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Computational Bibliometric Analysis: Can Digital Transformation Improve the Quality of Islamic Learning?

Dwi Novia Al Husaeni, Munawar Rahmat*

Universitas Pendidikan Indonesia, Bandung, Indonesia
*Correspondence: E-mail: dwinoviaalhusaeni14@upi.edu

ABSTRACT

Digital transformation has become a major driver of change in various areas of life, including religious education. The focus on digital transformation in the context of religious education raises important questions about the potential for improving the quality of learning. This research aims to provide an in-depth understanding of the extent to which digital transformation influences and can improve the quality of religious learning, as well as to identify research trends and main topics in related literary academies. Bibliometric analysis methods are used to determine trends in research topics. There are 5 stages in this method, namely determining the research topic, collecting publication data, processing article data with bibliometrics, data visualization, and analyzing the results of visualization and data collection. The results of the research show that the number of publications regarding the topics used as keywords, namely "Digital Transformation" AND "Religion" AND "Education" AND "Learning" has increased every year except in 2023, which experienced a decline. Apart from that, the research results also show that digital transformation improves the quality of religious learning because with digital transformation the learning carried out can be more interactive and varied.

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1. INTRODUCTION

Religious learning has long been the main foundation for understanding, practicing, and developing spiritual values in society (Huda *et al*., 2019). However, as times change, the digital revolution has changed the educational landscape as a whole (Jamil, 2022), sparking debate about its impact on the quality of religious learning. Computational bibliometric analysis is an important basis for exploring whether the digital revolution can truly improve the quality of religious learning.

First, the digital revolution has penetrated various aspects of our lives, including education. As a technology that permeates every aspect of life, it offers great potential to expand and increase access to religious materials (Romadanti, 2023). This ease of access is an important starting point in assessing how the digital revolution can contribute to the overall understanding and teaching of religion.

Apart from ease of access, the digital revolution has also brought changes in teaching methods (Railean & Railean, 2017). With the adoption of digital platforms, religious educators can use various tools and techniques to present information in a more dynamic, interactive, and in-depth way to students (Demmangsa *et al*., 2023). However, the question that arises is to what extent these changes affect conceptual understanding and spirituality in religious contexts.

In the context of bibliometric analysis, it is important to look at the development of related literature and research. Bibliometric data can provide deep insight into how religious learning topics are studied, researched, and interpreted in the digital era (Latuconsina *et al*., 2023). By mapping literature trends, we can evaluate the extent to which the digital revolution has influenced the depth of study in religious learning.

However, it should also be noted that technological advances are not always accompanied by improvements in quality. In some cases, the digitalization of religious learning may present its challenges, such as misuse of information, simplification of concepts, or even the loss of the religious dimension. Therefore, bibliometric analysis must be able to explore these aspects critically. Several studies that use bibliometric analysis can be seen in **Table 1**.

Table 1. Previous research regarding bibliometric analysis.

No	Research Title	Reference
1.	Literature review and bibliometric mapping analysis: Philosophy of science and technology education	Al Husaeni & Munir (2023)
2.	Computational bibliometric analysis of research on science and Islam with VOSviewer: Scopus database in 2012 to 2022.	Al Husaeni & Al Husaeni (2022)
3.	Sustainable development goals (SDGs) in science education: Definition, literature review, and bibliometric analysis.	Maryanti *et al*. (2022)
4.	Bibliometric computational mapping analysis of publications on mechanical engineering education using vosviewer.	Al Husaeni & Nandiyanto (2022a)
5.	A computational bibliometric analysis of science education research using VOSviewer.	Maryanti *et al*. (2023)
6.	Computational bibliometric analysis on publication of techno-economic education.	Ragadhita & Nandiyanto (2022)
7.	Bibliometric analysis for understanding the correlation between chemistry and special needs education using vosviewer indexed by Google.	Bilad (2022)
8.	Development Analysis Research on Physical Education by Mapping Keywords Using the Vosviewer Application.	Al Husaeni (2022)

Table 1 (Continue). Previous research regarding bibliometric analysis.

