Knowledge Structure and Trends in Poverty Research on the Web of Science Database: A Bibliometric Analysis

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Received: September 6, 2022
Revised: March 9, 2023
Accepted: March 20, 2023

Abstract

The study of poverty has made significant progress in the last decades. Bibliometric analysis, the most extensively used technique for scientific mapping, has not been widely utilized to explore knowledge structure and trends for poverty research. Based on domain-level and knowledge structure analysis, this study used data from the Web of Science (WoS) database, which included 23,939 published articles from 2011 to 2022 on poverty research. Data analysis and visualization may be accomplished with the bibliometrix package in R, an open-source software. There are several ways that trends can be mapped, such as trend themes, bibliometric coupling, and co-occurrence networks. There has been a 3.58 percent annual growth in poverty research since 2011. Studying the most frequently used terms and phrases in poverty research makes it possible to see which research areas have the greatest impact. According to the results, poverty, COVID-19, India, children, gender, Africa, inequality, health, and food security should be the focus of future research.

Keywords: poverty research, bibliometrics, scientometrics, biblioshiny, knowledge structure, research trends

Introduction

Growing up in poverty is associated with a range of adverse outcomes that can have lifelong consequences for physical health, language, and cognitive development, as well as educational attainment and academic achievement (Keeney, Hohman, and Bergman, 2019). A number of programs have been carried out using a common denominator because of the need to fit education to the cultural, economic, and social standards of the location where such education takes place; for example, rural projects seek to deal with the disarticulation of educational offerings, with the specificity of life-skill needs and development of the population in rural areas (Wei et al., 2018). At the same time, the concept of poverty is central in the comparative education field but has been empirically elusive in many large international educational surveys. These studies have not typically included measures corresponding to prevalent conceptualizations or measurement strategies in the poverty literature (Hannum and Alvarado-Urbina, 2017). Life and education are profoundly affected by poverty. Candidates for study in this field should inquire into the perspectives of researchers on previously examined subjects when there is sufficient data available to pique their interest. This might be utilized in future research investigations to reduce the stresses of poverty. The study of poverty alleviation by finding solutions to enhancing household income adheres to a set of income thresholds established by World Bank standards. Furthermore, the study of poverty alleviation emphasizes the importance of various factors beyond income. Poverty is a multidimensional issue and income enhancement alone may not be sufficient to uplift individuals out of poverty. Therefore, researchers explore various strategies to address poverty comprehensively, including skill development, entrepreneurship, access to credit, social protection programs, and educational initiatives. Three approaches to the multidimensionality of poverty have been multidisciplinary teams, composite indicators, and mixed methods. Complementing these, participatory methodologies go further into new ground. In the past decade and a half, they have exploded with creative diversity, not least with participatory poverty assessments, methodological innovations for research, face-to-face experiential learning, and local people's research. The contrasting mindsets of economics, anthropology, and participatory pluralism are reflected in and reinforced by their different forms of

representation. Participatory methodologies repeatedly reveal and illuminate relatively neglected dimensions of poverty and ill-being like seasonality, the places of the poor, the importance of the body, and how these and others interlock. With participatory pluralism, methods can be invented and evolved to fit specific topics (Chambers, 2007). A starting point, as suggested by the ongoing trend toward greater inequality, is to shift the focus of research away from the characteristics and failings of poor people, and toward those of a mainstream political economy and culture that relegates so many people to economic insecurity and social marginality (O'Connor, 2000).

The main research questions in this study include the following: which publications, authors, and nations have made significant contributions to poverty studies? What are the primary research strands, and how have values relevant to the problem changed over time? Are there any holes in the studies on poverty within the time frame of this study? What are some of the most pressing issues and trends that people should keep an eye out for in the next few years? The WoS (Web of Science), which has archived research on poverty published during the last 60 years, was the only database used in this investigation.

