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Enhancing the Quality of Islamic Outreach Through the Use of Multimedia at Mushalla Al-Mahira, Aie Pacah Village

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A B S T R A C T

The Community Service Activity (PkM) conducted by the Telecommunications Expertise Group (KBK), Department of Electrical Engineering, Faculty of Engineering, Andalas University, was carried out with the aim of supporting the improvement of Islamic outreach quality through the utilization of multimedia technology at Mushalla Al-Mahira, Aie Pacah Subdistrict. The program, held on November 22, 2025, focused on providing and introducing technological devices, particularly audio and multimedia systems, as supporting tools for more effective and engaging religious dissemination. The activity was led by Baharuddin, MT, with support from the Head of the Electrical Engineering Study Program, Dr. Eng. Primas Emiraldi, along with the participation of other lecturers from the Telecommunications Expertise Group. The PkM team provided a sound system and a vacuum cleaner unit as efforts to enhance the mushalla's facilities, while also offering training on how to use the equipment so it can be utilized optimally. The results of the activity indicated that the implementation of multimedia technology improved the quality of religious material delivery, enhanced the comfort of worshippers, and strengthened the capacity of mushalla administrators in managing worship facilities. This program reaffirms the vital role of universities in transferring technology to the community as part of the implementation of the academic tridharma.

INTRODUCTION

The use of information and communication technology in religious activities is becoming increasingly important as society's need for effective media to deliver religious messages continues to grow. Advances in multimedia devices now allow religious messages to be conveyed more clearly, attractively, and systematically. Places of worship such as mushallas and mosques have begun adopting such technology to strengthen the quality of Islamic outreach. However, not all worship administrators possess the understanding and skills needed to operate multimedia equipment optimally. Limited facilities and the lack of technical assistance often become obstacles in improving the quality of religious propagation activities. Therefore, empowerment programs are needed to bridge the technological understanding gap at the community level. Community service activities serve as an appropriate medium to address these needs.

Mushalla Al-Mahira in Aie Pacah Subdistrict is one of the places of worship that hosts regular religious activities attended by various age groups. To carry out its religious programs, this mushalla needs supporting media that can enhance the quality of religious message delivery. Prior to the community service activity, the available audio equipment and multimedia facilities were limited and underutilized. The mushalla administrators also had not yet received technical training on how to operate more modern devices. This situation hindered the optimal delivery of Islamic teachings to the congregation. Recognizing this need, the Telecommunications Expertise Group (KBK) Community Service Team saw the importance of providing technological support. This technological assistance is expected to bring significant improvements to the quality of worship and community development.

The Telecommunications Expertise Group of the Department of Electrical Engineering, Andalas University, possesses competencies in telecommunications and multimedia that are highly relevant for community implementation. Through the PkM program, the team strives to apply academic knowledge and skills in a real-world context to provide solutions to socio-religious issues. The program is designed not

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only to provide equipment but also to ensure that mushalla administrators are able to operate it independently. Technical guidance is an essential component to ensure that the technology provided does not merely become a facility but truly delivers benefits. This activity also serves as a platform for Electrical Engineering lecturers to implement the university's tridharma. In addition, the involvement of multiple lecturers enriches the technical approaches used. Thus, the activity can be conducted comprehensively and sustainably.

The implementation of the activity on November 22, 2025, took place in a supportive environment with active participation from the Mushalla Al-Mahira congregation. The PkM Telecommunications Team, led by Baharuddin, MT, attended along with several other Electrical Engineering lecturers, enabling the activity to run with strong multidisciplinary support. During the activity, the team provided training on how to use a modern sound system to support sermons and religious studies. The training also included explanations on how to maintain the equipment to ensure long service life. The attendees showed great enthusiasm, as the technology offered a new experience in participating in religious activities. In addition to providing education, the team also conducted direct demonstrations to make the material easier to understand. The activity ran smoothly and offered a meaningful learning experience.
Introduction provides adequate background or context (problem and its significance) of the study. The subject should not be written extensively. It is expected that rationale or purpose of the study (gap analysis), the objective in general and specific, and hypothesis (if any) should be expressed clearly. Present a clear "state of the art" of the subject, which discussed literature and theoretical concepts behind it. A concise general background may be included in the article. Present at least 5 (five) recent related works to support the novelty of the research.