No	Research Title	Reference
9.	Research mapping in the use of technology for fake news detection: Bibliometric analysis from 2011 to 2021.	Gunawan *et al*. (2022)
10.	Bibliometric Analysis for Understanding "Science Education" for "Student with Special Needs" using VOSviewer.	Nursaniah & Nandiyanto (2023)
11.	A bibliometric analysis: research trend of critical thinking in science education.	Misbah *et al*. (2022)
12.	Counseling guidance in science education: Definition, literature review, and bibliometric analysis.	Solehuddin *et al*. (2023)
13.	Bibliometric Analysis of Didactical Transposition on Teaching and Learning Process.	Sholikhakh *et al*. (2023)
14.	Computational bibliometric analysis of English research in science education for students with special needs using VOSviewer.	Sukyadi *et al*. (2023)
15.	Implementation of biotechnology in education towards green chemistry teaching: A bibliometrics study and research trends.	Riandi *et al*. (2022)

Based on the explanation above, it can be seen that bibliometric analysis has been carried out by many previous researchers. This bibliometric analysis can be a strong basis for evaluating the role of the digital revolution in improving the quality of religious learning. Through empirical data and in-depth interpretation, we can identify trends, challenges, and potential solutions to improving the quality of religious education in the digital era.

Therefore, this research was conducted to analyze literature and bibliometric studies of digital transformation in the field of education, especially religious education. It is hoped that this research can provide an overview of digital transformation in education, so that educators become aware of applying digital technology in the learning process, especially in supporting religious education, so that the quality of learning, especially religious learning, can continue to improve.

2. METHOD

In this research, a literature review was carried out on previous research regarding digital transformation in education, especially in religious education, and its influence on improving the quality of religious learning. Bibliometric and theoretical analysis methods were used in this research. We carried out five stages of research, namely (i) determining the study topic, (ii) collecting publication data, (iii) processing article text and bibliometric data, (iv) visualization of bibliometric data mapping, and (v) analysis of bibliometric data visualization results (see **Figure 1**).

Figure 1. Stages of bibliometric analysis research.

In this research, article data indexed by Google Scholar is used for the data analysis stage. Google Scholar is used on the grounds that articles indexed by Google Scholar are more general without limitations. Mapping visualization is produced through computational processing in the VOSviewer application. Detailed information for installing and using the

software (VOSviewer) and the step-by-step process for processing bibliometric data are explained in research conducted by Al Husaeni & Nandiyanto (2022b).

Data retrieval from the Google Scholar database was carried out on December 20, 2023. The keywords used to search for article data were "Digital Transformation" AND "Religious" AND "Education" AND "Learning". Data searches were limited to articles of the journal type and in English. We determined the research year limit, namely from 2014-2023 (the last 10 years). Meanwhile, the search process using the Publish or Perish 8 application results in a maximum number of articles found being limited to 1000 articles. From the results of article data collection using the Publish or Perish 8 application, 861 articles were obtained.

Network visualization and overlay visualization are used to depict relationships between terms. Data mapping based on text data found 4560 appropriate terms or keywords. The terms found were selected again based on the number of occurrences at least 5 times. Thus, the keyword terms found were 269 terms. After that, a minimum relevance of 100% is selected for retrieval of each term. The final stage is term filtering. The results of the filtering show that the number of terms used in the mapping analysis is 219 terms.

3. RESULTS AND DISCUSSION

3.1. Current Research Development Bibliometric Analysis

Based on the results of a search for publication data regarding digital transformation in the field of education, especially in religious education, a total of 861 documents were found spread from 2014-2023. **Figure 2** shows the annual report on the number of publications regarding digital transformation in religious education. Based on the data in **Figure 2**, it is known that research on this theme has increased every year except in 2023. Several reasons why the number of publications in 2014-2022 increased are as follows.

(i) Technological developments. Advances in information and communication technology have enabled the adoption of digital technology in various fields, including religious education (Riyanto, 2023).
(ii) The importance of religious education. Religious education is considered important in developing spiritual understanding and human values (Yuliatun, 2018).
(iii) Public demand for information on religious education. A society that is increasingly connected and curious about religious issues, morality, and spirituality has also encouraged increased interest in producing publications that can provide better understanding (Fathurrochman, 2021).
(iv) Recognition of the role of technology in education. More educational institutions and religious organizations recognize the role of technology in conveying religious teachings and values more efficiently and effectively (Syahri, 2018).

3.2. VOSviewer Mapping Analysis

Figure 3 shows the network visualization. Network visualization describes the connections between topics or terms that are often used in the research themes being analyzed (Al Husaeni & Nandiyanto, 2022). Network visualization depicts 219 frequently discussed research topics and divides them into 10 clusters. **Table 2** shows the distribution of terms in each cluster.