According to the authors' knowledge, no study has established networks for collaboration, identified the most productive authors and publications in the field of scientific research on poverty, or detected research trends. By contrast, a subjective approach to selecting research subjects was used in the majority of review documents. This study uses bibliometric analysis to differentiate between various methods for identifying research gaps and trends and, as a result, identifies the most promising subjects or problems for advancing poverty research (Dereli et al., 2011). We present a third strategy, known as "science mapping," based on the quantitative approach of bibliometric research methodologies, which is being increasingly utilized to map the structure and evolution of scientific domains and specialties. According to the authors' personal experience, management scholars are increasingly interested in adopting bibliometric techniques to complement their subjective evaluation of literature reviews (Zupic and Cater, 2015). A number of review

techniques exist, including structured reviews, reviews of model/framework development, meta-analysis, theoretical reviews, future hybrid research, framework-based, and systematic reviews (Al Mamun and Boyle, 2022). This article may serve as a helpful reference for academics interested in bibliometric approaches because bibliometric methods are becoming increasingly popular, but there is a paucity of guidance available on how to apply these methods.

The article first introduces the procedures used for data collection and then discusses the analysis of bibliometric results. Next, the significance, limitations, knowledge gaps, opportunities for future study, and findings are discussed. It is possible to use hybrid methods that combine the existing bibliometric and semantic approaches (e.g., bibliographic coupling with latent semantic indexing) to identify emerging topics in scientific research. These hybrid methods are quickly becoming the preferred basis for the mapping and visualization of science.

Methodology

Structured reviews, model/framework reviews, meta-analysis, theoretical examination, future hybrid research, frameworks, and bibliometric reviews are some of the bibliometric methodologies covered in this article (Al Mamun and Boyle, 2022). This study used a bibliometric methodology and examined the literature on the effectiveness of poverty researchers. Bibliometric analysis is a well-recognized and widely-used scientific technique. It is an evaluation using mathematical and statistical approaches (Cabeza et al., 2020). The bibliometric method, based on citation mapping, may be utilized to quantitatively summarize a study topic and provide insight into its key research streams (Zupic and Cater, 2015).

We used the WoS database to gather and examine the documents required for this study. There are more research publications in the WoS database than in the Scopus database on themes spanning multiple disciplines (Cabeza, Chafer, and Mata, 2020; Archambault et al., 2009). Furthermore, there is a good interconnection between the aggregated

articles and citations from these two databases, and the results of the bibliometric study are not significantly different (Zhao et al., 2018). The research data was obtained from the WoS metadata in bibliographical information data on poverty research. The collected data is a type of article with the keyword 'poverty' OR 'poverty research' (title). The study's time frame runs from 2011 to 2022 and begins in 2011. 'All years (2011-2022)' and 'all documents' were used as search criteria to ensure that no important information was missed. Figure 1 displays the criteria (Khan et al., 2020) for selecting documents and procedures used during the study.

The bibliometric study was conducted using an R program named "Biblioshiny" (Aria and Cuccurullo, 2017). Figure 1 shows the point in this analysis when the search phrase 'poverty OR poverty research' was first used, producing 35,693 results. Then, 23,936 English-language documents were removed from this list using the criteria of 'poverty research.' Based on the bibliometric analysis, which comprised 23,204 papers, 172 conference articles, 491 note/review articles, 29 editorial/erratum articles, and 40 books/book chapter articles, it was also decided to omit findings that were inappropriate for the topic area and included information gaps.

