

# Bibliometric Analysis of Human Development and Local Wisdom: Global Trends and Insights

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**Abstract:** This study aims to conduct a bibliometric analysis of scientific literature on human development and local wisdom over the past decade to identify trends, patterns, and key themes in the research. Utilizing a descriptive bibliometric research design, the analysis encompassed 210 article publications sourced from the Scopus database. The study employed quantitative bibliometric techniques to explore publication patterns, citation metrics, collaboration networks, and thematic developments. Data visualization was performed using VOS Viewer to facilitate the interpretation of co-authorship networks, keyword co-occurrence, and citation relationships. The analysis revealed a substantial increase in research publications on human development and local wisdom from 2014 to 2024, with a notable peak in 2021. Indonesia emerged as the leading contributor, followed by the United States and China. The keyword analysis highlighted core themes such as sustainability, ecological wisdom, community development, and education, indicating a multidisciplinary approach in addressing human development issues. Collaborative networks were prominent, with significant contributions from specific author clusters. The study underscores the growing recognition of local wisdom's importance in human development research. It highlights the necessity of interdisciplinary collaboration and integrating local knowledge into sustainable development practices. The findings provide valuable insights for future research directions, promoting culturally relevant and sustainable solutions to global challenges.

**Keywords:** Human development; Local wisdom; Bibliometric analysis; Sustainability; Collaboration; Scopus; VOS Viewer.

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## 1. Introduction

The concept of human development is a multidimensional approach that encompasses various aspects beyond just economic growth, focusing on the well-being of individuals and society as a whole. It is defined as the upward movement of the entire social system, which includes not only economic factors but also non-economic factors such as education, income, health and education facilities, power distribution, and social systems [1]. In particular, health includes access to health facilities and service levels, while education includes access to all three levels of education—primary, secondary, and tertiary. According to [2], the *Human Development Index* (HDI) is used to measure development beyond just economic growth by including indicators such as life expectancy, education, and income. Income here refers to the average income of the population. The availability and quality of educational and health facilities also play an important role, as does the distribution of power across economic, social, and political strata.

The social system is concerned with the overall structure and dynamics of society related to the opinion expressed by [3] who said that development should focus on expanding human capabilities, which includes not only economic growth but also social and political freedom. This approach recognizes that people have different needs and aspirations, and development must meet diverse needs. The multidimensional definition of human development has been widely accepted as a more comprehensive and accurate measure of development, given that development cannot be measured solely by income or GDP. It aims to improve the overall quality of life by addressing various aspects that contribute to the well-being of individuals and society.

Local wisdom refers to traditional knowledge, values, and practices that are unique to a particular community or region. This wisdom encompasses the collective understanding and experience of local communities, which are often passed down from generation to generation, and are deeply embedded in

the cultural, social, and environmental contexts of the region. The importance of local wisdom in formulating sustainable and culturally sensitive human development strategies has many aspects. First, local wisdom provides a comprehensive understanding of the local context, including ecological, social, and economic conditions, which is essential for developing strategies specifically tailored to the unique needs and challenges of communities [1]. Second, it ensures that development strategies are culturally sensitive, respecting community values, traditions, and practices, thus avoiding cultural homogenization and encouraging the preservation of local identities [4]. Third, local wisdom encourages community involvement and participation in the development process. This inclusive approach increases the sense of ownership and responsibility among local communities, resulting in more effective and sustainable development outcomes [5].

In addition, local wisdom is often based on traditional practices that have adapted to the local environment over time, thus providing a level of adaptability and resilience that is critical in addressing challenges posed by climate change, natural disasters, and other external factors [1]. Finally, the integration of local wisdom with global knowledge and best practices creates a more comprehensive and effective approach to human development, ensuring that local solutions are based on global expertise and vice versa. In short, local wisdom is indispensable for developing culturally sensitive and sustainable human development strategies tailored to the specific needs and context of a community. This encourages community engagement, cultural preservation, adaptability, and global knowledge integration, ultimately leading to more effective and sustainable development outcomes.

Local wisdom plays an important role in shaping human development policies and practices by providing a contextual understanding of communities and their needs. This understanding is important for developing policies that are culturally sensitive, sustainable, and tailored to the specific context of society. Local wisdom provides deep insight into ecological, social, and economic conditions, ensuring that policies are responsive to the specific needs and challenges of the community [6]. It enhances cultural sensitivity by respecting the values, traditions, and practices of the community, thus preserving local identity. In addition, local wisdom encourages community involvement and participation in the development process, fosters a sense of ownership and responsibility among local communities, resulting in more effective and sustainable results [6].

Its foundation on traditional practices adapted to local environments increases adaptability and resilience, which are essential for tackling challenges such as climate change and natural disasters. Integrating local wisdom with global knowledge and best practices creates a more comprehensive approach to human development. It provides input to policy development, ensures policies are effective and responsive to community needs, and builds local capacity by empowering communities to take ownership of their development processes. In addition, local wisdom facilitates collaborative governance by encouraging stakeholder cooperation and can be integrated into curriculum development for culturally relevant education [7]. It also provides valuable insights into poverty alleviation strategies, making them more culturally sensitive and effective. In short, local wisdom is essential to developing culturally sensitive and sustainable human development policies and practices, ensuring they are tailored to the unique context of society.