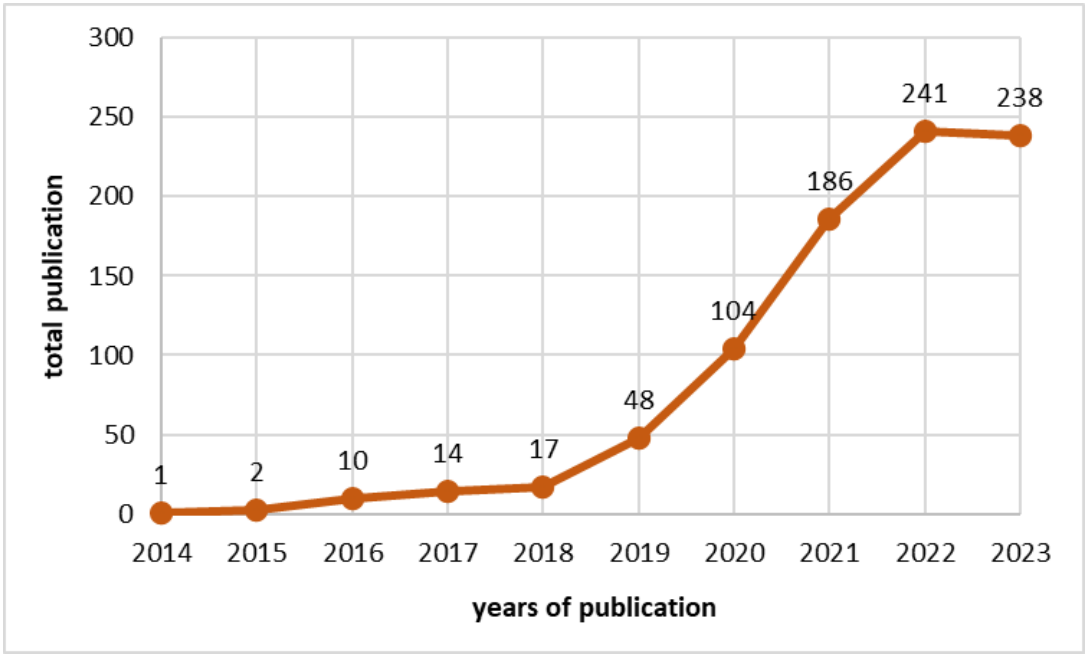

Figure 2. Annual report on the number of publications regarding digital transformation in the field of religious education.