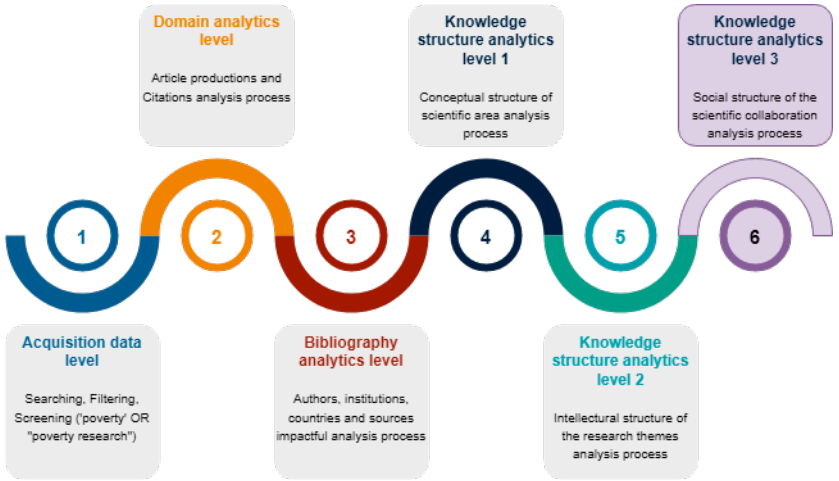

Figure 1 Methodology for article selection and evaluation

An analysis of five key elements was performed to identify knowledge-based research gaps in the field of poverty. These elements were the following: (i) published articles and citations; (ii) authors, institutions, countries, and resources of influence; (iii) conceptual frameworks of the subjects; (iv) a framework for the study of a variety of related subjects; and (v) a social framework of the related research topics involving scholarly collaboration. The number of publications, citations, co-citations, keywords, and the most prolific authors, sources, nations, and institutions were considered while assessing each component.

Results

The Main Information

There are 74,088 authors among the 23,939 documents chosen for this study. However, only 2,958 of them are single-authored documents (3.99 percent). An average of 3.09 authors contributed to each document; 15.84 citations per document demonstrate how they are well recognized in academia. These data suggest that, given the interdisciplinary nature of the issue, cooperation among researchers from many areas is crucial. The broad details of the papers studied for this research are included in Table 1.

Table 1 Summary of descriptive information

Description	Result	Description	Result
Main Information		**Document contents**	
Timespan	2011:2022	Keywords Plus (ID)	21510
Sources (Journals, books, etc.)	4286	Author's Keywords (DE)	37829
Documents	23939	**Authors**	
Average years from publication	3.58	Authors	74088
Average citations per document	15.84	Author appearances	122247
Average citations per year per doc	4.42	Authors of single-authored documents	2958
References	800280	Authors of multi-authored documents	71130

Table 1 Summary of descriptive information (cont.)

Description	Result	Description	Result
Document types		**Author collaboration**	
Article	23204	Single-authored documents	3376
Book/book chapter	40	Documents per author	0.323
Conference paper	172	Authors per document	3.09
Editorial/erratum	29	Co-authors per document	5.11
Note/review	491	Collaboration index	3.46

1. Publication output

As shown in Figure 2, the number of research works published over the last decade has increased significantly, indicating the academic community's growing interest. The annual growth rate increased from 810 to 3,517 papers as time went on. The fact that more than 976 new studies have been published every year since 2011 leads us to believe that the study of poverty is still in its infancy. The WoS database contains 23,939 documents spanning just over a decade. It is anticipated that this pattern will continue into the foreseeable future.

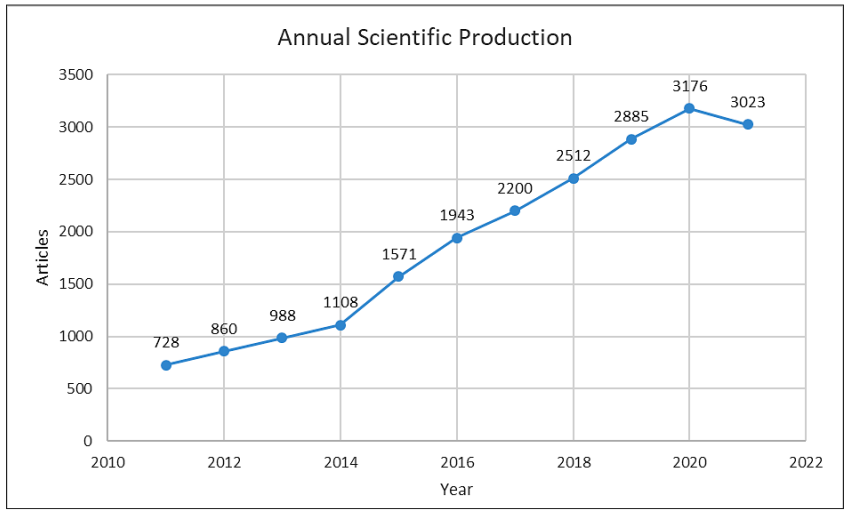

Figure 2 Publication output

2. Discipline-wise analysis

Research on poverty has been covered in depth in **Sustainability** (816), **PloS One** (620), and the **International Journal of Environmental Research and Public Health** (424), as seen in Figure 3 (except for other journal groups).