Understanding global trends in human development and integrating local wisdom is important for several reasons. Global trends provide a broader perspective on the complexities of human development, while local wisdom offers an in-depth understanding of the context and specific needs of a community. Combining these perspectives ensures that development strategies are globally informed and locally relevant. Integrating local wisdom into global development initiatives ensures that cultural differences are respected and development strategies tailored to people's specific needs and values, increasing cultural sensitivity and avoiding cultural homogenization. Local wisdom encourages community involvement and participation in the development process, fosters a sense of ownership and responsibility among local communities, resulting in more effective and sustainable development outcomes [8]. In addition, local wisdom is often based on traditional practices that have adapted to the local environment over time, providing critical adaptability and resilience to address challenges such as climate change and natural disasters.

It can be integrated with global knowledge and best practices to create a more comprehensive and effective human development approach, ensuring that local solutions are based on global expertise and vice versa. It also provides input to policy development by providing insight into people's needs and preferences, ensuring that policies are responsive and more effective. In addition, local wisdom builds the capacity of local communities by empowering them to take ownership of their development processes, foster self-reliance and encourage sustainable development [4]. In short, understanding global

trends in human development and integrating local wisdom is critical to designing effective and context-specific development programs that foster cultural sensitivity, community engagement, adaptability, and resilience.

This study aims to conduct a bibliometric analysis of scientific literature on human development and local wisdom over the past decade to identify trends, patterns, and key themes in the research. The data is taken from Scopus database which is spanning from 2014 to 2024.

## **2. Material and Proposed Method**

### **2.1. Research Design**

The main objective of the study was to conduct a bibliometric analysis of the scientific literature on human development and local wisdom over the past decade. The analysis included 210 international journal publications sourced from the Scopus database. The study aims to identify major trends, patterns, and themes in the research literature, and to evaluate the impact and development of this field over the past ten years. Using a descriptive bibliometric research design, this approach analyzes bibliographic data quantitatively to explore patterns of publication, citation, collaboration, and content within a particular field or discipline. The focus on the review of scientific articles is related to research that discusses human development and local wisdom.

### **2.2. Method**

#### **2.2.1. Bibliometrics**

Bibliometrics is an analytical approach rooted in quantitative examination of scientific outputs, including articles, publications, citations, patents, and other indicators [9]. Bibliometric analysis offers a comprehensive understanding of the development trends and current state of a concept or discipline. By systematically examining the pattern and frequency of publications, citations, and collaborations, this analysis can uncover how a field has evolved over time [10]. The analysis provides insight into the most influential research, emerging themes, and key contributors to the discipline. In addition, bibliometric studies can identify the geographic distribution of research activities, highlight the most productive institutions and researchers, and uncover the interdisciplinary relationships that drive innovation. Overall, bibliometric analysis serves as an important tool for mapping the intellectual landscape of a field, guiding future research directions, and providing information in policymaking.

Data for bibliometric analysis is usually sourced from comprehensive databases such as Web of Science, Scopus, and InCites [11-14]. The platform provides broad coverage across multiple disciplines and comes with tools for detailed bibliometric investigation. In addition, the emergence of innovative systems such as Scite.ai [15], Lens.org [16], and Bibliometrix [17] has transformed bibliometric research by integrating multiple data sources and enabling more sophisticated analysis. As technology advances and rich bibliographic data becomes available, bibliometrics continues to evolve. Researchers, policymakers, and institutions can leverage bibliometrics to make informed decisions and advance scientific research in a variety of fields [18].

#### **2.2.2. Visual Analysis**

Visual analysis is an important aspect in bibliometric studies, which uses data visualization techniques to explore and interpret bibliometric findings. The main goal of visual analysis is to offer a clear and intuitive representation of data, facilitating the identification of patterns, trends, and relationships that may not be immediately visible from raw data alone [19-22]. In this study, visual analysis was carried out using VOS Viewer software version 1.6.19 which is known to be able to produce detailed scientific visualizations. Developed by Van Eck and Waltman in 2010, VOS Viewer is specifically designed to create and display bibliometric maps [23]. These advanced mapping tools are important for generating descriptive results, providing insight into developments in science, and evaluating research performance. By utilizing these advanced visualization techniques, researchers can gain a deeper understanding of the bibliometric landscape, thereby increasing the clarity and impact of their findings. The VOS Viewer can be used to group publications and analyze the resulting clustering solution [23]. The software enables exploration of co-authoring, co-occurrence, citation, bibliographic coupling, and shared citation links through three types of visual representations: network, overlay, and density visualization [24]. In this analysis, VOS Viewer is used to determine the *Co-authorship of authors*, *Network Visualization of Co-Occurrence*, and *Overlay Visualization of Co-Occurrence*. Other data results

are presented based on processed data from the Scopus database. So that the results of this analysis will be better understood.

### 2.3. Data Collection

This analysis uses Scopus as a database to retrieve journal sources. Scopus is a multidisciplinary and selective data base launched by Elsevier in November 2004 [25]. Scopus is intended to be the widest possible database of research items of adequate quality. Scopus is one of the largest databases of curated abstracts and citations, offering extensive coverage of global and regional scholarly journals, conference proceedings, and books. This ensures the highest quality data by indexing only strictly selected content, which is periodically reevaluated by an independent Content Advisory and Selection Board [26]. The selection of journal sources using Scopus is an alternative that can be used to analyze trends from research phenomena with guaranteed quality. Scopus maintains neutrality as a source, and its content is overseen by an international panel of independent experts to ensure quality and relevance. In addition, Scopus offers advanced search capabilities, allowing researchers to quickly and precisely retrieve relevant documents from large amounts of information. This makes Scopus a comprehensive and reliable source for bibliometric analysis. The search field of this study includes title, abstract, and keywords TITLE-ABS-KEY (human AND development AND local AND wisdom) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND (LIMIT-TO (LANGUAGE, "English")) taken on June 3, 2024. Data collection is limited to only taking journal sources in English to facilitate keyword analysis in the bibliometric analysis stage.

