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THE TRANSFORMATION OF THE KIAI'S SCHOLARLY AUTHORITY IN THE PESANTREN EDUCATIONAL TRADITION IN THE ERA OF ARTIFICIAL INTELLIGENCE

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Abstract

This study examines the transformation of the kiai's scientific authority in Islamic boarding school education in the era of Artificial Intelligence (AI). AI has transformed the production, distribution, and accessibility of knowledge, including Islamic education, enabling students to access religious information independently beyond traditional learning practices based on sanad and talaqqi. This development raises concerns regarding the position and sustainability of the kiai's authority as the holder of scientific legitimacy. This study aims to analyze the transformation of the kiai's scientific authority and its implications for the structure of authority in Islamic boarding school education. It employs a library research method using an Islamic intellectual history approach. Data were collected from books, scholarly articles, and relevant literature on Islamic scientific authority, Islamic boarding school traditions, and AI development. The data were analyzed through content analysis and historical-critical analysis. The findings reveal that AI does not eliminate the kiai's scientific authority but transforms its form and basis of legitimacy. This transformation involves changes in knowledge access, authority functions, and educational relationships. The kiai's authority shifts from being the primary source of knowledge toward verifying, interpreting, and providing moral guidance on digital information. Thus, its sustainability depends on scientific legitimacy, contextual interpretation, and moral guidance in navigating digital knowledge.

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A. INTRODUCTION

The development of digital technology has become one of the most significant technological transformations in the 21st century. (Riza Chakim & Arya bimantara, 2023) The presence of AI is no longer limited to the industrial, economic, or scientific sectors, but has entered almost all spaces of human life, including the world of education according to

Manuel Castells (1996) Through generative technologies such as ChatGPT, Gemini, Claude, and various other AI-based platforms, the process of acquiring knowledge has changed very rapidly, making information that previously could only be obtained through teachers, books, or educational institutions can now be accessed instantly through artificial intelligence systems. This change not only shifts the way of learning but also raises new problems regarding the source of legitimacy of knowledge and scientific authority in the digital era.(Riza Chakim & Arya bimantara, 2023) This phenomenon is important to discuss because AI no longer functions just as a technological tool, but has begun to act as an alternative source of knowledge that can influence the learning patterns of the younger generation.

This transformation has also entered the Islamic educational environment, including pesantren as one of the oldest Islamic educational institutions in Indonesia. In the history of Islamic education, pesantren have an important position as a center for the transmission of Islamic knowledge that maintains the tradition of sanad, talaqqi, and teacher-student relations as the main foundation of the learning process.(Suhendra, 2023) In contrast to the modern education system that is oriented towards information transfer, the tradition of pesantren education is built through the process of inheritance of knowledge that emphasizes the intellectual connection between teachers and students. In this context, kiai occupies a central position as a holder of scientific authority. This position is built through the mastery of religious knowledge supported by scientific sanad, intellectual experience, social recognition, and moral exemplary. (Minarti, Sri, 2025) Therefore, the scientific authority of kiai in the tradition of pesantren is not just a matter of mastery of information, but a representation of the chain of transmission of Islamic knowledge that has been going on for centuries.

Normatively, the Islamic educational tradition places the teacher as the center of the transmission of knowledge. In the intellectual treasures of Islam, the validity of knowledge is not only determined by the content of knowledge, but also by the process of acquiring it. (Alim, Nur, Zidny Irfanal Haqq, 2025) The concept of sanad is an important instrument in maintaining the authenticity of knowledge because every knowledge must be connected to teachers who have clear scientific authority. This tradition is then inherited in the pesantren education system through the relationship between kiai and santri which emphasizes aspects of adab, talaqqi, and direct learning. Thus, ideally, the process of seeking knowledge

in pesantren should remain centered on the scientific authority of the kiai as the main source of religious knowledge as well as the guardian of Islamic intellectual traditions.

