understanding and the lack of inclusive communication media further widen the information access gap (Amin et al., 2026). This condition can also be explained through digital transformation theory, which highlights that successful digitalization requires not only technological infrastructure but also accessibility, inclusivity, and user readiness in utilizing digital services effectively (Muhammad et al., 2025). Therefore, inclusive digital-based assistance is essential to ensure equitable access to services for all groups.

The digitalization of public services in the context of Hajj and Umrah has become inevitable. Registration applications, pilgrim health services, official information platforms, and digital reporting systems are crucial tools to enhance communication effectiveness (Dewi & Yusuf, 2026). However, many KBIHU facilitators still lack sufficient skills in utilizing, managing, and developing these digital services, mainly due to limited training opportunities and infrastructure constraints (Abdul Wafi, 2025). Consequently, the transition toward digital-based services requires strengthening facilitators' capacities so they can deliver relevant and accessible manasik (ritual guidance) to all pilgrims (Andini et al., 2024).

The KBIH Muhammadiyah Kota Semarang is one of the key institutions providing Hajj and Umrah guidance to the community. Located in the At-Taqwa Mosque complex in Wonodri and operating under the coordination of Muhammadiyah's regional leadership in Semarang, the institution oversees approximately 50 active facilitators. These facilitators play a central role in assisting pilgrims, from ritual guidance and religious education to administrative support. The organization also manages an official travel unit, PT Surya Barokah Tour & Travel (SUBA), which handles the technical aspects of pilgrim travel. However, administrative and data management within this unit remain largely manual or semi-digital, limiting service optimization.

Field observations conducted on May 25, 2025, indicate several key challenges faced by KBIH Muhammadiyah Kota Semarang. One major issue is limited service accessibility, particularly for vulnerable groups and individuals living far from the KBIH activity center. The absence of an integrated service system results in inefficient communication, guidance, and assistance processes. Additionally, there is no structured digital repository for guidance materials. Manasik materials are often delivered orally or through printed documents without proper digital archiving, making updates difficult and limiting access for both facilitators and pilgrims (Fikria & Rafsanjanie, 2025).

Other challenges relate to service management, which is still largely handled manually. The management of pilgrim data, scheduling of manasik sessions, and coordination of travel logistics have not yet been supported by integrated information systems, increasing the risk of misinformation and reducing operational efficiency (Hafiz et al., 2025). Furthermore, marketing strategies for Hajj and Umrah services still rely heavily on conventional methods such as brochures and mosque announcements. Limited use of digital marketing has hindered broader outreach, particularly among younger generations and potential pilgrims outside Muhammadiyah networks.

These challenges highlight the urgency of a structured and inclusive digital transformation. Strengthening the digital capacity of KBIHU facilitators through digital services is essential not only to improve the effectiveness of manasik delivery but also to



expand service reach, enhance internal management systems, and ensure accurate and accessible information for pilgrims (Arum, 2024; Adhlitama, 2025). From an institutional development perspective, digitalization also supports improved organizational governance, as emphasized in modern religious institution management literature (Gunanto et al., 2024; Danko et al., 2025).

This community engagement initiative is designed to support the achievement of Key Performance Indicators (IKU) of Universitas Muhammadiyah Semarang, particularly IKU 2, IKU 5, and IKU 6, which focus on student involvement, collaboration with external partners, and the application of research and innovation to society. Additionally, the program aligns with the Asta Cita vision and the National Research Master Plan (RIRN), particularly in strengthening engineering products through the development of distributed systems in public services. The development of digital systems within KBIH Muhammadiyah Kota Semarang is expected to foster technological innovation, support digital entrepreneurship, and promote responsible consumption and production practices, especially in the halal service sector related to Hajj and Umrah.

Based on these phenomena, challenges, and partner needs, the UNIMUS community service team proposes a program titled "Enhancing Accessibility and Inclusivity of Digital Service-Based Assistance for Hajj and Umrah Management." This program aims to strengthen the digital capacity of facilitators, provide integrated service and information systems, and improve the quality of services for pilgrims. The expected outputs include scientific publications in nationally accredited journals (Sinta 4), mass media publications, and intellectual property rights (IPR) registration for supporting products, representing a tangible contribution to community empowerment and technological advancement in religious services.