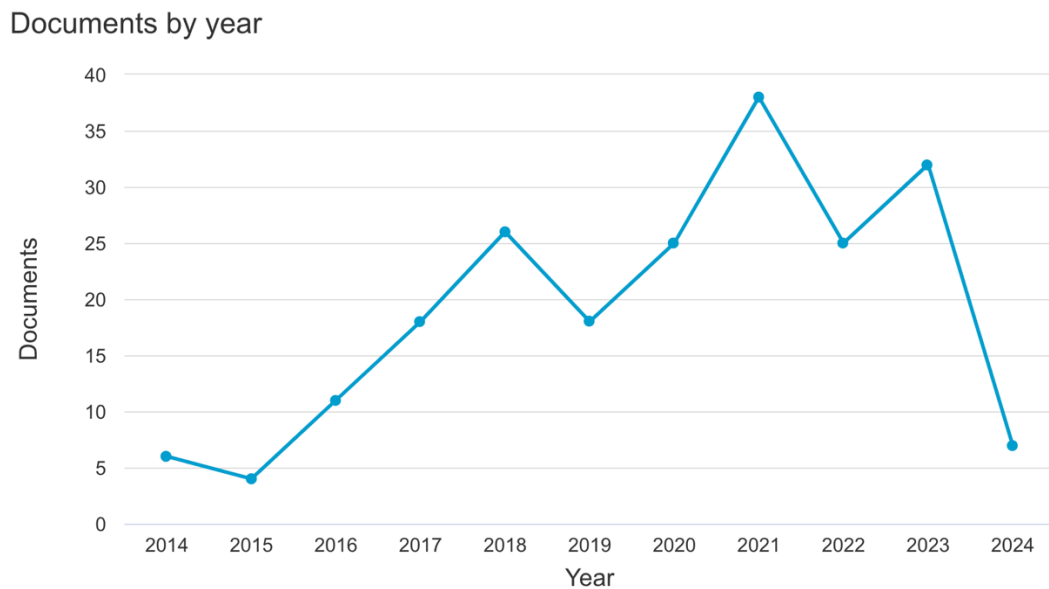
## 3. Results and Discussion

### 3.1. Research publication growth

Table 1 and Figure 1 show the number of research publications on Human Development and Local Wisdom. In the last 10 years (2014-2024), 210 documents have been issued. This data comes from Scopus and has been filtered based on the language used in the journal. Only English-language journals are analysed in the data presented, because the use of English facilitates visualization analysis in VOS Viewer.

**Tabel 1.** Publication Growth

Year	Number of Publications	Publication Contribution (%)	Publication Growth (%)
2024	7	3.33%	0.00%
2023	32	15.24%	357.14%
2022	25	11.90%	-21.88%
2021	38	18.10%	52.00%
2020	25	11.90%	-34.21%
2019	18	8.57%	-28.00%
2018	26	12.38%	44.44%
2017	18	8.57%	-30.77%
2016	11	5.24%	-38.89%
2015	4	1.90%	-63.64%
2014	6	2.86%	50.00%
Total	210	100%	



**Figure 1.** Publication growth from 2014 to 2024

Table 1 and Figure 1 present the number of Human Development and Local Wisdom research publications. Over the past decade (2014-2024), a total of 210 documents have been published. Data sourced from Scopus has been filtered by journal language, and only those written in English are analyzed. Table 1 shows the annual distribution of publications from 2014 to 2024, which shows noticeable fluctuations in the number of publications each year. In 2024 there will be 7 publications, while in 2023 there will be more 32 publications. In 2022, there were 25 publications, and in 2021 there were 38 publications. In 2020 and 2018, there were 25 and 26 publications, respectively. The number of issues in 2019 and 2017 was 18 issues each, while in 2016 there were 11 issues. 2015 and 2014 were the fewest publication years, with 4 and 6 publications respectively. Overall, the number of publications over the ten-year period amounted to 281.

The "Publication Contribution (%)" and "Publication Growth (%)" columns provide information showing the percentage of contributions each year to total publications and the year-over-year growth rate of publications. It is seen that some years have a higher contribution than others, which can be a reflection of the focus of research on a certain period of time. In addition, year-on-year growth in the percentage of publications illustrates the dynamics of growth or decline in research productivity from year to year. Some years show significant growth in the number of publications, while others experience a decline.

### 3.2. Country participation

Subsequent analysis showed the participation of documents from different countries. It can be known based on table 2, Indonesia is ranked the highest with the number of publications until 2024 as many as 106.