However, the evolving reality shows that the increasingly complex conditions of digital technological advances have changed the way the younger generation obtains information, including in the religious field. The presence of AI allows users to get answers to questions about fiqh, interpretation, hadith, Arabic, and various Islamic issues in just a matter of seconds. A number of studies show that the use of Generative Artificial Intelligence in the world of education has increased very quickly because it is considered to be able to help the learning process, speed up information search, and increase learning efficiency.(Mahmudah, Husna, 2025) In fact, various surveys show that AI is starting to be used by students and students as a source of academic reference in completing assignments and gaining an understanding of learning materials.

This phenomenon is slowly starting to enter the pesantren education space. Various studies show that pesantren are starting to face new challenges in the form of the adoption of Artificial Intelligence technology in the learning system. AI is not only used as a supporting medium for education, but also begins to be used to quickly find religious information without having to go through the talaqqi process directly with the kiai. This condition raises a more fundamental problem, namely how the position of the kiai scientific authority is when students have direct access to digital knowledge sources that are able to provide answers instantly. On the one hand, AI offers convenience and efficiency in learning, but on the other hand, its presence has the potential to change the pattern of knowledge transmission which has been the main character of pesantren education.

Muhammad Abraar's Research (2025) Regarding the digitization of the Yellow Book, it shows that the development of digital fiqh applications has begun to present challenges to the Islamic boarding school scientific authority system which has been based on sanad and the role of kiai as the main source of religious knowledge. Research by Adib Riyadi, Asror Maulana, and Ahmad Yani (2025) It was found that the development of digital technology encourages a change in the leadership pattern of KAI to be more adaptive to technological developments. Meanwhile, research by Suyono Yono and Achmad Mahrus Helmi (2025) explained that pesantren are still able to maintain the authenticity of Islamic scientific traditions through the sanad and talaqqi systems even though they are in the midst of the development of Artificial Intelligence. However, these studies mostly discuss the digitization of education, kiai leadership, and the resilience of pesantren traditions in

general. Studies that specifically highlight Artificial Intelligence as an alternative source of knowledge for students and its implications for the scientific authority of kiai are still relatively limited.

Based on these conditions, there is a gap between the ideals of the Islamic boarding school education tradition and the reality of contemporary technological developments. Ideally, scientific authority in pesantren is built through a direct relationship between kiai and students based on sanad, talaqqi, and scientific legitimacy. However, empirically, students now have access to new sources of knowledge that do not depend on traditional scientific relations. (Andrean, Fanny Apriyaldi, 2016) The presence of Artificial Intelligence opens up the possibility of changes in knowledge access patterns that have implications for the transformation of scientific authority in the pesantren environment. The problem is no longer just how AI is used in learning, but how AI begins to enter the space that has been the basis for the legitimacy of kiai scientific authority.

This research is important because the development of Artificial Intelligence takes place much faster than the ability of educational institutions to formulate an adequate response to these changes. If not understood critically, this phenomenon has the potential to affect the transmission pattern of Islamic knowledge which has been the foundation of pesantren education for centuries. Therefore, this research is not only important in the context of the development of educational technology, but also relevant to explain how Islamic intellectual traditions adapt to the changing sources of knowledge in the digital era. Through research on the transformation of kiai scientific authority in the Islamic boarding school education tradition in the Artificial Intelligence era, this research seeks to fill the gap in the study of the relationship between Islamic scientific authorities, Islamic boarding school traditions, and the development of artificial intelligence technology in the context of contemporary Islamic education.

B. RESEARCH METHOD

This research is a library *research* that uses the Islamic *Intellectual History approach* to trace the development and transformation of kiai scientific authority in the tradition of pesantren education in the era of Artificial Intelligence. The intellectual history approach was chosen because this research seeks to understand the changes in the construction of scientific authority in the Islamic educational tradition which has historically been built through the system of sanad, talaqqi, and teacher-student relations, then analyzed in the

context of the emergence of Artificial Intelligence as a new source of knowledge. In its analysis, this study also considers the socio-religious dimension that arises due to the development of digital technology and its influence on the pattern of knowledge transmission in the contemporary Islamic boarding school environment.

