

A Scientometric Analysis of Spiritual Well-being in the Age of Artificial Intelligence

Noraini Junoh^{1*}, Zanirah Mustafa@Busu², Mohd Nazri Mat Zin³, Ahmad Baha Mokhtar⁴

**Corresponding Author*

^{1, 2, 3} Senior Lecturer, Academy of Contemporary Islamic Studies, University of Technology MARA, Kelantan Branch, 18500 Machang, Kelantan, Malaysia

⁴ Assistant Professor, Fakulti Usuluddin Universiti Islam Sultan Sharif Ali Brunei Darussalam

Email of All Authors: norainijunoh@uitm.edu.my, zanir126@uitm.edu.my, nazri743@uitm.edu.my, baha.mokhtar@unissa.edu.bn
Tel: +60139842483

Abstract

As AI increasingly becomes an intermediary in human life, its relationship to spiritual well-being needs to be understood more deeply, as it affects not only technical aspects but also ways of thinking, the formation of meaning in life, and the balance of the soul. Reliance on AI has the potential to impair the ability to reflect and spiritual awareness if not properly controlled. Therefore, a balanced approach is needed to ensure that AI functions as a tool that supports spiritual development, rather than replacing humans in the pursuit of peace and meaning in life. To address this concern, this bibliometric review maps global studies of how artificial intelligence impacts spiritual well-being. The scientometric analysis of 182 peer-reviewed articles published between 2016 and 2025 revealed a steady annual increase in the number of articles addressing the impact of AI on spiritual well-being. In terms of countries with the most publications, the United States ranked first. Bibliometric analysis reveals that spirituality, artificial intelligence (AI), and health are key pillars of current discussions, alongside the topics of indigenous well-being, youth, cancer treatment, and culturally responsive intervention strategies. Observations of citation patterns prove that the majority of research is now centered on holistic and community health models, despite the increasing interest in AI-based methodologies and digital platforms. However, there is a significant imbalance as existing studies focus more on the clinical and psychosocial dimensions, thus ignoring the deep integration between spirituality and technological theory. This situation reveals critical academic gaps in cross-cultural perspectives as well as empirical studies of spiritual experiences facilitated by artificial intelligence. Overall, this review maps the intellectual landscape of this field and proposes an interdisciplinary research agenda to strengthen spiritual resilience in the modern technological age. The implications of this study are significant as they provide a comprehensive theoretical framework for policymakers and researchers to systematically incorporate spiritual values into technological design, thus ensuring that human well-being continues to be preserved amidst the rapid wave of digitalization.

Keywords: Scientometric; Spirituality; Well-being; Artificial Intelligence

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1.0 Introduction

In recent years, particularly in the post- COVID-19 era, artificial intelligence (AI) has progressively transformed various aspects of human life, including economic, educational, technological, social, emotional, and spiritual aspects (Agarwal, P., Swami, S., & Malhotra, S.K., 2022). These significant impacts have been evidenced by a number of studies, which often focus on specific contexts, populations, or technological applications (Abdolrezapour, P., Ganjeh, S.J. & Ghanbari, N., 2023; Liu, C., et al., 2021).

However, AI's influence on human spiritual well-being remains underexplored (Kumar, D. & Uchoi, E., 2025; Agarwal, P., Swami, S., & Malhotra, S.K., 2022), which highlights a gap in knowledge, requiring further investigation (Al-Kumaim, N.H., et al., 2021; Chan,

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M.K., et al., 2021). Generally, spiritual well-being encompasses an individual’s sense of purpose, meaning, inner peace, and connection to transcendent values, and it is increasingly recognized as a critical component of holistic human health, especially in the context of digitalization and technological era (Pargament, K.I., 2011).

In the light of the identified gap, this scientometric review aims to (1) map global research on spiritual well-being in the age of AI, (2) identify the most productive authors, countries, and institutions, and (3) highlight key trends and gaps to guide future research. The synthesized findings from this scientometric review provide a comprehensive overview of the foundations and trends of studies on AI and its relationship with spiritual well-being. As a result, the findings provide significant insights for relevant parties to strengthen the understanding of this emerging topic.