**Table 2.** Top 20 Country Participation

Rank	Country	Publication
1	Indonesia	106
2	United States	17
3	China	14
4	United Kingdom	13
5	Thailand	11
6	Australia	9
7	Malaysia	8
8	Canada	4
9	India	4
10	Austria	3
11	Italy	3
12	Japan	3

13	Netherlands	3
14	Denmark	2
15	Ethiopia	2
16	Finland	2
17	Iran	2
18	Macao	2
19	New Zealand	2
20	Spain	2

The Table 2 above provides an overview of the contribution of countries or regions in the field of Human Development and Local Wisdom research. Indonesia found the first position in the ranking with a significant number of publications, reaching 106 publications, showing a strong role in generating knowledge in this field. Meanwhile, the United States, despite coming in second place with 17 publications, remains a major force in global research with a strong and diverse research base. China, in third place with 14 publications, is also showing rapid growth in its contribution to the scientific literature, reflecting its increasing focus on Human Development and Local Wisdom. In addition, countries such as the United Kingdom, Thailand, Australia, and Malaysia, which are also listed in the table, make important contributions to research in the field of Human Development and Local Wisdom. This ranking analysis provides important insights into research activity in each country or region, as well as the potential for cross-border cooperation in research projects. By understanding the geographic distribution of knowledge generated in the scientific literature, policymakers, academics, and researchers can better navigate opportunities for international collaboration, resource allocation, and the development of effective research strategies. Data such as those contained in this table can be a strong basis for informational and contextual decision making in an effort to increase understanding and development in the field of Human Development and Local Wisdom globally.

### 3.3. Institution participation

Participation of institutions from various countries in conducting research related to Human Development and Local Wisdom.

**Table 3.** Institution participation

Institution	Country	Number of articles
Diponegoro University	Indonesia	8
University of Indonesia	Indonesia	7
Bina Nusantara University	Indonesia	6
Sebelas Maret University	Indonesia	5
London School of Economics and Political Science	United Kingdom	4
Srinakharinwirot University	Thailand	3
Maharakham University	Thailand	3
Chinese Academy of Sciences	China	3
IPB University	Indonesia	3
University of North Sumatra	Indonesia	3
University of Jember	Indonesia	3
Yogyakarta State University	Indonesia	3
Indonesian University of Education	Indonesia	3
Surabaya State University	Indonesia	3
Ganesha University of Education	Indonesia	3
Musamus University Merauke	Indonesia	3
Warmadewa University	Indonesia	3
Shenzhen University	China	2
Radboud University Medical Center	Netherlands	2
Thammasat University	Thailand	2

Table 4 above provides a breakdown of affiliation by country, providing an overview of the global distribution of research results among academic institutions. Indonesian universities are emerging as dominating contributors to research related to Human Development and Local Wisdom, which shows the country's growing contribution to scientific discourse. Diponegoro University has the most publications with scientific paper contributions with 8 publications, followed by the University of

Indonesia with 7 publications. This important contribution underscores Indonesia's commitment to advancing its research agenda and fostering intellectual growth within its academic community. In addition, Bina Nusantara University and Sebelas Maret University showed considerable research results by contributing 6 and 5 publications, respectively. This shows how rich the academic landscape in Indonesia is, which is characterized by a dynamic diversity of research interests and scientific activities in various institutions. In addition, the representation of the London School of Economics and Political Science from the UK with 4 publications underscores the global influence of the institution and its role in shaping intellectual discourse on an international scale.

Other universities that contribute to Human Development and Local Wisdom are from Thailand and China which further enrich the global research landscape. Universities such as Srinakharinwirot University and Mahasarakham University of Thailand, as well as the Chinese Academy of Sciences and Shenzhen University of China, make significant contributions to the collective body of knowledge. This highlights the collaborative nature of cross-border research efforts and the importance of cross-cultural exchanges in advancing scientific inquiry. Overall, the comprehensive analysis presented in Table 4 emphasizes the contributions of universities in diverse and impactful countries to scientific knowledge. This underscores the important role of international collaboration in driving the research agenda forward and underscores the connectedness of academic institutions in the pursuit of intellectual advancement.

### 3.4. Subject Area Distribution

Table 4 provides a comprehensive breakdown of the distribution of subject areas based on the number of documents attributed to each category. The analysis provides a look into the thematic landscape of scientific research, highlighting the prominence of different fields in the academic sphere. In the top position is Computer Science, ranking first with 499 documents. This underscores the significant impact and widespread interest in computational methodologies, algorithms, and technological innovation across multiple domains.

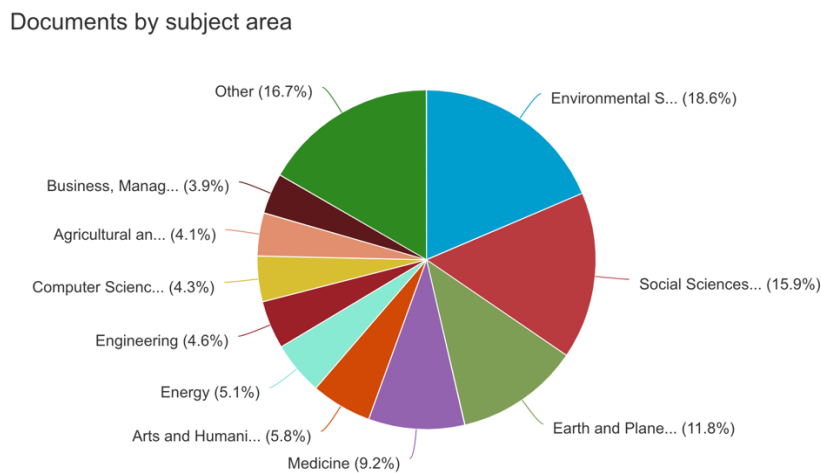


Figure 2. Subject area

Table 4. Subject area distribution

Rank	Subject Area	Number of Document
1	Environmental Science	77
2	Social Sciences	66
3	Earth and Planetary Sciences	49
4	Medicine	38
5	Arts and Humanities	24
6	Energy	21
7	Engineering	19
8	Computer Science	18
9	Agricultural and Biological Sciences	17