Research data sources consist of primary sources and secondary sources. Primary sources are in the form of books, scientific articles, and academic works that discuss the concept of scientific authority in Islam, the history of pesantren education, the sanad tradition, kiai leadership, and the development of Artificial Intelligence in the world of education. The secondary sources are obtained from reputable national and international journals, scientific proceedings, research reports, and various supporting literature that have relevance to the research focus. The selection of sources is carried out purposively by considering the author's credibility, relevance of substance, and contribution to the discussion of scientific authority and knowledge transformation in the digital era.

Data collection is carried out through documentation techniques by examining various literature sources related to the research theme. At this stage, the researcher identifies, inventories, and classifies data based on the main themes that are the focus of the study. The data classification is carried out into four groups, namely: (1) the historicity of scientific authority in the Islamic education tradition; (2) the construction of kiai scientific authority in the pesantren education system; (3) the development of Artificial Intelligence as a source of knowledge in the world of education; and (4) the transformation of kiai scientific authority in the midst of a change in the digital knowledge landscape. The grouping is carried out to facilitate the analysis process while maintaining the connection between research variables.

Data analysis uses *content analysis* techniques combined with *historical-critical analysis*. Content analysis is used to identify ideas, concepts, arguments, and findings contained in various literature studied. Meanwhile, historical-critical analysis is used to trace the development of scientific authority in the Islamic educational tradition over time and understand the factors that influence these changes. Through this approach, the research not only describes the phenomenon of the use of Artificial Intelligence in Islamic boarding school education, but also examines how the technology affects the structure of scientific authority which has been the foundation of knowledge transmission in Islamic boarding school traditions.

The analysis process is carried out through several stages. First, the researcher traces the historical roots of the formation of scientific authority in the Islamic tradition by examining the concepts of sanad, talaqqi, and scientific legitimacy that developed from the early days of Islam to its institutionalization in the pesantren education system. Second, the researcher analyzes the position and function of the kiai as a holder of scientific authority in the Islamic boarding school education tradition. Third, the researcher examines the development of Artificial Intelligence as a new form of knowledge production and distribution that affects the way individuals obtain information. Fourth, all findings are analyzed interpretively to understand the forms of transformation of kiai scientific authority that emerged in response to the presence of Artificial Intelligence in the contemporary pesantren environment.

To ensure the validity of the data, this research applies triangulation of sources by comparing various literature from different disciplines, such as the history of Islamic education, pesantren studies, sociology of religion, and the study of educational technology. This step is carried out to gain a more comprehensive understanding of the relationship between the Islamic intellectual tradition and the development of Artificial Intelligence. Through this procedure, the research is expected to be able to produce an in-depth analysis of the changes, sustainability, and adaptation of kiai scientific authorities in facing the challenges of technological development in the contemporary era.

C. RESULTS AND DISCUSSION

The Historicity of Scientific Authority in the Islamic Educational Tradition

Scientific authority is one of the main foundations in the tradition of Islamic education. Since the time of the Prophet Muhammad SAW, the process of transmitting knowledge is not only understood as the delivery of knowledge, but also as an effort to maintain the authenticity of teachings through a chain of science that can be accounted for.(Scott, N.Y., 2026) In the Islamic tradition, the legitimacy of knowledge is not only determined by the content of knowledge, but also by the source and process of its acquisition. Therefore, the relationship between teacher and student occupies a central position in the Islamic education system.

The historical roots of Islamic scientific authority can be traced back to the time of the Prophet Muhammad PBUH who became the main source of Islamic teachings after the death of the Prophet, the companions continued the transmission of knowledge by maintaining

the validity of knowledge through mentioning the sources of teachings they received.(Taufiq, 2025) The tradition then developed into the concept of sanad which functioned as a mechanism for verification and scientific legitimacy. During the time of tabi'in and tabi' al-tabi'in, when the territory of Islam was expanding and the number of historians of knowledge increased, sanad developed into a more structured system to ensure the credibility of knowledge.(Muhid, 2024) Initially used in hadith, this system later expanded to various Islamic scientific disciplines such as tafsir, fiqh, and Sufism.