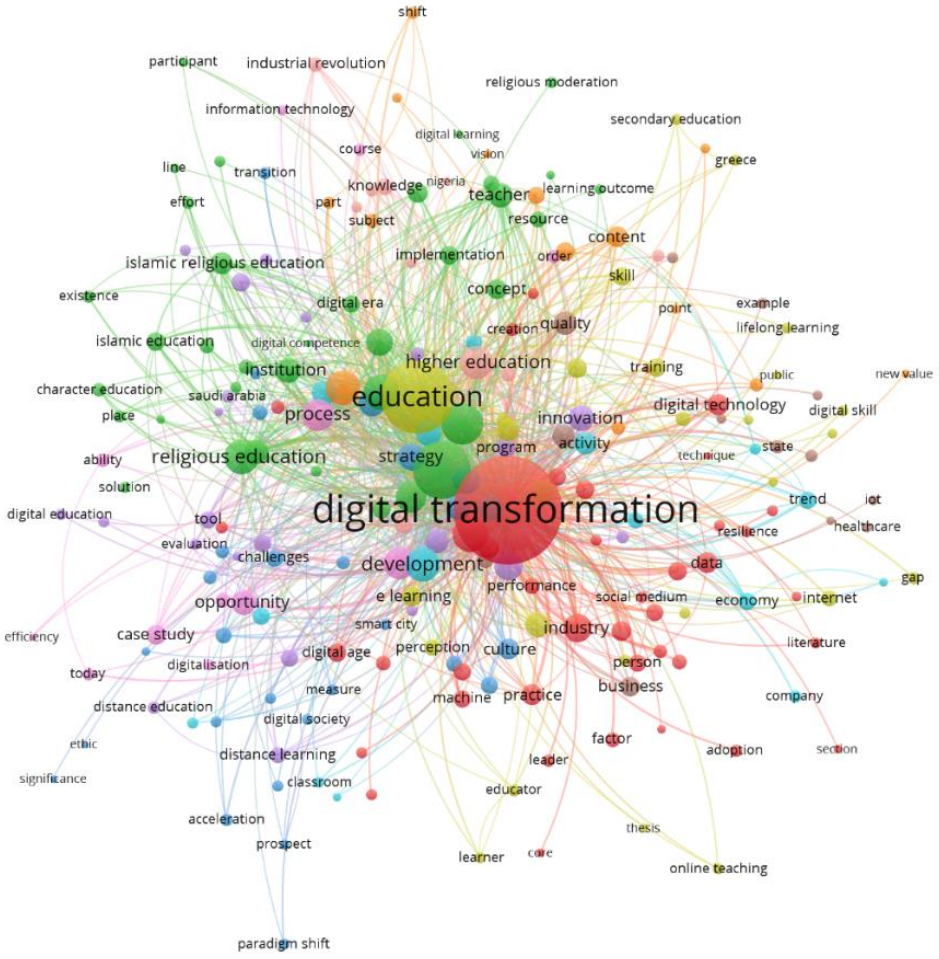

Figure 3. Network visualization.

Table 2. Distribution of terms in cluster network visualization.

Cluster	Color	Items	Total Items
1	Red	Adoption, application, artificial intelligence, behavior, business model, chapter, child, communication, contribution, core, creation, data, deep learning, digital, digital age, digital technology, digital tool, digital transformation, factor, framework, industry, leader, literature, literature review, machine, machine learning, medium, organization, outbreak, performance, person, practice, relationship, resilience, review, section, social medium, systematic literature review, technique, technology, work.	41
2	Green	Character education, competency, concept, creativity, demand, digital competence, digital era, digital learning, digital literacy, digital transformation performance, effort, era, existence, implementation, institution, Islamic education, Islamic religious education, learning, learning outcome, learning process, line, model, participant, pesantren, place, primary education, rapid digital transformation, relevance, religious education, religious moderation, resource, school, solution, study, teacher, teaching.	36
3	Dark blue	Acceleration, analysis, challenges, community, condition, culture, digital society, education sector, environment, ethic, government, health, home, Islamic higher education, learning system, measure, ministry, paradigm shift, perspective, prospect, question, science, significance, smart city, strategy, sustainability, transition.	27
4	Yellow	Access, communication technology, digital divide, digital skill, e-learning, education, education system, educator, employee, gap, Greece, individual, influence, information, internet, learner, lifelong learning, online teaching, outcome, perception, public, secondary education, sector, skill, system, thesis, training.	27
5	Purple	Area, blended learning, case, change, digital education, distance education, distance learning, emphasis, evaluation, experience, higher education institution, importance, innovations, integration, ongoing digital transformation, online education, program, provision, response, Saudi Arabia, sustainable development, tool.	22
6	Light blue	21st century, activity, aspect, classroom, company, development, digital economy, economy, expert, face, online learning, pandemic era, problem, transformation, trend, world.	16
7	Orange	Addition, content, evidence, goal, new value, online, part, platform, point, remote learning, shift, student, subject, vision.	14
8	Chocolate	Benefit, business, crisis, digitalization, digitization, evolution, example, healthcare, IoT, quality, state, utilization, Vietnam.	13
9	Pink	Ability, case study, course, digitalization, effectiveness, efficiency, impact, information technology, opportunity, order, process, today.	12
10	Corals	Advancement, effect, generation, higher education, higher learning, implication, industrial revolution, knowledge, lesson, Nigeria, pace.	11

Figure 4 shows the visualization overlay. The visualization overlay illustrates the novelty of the discussion of research topics found based on analysis using the VOSviewer application (Al Husaeni & Nandiyanto, 2022b). Based on the data shown in **Figure 4**, it is known that the majority of discussions on topics regarding religious education are in the 2021-2022 range. Meanwhile, the topics with the highest novelty which are connected to the research theme regarding digital transformation in religious education include Islamic education and character education.