Table 1 presents a comprehensive breakdown of the field of study, offering a detailed overview of research results across different disciplines. Environmental Science leads the ranking with 77 documents, indicating a significant focus on environmental sustainability and conservation efforts in the scientific community. Next is Social Sciences, which consists of 66 documents, reflecting the diverse research topics covered in this field, including sociology, psychology, and economics. Earth and Planetary Sciences took third place with 49 documents describing the exploration and ongoing understanding of natural phenomena and celestial bodies. Medicine ranked fourth with 38 documents, highlighting ongoing efforts to advance medical knowledge and improve healthcare outcomes. Arts and Humanities followed with 24 documents, which underlined the importance of cultural and artistic exploration alongside scholarly activities. Energy and Engineering came next with 21 and 19 documents, respectively, indicating a growing emphasis on technological innovation and sustainable energy solutions. In addition, Computer Science and Agricultural and Biological Sciences are represented with 18 and 17 documents, respectively, which showcase the intersection of technology and life sciences in addressing contemporary challenges. Finally, Business, Management, and Accounting completes its list with 16 documents, which emphasize the importance of research in this area to inform business practices and economic policies. This comprehensive analysis underscores the diverse nature of academic research and the collaborative efforts of researchers in different subject fields to address pressing global challenges and advance knowledge in their respective fields related to Human Development and Local Wisdom.

### 3.5. Co-Authorship of Authors

Figure 2 presents a visualization of the network obtained from the data presented in Table 5, which offers different perspectives on the collaborative dynamics between authors. This suggests that while not all authors are part of collaborative networks, there are groups of authors engaged in collaborative efforts with each other. Table 5 complements this visualization by providing detailed insights into the dynamics of co-authoring, including the number of documents produced by each author and the overall strength of relationships built through collaborative efforts.

When examining the data, it is clear that certain authors stand out for their extensive collaboration networks. Notably, authors such as Ghaeminia, H., Hoppenreijts, T.J.M., Mettes, T.G., Nienhuijs, M.E.L., and Perry, J. have each contributed to a large number of documents, totaling 2 collaborations each. This underscores their active involvement in collaborative research efforts within the academic community. The information gleaned from network visualization and Table 5 highlights the complex dynamics of collaboration among authors, highlighting the connectedness of the scientific community and the importance of collaborative efforts in advancing the research agenda. These findings not only enrich our understanding of research collaboration but also underscore the importance of fostering interdisciplinary partnerships and knowledge exchange in fostering innovation and scientific progress.

**Table 5. Co-authorship of authors**

Author	Documents	Total link strength
Budiartha, I.N.P.	3	2
Martoredjo, N.T.	3	2
Munir, A.	3	2
Susanto, T.	3	4
Yarns, F.	2	2
Ghaeminia, H.	2	14
Hoppenreijts, T.J.M.	2	14
Mettes, T.G.	2	14
Nienhuijs, M.E.L.	2	14
Perry, J.	2	14
Rahim, M.	2	2

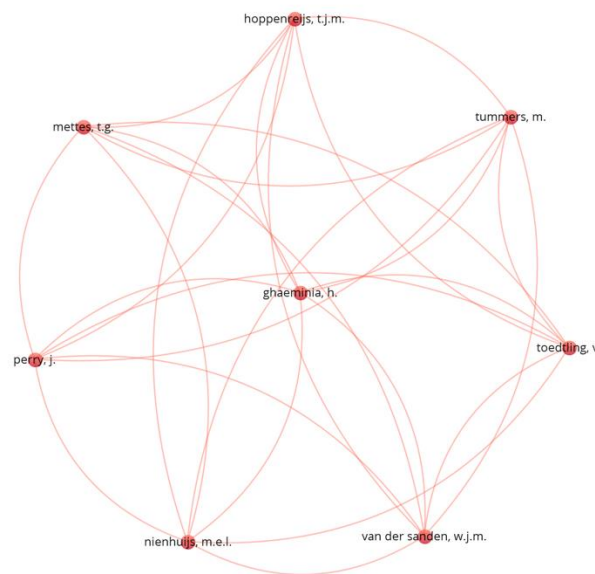
Table 5 provides an overview of the authors, their document contributions, and the strength of the relationship as a whole, providing insight into collaborative dynamics within the research community.



This table highlights the number of documents produced by each author and the strength of their collaborative relationships, measured by the total link strength generated by VOS Viewer software. Several authors have produced three documents each, which shows a high level of productivity. The authors include Budiarta, I.N.P., Martoredjo, N.T., Munir, A., and Susanto, T. Among them, Susanto, T. stands out with a total link strength of 4, which indicates a fairly strong network of collaboration with other researchers. In contrast, Budiarta, I.N.P., Martoredjo, N.T., and Munir, A. each have a total link strength of 2, which indicates fewer collaborative connections than Susanto, T.