The importance of the role of teachers in the process of transmitting knowledge was emphasized by Burhanuddin al-Zarnuji in *Ta'lim al-Muta'allim*.(Zumrotus, 2021) According to him, the knowledge obtained through the guidance of the teacher has a higher position than the knowledge obtained independently because the teacher not only transmits knowledge, but also shapes the manners and scientific character of the students. This view is in line with Abu Hamid al-Ghazali who places the teacher as the *Waratsat al-Anbiya'* (heir of the prophets) who are in charge of guiding the intellect as well as the morality of students. From here, the tradition of talaqqi developed as the main learning method in Islamic education, where the legitimacy of knowledge is obtained through the direct relationship between students and teachers.

Entering the Islamic middle period, especially the 11th to 15th centuries AD, the system of scientific authority was further strengthened through the development of madrassas and Islamic scientific centers.(Subhan, 2012) The Nizamiyah Madrasah in Baghdad became one of the important institutions that strengthened the tradition of transmission of sanad-based knowledge. In this period, the diploma system began to develop as a form of recognition of a person's competence in narrating and teaching a discipline. Thus, scientific authority in the Islamic tradition is built on three main elements, namely the mastery of knowledge, the continuity of sanad, and the recognition of the scientific community. These three elements make the legitimacy of knowledge in Islam not only based on the information that a person has, but also on the process and source of its acquisition.

The scientific tradition was then inherited in the Islamic boarding school education system in Indonesia. Through the figure of the kiai, the pesantren maintains a mechanism of knowledge transmission that places the teacher as the center of knowledge authority. The scientific authority of the kiai is built through the mastery of religious knowledge, the connectedness of sanad, intellectual experience, and community recognition.(Affan, Moh, 2026) Therefore, scientific authority in the tradition of Islamic education is a historical

construction that is built through a continuous process of knowledge transmission. When Artificial Intelligence presents new sources of knowledge that can be accessed without going through the mechanism of sanad and talaqqi, the question arises about how the position of scientific authority which for centuries has been the foundation of Islamic education. This problem is the entry point to understand the dynamics of kiai scientific authority in the tradition of Islamic boarding school education in the Artificial Intelligence era.

From this historical description, it can be seen that scientific authority in the Islamic tradition from the beginning was not built solely on the possession of information, but on the legitimacy of the process of transmission of knowledge that is connected through sanad and teacher-student relations. So that the main value of scientific authority lies in the validity of knowledge sources and moral responsibility in the process of inheritance. In this context, the emergence of Artificial Intelligence presents a fundamental change because it allows access to knowledge to take place without the direct involvement of traditional scientific authorities. Therefore, the challenge that arises is not only the problem of the use of technology, but also changes in the way people understand the source of legitimacy of religious knowledge in the digital era.

The Construction of Kiai Scientific Authority in the Tradition of Islamic Boarding School Education

Pesantren as a traditional Islamic educational institution places the kiai in a central position in intellectual life and the process of transmitting knowledge.(Sadali, 2020) In contrast to modern education, which generally makes institutions the main source of academic legitimacy, pesantren rely on the figure of the kiai as the holder of scientific authority. The kiai not only plays the role of a teacher, but also as a caregiver, spiritual guide, as well as a guardian of the sustainability of the Islamic intellectual tradition.(Scott, S. Scott, 2026) Therefore, the dynamics of education in Islamic boarding schools are greatly influenced by the role and authority possessed by a kiai.

Such authority is not born automatically, but is formed through a long process involving education, intellectual experience, and social recognition. The legitimacy of a kiai is built through mastery of Islamic sciences, the ability to study and understand the classical books (*Turats*), connection with clear scientific sanad, as well as intellectual journeys taken through various Islamic educational institutions.(Hak, Nurul, 2021) Through this process, the kiai are seen not only as individuals who have religious knowledge, but also as

successors to Islamic scientific traditions that are inherited continuously from generation to generation.