2.0 Data and Method

This study adopted scientometric review as recommended by Aria & Cuccurullo (2017) and Donthu et al. (2021) to systematically map global research on artificial intelligence (AI) and its relationship with spiritual well-being. Briefly, scientometric analysis provides a systematic way to examine research patterns, reveal collaboration networks, and identify gaps in scientific literature and policy development. In the context of this study, relevant articles were exclusively extracted from the Web of Science (WoS) Core Collection from 2016 to 2025. This offers a 10-year perspective on the dynamics of the topic. Relevant publications were retrieved through a keyword-based search combining AI-related terms, such as “artificial intelligence,” “machine learning,” “deep learning,” and “digital learning,” with spiritual and well-being terms, including “spirituality” and “spiritual well-being.” This search produced 269 potential articles.

Only articles and reviews were included, while conference proceedings, book chapters, and editorials were excluded, leaving 182 articles eligible for analysis. Using VOSviewer and Biblioshiny (the R package bibliometrix), descriptive statistics were applied to analyze publication trends, top disciplines and institutions, most-cited authors, frequent keywords, and globally cited documents.

3.0 Research Mapping Results

This scientometric study specifically reviews the literature on spiritual well-being in the context of artificial intelligence.

3.1 Global Overview

Fig. 1 presents a bibliometric overview of research on spiritual well-being in the age of artificial intelligence from 2016 to 2026. The dataset included 703 author keywords, and 9,100 references. In total, 182 documents were published across 135 sources. The 10.65% annual growth rate reflects the steady growth of this field. Most research is carried out collaboratively, as from 592 authors identified, only 65 papers were single-authored. Although each paper recorded an average of 3.56 co-authors, most collaborations remain regional as only 10.99% of publications involved international partnerships.



Fig. 1. Global overview of publications on AI and spiritual well-being
(Source: Biblioshiny, the R package bibliometrix)

Although most publications are recent (average age: 2.82 years), they are already receiving citations, with an average of 4.70 citations per document. These metrics indicate that the field is emerging and gaining visibility globally, thereby creating more opportunities for future research, international collaboration, and conceptual development to better understand AI and its relationship with spiritual well-being.

3.2 Annual Trends

Fig. 2 shows an increasing trend in annual publications from 2016 to 2025. From only 4 articles in 2016, the number of publications rose to 8 articles in 2018. The number later dropped sharply to only 1 article published in 2019, before showing a steady increase for two consecutive years, in 2020 (10) and 2021 (12). The year 2022 saw a slight decline to only 9 articles published. However, the numbers of publications then surged consistently in the next three years with 17 articles produced in 2023, 29 articles in 2024, and 74 articles in 2025. This overall rising pattern reflects the growth of academic interest, wider research collaborations, and increased publication capacity in the study of AI and its relation to human spiritual well-being.

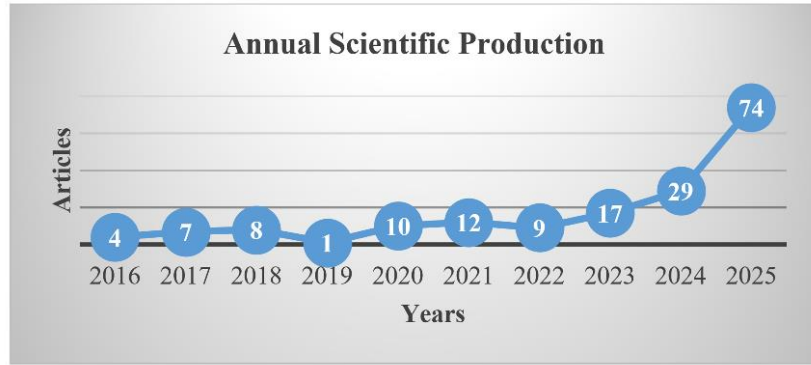


Fig. 2. Annual publication trend from 2016-2025 on AI and spiritual well-being
(Source: Web of Science Database)

3.3 Top Disciplines

The top disciplines, as shown in Table 1 are Religion, Nursing, Public Environmental Occupational Health, Computer Science Artificial Intelligence, and Health Care Sciences & Services. The main research direction of this topic is spiritual well-being in the context of artificial intelligence.