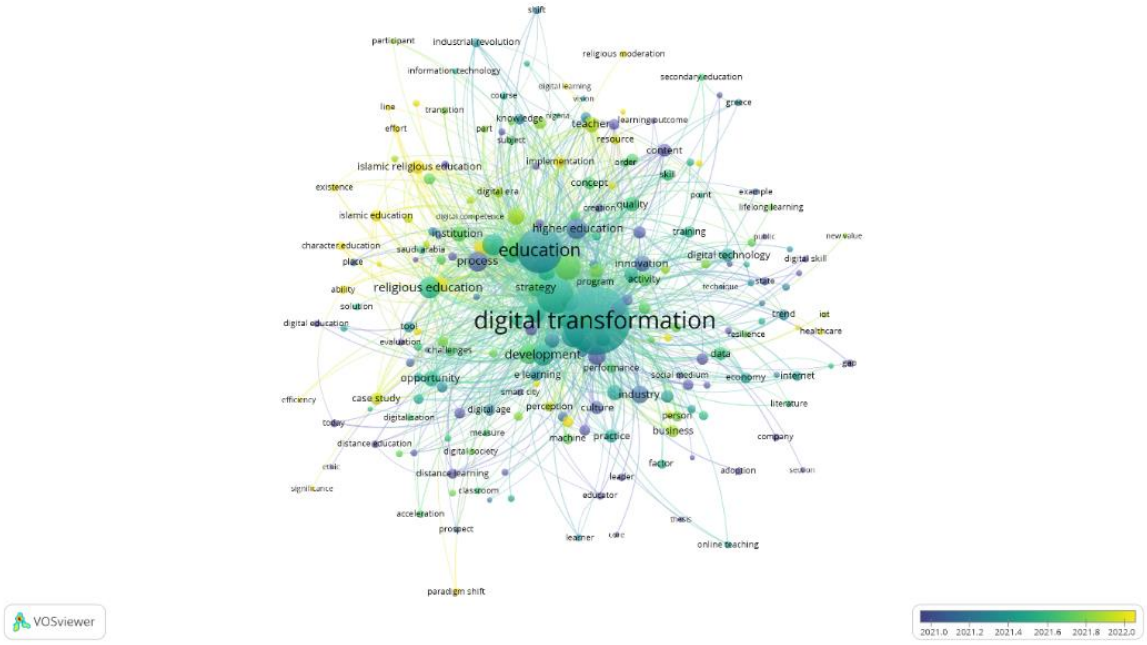

Figure 4. Overlay visualization.

3.3. Islamic Perspective on Digital Transformation

Islam provides an inclusive view of technological developments, including digital transformation, with certain terms and conditions. Islamic principles teach that technology must be used for the good, learning and welfare of humanity. As Allah says in Q.S. Al-Baqarah: 269:

يُؤْتِي الْحِكْمَةَ مَنْ يَّشَاۤءُ ۚوَمَنْ يُّؤْتَ الْحِكْمَةَ فَقَدْ اُوْتِيَ خَيْرًا كَثِيْرًا ۗوَمَا يَذَّكَّرُ اِلَّآ اُولُوا الْاَلْبَابِ

“He (Allah) bestows wisdom on whom He wills. Whoever is blessed with wisdom, indeed He has been blessed with much goodness. No one can learn a lesson (from it), except ululalbab.”

In the letter, it is explained that Allah will give wisdom to whomever He wishes. This means that Allah bestows wisdom and knowledge on whom He wishes among His servants. Thus, with that knowledge and wisdom, He can differentiate between right and wrong, between the misgivings of Satan and inspiration from Allah SWT. The tool for obtaining wisdom is a healthy and intelligent mind, which can recognize something based on arguments and evidence, and can understand something according to its true nature. Whoever has attained such wisdom and knowledge means he has been able to differentiate between Allah's promises and Satan's whispers, then Allah's promises are believed and Satan's whispers are shunned and abandoned. Allah confirms that anyone who has obtained such wisdom and knowledge means that he has obtained much good, both in this world and in the afterlife. He does not want to accept evil whispers from Satan, in fact, he uses all his five senses, reason, and knowledge to know what is good and what is false, what is Allah's guidance and what is

Satan's persuasion, then he surrenders completely to Allah. At the end of this verse, Allah praises people who are wise and willing to think. They always remember and are alert and know what is beneficial and can bring them happiness in this world and the hereafter (Al-Quran Online Al-Baqarah Terjemah Dan Tafsir Bahasa Indonesia | NU Online, 2023).

Apart from that, Allah also says in Q.S. Al-Baqarah: 164.