Authors with two document contributions also showed varying levels of collaborative power. Asriningpuri, H. has a total link strength of 0, implying no recorded collaborations with other authors. On the other hand, Fios, F., and Rahim, M. both have a total link strength of 2, which signifies some level of collaborative interaction within the research community. A group of different authors—Ghaemina, H., Hoppenreijts, T.J.M., Mettes, T.G., Nienhuijs, M.E.L., and Perry, J.—each contributed two documents and had a very high total link strength of 14. This high strength of links reflects a strong network of collaboration, suggesting that these authors often work together or have strong co-authoring ties in their research efforts.

Overall, the data from Table 5 underscore the variability of collaborative efforts among authors. This highlights the importance of co-authoring and collaboration in increasing research productivity and fostering a more interconnected scientific community. Authors with higher relationship strength tend to have greater influence and influence in their respective fields, thus emphasizing the value of collaborative research in advancing academic knowledge and innovation.



**Figure 3.** Co-authorship of authors

### 3.6. Analysis of Research Keyword and Co-Occurrence

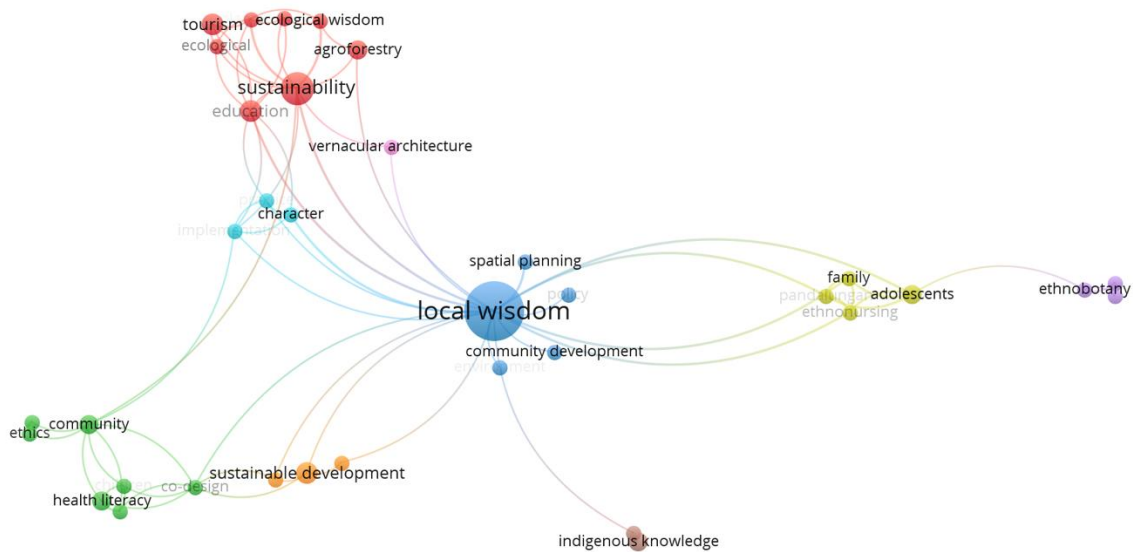
The simultaneous occurrence of keywords is represented visually through a network where the node size corresponds to the frequency of occurrence of keywords (Vittori et al., 2022). Larger nodes signify keywords that appear more frequently in the data set. A curve connecting the dots depicts the simultaneous occurrence of keywords in the same publication, indicating a thematic relationship or relationship between the words. The proximity of nodes to each other provides additional insight: the shorter the distance between two nodes, the more often those keywords appear together. This visualization technique helps identify the most common keywords and uncover common linkages and themes in the research literature.

In addition, investigating the emergence of keywords gives researchers insight into the relationship between various concepts and subfields in Human Development and Local Wisdom. By analyzing the occurrence of concomitant keywords, researchers can uncover which terms often appear together in the literature, thus highlighting the potential for thematic groups or subdomains of research to emerge. This

analysis not only helps map the intellectual structure of the field but also highlights interdisciplinary intersections that may not be immediately apparent.

Through joint events analysis, we can identify central themes driving research in these areas, as well as additional topics that are gaining attention. This information is critical to understanding research progress, determining areas ready for further exploration, and recognizing trends that may affect future research. In addition, the identification of keywords that often appear together facilitates collaboration opportunities by connecting researchers working on related or complementary topics. This can lead to synergistic partnerships, encouraging a more integrated and holistic approach to answering complex questions in Human Development and Local Wisdom.

In short, the analysis of keyword events and shared events serves as a powerful tool for explaining thematic relationships and networks in the academic literature. This allows for a deeper understanding of how various research topics are interrelated, providing a roadmap for researchers looking to navigate the vast and interconnected landscape of Human Development and Local Wisdom. This, in turn, fosters a more collaborative and interdisciplinary research environment, ultimately advancing the collective knowledge and impact of the field.



**Figure 4.** Network Visualization of Co-Occurrence

**Table 5.** Keywords in each cluster

Cluster	Colour	Keywords
1	Red	agroforestry ecological ecological wisdom education history planning sustainability tourism
2	Green	children co-design community ethics health literacy health promotion public health
3	Blue	community development environment local wisdom policy spatial planning

4	Yellow	adolescents ethnonursing family pandalungan
5	Purple	ethnobotany ethnomedicine medical plants
6	Light blue	character implementation practice
7	Orange	agriculture environmental protection sustainable development
8	Brown	biodiversity Indigenous knowledge
9	Pink	vernacular architecture

Table 5 above presents data on keywords distributed across different groups, illustrating thematic organization in data obtained from Scopus. This detailed examination is based on the visualization depicted in Figure 4, setting the minimum number of keyword occurrences to 2. This threshold filters the original 627 keywords to 45 for analysis. Prior to analysis, a careful review of keywords is performed to eliminate duplicates and irrelevant terms, ensuring that only related keywords are included. As a result, the visualization in Figure 4 analyzes 36 keywords, organized into 9 different clusters, forming a total of 94 connections in the network.