## **B. METHODS**

This community service program was implemented using the Kurt Lewin Action Research Model, which consists of four main stages: planning, action, observation, and reflection. This approach was chosen because it allows continuous evaluation and improvement throughout the implementation process. In addition, the program implementation was supported by the Plan-Do-Check-Act (PDCA) cycle to ensure that each activity could be systematically monitored and improved (Ridwan et al., 2023).

At the planning stage, the team identified the main problems faced by prospective Hajj and Umrah pilgrims, particularly elderly participants, persons with disabilities, and individuals with limited digital literacy in accessing digital-based services and information. Problem identification was conducted through preliminary observation and discussions with KBIHU administrators to understand the challenges related to digital accessibility and inclusive services.

The action stage focused on implementing inclusive digital-based assistance through educational and mentoring activities. Participants were guided in accessing online administrative services, understanding updated Hajj and Umrah procedures, and utilizing digital communication media more effectively. Educational materials were adjusted to participants' needs and levels of digital understanding to ensure better accessibility and participation.

Data collection techniques in this program included observation, interviews, documentation, and participant response questionnaires (Morgan & Harmon, 2001). Observation was conducted during the implementation process to evaluate participant



involvement and identify operational constraints. Interviews with participants and KBIHU administrators were carried out to obtain information regarding the effectiveness of the assistance program. Supporting documents such as activity records and training materials were also collected as additional data sources.

The evaluation instruments used in this study consisted of observation sheets, interview guidelines, and participant response forms. The collected data were analyzed descriptively through data reduction, categorization, interpretation, and conclusion drawing to evaluate the effectiveness of the inclusive digital assistance program. The overall activity cycle is presented in Figure 1 below.

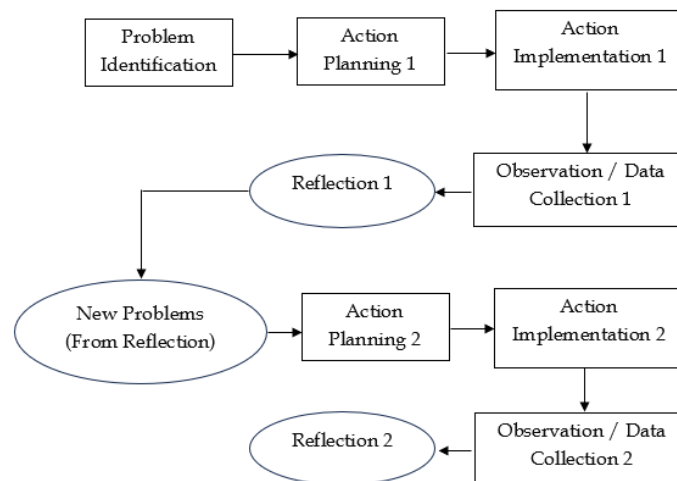


Figure 1.

Service Implementation Cycle

Community

The support approach applied in this program is fully aligned with the results of the problem situation analysis. The supporting methods include:

a. Counseling (Outreach Activities)

Counseling is provided to facilitators and participants of Hajj and Umrah manasik at the KBIHU Muhammadiyah Kota Semarang. This activity aims to enhance participants' understanding of digital-based services and improve their capacity to deliver inclusive guidance.

b. Focus Group Discussion (FGD)

A Focus Group Discussion (FGD) is conducted when the number of participants is limited or relatively large within a workshop setting. This method emphasizes two-way communication, enabling participants and partners to actively engage in discussions, ask questions, and share opinions in a more relaxed and interactive environment.

c. Mentoring (Assistance Program)

Mentoring is carried out as a follow-up activity that includes consultation, intensive communication, motivation, and problem-solving negotiation. At this stage, facilitators establish professional relationships with participants through communicative and supportive interactions. Mentors ensure shared understanding, assist participants in adapting to digital technologies, and build their confidence in delivering manasik guidance directly. The negotiation process helps participants identify practical solutions to field challenges, particularly those related to digital service accessibility and pilgrims' needs.