اِنَّ فِيْ خَلْقِ السَّمٰوٰتِ وَالْاَرْضِ وَاخْتِلَافِ الَّيْلِ وَالنَّهَارِ وَالْفُلْكِ الَّتِيْ تَجْرِيْ فِى الْبَحْرِ بِمَا يَنْفَعُ النَّاسَ وَمَآ اَنْزَلَ اللّٰهُ مِنَ السَّمَآءِ مِنْ مَّآءٍ فَاَحْيَا بِهِ الْاَرْضَ بَعْدَ مَوْتِهَا وَبَثَّ فِيْهَا مِنْ كُلِّ دَاۤبَّةٍ ۖوَّتَصْرِيْفِ الرِّيٰحِ وَالسَّحَابِ الْمُسَخَّرِ بَيْنَ السَّمَآءِ وَالْاَرْضِ لَاٰيٰتٍ لِّقَوْمٍ يَّعْقِلُوْنَ

“Indeed, in the creation of the heavens and the earth, the alternation of night and day in the ark that sails on the sea with (cargo) that is useful for humans, what Allah sent down from the sky in the form of water, then with it He revived the earth after it had died (dry), and He scattered in it all kinds of animals, and the controlled distribution of winds and clouds between heaven and earth, (all of that) are truly signs (of Allah's greatness) for a people who understand.” (Q.S. Al-Baqarah: 164).

In the verse above (Q.S. Al-Baqarah: 164) it is explained that humans must always understand that all of Allah's creations have order and a clear purpose. It is hoped that this understanding can encourage humans to use God's blessings wisely, as well as increase their devotion and gratitude to Him. Overall, this letter emphasizes the importance of contemplating the signs of Allah's greatness in every aspect of life and the universe (Al-Quran Online Al-Baqarah Terjemah Dan Tafsir Bahasa Indonesia | NU Online, 2023).

Apart from what has been explained above, there are three Islamic perspectives on facing digital transformation, namely:

1. Setting Priorities: From an Islamic perspective, it is important to set priorities wisely. Allocating the right time for work, family, health, and worship is the key to maintaining life balance. Islam teaches us to provide appropriate rights in every aspect of life.
2. Manage Technology Wisely: Islam encourages us to use technology wisely and responsibly. This includes managing digital device usage time, distancing oneself from negative content, and utilizing technology for beneficial purposes, such as learning, sharing knowledge, and spreading positive messages.
3. Reflection and Worship: Digital developments allow us to connect widely, but it is also important to maintain a connection with ourselves and Allah SWT through reflection and worship. Taking time to pray, read the Koran, do dhikr, or meditate can help us maintain a balanced spiritual life.

Integrating technology with life balance is key in facing digital transformation. Allah says in Q.S. Al-Qashash: 77 which reads.

وَٱبْتَغِ فِيمَآ ءَاتَىٰكَ ٱللَّهُ ٱلدَّارَ ٱلْءَاخِرَةَ ۖ وَلَا تَنسَ نَصِيبَكَ مِنَ ٱلدُّنْيَا ۖ وَأَحْسِن كَمَآ أَحْسَنَ ٱللَّهُ إِلَيْكَ ۖ وَلَا تَبْغِ ٱلْفَسَادَ فِى ٱلْأَرْضِ ۖ إِنَّ ٱللَّهَ لَا يُحِبُّ ٱلْمُفْسِدِينَ

“And seek what Allah has bestowed upon you (happiness) in the land of the hereafter, and do not forget your share of worldly (pleasures) and do good (to others) as Allah has done good to you, and do not cause damage to (the face) earth. Indeed, Allah does not like those who do damage.” (Q.S. Al-Qashash: 77).

Digital transformation has brought significant changes to our lives, including challenges in maintaining life balance. However, with an Islamic perspective, we can face this challenge wisely. By setting priorities, managing technology wisely, being good in the use of technology, and maintaining spiritual connections, we can integrate digital transformation with a healthy

and meaningful life balance. By practicing Islamic values, we can positively utilize technology and maintain harmony in our lives.

3.4. The Influence of Digital Transformation in Islamic Religious Education

Digital transformation has had a significant impact in the context of religious education. The use of information and communication technology, such as religious learning applications, online platforms, and digital resources, has opened the door to more dynamic and interactive learning (Mawardi, 2023). Teachers can easily present religious material using various media, such as videos, animations, and simulations, which make learning more interesting and easy for students to understand. In addition, the adoption of technology allows flexibility in the learning process, where students can access material anytime and anywhere, increasing accessibility and participation in religious learning (Oktavia & Khotimah, 2023). Digital transformation also provides opportunities for the development of students' digital skills, which become relevant in facing the demands of today's technology-based society.

Apart from that, digital transformation in religious education also provides opportunities for personalized learning (Mawardi, 2023; Barokah, 2023). Through data analysis and artificial intelligence, teachers can develop learning strategies tailored to students' individual needs, increasing the effectiveness of religious learning. Students can also participate in online discussions and collaboration through forums or social media, enriching their learning experience and forming a virtual learning community. Therefore, digital transformation does not just change the way the material is delivered but also stimulates more active interaction between teachers and students as well as between students themselves in the context of religious learning.