In addition to the training, the PkM Team also handed over a set of sound system equipment designed specifically for the needs of the mushalla space. The equipment was selected based on room suitability, as well as the need for clear sound and adequate coverage. The handover of this equipment represents a strategic step in improving the quality of dakwah facilities, which had previously been limited. The team also donated a vacuum cleaner as an effort to enhance the cleanliness and comfort of the mushalla. This cleaning facility greatly assists the administrators in maintaining a comfortable worship environment for the congregation. With the addition of these new facilities, the mushalla now has improved infrastructure in terms of both technology and cleanliness. The equipment handover serves as a tangible form of the university's support for the community.

The application of multimedia technology in dakwah activities has provided positive impacts that can be directly felt by the congregation. Clearer sound quality helps worshippers better understand the sermon material. The visualization of content through multimedia devices can make religious teachings more varied and engaging. This increases the congregation's involvement in each religious activity held. Thus, technology can function as a message amplifier rather than merely a supporting tool. Additionally, the administrators' knowledge of operating the devices has also improved following the technical guidance provided. These outcomes indicate that the PkM activity successfully achieved its initial objectives.

This community service activity not only benefits the mushalla and its congregation but also the university in strengthening its relationship with the community. As a higher education institution, Andalas University can directly observe community needs and actively participate in providing knowledge-based solutions. This program also reinforces the role of lecturers in fulfilling the tridharma through the implementation of appropriate technology. Moreover, direct interaction between academics and the community opens opportunities for further collaborative activities. The team hopes that this activity can serve as a model for similar community service programs in other places of worship. Improving the quality of Islamic outreach through multimedia represents an innovative step aligned with current developments. This effort is expected to continue evolving and bring long-term benefits to society.

Stages of Activities

The stages of activities in this Community Service program were structured to ensure that the objective of enhancing the quality of Islamic outreach through the use of multimedia could be achieved optimally. The first step was conducting an initial observation at Mushalla Al-Mahira to identify the condition of existing facilities, technological needs, and challenges faced by the mushalla administrators in carrying out dakwah activities. This observation included checking audio equipment, the sermon area, and the potential use of visual media in Islamic outreach. The results of the observation served as the basis for drafting the activity plan and selecting the multimedia equipment to be provided. This stage ensured that the solutions prepared were aligned with the actual needs in the field.

The next stage was internal coordination within the Telecommunications Expertise Group (KBK) team to determine the division of tasks for activity implementation. Each participating lecturer had a specific role, such as selecting equipment, preparing training materials, and developing multimedia usage modules. This coordination was essential to ensure the smooth execution of the activity and the effectiveness of material delivery to the Mushalla Al-Mahira congregation. In addition, coordination with the mushalla administrators was carried out to determine the activity schedule, number of participants, and other technical adjustments. The coordination process was conducted communicatively and involved the mushalla management to ensure that the activity ran comfortably and met its objectives.

The following stage was the procurement of multimedia equipment, which in this program consisted of a set of sound system equipment and a vacuum cleaner unit as a supporting facility for maintaining the cleanliness of the mushalla. The sound system was selected based on sound quality, ease of use, and suitability for the size of the worship area. This equipment is expected to enhance sound clarity during

sermons, religious studies, and other Islamic outreach activities. The vacuum cleaner was provided as part of efforts to improve worshippers' comfort through better cleanliness maintenance. Both devices served as essential components in upgrading the mushalla's facilities to better serve the congregation.

The fourth stage was the socialization and training on the use of multimedia equipment for the administrators and congregation of Mushalla Al-Mahira. The training was delivered by lecturers from the Telecommunications Expertise Group who possessed competencies in technology and audio systems. The material covered how to operate the sound system, optimal sound adjustment, equipment maintenance, and the use of multimedia to support dakwah delivery. Participants were given the opportunity to practice using the equipment directly to strengthen their understanding. This method ensured that the equipment not only existed but could also be used correctly and sustainably. be written boldface and italics using upper and lower cases. You must set your second level heading left aligned.

The next stage was the demonstration of multimedia use in Islamic outreach activities. The PkM team presented examples of how audio and visual equipment can be used to support the delivery of sermons or religious teachings. The demonstration was carried out using real-life scenarios similar to typical dakwah activities held in the mushalla. Through this demonstration, the congregation was able to observe how technology helps clarify material delivery and improve their focus. This stage also served as an opportunity for the team to conduct technical evaluations of the equipment's performance. In this way, the effectiveness of the equipment could be assessed before being fully utilized by the mushalla administrators.