This community service program is designed as a solution to various challenges faced by Hajj-Umrah facilitators, while also serving as a platform for interaction and brainstorming to

strengthen their competencies. The primary focus is not only on improving skills in delivering manasik guidance but also on optimizing the use of digital platforms as inclusive and accessible service tools for both facilitators and pilgrims.

The data collected in this program include activities from counseling sessions, FGDs, and mentoring processes involving the community service team and facilitators from KBIHU Muhammadiyah Kota Semarang. Data analysis is conducted using a quantitative descriptive approach, involving data sorting, classification, and interpretation to address the research objectives (Dibekulu, 2020). This process is further strengthened by a theory-based interpretative approach, resulting in a comprehensive understanding of participants' competency improvement through a digital service-based approach.

## C. RESULTS AND DISCUSSION

This project is part of a community service program aimed at improving the knowledge and skills of Hajj-Umrah facilitators through a digital service approach. The implementation is designed using descriptive analysis and the Classroom Action Research (CAR) approach, strengthened by the Deming Cycle (Mohammad Ridwan et al., 2023), as described below:

### a. Planning Stage

1. An initial visit was conducted to the LPHU Kota Semarang office on May 25, 2025 (Figure 2). This activity involved meetings with administrators and facilitators to identify needs, accessibility barriers, and digital capacity gaps in the assistance process. It also aimed to gather information on challenges faced by partners in organizing Hajj-Umrah services.



Figure 2. Coordination of Community Service Program Planning with LPHU

Source: Personal documentation, 2025

2. Follow-up coordination was carried out with KBIHU facilitators to finalize the activity plan, determine implementation schedules, and ensure technical readiness for the digital service program to be implemented.



Figure 3. Coordination between LPHU Management and KBIH Team.

Source: Personal documentation, 2025

## **b. Action Implementation Stage**

### **1. Action Implementation I**

The team conducted counseling and initial mentoring sessions for facilitators of KBIHU Muhammadiyah Kota Semarang through face-to-face meetings. At this stage, initial data collection and reflection were also carried out to assess participants' needs and readiness. This activity took place on August 24, 2025, at the Asrama Haji Donohudan (Figure 4).



Figure 4. Hajj and Umrah Guide Training  
Source: Personal documentation, 2025

### **2. Action Implementation II**

Further activities included counseling, Focus Group Discussion (FGD) sessions, and advanced mentoring for facilitators and Hajj-Umrah manasik participants (Figure 5). This stage focused on strengthening facilitators' competencies in delivering manasik materials and utilizing digital services. The activity was held on September 21, 2025, at the Aula AR Fachruddin RS Roemani Muhammadiyah, followed by data collection and reflection on October 5, 2025.



Figure 5. Training for Hajj and Umrah Guidance Guides and Participants  
Source: Personal documentation, 2025

### **3. Evaluation Results**

A total of 125 participants joined this community service program, consisting of prospective Hajj and Umrah pilgrims, KBIHU administrators, elderly participants, and individuals with limited digital literacy. The evaluation results showed that the program improved participants' understanding of digital-based Hajj and Umrah services, particularly in accessing online information, administrative systems, and digital communication platforms. In addition, the inclusive assistance approach



helped participants become more confident in using technology during Hajj and Umrah service activities.

Table 1. Results of the Community Service Program Implementation Evaluation Analysis

Evaluation Stage	Incorrect (n/ %)	Correct (n/ %)
Pre-Test	55 (44%)	70 (56%)
Post-Test 1	30 (24%)	95 (76%)
Post-Test 2	18 (14%)	107 (86%)

Source: Processed data, 2025

The monitoring and evaluation results show a consistent improvement in participants' competencies at each stage:

1. Pre-Test: Only 56% of participants demonstrated adequate understanding.
2. Post-Test 1: After conventional learning (counseling, discussion, guided practice), correct responses increased to 76%.
3. Post-Test 2: After digital service-based learning, correct responses reached 86%, indicating a significant improvement.