The position of the kiai is stronger because it is supported by a close relationship with the students. This relationship is not limited to classrooms or teaching and learning activities, but is intertwined in daily life in the pesantren environment. Through intense interaction, there is a process of internalizing values, ethics, and religious views that shape the character of the students. In this position, the kiai functions not only as a transmitter of knowledge, but also as an exemplary figure whose behavior, attitude, and views become a reference for the students. Thus, the recognition of the authority of the kiai does not solely come from his intellectual capacity, but also from the moral integrity and example he shows.

This condition can be understood through the concepts of traditional authority and charismatic authority put forward by Max Weber. Weber (1930) explained that traditional authority is formed through respect for values and habits that are inherited from generation to generation, while charismatic authority arises because of the recognition of personal qualities that are considered special. In the pesantren environment, the two forms of authority complement each other. Kiai gains legitimacy because it is part of the chain of Islamic scientific traditions that have lasted for a long time, as well as because it has charisma that makes its advice, views, and decisions respected by students and the community.

The role of the kiai as a holder of scientific authority is also seen in the process of producing and disseminating knowledge in Islamic boarding schools. For centuries, the kiai has been the main reference in determining the material studied, the learning methods used, and how to understand various religious issues.(Khasanah, Nur, Achmad Irwan Hamzani, 2022) In such a situation, students' access to Islamic knowledge mostly takes place through the guidance and direction of the kiai. Therefore, the kiai not only functions as a mediator of knowledge, but also as a guardian of the validity, direction, and authenticity of the scientific traditions that develop in the pesantren environment.

Such a construction of authority shows that the power of the kiai in the tradition of pesantren does not only come from the mastery of religious knowledge, but also from its position as the main mediator of access to knowledge. As long as scientific sources are relatively limited, this position makes the kiai have authority that is difficult to replace. However, when digital technology presents various sources of knowledge that can be accessed directly by students, the authority base that relies on the control of access to

information begins to change.(Wahyudi, Kacung, Abd Aziz, 2026) Therefore, technological developments not only affect learning methods, but also have the potential to change the structure of scientific relations that have been supporting the authority of kiai in the pesantren environment.

Artificial Intelligence as a New Source of Knowledge

The development of digital technology in the 21st century has brought significant changes in the way humans acquire, manage, and distribute knowledge.(Miagusttin, Azizah Pricilya, 2024) One of the most prominent developments is the emergence of Artificial Intelligence (AI), which is a technology designed to mimic human cognitive abilities in processing information, understanding language, analyzing data, and generating responses based on various sources of knowledge stored in digital systems.(Night, Youdy Luvry Livvron, 2025) The presence of AI marks an important change in the history of knowledge development because this technology no longer functions just as a medium for storing information, but is also able to generate answers, explanations, and recommendations instantly according to user needs.

These changes have been increasingly visible since the development of generative AI technologies such as ChatGPT, Gemini, and Claude. Unlike conventional search engines that only display a list of information sources, generative AI is able to present answers that have been summarized and compiled in the form of an easy-to-understand narrative. (Rojabi, 2025) This condition makes the knowledge search process faster, practical, and more efficient. Users no longer have to read a lot of references to get an initial idea of a problem because part of the information processing process has been carried out by artificial intelligence systems.

This phenomenon shows a shift in the pattern of access to knowledge if in the past a person had to rely on teachers, books, libraries, or educational institutions as the main source of information, now various knowledge can be obtained through digital devices connected to the internet. In the perspective of a networked society (*Network Society*), Manuel Castells explained that the development of information technology has created a new social system that allows information to be produced, disseminated, and accessed quickly through digital networks.(Nugroho, 2020) In this context, AI accelerates the process of democratizing access to knowledge because information that previously could only be obtained through certain authorities is now accessible to anyone without space and time limitations.