Cluster 1 in red focuses on environmental sustainability and planning, including keywords such as agroforestry, ecological wisdom, education, history, planning, sustainability, and tourism. Cluster 2, which is green, emphasizes public health and community well-being, covering themes such as health literacy, ethics, and community engagement in health promotion. Cluster 3, depicted in blue, integrates local wisdom and policy-making in environmental planning and spatial planning, highlighting community development and environmental considerations.

The yellow cluster, Cluster 4, deals with the dynamics of the younger generation and family, including terms related to ethnonursing practices and the "pandalungan" cultural group. Cluster 5, represented in purple, focuses on traditional knowledge systems, particularly in the fields of ethnobotany and ethnomedicine, focusing on the use of medicinal plants. Cluster 6, shown in light blue, covers the implementation and practical aspects of the initiative, emphasizing character development and applied practice.

Cluster 7, depicted in orange, focuses on agricultural practices and their role in environmental protection and sustainable development. Cluster 8, shown in brown, emphasizes the preservation of biodiversity and indigenous knowledge, highlighting the importance of traditional ecological knowledge. Lastly, Cluster 9, represented in pink color, focuses on vernacular architecture, emphasizing traditional architectural practices and their cultural significance.

The author-based keyword analysis in Table 5 reveals an arrangement of keywords structured into groups, each representing a specific thematic area. The organization facilitates a deeper understanding of connectedness and focus areas in research, by highlighting the diversity of topics covered. This visualization helps in identifying key research areas, potential for interdisciplinary collaboration, and emerging themes within the fields of Human Development and Local Wisdom.

**Table 6.** Co-Occurrence of Keyword

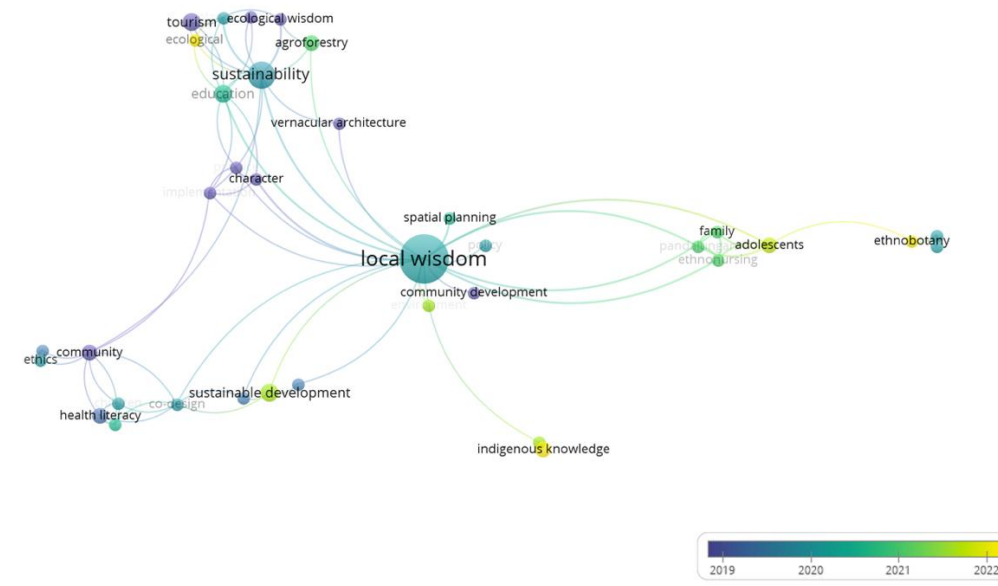
Keyword	Occurrences	Total Link Strength
Local wisdom	29	28
Sustainability	9	14
Education	4	10
Sustainable development	4	4
Tourism	4	4
Adolescents	3	9
Agroforestry	3	3
Community	3	8
Health literacy	3	5

Indigenous knowledge	3	1
Traditional wisdom	3	1
Agriculture	2	3
Biodiversity	2	2
Character	2	5
Children	2	4
Co-design	2	7
Collective intelligence	2	0
Community development	2	1
Early childhood	2	0
Ecological	2	4
Ecological wisdom	2	5
Environment	2	1
Environmental protection	2	2
Ethics	2	2
Ethnobotany	2	3

Table 6 provides a comprehensive overview of keywords, detailing their occurrence and total strength of relationships in the research literature. This table highlights the frequency with which each keyword appears and the strength of its connections to other keywords, offering insight into the central themes and interrelationships within those fields. The keyword "local wisdom" stands out with 29 occurrences and a total relationship strength of 28, confirming its central role in the research landscape. "Sustainability" is followed by 9 emergences and the strength of relationships by 14, reflecting the importance and frequency of co-emergence with other major themes. "Education," appearing 4 times with the strength of relationships at 10, is another key theme often associated with sustainability and local wisdom. Similarly, "sustainable development" and "tourism," each with 4 emergences and 4 relationship strengths, emphasize the importance of developing sustainable practices and managing tourism sustainably.