The additional 10% increase from Post-Test 1 to Post-Test 2 highlights the effectiveness of digital approaches. Digital services enabled more structured, visual, and accessible learning, allowing participants to revisit materials and better understand service workflows through simulations.

The comparison between conventional and digital approaches clearly demonstrates that digital services provide more effective and sustainable learning outcomes. While conventional methods such as lectures, printed materials, and face-to-face explanations remain valuable for delivering foundational knowledge, they often rely heavily on one-way communication and are limited by time, space, and participants' ability to retain information. In contrast, digital platforms introduce a more dynamic and flexible learning environment, where participants can access materials repeatedly, explore content at their own pace, and engage more actively with the learning process (Tupen, 2025).

Digital platforms significantly enhance accessibility by allowing participants to obtain information anytime and anywhere, reducing dependence on physical presence (Brugliera, 2024). This is particularly beneficial for participants who face geographical, time, or mobility constraints. In addition, digital tools improve comprehension by presenting materials in more engaging formats, such as videos, animations, interactive modules, and visual simulations (Waldi et al., 2025). These formats help simplify complex concepts and make them easier to understand compared to purely textual or verbal explanations.

Another important advantage of digital services is their ability to accommodate diverse learning styles. Participants with visual preferences benefit from diagrams, infographics, and video demonstrations, while auditory learners can gain from recorded explanations and guided instructions. Furthermore, kinesthetic learners are supported through interactive features such as simulations and step-by-step practice modules. This flexibility ensures that the learning experience becomes more inclusive and effective for individuals with different cognitive preferences and levels of digital literacy (Oviedo Ramirez et al., 2025).



In the context of Hajj-Umrah assistance, digital platforms also enable participants to better understand service workflows, administrative procedures, and real-life scenarios through interactive simulations and practical examples (Shah, 2024). For instance, participants can visualize the sequence of rituals, explore digital service systems, and simulate real field conditions, which significantly enhances their readiness and confidence in providing guidance. This experiential learning approach is difficult to achieve through conventional methods alone (Chairawati & Nadia, 2026).

Thus, the implementation of digital services not only improves overall learning effectiveness but also strengthens inclusivity and accessibility for all participants. It creates a more adaptive learning ecosystem where participants are empowered to engage, explore, and practice independently. The significant improvement observed in Post-Test 2 results provides strong empirical evidence that digital technology plays a strategic role in enhancing participants' competencies.

Ultimately, the integration of digital service approaches contributes to the long-term development of facilitators at KBIHU Muhammadiyah Kota Semarang by equipping them with relevant skills that align with the demands of modern Hajj-Umrah services. It also supports the transformation of mentoring practices into a more innovative, efficient, and participant-centered model, ensuring that guidance services remain responsive to the evolving needs of pilgrims in the digital era (Mulyadi, 2026).

#### **D. CONCLUSION**

The mentoring program, implemented through counseling, Focus Group Discussion (FGD), and assistance based on the Classroom Action Research (CAR) approach covering the stages of planning, action, observation, and reflection has demonstrated a significant improvement in participants' competencies. The entire series of activities involved 125 participants, consisting of facilitators and Hajj-Umrah manasik participants from KBIHU Muhammadiyah Kota Semarang.

Monitoring and evaluation results across two measurement stages indicate consistent competency improvement. In the first post-test, following conventional learning approaches, 76% of participants demonstrated a good understanding of mentoring materials. This figure increased to 86% in the second post-test after participants engaged in learning through a digital service-based approach. The 10% improvement between the first and second interventions highlights the effectiveness of digital services in strengthening participants' understanding, expanding access to information, and enhancing overall learning effectiveness.

These findings confirm that integrating digital services into Hajj-Umrah mentoring plays a strategic role in creating a more inclusive, adaptive, and accessible learning process, particularly for participants with diverse backgrounds and varying levels of digital literacy. In addition to serving as an interactive learning medium, digital technology enables participants to better comprehend service workflows, mentoring procedures, and real-world simulations in a more concrete manner.