Table 1. Top disciplines studying the AI and spiritual well-being

Disciplines	Record Count	% of 182
Religion	54	29.67%
Nursing	17	9.34%
Public Environmental Occupational Health	13	7.14%
Computer Science Artificial Intelligence	11	6.04%
Health Care Sciences Services	9	4.95%
Psychiatry	9	4.95%
Psychology Multidisciplinary	9	4.95%
Clinical Neurology	8	4.40%
Computer Science Interdisciplinary Applications	8	4.40%
Medicine General Internal	8	4.40%

(Source: Biblioshiny, the R package bibliometrix)

3.4 Top Publishing Institutions

In Table 2, the University of Minnesota and Arizona State University, US, published the most literature on this topic. Other top publishing universities, also based in the US, include the University of New Mexico, Oklahoma State University, University of North Dakota, Columbia University and Stanford University.

Table 2. Top institution publishing articles on AI and spiritual well-being

Institutions	Articles
University of Minnesota	5
Arizona State University	5
University of New Mexico	4
Oklahoma State University	4
University of North Dakota	4
Columbia University	4
Stanford University	4
Rand Corp	3
Sacred Path Indigenous Wellness Centre	3
University California Los Angeles	3

(Source: Biblioshiny, the R package bibliometrix)

3.5 Top Publishing Countries

Research on this topic, as illustrated by Fig. 3, was dominated by Western countries and selected Asian regions. The United States led in research output with 79 publications, far exceeding other countries. India followed with 10 publications, while Australia, China, and Türkiye each contributed 9 publications. England and Canada recorded 8 publications each, followed by South Korea (7), Spain (5), and lastly was Iran with only 4 publications.

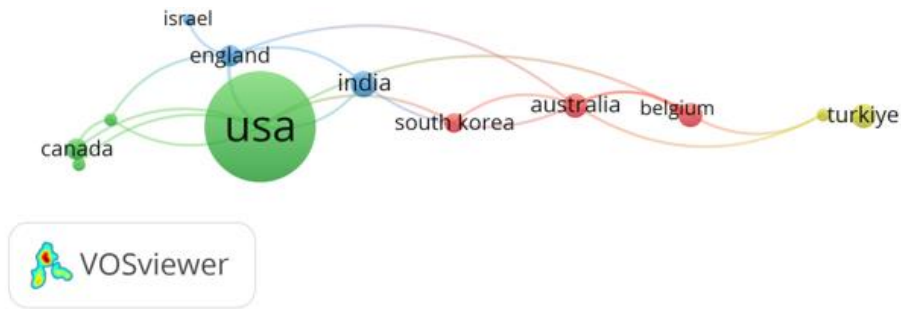


Fig. 3. Top publishing countries on AI and spiritual well-being
(Source: VOSviewer)

The number of publications suggests that current discourse on AI and its impacts on spiritual well-being is dominantly viewed from the United States perspectives. Therefore, to further enrich the body of knowledge, there is a need for broader global participation from various other countries to provide more cross-cultural insights into the impacts of AI on spiritual well-being in future research.

3.6 Top-cited Authors

The citation analysis in Fig. 4 shows that D’Amico, Dickinson, Johnson, and Klein were ranked as the most cited authors in this field, each receiving 95 citations. Their high citation counts highlight their significant scholarly contribution to understanding the impacts of AI on spiritual well-being. They were followed by Kulis (49 citations), Manson (48 citations), Lee and Roh (30 citations each), Tsethlikai, (11 citations), and Aupperle (8 citations).

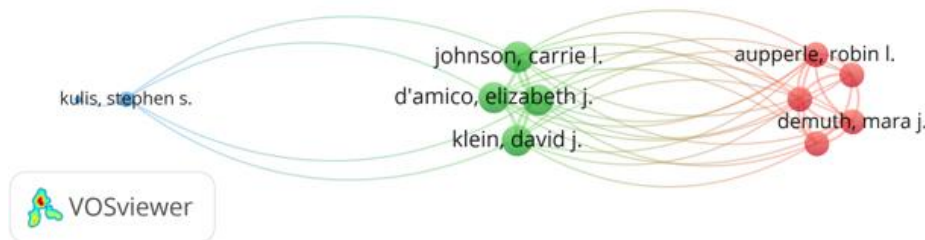


Fig. 4. Top-cited authors on AI and spiritual well-being
(Source: VOSviewer)

3.7 Most Frequent Keywords

Fig. 5 and Table 3 show the most frequent keywords in studies on AI and spiritual well-being. “Spirituality” was identified as the most frequent keyword with 56 occurrences, followed by “Artificial Intelligence” with 46 occurrences. “Health” was ranked third with 24 occurrences. Other commonly featured keywords were “Religion” (19 occurrences) “AI” (17 occurrences), “Adolescents” and “Cancer” (9 occurrences each), “American Indian,” “Culture,” and “Needs” (8 occurrences each). Overall, the keyword distribution analysis indicates that studies on AI and spiritual well-being primarily emphasize spiritual and health-related dimensions, with growing attention to culturally and demographically specific applications.