The sixth stage involved evaluation and discussions with the mushalla administrators and congregation members who participated in the activity. The evaluation aimed to determine the extent to which the training and equipment provided addressed the administrators' needs in managing dakwah activities. The discussion was conducted openly, allowing participants to express challenges, suggestions, and expectations regarding future use of the technology. The PkM team documented all feedback as material for improving and developing similar programs in the future. This evaluation process was essential to ensure that the impact of the activity was genuinely felt by the beneficiary community.

The final stage was the formal handover of the equipment from the Telecommunications Expertise Group to the Head of Mushalla Al-Mahira, Jaenal, M.Pd. This handover symbolized the beginning of the mushalla's independent use of the multimedia equipment. On this occasion, the mushalla administrators expressed their appreciation for the support provided by the Faculty of Engineering, Andalas University, in enhancing the quality of Islamic outreach in their community. The PkM team hopes that the mushalla will continue to maximize the use of the facilities provided to improve service quality for the congregation. This final stage marked the success of the PkM program as well as the commitment to strengthening the relationship between the university and the community.

Stages of Activity Evaluation

The evaluation stage was carried out to assess the effectiveness of the Community Service program in improving the quality of Islamic outreach through the use of multimedia at Mushalla Al-Mahira. The first evaluation was conducted through direct observation of the mushalla administrators' ability to operate the sound system and multimedia equipment after the training was delivered. This observation aimed to determine the extent of participants' competency improvement and whether the equipment was being used properly during religious activities. The PkM team recorded changes in technical behavior, levels of independence, and audio quality during equipment use. This observational data served as an initial indicator of the program's success.

The next evaluation was conducted through structured interviews with the Head of Mushalla Al-Mahira and several congregants who regularly participated in worship activities. These interviews explored their perceptions regarding changes in sermon delivery quality and comfort during activities after the multimedia equipment was used. The questions addressed sound clarity, smoothness of equipment operation, and the impact on congregants' focus in receiving religious material. The interview results indicated the extent to which technology contributed to enhancing the worship experience. These findings provided important qualitative data for assessing user satisfaction.

The following stage involved assessing the functionality of the devices to ensure that the sound system and vacuum cleaner provided could be used sustainably. The PkM team inspected the technical condition of the equipment after several uses, including sound stability, cable quality, and the condition of supporting components. This technical assessment also provided insight into potential maintenance needs and risks of damage. In addition, the team offered maintenance recommendations to ensure long-term usability of the equipment. This technical evaluation served as a reference for determining the sustainability of the program.

The evaluation stages also included measuring the level of congregation participation during the training and the implementation of multimedia usage. The level of enthusiasm and attendance served as additional indicators of the success of the technology socialization in the context of religious activities. Participation data was recorded to assess whether the program successfully encouraged active community involvement. The higher the participation level, the greater the potential for sustainable technology adoption in the mushalla.

In addition to internal evaluation, the team also conducted a reflection session to assess the alignment between planning and implementation. Each team member provided input on the challenges encountered and the effectiveness of the training delivery methods.

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This reflection aimed to improve the design of future PkM activities, especially similar programs in other places of worship. The reflection results served as important notes for the Telecommunications Expertise Group to enhance the quality of future community service.
The final evaluation stage was the preparation of a comprehensive evaluation report containing all findings from observations, interviews, technical assessments, and reflections. This report was used as an accountability document for the institution and as a reference for future research or community service initiatives. The report was prepared systematically to ensure that all evaluation results could be scientifically justified. This document also serves as evidence that the program has provided a positive impact on the community.

Through this comprehensive series of evaluations, the implemented PkM program was found to successfully improve the ability of the mushalla administrators to utilize multimedia technology for Islamic outreach. The evaluation demonstrated that the use of appropriate equipment can enhance the quality of sermon delivery and increase the comfort of congregants in receiving religious material. These findings reaffirm the importance of technological support in places of worship as part of the digital transformation of religious activities. The evaluation results serve as a foundation for developing broader and more sustainable follow-up programs in the future.