3.5. Learning Model as a Form of Implementing Digitalization in Islamic Religious Education

The application of digitalization in religious education can be realized through a learning model that makes optimal use of technology. One model that can be used is the Flipped Classroom. In this model, teachers present religious material through videos, presentations, or other digital resources that students can access before face-to-face sessions. Furthermore, class time is used for discussion, problem-solving, and collaborative activities that strengthen students' understanding of religious concepts. The use of technology in the Flipped Classroom concept encourages students to be more independent in understanding the material, while teachers can focus more on guiding and providing direct support (Amalia et al., 2023).

Apart from that, the Cooperative Online Learning model is also an effective alternative in combining social interaction and the use of technology (Hadisi & Muna, 2015). This model involves students in small groups online to complete religious assignments or projects. They can use collaborative platforms, such as Google Workspace or Microsoft Teams, to communicate, share ideas, and create presentations together online. Through this model, digitalization is not only used as a means of conveying information but also as a means of building students' social and collaborative skills in the context of religious education.

3.6. Implementation of Digital Transformation Applications in Islamic Religious Education

Digital transformation applications have been widely used in the world of education, including religious education. To date, there are several forms of implementing digital transformation in the education sector, one of which is:

(i) Use of the Google Classroom application in the learning process (Salamah, 2020). The Google Classroom application allows teaching staff to still be able to deliver learning well

and easily understood by students, namely by providing materials, assignments, and even filling in student attendance lists online every day. Apart from that, the Google Classroom application provides several other benefits, such as ease of access, giving assignments online, interaction and discussion, and online attendance register.

(ii) Using the Ruang Guru Application as an alternative online tutoring which can be easily accessed and has several superior features such as RuangUji, RuangLatihan, RuangVideo, RuangLes, RuangLesOnline, DigitalBootCamp and Edumail allows students to upgrade their learning abilities so that they are expected to achieve desired results (Rahmadani & Setiawati, 2019; Efendi, 2018).

(iii) Use of Cell Phones as M-Learning in Islamic Education. The use of cell phones as m-learning media in Islamic education provides several benefits including ease of access, providing notifications, and more interactive learning (Arif, 2016; Miasan & Kasim, 2018).

(iv) Using Web Multimedia Looper as an e-learning media that presents material regarding looping in Algorithms and Programming subjects. Another benefit provided when using a web multimedia looper is clearer and more interactive visualization of the material, students can access the material independently, and these loopers provide a more interesting form of presenting material such as animation or simulation.

Figure 5 shows several applications which are a concrete manifestation of digital transformation in the world of education. Meanwhile, **Figure 6** shows several learning media used for learning Islamic religion.

Figure 5. Application for implementing digital transformation.

Figure 6. Application for learning Islamic religion.

3.7. Challenges of Implementing Digital Transformation in Islamic Religious Education

3.7.1. Digital Literacy

One of the biggest challenges for teachers to apply technology in religious education, especially in the current millennial era, is digital literacy (Taraju et al., 2022). The teacher's ability to utilize digital devices to improve the religious learning process is the main point that must be considered (Wahidin, 2018). The use of tools such as laptops, smartphones, and presentation media is the key to creating interesting and meaningful learning. However, facts on the ground show that many teachers still experience difficulties in mastering this technology, especially in the context of preparing learning plans and grade management.

3.7.2. Teachers as Lifelong Learners in the Context of Islamic Religious Education

The teacher's role is not only as a teacher but also as a lifelong learner. The qualities needed by a teacher in this era of digital transformation, such as sincerity, patience, creativity, and skills in producing work (Rahman et al., 2023). Teachers who can continue learning and innovating will be more effective in handling the complexities of religious education in the millennial era.

3.7.3. Fun and Meaningful Learning in Islamic Religious Education

Students in the millennial era tend to be more responsive to learning that is interesting and can be accessed via gadgets. However, teachers must also pay attention to the learning methods used. Choosing the right learning method can arouse students' interest in learning in the context of religious material (Maesaroh, 2013). Question-and-answer methods, experiments, and lectures need to be adapted so that religious learning becomes more effective and interesting for students.