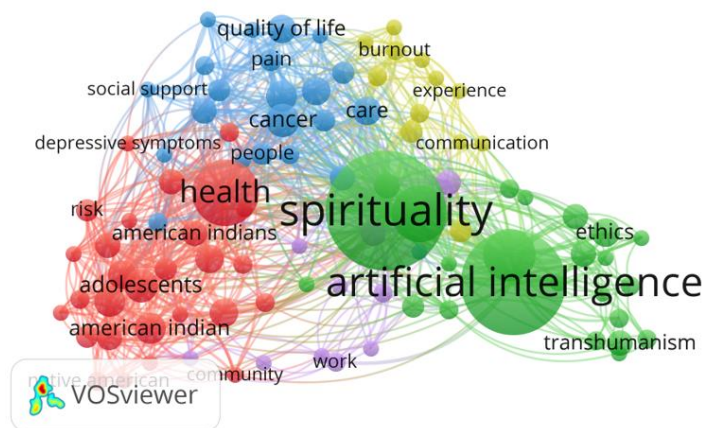


Fig. 5. Most frequent keywords in studies on AI and spiritual well-being
(Source: VOSviewer)

Table 3. Most frequent keywords in studies on AI and spiritual well-being

Word	Occurrences
Spirituality	56
Artificial Intelligence	46
Health	24
Religion	19
AI	17
Adolescents	9
Cancer	9
American Indian	8
Culture	8
Needs	8

(Source: VOSviewer)

3.7 Most Global Cited Documents

Fig. 6 shows that D’Amico et al.’s (2021) article on AOD use, spirituality, and cultural identification among urban Native American youth was ranked the most cited publication, with 51 total citations and an average of 7.29 citations per year. Article by Satija (2017) reviewing complementary and supportive therapies used in cancer care that may influence psychological and general well-being, recorded 46 citations (4.60 per year). This was followed by the article by Kulis et al. (2017) on “Leave Drug Resistance” strategy in relation to American Indian (AI) spirituality and cultural traditions, with 38 citations (3.80 per year).

Venner et al.’s (2021) article achieved 36 citations (6.00 per year), and Brown et al. (2019) recorded 33 citations (5.50 per year). These articles highlighted American Indian adolescents’ well-being as their main concern. Following was article by Nooripour et al. (2021) examining the link between spiritual well-being, COVID-19 stress, and machine learning, with 32 citations (5.33 per year). Article by Sturgill et al. (2021) highlighting artificial intelligence applications within emotional intelligence and mindfulness in the light of COVID-19 pandemic attained 25 citations. The articles with the least number of global citations were by Tan (2020) on implications of artificial intelligence in spiritual education, and Veckalov et al. (2023) on public attitudes towards AI and scientific innovation, each recording 23 citations (5.75 per year).

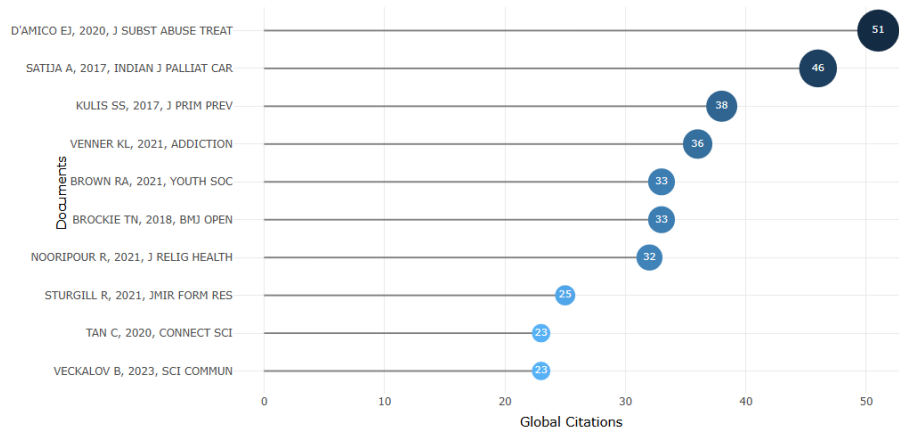


Fig. 6. Most globally cited documents on AI and spiritual well-being
(Source: Biblioshiny, the R package bibliometrix)