Efforts for Activity Sustainability

The evaluation stage was carried out to assess the effectiveness of the Community Service program in improving the quality of Islamic outreach through the use of multimedia at Mushalla Al-Mahira. The first evaluation was conducted through direct observation of the mushalla administrators' ability to operate the sound system and multimedia equipment after the training was delivered. This observation aimed to determine the extent of participants' competency improvement and whether the equipment was being used properly during religious activities. The PkM team recorded changes in technical behavior, levels of independence, and audio quality during equipment use. This observational data served as an initial indicator of the program's success.

Efforts to ensure the sustainability of the activities are carried out to make sure that the benefits of this Community Service Program can be experienced by Mushalla Al-Mahira in the long term. The first step taken is providing guidelines for the use of multimedia equipment in the form of written documentation and direct explanations to the mushalla administrators. These guidelines contain procedures for operating the sound system, routine maintenance techniques, and steps for handling technical issues so that the equipment can last longer. Next, the PkM team provides ongoing assistance sessions that can be accessed by the mushalla administrators whenever needed. This assistance includes remote technical consultations through online communication as well as limited visits when issues cannot be resolved independently. With this support system in place, the mushalla administrators do not need to worry about managing the multimedia equipment provided.

Sustainability efforts are also carried out through training local technology cadres, by selecting several congregants who have an interest in technology and providing them with additional knowledge about equipment installation and maintenance. These cadres will become internal managers who can help other congregants operate the equipment, thereby minimizing dependence on external parties. This approach also strengthens the community's technological capacity.

In addition, the PkM team encourages the mushalla administrators to develop their own technology-based da'wah facility development plan. This plan includes rearranging the room layout to optimize multimedia usage, planning maintenance budgets, and proposing the procurement of additional equipment in the coming years. This initiative aims to ensure that the mushalla has a long-term vision in managing its technological facilities.

To ensure technical sustainability, the PkM team also provides basic troubleshooting training, including how to detect common malfunctions and simple repair steps that can be done without professional technicians. This knowledge is essential so that multimedia equipment can still be used even when minor technical issues occur. Thus, Islamic da'wah activities can continue without being disrupted by equipment problems.

Another effort involves building continuous communication between the Telecommunications Research Group (KBK Telekomunikasi) and the mushalla administrators as a form of long-term partnership. This communication opens opportunities for future collaborative programs, whether in facility improvement, further training, or the development of technology-based social activities. This partnership ensures that the relationship between the university and the community remains productive.
Finally, the PkM team encourages the mushalla to conduct internal evaluations every few months to assess the effectiveness of the multimedia equipment usage and to review any new needs that may arise. This evaluation will help the mushalla make decisions related to maintenance, repairs, or further facility development. With continuous evaluation, the benefits of the PkM activities can be maintained and enhanced to support higher-quality Islamic outreach within Mushalla Al-Mahira.

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METHOD

The Community Service Activity (PkM) implemented by the Telecommunications Expertise Group (KBK) of the Department of Electrical Engineering, Faculty of Engineering, Andalas University, employed a series of structured methods to ensure the effective integration of multimedia technology into the religious outreach activities at Mushalla Al-Mahira, Aie Pacah Subdistrict. The methods used in this program are outlined as follows:

- **Preliminary Assessment and Coordination**
  The activity began with an initial assessment of the mushalla's needs through direct communication with administrators. This stage aimed to identify specific challenges in Islamic outreach, particularly those related to audio clarity, limited multimedia usage, and facility maintenance.

- **Provision and Preparation of Equipment**
  Based on the assessment outcomes, the PkM team procured and prepared essential multimedia devices, including a sound system and a vacuum cleaner unit. Prior to implementation, all equipment was tested to ensure functionality, safety, and suitability for use in the mushalla's environment.

- **Technical Training and Demonstration**
  The team conducted hands-on training sessions for mushalla administrators and community members. The training covered equipment operation, sound system configuration, routine maintenance procedures, and basic troubleshooting techniques. Demonstrations were delivered using real-use scenarios to enhance participants' understanding and confidence.

- **Simulation of Multimedia-Based Outreach Activities**
  To provide practical experience, the team facilitated a simulated religious lecture session utilizing the newly provided multimedia equipment. This simulation allowed participants to observe improvements in sound clarity, message delivery, and audience engagement.

- **Evaluation and Feedback Collection**
  After the training and simulation stages, an evaluation was carried out through discussions with administrators and worshippers. Feedback was collected regarding device usability, training effectiveness, and perceived benefits to religious activities. This evaluation served as a basis for refining future community service initiatives.