3.8. Opportunities with Digital Transformation in Islamic Religious Education

Digital transformation in religious education opens up many opportunities that can increase the effectiveness and efficiency of religious learning (Alfi et al., 2023). The following are some of the opportunities that arise with digital transformation:

(i) Global Access. Teachers and students can access religious education resources from around the world, enabling cross-cultural exchange of knowledge and understanding.
(ii) Interactive Learning. The use of video, animation, and multimedia content increases student engagement in religious learning, making it more interesting and understandable.
(iii) Collaborative Learning. Students can participate in online forums or social platforms to discuss, share thoughts, and learn from each other's religious experiences.
(iv) Personalized Learning. The analyzed data can help develop learning programs tailored to individual student needs, increasing learning effectiveness.
(v) Active and Practical Learning. The use of VR technology and simulations allows students to experience and practice religious teachings virtually, increasing their practical understanding of concepts.
(vi) Inclusive Education. Specialized apps and software can help students with special needs access religious materials more easily.
(vii) Digital Skills Development. Religious education can include teaching digital ethics and helping students understand responsibility and ethical behavior in the use of technology.

(viii) Integrated Teacher Training. Teachers can undertake training and professional development online, improving their skills in integrating technology into religious teaching.
(ix) Security and Privacy. Education managers can build strong data security policies to protect the privacy of student and teacher information.
(x) Lifelong Learning. Digital resources enable lifelong religious education, with materials accessible to all age groups to continually increase their understanding of religion.
(xi) Monitoring Student Progress. Automated systems can help teachers monitor student progress in real-time and provide faster feedback.
(xii) Collaboration between Schools and Institutions. Collaboration between schools or religious institutions can be enhanced through digital learning platforms, enabling the exchange of ideas and best practices.

3.9. The Influence of Digital Transformation on the Quality of Islamic Learning

Digital transformation in the context of religious learning has a significant impact on the quality of learning. The following are some of the positive influences that can occur:

(i) Increased Accessibility. Digital transformation allows access to religious materials and learning from various places, overcoming geographical barriers and expanding the reach of religious education (Komarudin & Irawati, 2023).
(ii) Interactive and Interesting. Technology allows the use of more interactive learning materials, such as videos, simulations, and gamification, increasing student involvement in religious learning (Mawardi, 2023).
(iii) Personalized Learning. Technology can analyze learning data to provide learning experiences tailored to individual needs, helping students to understand religious concepts better (Fauziyati, 2023).
(iv) Collaboration and Communication. Digital platforms allow students and teachers to communicate, share ideas, and discuss via online forums or social media, enriching the learning experience.
(v) Flexibility of Time and Place. Students can access religious material anytime and anywhere, providing flexibility in time and place that can be adjusted to their individual needs (Taufik & Udhmah, 2021).
(vi) High-Quality Material. Teachers can access and use high-quality digital resources, including videos, texts, and multimedia presentations, to improve students' understanding of religious teachings.
(vii) Progress Monitoring. Teachers can use data and analysis of student performance to evaluate their understanding of religious material and design more effective learning strategies.
(viii) Inclusive Education. Technology can help create a more inclusive learning environment, facilitating access for students with special needs or geographic challenges.
(ix) Effective Teacher Training. Teachers can utilize e-learning platforms to undertake training and professional development, ensuring that they have the skills necessary to effectively integrate technology into religious instruction.
(x) Digital Security and Ethics. By implementing appropriate data security policies, digital transformation can help maintain the privacy and security of student and teacher information (Shobirin et al., 2023). Additionally, students can be taught about digital ethics, helping them use technology responsibly and respect religious values.

4. CONCLUSION

Based on bibliometric analysis in a computing context, the number of publications regarding digitalization and religious education has increased every year and reached a peak in publications in 2022 with a total of 241 documents published. The results of publication data mapping also show that the terms "religious education" and "digital transformation" are widely used in 2022.

Apart from that, based on the results of the literature study, evidence was also obtained showing that digital transformation can make a positive contribution to improving the quality of religious learning. In general, studies that focus on the application of information and communication technology in religious education show a significant impact. The implementation of online platforms, mobile applications, and digital resources has opened up new opportunities for more interactive, flexible, and personalized learning. In related literature, it appears that the use of technology can increase student involvement, facilitate access to religious education resources, and provide flexibility in learning methods. Moreover, digital transformation also encourages the development of digital skills which are becoming increasingly important in the modern era. This conclusion supports the idea that the role of technology, particularly in the context of computing, has the potential to enrich religious learning experiences and overall improve the quality of religious education.

However, it should be noted that the results of this research are still very limited. Therefore, it is necessary to carry out further research and deeper bibliometric analysis to understand in detail the impact of digital transformation on the quality of religious learning.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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