4.0 Discussion

This scientometric analysis shows that research on spiritual well-being in the context of artificial intelligence (AI) is an emerging interdisciplinary field, with 182 publications between 2016 and 2025 and a marked increase in output after 2023 (Shirsat, A. & Sabale, S., 2025; Oritsegbemi, O., 2023). While the field is expanding, most research remains concentrated in the United States, as shown by the dominance of US institutions such as the University of Minnesota, Arizona State University, and Stanford University. Publications from Asian countries and other regions are present but limited, which indicates opportunities for exploring broader global engagement and providing more cross-cultural perspectives on AI and its relationship with spiritual well-being, for example from the perspectives of the African or Arabs.

Analysis of keywords highlights that much of the studies on AI and its relationship with spiritual well-being remain anchored in culturally grounded and community-based frameworks. This can be exemplified by numbers of studies, such as D’Amico et al. (2020) focusing on Native American youth, Kulis et al. (2017) examining the American Indian adolescents, and Satija (2017) studying cancer patients. Also, keyword analysis revealing the most frequent key terms featured in the selected articles such as “spirituality,” “health,” and “artificial intelligence,” reflects that studies in this field primarily examine spiritual well-being in relation to health-related contexts, with artificial intelligence framed as an emerging or enabling component rather than a standalone focus.

AI applications in fostering spiritual well-being are emerging topic but it has not yet become central to the field. This is reflected in the incorporation of AI, machine learning, and digital platforms into studies of spiritual well-being by some recent publications, for example Nooripour et al. (2021), Sturgill et al. (2021), and Abdolrezapour et al. (2023). However, these studies are fewer in number and receive relatively modest citation counts.

Analysis on the international co-authorship reveals relatively low levels of international collaboration, with only 10.99% of publications involving cross-country partnerships. This suggests that the research landscape is still largely regional, and greater cross-cultural collaboration as well as comparative studies are needed to further enrich the body of knowledge on AI and its relationship with spiritual well-being.

Overall, the findings indicate that the research on AI and its relationship with spiritual well-being is in a formative stage with a strong foundation in culturally grounded, community-based, and AI-mediated approaches. It is recommended for future research to further integrate recent technological advancements, include more diverse populations, and foster interdisciplinary collaborations to advance understanding of AI and its relationship with human spiritual well-being.

5.0 Conclusion & Recommendations

This scientometric review provides a comprehensive overview of global research on spiritual well-being in the context of artificial intelligence between 2015 and 2026. The findings reveal a rapidly growing but uneven body of literature, with research output largely dominated by the United States, with the concentration on health, psychosocial, and culturally grounded applications. Highly cited studies emphasize holistic and community-based approaches, especially among Indigenous populations, adolescents, and healthcare settings, while more recent publications increasingly introduce AI- and digitally mediated perspectives.

Despite this growth, the findings indicate limited international collaboration and uneven global representation, suggesting opportunities for broader cross-cultural engagement. Although AI-related studies are emerging, they remain less prominent within the most influential literature, highlighting the early stage of technological integration in this field. Overall, the results point to a research landscape that is expanding in scope but still developing in terms of conceptual coherence and interdisciplinary integration.

By mapping publication trends, influential contributors, and thematic emphases, this scientometric review contributes to a clearer understanding of the intellectual structure of research on artificial intelligence and its relationship with spiritual well-being and. Future research would benefit from more inclusive geographical representation, stronger cross-disciplinary collaboration, and the development of integrative frameworks that connect technological innovation with spiritual well-being across diverse cultural contexts. Such efforts may support more balanced and human-centered approaches to AI-mediated environments.

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Paper Contribution to Related Field of Study

This study contributes to the integration between technology and humanity by mapping global trends as well as academic gaps to ensure that the development of AI is in line with spiritual values. It serves as a strategic guide for researchers and policymakers in devising technologies that support the balance of the soul, thus preserving the meaning of human life amidst the currents of digitalization.

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