The impact of these developments is also beginning to be felt in the Islamic education environment, including Islamic boarding schools. Various AI platforms allow students to obtain explanations about Islamic concepts, Islamic history, Arabic, and fiqh studies only through commands or questions typed on digital devices. According to Acep's research (2025)In many cases, AI is able to provide answers in seconds to problems that previously required searching for references or consulting directly with teachers. This condition shows that AI has developed into one of the alternative sources of knowledge that is increasingly accessible to the younger generation, including students.

However, the character of knowledge generated by Artificial Intelligence is different from the tradition of knowledge transmission that has developed in Islamic education. AI works based on algorithms, data, and computational capabilities in processing the information available in the digital space. This technology can present answers quickly, but it does not have scientific authority in the traditional sense as inherent in a teacher or kiai. AI does not have scientific sanad, spiritual experience, moral responsibility, or the capacity to guide the formation of students' character.(Mahmudah, Husna, 2025) Therefore, the knowledge generated by AI is basically informative, while education in the tradition of pesantren is not only oriented towards the mastery of information, but also the formation of manners, ethics, and personality.

On the other hand, the ease of access offered by AI is slowly changing the learning patterns of the pesantren generation. If previously the process of seeking knowledge was highly dependent on books, teachers, and study forums, now students have access to various digital knowledge sources that can be used independently.(Kurniawan, M. Agus, 2025) These changes show that AI not only presents new technologies, but also forms a new knowledge ecosystem that influences the way individuals search, verify, and understand information. It is in this context that Artificial Intelligence begins to become an important factor that affects the relationship between traditional knowledge sources and digital knowledge sources in the world of Islamic education.

From the perspective of knowledge authority, Artificial Intelligence not only presents new technologies, but also changes the pattern of relationships between individuals and knowledge sources.(Musthafa, 2024) If in the Islamic education tradition the legitimacy of knowledge is obtained through relationships with teachers who have scientific sanad, AI allows the process of searching for information to take place directly without the involvement of the authority. This condition creates new competition in the knowledge

production space because some of the information provision functions previously carried out by teachers can now be carried out by digital systems. Thus, the presence of AI is not only a matter of technological innovation, but also a problem of shifting the structure of authority in the contemporary knowledge society.

Departing from these developments, Artificial Intelligence can be understood as part of a major transformation in the production and distribution system of knowledge in the digital era.(Erwin, Erwin, 2023) Its presence not only expands access to Islamic information, but also presents new alternatives in the process of seeking knowledge which has been dominated by educational institutions and religious authorities. This development is an important foundation to understand how kiai scientific authorities face new dynamics that arise along with the development of artificial intelligence technology in the contemporary pesantren environment

The Transformation of Kiai's Scientific Authority in the Era of Artificial Intelligence

The presence of Artificial Intelligence brings important changes in the structure of access to knowledge which has been the foundation of scientific authority in the tradition of pesantren education.(Fikri, Mohammad, Muhammad Muslim, 2025) If in the past the kiai occupied the position of the main source of religious knowledge, the development of digital technology allows students to obtain various Islamic information independently through artificial intelligence-based platforms. These changes do not necessarily eliminate the authority of the kiai, but create a new configuration in the relationship between the holder of scientific authority and the source of digital knowledge.

This transformation can be seen from the shifting pattern of seeking knowledge among students. In the traditional pesantren system, the process of acquiring knowledge takes place through a direct relationship between teachers and students which is built through recitation, talaqqi, and reading books in stages. In the Artificial Intelligence era, part of the information search process can be done individually without having to wait for the teacher's explanation.(Morocco, Saksana Permana, 2025) Students can now get explanations about the concepts of fiqh, tafsir, Islamic history, and Arabic rules only through the digital devices they have. This condition shows that access to knowledge is no longer fully mediated by kiai figures as has been the case in the tradition of Islamic boarding schools for centuries.

However, these changes cannot be understood as the loss of the scientific authority of the kiai. Various literature on Islamic education shows that the main function of the kiai lies

not only in the delivery of information, but also in providing legitimacy, interpretive guidance, and the formation of religious character. In this context, Artificial Intelligence is able to provide information, but it does not have the capacity to replace the educational functions that have been carried out by the kiai. In other words, what undergoes a transformation is not the existence of the kiai authority, but the form and operational space of the authority.