In conclusion, the use of digital approaches in mentoring not only effectively enhances participants' competencies but also represents an important step toward improving the service quality of KBIHU Muhammadiyah Kota Semarang in addressing the needs of Hajj-Umrah assistance in the modern era. This success also opens opportunities for the development of more comprehensive digital programs in the future.



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## F. REFERENCES

- Abdul Wafi. (2025). Laporan Implementasi Aksi Perubahan MANASIK HAJI DIGITAL: “Ajer (Belajar) Manasik Haji (AMANAHA).” KEMENAG.
- Adhlitama, M. R. (2025). Strategi Inovatif KBIHU Wali Kabupaten Semarang Dalam Pembinaan Haji Untuk Meningkatkan Kualitas Pelayanan Jamaah Kloter 35. *Values: Jurnal Kajian Islam Multidisiplin*, 2(6), 647–654.
- Amin, C., Sigit, A. A., Saputra, A., Samson, M. G. M., & Sattar, F. (2026). Beyond access: Understanding digital platform adoption in Indonesia’s informal economy. *Digital Geography and Society*, 10, 100162. <https://doi.org/https://doi.org/10.1016/j.diggeo.2026.100162>
- Andini, M., Zinaida, R. S., & Caropeboka, R. M. (2024). Upaya Meningkatkan Pelayanan Pelaksanaan Haji Melalui Sosialisasi Aplikasi Haji Pintar di Kantor Kementerian Agama Kabupaten Musi Banyuasin. *Https://Dinastirev.Org/JMPIS*, 5(6), 2712–2726.
- Arum, P. R., Amri, S. ., Ridwan, M. ., Puspitasari, L., Supriyadin, S., & Putro, D. P. . (2024). IMPLEMENTASI SISTEM INFORMASI KEMITRAAN BERBASIS CLOUD UNTUK MENINGKATKAN KETERJANGKAUAN DAN AKSESIBILITAS BAGI UMKM AISYIAH JAWA TENGAH. *Community Development Journal : Jurnal Pengabdian Masyarakat*, 5(5), 10166–10173. <https://doi.org/10.31004/cdj.v5i5.35200>
- Basahel, S., Alsabban, A., & Yamin, M. (2021). Hajj and Umrah Management During COVID-19. *International Journal of Information Technology : An Official Journal of Bharati Vidyapeeth's Institute of Computer Applications and Management*, 13(6), 2491–2495. <https://doi.org/10.1007/s41870-021-00812-w>
- Bashir, H. (2024). Elucidating the role of contributors enriching spiritual and religious inspirations for the Muslims to perform holy umrah pilgrimage to Mecca. *International Journal of Innovation and Business Strategy (IJIBS)*, 19, 36–47.
- Brugliera, P. (2024). The Effectiveness of Digital Learning Platforms in Enhancing Student Engagement and Academic Performance. *Journal of Education, Humanities, and Social Research*, 1, 26–36. <https://doi.org/10.70088/xq3gy756>
- Chairawati, F., & Nadia, R. (2026). Smart Hajj and Umrah : Inovasi Manajemen Digital Untuk Pelayanan Jama’ ah di Era Modern. *Journal Al-Mabrur*, 1(1), 8–18.
- Danko, J. S., Golan, O., & Rost, K. (2025). Legitimizing digital media in religious institutions : the case of Benedictine monasteries. *Information, Communication & Society*, 4462, 1–17. <https://doi.org/10.1080/1369118X.2025.2594586>