The value of the papers published by each journal is ranked in Figure 3. The chart indicates the importance of the articles with research on poverty. In addition, the information presents a ranking, from 0 to 10, of the most regularly published journals and papers.

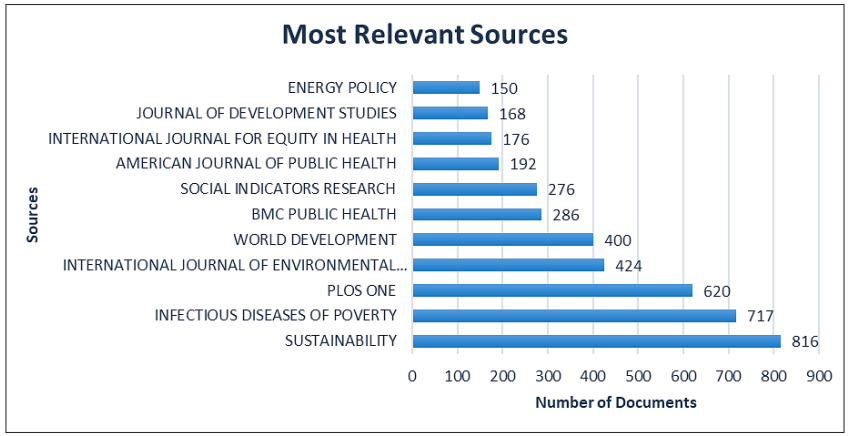

Figure 3 Distribution of documents across titles

3. The leading countries and institutions

As part of our analysis, we evaluated most of the major countries and organizations worldwide. It was discovered that the United States (US) is the most productive country, producing 28,367 total publications (TPC). The United Kingdom (UK) (TPC, 9,570) is second, followed by China (TPC, 5,190). Figure 4 provides a ranking of countries that are tied for second place. The University of Oxford in the UK is currently in first place among the top ten educational institutions, with a total publication index (TPI) of 732. In second place is Harvard University in the US, with a TPI of 683, and the third place is the University of

Michigan also in the US, with a TPI of 676. Table 2 also includes entries for many other illustrious organizations.

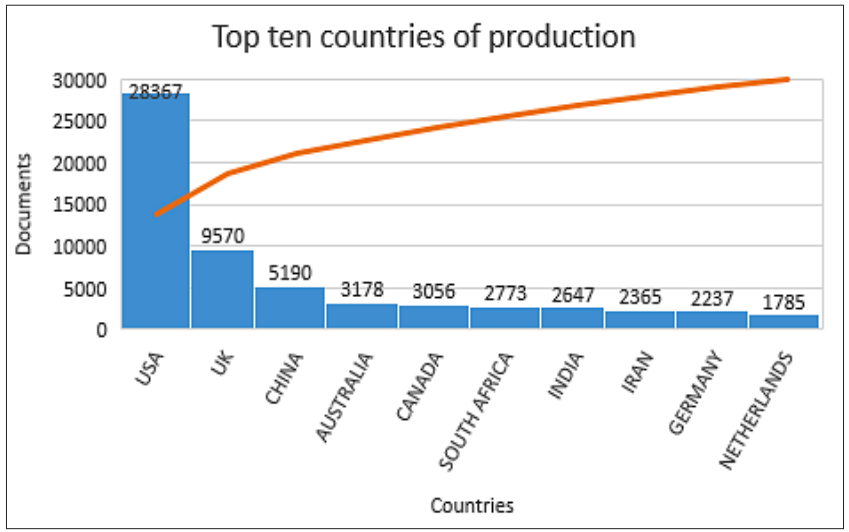

Figure 4 Top 10 countries and institutions

Table 2 Top 10 institutions with published articles

Affiliations	Articles
University of Oxford	732
Harvard University	683
University of Michigan	676
University of North Carolina at Chapel Hill	617
Columbia University	580
University of California San Francisco	550
Stanford University	532
University of Washington	530
The London School of Hygiene & Tropical Medicine	464
Johns Hopkins University	432