- **Formal Handover of Equipment**
  A ceremonial handover of the multimedia devices was conducted, symbolizing the official transfer of ownership to Mushalla Al-Mahira. This step ensured that the mushalla could independently operate and maintain the equipment for long-term use.

- **Follow-Up Support for Sustainability**
  To support long-term sustainability, the PkM team provided provisions for follow-up assistance, including remote technical support and optional on-site guidance. Administrators were also encouraged to appoint local technology caretakers to manage equipment maintenance and operation.

RESULTS AND DISCUSSION

The implementation of the Community Service Activity conducted by the Telecommunications Expertise Group (KBK) proceeded smoothly and involved active interaction between the implementing team and the Mushalla Al-Mahira community. The activity began with an opening session led by the team leader, Baharuddin, MT, who explained the main objective of the program, namely to enhance the quality of Islamic outreach through the utilization of multimedia equipment. The opening remarks were well received by the mushalla administrators and congregants in attendance, officially marking the start of the series of activities. At this stage, effective communication was established, creating a conducive and enthusiastic atmosphere throughout the event.

Following the opening session, the activity continued with the handover of a set of sound system equipment and a vacuum cleaner unit to the Head of Mushalla Al-Mahira, Jaenal, M.Pd. This handover was not merely ceremonial but also symbolized KBK Telecommunications' commitment to supporting the improvement of religious facilities. The sound system provided was selected based on prior observations, which indicated that the mushalla's existing audio facilities did not adequately support effective delivery of religious lectures. Meanwhile, the vacuum cleaner served as additional support to help maintain cleanliness, ensuring greater comfort for worshippers during religious activities.

The next stage involved technical training on the use of multimedia equipment, facilitated by lecturers from the Telecommunications Expertise Group. The training materials covered device installation, proper audio adjustment, microphone operation techniques, and routine maintenance methods to extend the equipment's lifespan. Both congregants and mushalla administrators participated enthusiastically in

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this session, particularly during the hands-on practice. Participants were given the opportunity to operate the devices directly, enabling them to understand button functions, sound settings, and basic troubleshooting.

Figure 1. The KBK Telecommunications Community Service Team Donating a Unit of Audio System and a Vacuum Cleaner

During the training, the PkM team also provided personal assistance to the mushalla administrators appointed as equipment operators. This approach aimed to increase their confidence in managing multimedia tools without relying on external assistance. The mentoring proved effective, as several participants successfully performed proper sound adjustments after receiving direct guidance from the team. A question-and-answer session was also held, allowing participants to raise difficulties and receive immediate technical solutions.

Beyond the technical aspects, the activity demonstrated increased social interaction between the academic team and the community. The congregants of Mushalla Al-Mahira showed strong enthusiasm, evident from the number of participants present and their active involvement in each session. This sense of togetherness supported the effectiveness of the activity and strengthened the bond between the university and the community. The interactions also provided the team with deeper insight into community needs related to technology that supports religious outreach.

At the conclusion of the activity, the PkM team conducted a closing session that included a brief evaluation of participant understanding and the mushalla's readiness to independently implement multimedia technology. The evaluation results showed that the mushalla administrators had understood how the equipment works and felt more prepared to operate it during future religious programs. Additionally, congregants expressed their appreciation for the provided facilities, recognizing their significant contribution to enhancing the quality of worship and routine religious studies.

Overall, the implementation of the community service activity proceeded effectively and successfully achieved its intended objectives. The program not only provided technological facilities but also enhanced human resource capacity in managing multimedia equipment. Thus, this initiative succeeded in delivering a positive impact on Mushalla Al-Mahira and is expected to serve as an initial step toward the broader application of technology in religious activities within the community.

Write results in logical sequence. Results with important findings should be present first. When presenting results in a table or figure, do not repeat all those contents in the text. Present only the summary of the text. Describe only new and important aspects of the study. Do not repeat all information from results section or any section above. Present limitations of the study. Write the issues that are new or unsolved, for future research. This section consists of the information on What/How the presented data were produced, no raw data should be present in the article. The produced data are presented in tables, or figures with an explanation of what is the result/findings from the work. The section will also need to address connections between findings and basic concepts or hypothesis made earlier. Authors should also express whether any arguments were needed relating to other works from other researchers. Write implications made by the work related to theoretical or applications.