The keyword "adolescents" appeared 3 times with a relationship strength of 9, highlighting the focus on the young population in the study. "Agroforestry," with 3 emergences and relationship strength of 3, indicates a specific focus on the integration of agricultural and forestry practices. "Community" appears 3 times with a relationship strength of 8, reflecting its significance in the collective and social aspects of local wisdom and development. "Health literacy," with 3 emergences and 5 relationship strengths, emphasizes the intersection between education, public health, and community well-being. Both "indigenous knowledge" and "traditional wisdom," each appearing 3 times with the strength of a relationship of 1, highlight the importance of preserving and integrating indigenous and traditional knowledge systems.

Keywords such as "agriculture" (2 emergences, relationship strength by 3), "biodiversity" (2 emergences, relationship strength by 2), and "character" (2 emergences, relationship strength by 5) emphasize their role in sustainable development, environmental protection, and personal development. "Children" (2 emergences, relationship strength of 4) and "early childhood" (2 emergences, relationship strength of 0) focus on young demographics in education and development research. "Co-design," with 2 emergences and relationship strength of 7, emphasizes a collaborative design process that involves community participation. "Collective intelligence" (2 emergences, relationship strength of 0) and "community development" (2 emergences, relationship strength of 1) highlight efforts to improve community well-being and infrastructure. Keywords such as "ecological" (2 emergences, relationship strength of 4), "ecological wisdom" (2 emergences, relationship strength of 5), and "environment" (2 emergences, relationship strength of 1) reflect broad relevance across a wide range of research themes. "Environmental protection" (2 emergences, strength of relationship by 2) emphasizes the importance of protecting the environment in sustainable development practices. "Ethics," appearing 2 times with the strength of relationships amounting to 2, highlights moral considerations in sustainability and community development. Lastly, "ethnobotany," with its 2 emergences and 3 relationship strengths, reflects the study of relationships between humans and plants in a variety of cultural contexts. This detailed analysis of Table 6 reveals key themes and interrelationships in research on Human Development and Local Wisdom, highlighting the collaborative and interdisciplinary nature of these fields as well as assisting researchers in identifying emerging trends and encouraging collaborative efforts.



**Figure 4.** Overlay Visualization

This overlay visualization created using VOS Viewer illustrates the interconnectedness and temporal evolution of concepts related to human development and local wisdom. Each circle represents a concept, with larger circles indicating themes that appear more often. Lines connecting circles signify relationships or shared events among these concepts, while thicker lines indicate stronger or more frequent relationships. The colors of the vertices and lines, ranging from blue to yellow, represent the average year of publication, with blue indicating older research (2019) and yellow indicating more recent research (2022). At the center of this visualization is the main node of "local wisdom", which is larger and connected to many other concepts, thus highlighting its important role. Around this central theme are several main groups. The upper group, which transitions from blue to green, includes sustainability-related concepts such as ecological wisdom, tourism, agroforestry, vernacular architecture, and education, which often show their association with local wisdom. The central cluster, in blue, focuses on community development, spatial planning, and policy, underscoring the importance of these in discussions about local wisdom. On the left side, another group (blue to green) covers themes related to health and ethics, such as community, ethics, health literacy, and co-design, which shows strong connections between those areas. The lower right, transitioning from green to yellow, highlights concepts such as indigenous knowledge, family, youth, ethno-care, and ethnobotany, indicating recent academic interest in these fields.

Overall, these visualizations highlight the interdisciplinary nature of research on human development and local wisdom, showing how various related concepts interrelate and evolve over time. Temporal colour coding provides insight into the changing focus of research, particularly the growing interest in sustainability and indigenous knowledge in recent years.

#### 4. Conclusion

A comprehensive bibliometric analysis of human development and local wisdom uncovers several important insights and emerging trends in the research domain. The study shows a significant increase in research publications over the past decade, highlighting the growing recognition of the importance of integrating local wisdom into human development practices. This trend underscores the expanding relevance of this field and the growing interest among academics and practitioners.

The co-authorship analysis illustrates the collaborative nature of this research area, with specific authors and groups showing strong networks of cooperation. These collaborations are essential in fostering innovative approaches and facilitating interdisciplinary research. Such collaborative efforts are essential to address complex and diverse issues related to human development and local wisdom, enabling the creation of comprehensive and effective strategies. Keyword co-occurrence analysis provides a complex mapping of the intellectual landscape, identifying core themes and subdomains that emerge within the field. Central concepts such as sustainability, ecological wisdom, community development, and

education are often interconnected, reflecting the diverse and interconnected nature of research in this field. This analysis highlights the dynamic interaction between different elements of local wisdom and their application in human development.

Overall, this study underscores the usefulness of bibliometric analysis as a powerful tool for understanding the dynamics and evolution of the research field. By identifying key themes and collaborative networks, the analysis offers a roadmap for future research, fostering continued exploration and cooperation to advance the field of human development and local wisdom. These findings emphasize the importance of sustainable interdisciplinary collaboration and the integration of local wisdom into sustainable development practices. Such an approach is essential for effectively addressing global challenges, enriching academic discourse, and generating practical, culturally relevant, and sustainable solutions. The study provides a foundation for future research efforts, advocating deeper engagement with local wisdom to improve human development practices around the world.

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