Analyses of Bibliographic Performance

1. The publication and citation trend

According to the Scopus database, the first essay published on the topic of answers to a culture of poverty was written by Schorr in 1964. Although this is not our core area of interest, he recommended incorporating it into this research. During the last ten years (2011-2022), there was an increase in the number of publications at an annual average rate of 3.58 percent. The civil rights movement showed that people living in poverty hold positive qualities that should be acknowledged. The civil rights movement challenged the culture of poverty theory. The people living in poverty fought for their rights and achieved significant progress in the fight against racism and discrimination. This showed that the culture of poverty is not an impenetrable barrier and that people living in poverty can overcome challenges and achieve success. The civil rights movement also showed the positive aspects of the culture of poverty. For example, people living in poverty often have strong community ties and a sense of sharing identity. They are also very resourceful and creative in finding ways to survive and thrive. In conclusion, the civil rights movement showed the views buried in the culture of poverty, including the courage, determination, resilience, resourcefulness, and creativity of people living in poverty.

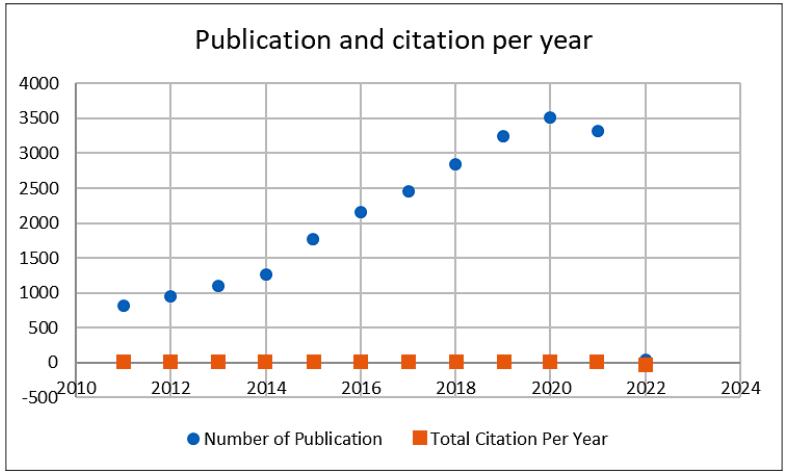

Figure 5 Publication and citation history on poverty research

Figure 5 illustrates the overall number of publications and the average number of citations received for each document per year. Since it was first published in 2011, the number of papers in the journal has significantly increased in response to the growing demand for poverty research between 2011 and 2020. There is an explanation for the roughly tenfold increase in scholarly publications on this topic during the past ten years. During this period, the focus of studies was mainly on field research, which led to an increase in the number of scholarly publications (Brown and Hirschl, 1995; Hallerod, 1995; Abbott, 1995; Room, 1995). The highest average number of citations for a single text was recorded in 2012, and since then, the document's popularity has been gradually declining. It is possible that this is due to an increase in similar papers during the past several years, or it could be that a few studies have made significant contributions to the volume of materials available. This suggests that research in this area expanded significantly at one point, but it has since stalled out due to research gaps in the wrong spot. However, after 2020, the yearly average value of the citations began to fluctuate.

2. The impact of the source

This section discusses the most significant and effective sources of poverty research. Figure 6 illustrates the distribution of the top twenty most impactful sources by the H index. According to the number of publications, **World Development** (56) is ranked at the top, followed by **Proceedings of the National Academy of Sciences of the United States of America** (51). According to Bradford's law, only 82 journals depicted in Figure 6 (zone 1) are the primary sources of poverty research publications (Venable et al., 2016). In total, zone 1 has 82 articles published yearly (2.50 percent). If all bibliometric characteristics are considered, the **World Development** journal is found to be an excellent source, as shown in Table 3. Considering the m-index, **World Development** takes first place. It is revealed that journals such as **Proceedings of the National Academy of Sciences of the United States of America**, **American Journal of Public Health, PloS One, and Social Science & Medicine** began publication on this subject earlier than most other journals.