Figure 2. Group photo of the community service team with the congregants of Mushalla Al-Mahira after the handover of the equipment from the KBK Telecommunications PkM program

CONCLUSIONS

The Community Service Program carried out by the Telecommunications Expertise Group (KBK) of the Department of Electrical Engineering, Andalas University, at Mushalla Al-Mahira has provided significant positive impacts on improving the quality of Islamic outreach within the congregation. The utilization of multimedia equipment, particularly the sound system provided, has proven effective in enhancing the clarity and reach of religious material delivery, allowing religious activities to be conducted more effectively and comfortably. The technical training given to the mushalla administrators also successfully improved their understanding and skills in operating and maintaining the equipment, thereby ensuring its sustainable use.

In addition to improvements in technical and operational aspects, this activity also strengthened collaborative relationships between academics and the community as an essential part of implementing the university's tridharma. The active participation of the congregation throughout the activities indicates high enthusiasm for technological innovations that support religious practices. With continuous support through usage guidelines and mentoring from the PkM team, the equipment provided is projected to be utilized optimally in the long term. Overall, this activity demonstrates that the application of multimedia technology in places of worship can be an effective strategy for enhancing the quality of Islamic outreach and strengthening community capacity in managing religious facilities. This program is expected to serve as a model for similar community service initiatives in the future, especially for places of worship that require improved audio-visual facilities to support religious dissemination. If needed, future activities may focus on developing digital religious content so that the benefits of technology can extend not only within the physical space of the mushalla but also across online platforms.

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NOMENCLATURE

Community Empowerment – Efforts to improve community skills and knowledge through training and assistance.
Community Service (PkM) – An academic implementation activity aimed at providing solutions to community needs.

ICT (Information and Communication Technology) – Technology used to manage, convey, and store information through digital media.
Islamic Outreach (Da'wah) – Activities aimed at delivering Islamic teachings to the community.

Media Support – Tools or devices used to enhance the delivery of religious messages, such as audio systems and multimedia equipment.
Mushalla Al-Mahira – The place of worship in Aie Pacah Subdistrict where the community service program was implemented.
Multimedia Devices – Digital tools such as projectors, audio systems, and screens used to support religious activities.

PkM KBK Telekomunikasi – Community service program conducted by the Telecommunications Expertise Group of the Department of Electrical Engineering, Andalas University.
Public Worship Facility – A religious place (mushalla or mosque) used by the community to conduct worship and educational activities.

Religious Activities – Programs conducted in places of worship, including sermons, Islamic studies, and community development activities.
Religious Message Delivery – The process of conveying Islamic teachings clearly, attractively, and effectively through multimedia technology.

Sound System – Audio equipment used to amplify speech or religious lectures.

Technical Training – Guidance provided to enhance the skills and understanding of mushalla administrators in operating multimedia equipment.
Telecommunications Expertise Group (KBK) – A group of lecturers specializing in telecommunications and multimedia technology within the Department of Electrical Engineering.

Technology Adoption – The process of implementing modern multimedia tools in religious facilities to improve teaching quality.
Tridharma of Higher Education – Three primary responsibilities of universities: Education, Research, and Community Service.

AUTHOR BIOGRAPHY

Baharuddin, S.T., M.T.
Baharuddin is a lecturer and researcher with a strong dedication to the field of Electrical Engineering, particularly Telecommunications and Electronics. He was born on June 26, 1969.
His educational background began with completing a Bachelor's degree (S1) in Electrical Engineering at the Faculty of Engineering, Hasanuddin University in 1993. He then pursued a Master's degree (S2) in Multimedia Telecommunications Engineering at the Sepuluh Nopember Institute of Technology (ITS) Surabaya, which he successfully completed in 2005.

Since 1995, he has been actively serving as a faculty member in the Department of Electrical Engineering, Faculty of Engineering, Andalas University. Throughout his career, he has not only contributed as an educator but has also actively conducted research in the fields of Telecommunications and Electronics, providing significant contributions to the development of science and technology.

With his academic background and extensive experience in higher education, he remains committed to supporting scientific advancement, mentoring students, and developing research that aligns with the progress of modern communication technology.

Author's biography must be short and concise (100 words maximum) and a photograph may be included. Height of the photograph cannot be more than 2.5 cm and the width is set accordingly.

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