The most noticeable change can be seen in the shift of the kiai's function from the main source of knowledge to the curator and interpreter of knowledge.(Kamaludin, 2023) When religious information is widely available through various digital platforms, the role of kiai is increasingly important in helping students verify, select, and interpret the information obtained. In a situation of information flooding (*Information overload*), scientific authority is no longer only measured by the ability to master knowledge, but also by the ability to guide the public in distinguishing information that is valid, false, partial, or misleading. Therefore, the legitimacy of kiai in the Artificial Intelligence era tends to shift from information-access-based authorities to interpretive capacity-based authorities

This transformation also shows a change from a monopolistic authority model to a more dialogical authority. At a time when knowledge sources are relatively limited, kiai has become the main reference in almost all religious issues. However, in the digital era, students have the opportunity to compare various views obtained from the internet, social media, and Artificial Intelligence-based applications.(Muid, Abdul, Bustanul Arifin, 2024) This condition encourages the birth of a more participatory relationship in the learning process. Students are no longer present only as recipients of knowledge, but also as active information seekers. As a result, the authority of the kiai is increasingly determined by the ability to explain, contextualize, and defend their scientific arguments in the presence of various alternative sources of knowledge.

On the other hand, the presence of Artificial Intelligence also opens up new opportunities for strengthening the scientific authority of kiai. Various digital technologies can be used to expand the reach of da'wah, teaching, and the dissemination of Islamic knowledge. In this context, AI does not have to be understood as a threat to the tradition of Islamic boarding schools, but as an instrument that can support the educational process if used critically and proportionately. The ability of kiai to adapt to technological developments will be an important factor in determining the sustainability of their scientific authority in the midst of changing digital knowledge landscapes.

Based on this description, the transformation of kiai scientific authority in the Artificial Intelligence era can be understood in three main forms. First, the transformation of knowledge access sources, from those originally centered on kiai to more open access through digital technology. Second, the transformation of the function of authority, from transmitters of knowledge to verifiers and interpreters of religious information. Third, the transformation of the pattern of educational relations, from a one-way relationship to a more dialogical relationship between kiai and students. These three changes show that the development of Artificial Intelligence does not remove the scientific authority of kiai, but changes the form and mechanism of legitimacy that supports it.

D. CONCLUSION

This research shows that the development of Artificial Intelligence has brought fundamental changes in the pattern of production, distribution, and access to knowledge in the Islamic boarding school education environment. Historically, scientific authority in the Islamic education tradition was built through the system of sanad, talaqqi, and teacher-student relations that placed kiai as the center of knowledge transmission as well as the holder of scientific legitimacy. However, the emergence of Artificial Intelligence allows students to obtain various religious information quickly and independently without always having to go through traditional learning mechanisms. This condition has changed the structure of access to knowledge which for centuries has been one of the main foundations of kiai scientific authority in the pesantren's tradition.

The presence of Artificial Intelligence does not eliminate the scientific authority of the kiai, but rather transforms the form and basis of legitimacy. The transformation takes place through three main aspects, namely changes in the source of access to knowledge, changes in the function of authority, and changes in the pattern of educational relations. The authority of the kiai, which previously relied on its position as the main source of religious knowledge, shifted towards an authority based on the ability to verify, interpret, and guide the information circulating in the digital space. These findings also show that although Artificial Intelligence is able to provide information quickly, it cannot replace the fundamental elements that are the basis for the legitimacy of scientific authority in the Islamic boarding school tradition, such as sanad, moral examples, intellectual experience, and the formation of manners.

The novelty of this research lies in the analysis of Artificial Intelligence as a factor that affects the structure and legitimacy of scientific authority in the tradition of Islamic boarding schools, not just as an educational technology innovation. In contrast to previous research that mostly discussed the digitalization of Islamic boarding schools, kiai leadership, or technological adaptation in learning, this study shows how Artificial Intelligence presents changes to the scientific authority base that has been the foundation of Islamic boarding school education

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