- Dayan, M., Husain, Z., Dayan, B., & Di, A. (2025). European Research on Management and Business Economics Roles of service innovation and dynamic internal resources on the organizational innovativeness-competitiveness relationship in Indian IT sector – A moderated mediation model. *European Research on Management and Business Economics*, 31(3), 100290. <https://doi.org/10.1016/j.iedeen.2025.100290>
- Dewi, S., & Yusuf, M. (2026). Tantangan Implementasi E-Service pada Layanan Haji. *Al-Mabrur*, 1(1), 48–55.
- Dibekulu, D. (2020). An Overview of Data Analysis and Interpretations in Research. *International Journal of Academic Research in Education and Review*, 1–27. <https://doi.org/10.14662/IJARER2020.015>
- Fikria, A., & Rafsanjanie, F. H. (2025). Exploring Virtual Reality in Pre-Hajj Training to Deepen Pilgrims' Sense of Spiritual Understanding. *Https://Journal.Walisongo.Ac.Id*, 5(June), 21–37.
- Gunanto, A., Hamzalouh, L. M. O., Sunarmi, S., & Ridwan, M. (2024). Islamic mutual funds: Risk and return management. *Journal of Islamic Accounting and Finance Research*, 6(1), 39–58. <https://dx.doi.org/10.21580/jiafr.2024.6.1.18034>
- Hafiz, A., Nizar, R. A., & Romdaniah, L. (2025). Artificial intelligence in hajj guidance: technology-based learning, adaptive and immersive learning innovation. *Http://Journal.Uinjkt.Ac.Id*, 13(April), 64–94.
- Hammad, M., & Felemban, E. (2025). Smart Mobile Features for Hajj: From Pilgrim Challenges to Feasible Solutions. *IEEE Access, PP*, 1. <https://doi.org/10.1109/ACCESS.2025.3621355>
- Ibad, M. N. (2026). Digital Communication Management in Hajj and Umrah Services: A Systematic Literature Review on the Transformation of Services for Muslim Pilgrims in the Era of Platformization. *Miqat: Journal of Islamic Management*, 1(1), 12–25.
- Mashohih, A. S., & Rozaq, A. (2026). Differentiation Treatment Of KBIHU According To The Law On Hajj And Umrah Management. *Al Manhaj, Jurnal Hukum Dan Pranata Sosial Islam*, 8(1), 135–148. <https://doi.org/10.37680/almanhaj.v8i1.8871>
- Morgan, G., & Harmon, R. (2001). Data Collection Techniques. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40, 973–976. <https://doi.org/10.1097/00004583-200108000-00020>
- Muhammad, S. S., Dey, B. L., Kamal, M. M., Samuel, L., & Alzeiby, E. A. (2025). Digital transformation or digital divide? Smes' use of AI during global crisis. *Technological Forecasting and Social Change*, 217, 124184. <https://doi.org/https://doi.org/10.1016/j.techfore.2025.124184>
- Mulyadi, H. (2026). Transformasi Digital dalam Meningkatkan Kualitas Pelayanan Haji dan Umrah di Indonesia. *Journal Al-Mabrur*, 1(1), 64–71.
- Oviedo Ramirez, D. C., Ramirez Salazar, D. A., Valderrama Muñoz, A. M., Quiroz Betancur, L. M., & Fletscher, L. (2025). Exploring the Relationship Between Learning Styles and Digital Educational Resources in Adaptive Learning Systems. In *Education Sciences* (Vol. 15, Issue 8, p. 1075). <https://doi.org/10.3390/educsci15081075>
- Ridwan, Mohammad., Hardiwinoto, Sukamto, Sriyono, P. R. A. (2023). Peningkatan Kemampuan Analisis Rasio Laporan Keuangan Lembaga Zakat Melalui Penggunaan Islamic Financial Technology (I-Fintech) Bagi Amil Lazismu Di Kota Semarang. *Resona: JurnallIlmiah PengabdiannMasyarakat*, 7(2), 257–267.
- Shah, A. (2024). Enhancing Hajj and Umrah Rituals and Crowd Management Through AI



Technologies: A Comprehensive Survey of Applications and Future Directions. *IEEE Access, PP*, 1. <https://doi.org/10.1109/ACCESS.2024.3487923>

Tupen, M. (2025). Comparative Study Between Digital and Conventional Based Learning on Student Learning Outcomes at STKIP Hermon Timika. *Jurnal Ilmiah Mandala Education*, 11, 468. <https://doi.org/10.58258/jime.v11i2.8618>

Waldi, A., Supendra, D., Putri, K., Anggraeni, A., & Febriani, R. (2025). Application of Digital Teaching Materials Based on Flipped Learning Model in Civics Education in Elementary School. *International Journal on Informatics Visualization*, 9(January).