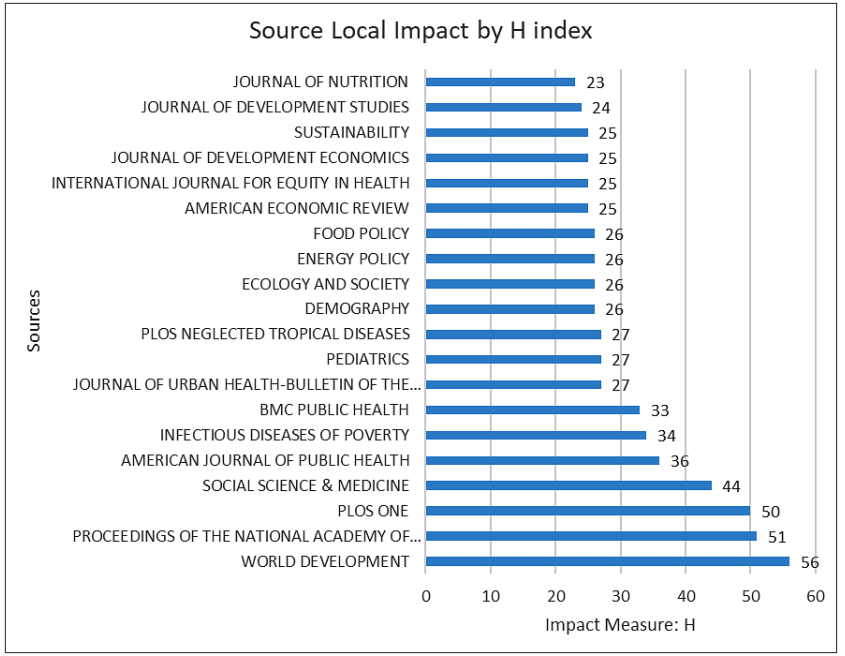

Figure 6 Top 20 impactful sources of poverty research

Table 3 The impact of the sources

Element	h-index	g-index	m-index	TC	NP	PY start
World Development - Journal	56	90	4.667	12634	382	2011
Proceedings of the National Academy of Sciences (PNAS)	51	99	4.250	10040	130	2011
American Journal of Public Health	50	75	4.167	7220	192	2011
PLOS One	44	65	3.667	8908	544	2011
Social Science & Medicine | Journal	39	59	3.250	4446	140	2011
Journal of Urban Health	38	54	3.167	3560	126	2011
Energy Policy | Journal	34	59	2.833	4156	138	2011
BMC Public Health	32	42	2.667	3868	252	2011
Food Policy | Journal	32	56	2.667	3290	82	2011
Journal of Development Economics	30	54	2.500	3020	82	2011
Demography	29	46	2.417	2360	84	2011

Table 3 The impact of the sources (cont.)

Element	h-index	g-index	m-index	TC	NP	PY start
Health & Place | Journal	29	42	2.417	2386	92	2011
Pediatrics	29	48	2.636	2428	60	2012
American Economic Review	28	38	2.545	3142	38	2012
Ecology & Society	28	44	2.333	2576	96	2011
The Journal of Development Studies	28	41		2526	152	
Sustainability	28	38	2.333	4696	628	2011
Child development	26	44	2.167	2086	44	2011
Energy Research & Social Science | Journal	25	48	3.125	2468	72	2015
International Journal for Equity in Health	25	32	2.083	2114	154	2011

(Notes: TC = Total Citations, NP = Number of Publications, PY Start: Publication Year Start)

3. The most impactful authors

Bibliometric citation analysis is a helpful method for measuring an author's productivity in document publication. Figure 7 depicts the top authors' works on poverty study analysis over the years. The color intensity in Figure 7 is related to the year of the citation, and the bubble size represents the individual authors' relative annual productivity. For instance, Evans, M. K. received around 1.71 citations per year in 2011 and published 64 times between 2011 and 2021. The three authors that have made the most significant contributions to the field over the years are Zonderman, A. B.; Blair, C.; and Wang, J.

Additionally, Raver, C. C. is the most popular author in this field of research, with an h-index of 28, a g-index of 44, and a total of 3,302 citations. Following that are Bouzarovski, S. (h-index 25, g-index 40, total citations 2, 658) and Barrett, C. B. (h-index 24, g-index 30, total citations 2, 182).

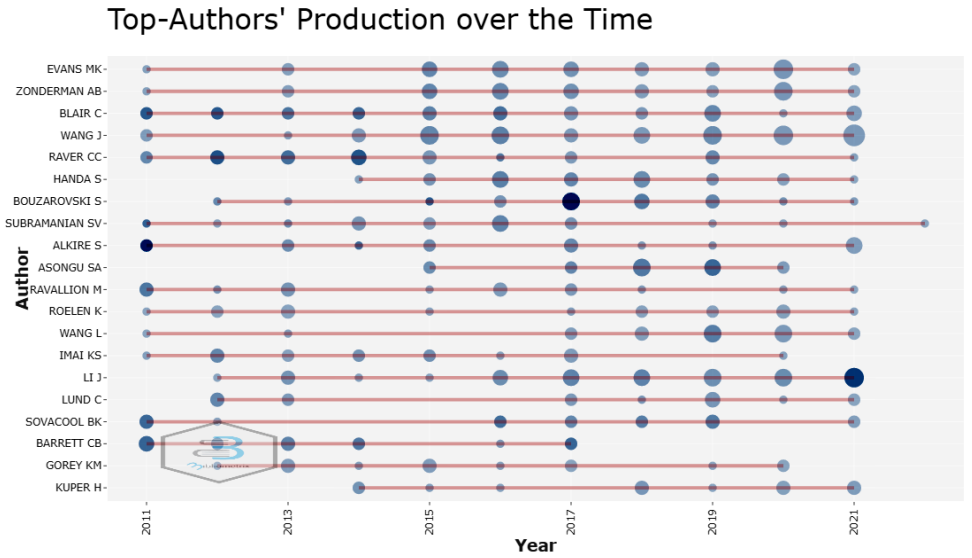

Figure 7 Top 20 impactful authors of poverty research

4. The most impactful documents

Document analysis identifies the intellectual structure of a knowledge field by assessing the volume and authority of referenced literature. Table 4 lists the top ten most-cited publications in WoS, with worldwide citation counts ranging from 533 to 1,066. Finer and Zolna (2016), Xu (2011), Alkire and Foster (2011) received the most global citations, with 1,066, 827, and 823, respectively, and were listed as the top three most referenced publications. Finer and Zolna (2016) calculated pregnancy rates for 2008 and 2011 according to women's and girls' pregnancy intentions and the outcomes of those pregnancies. Xu (2011) reported on research conducted in the Fundamental Institutions of China's Reforms and Development, and the study confirmed that China's economic reforms have resulted in spectacular growth and poverty reduction. Alkire and Foster (2011) introduced a novel methodology for measuring multidimensional poverty. This new methodology comprises an identification method called ρk that goes beyond the conventional intersection and union approaches, as well as a class of poverty measures called Mα.

Table 4 Top 10 cited documents of poverty research

Title	DOI	Total Citations	TC per Year	Normalized TC
Declines in Unintended Pregnancy in the United States, 2008-2011 (Finer and Zolna, 2016)	10.1056/NEJMsa1506575	1066	152.286	54.038
The Fundamental Institutions of China's Reforms and Development (Xu, 2011)	10.1257/jel.49.4.1076	827	68.917	18.242
Counting and Multidimensional Poverty Measurement (Alkire & Foster, 2011)	10.1016/j.jpubeco.2010.11.006	823	68.583	18.154
Early childhood development coming of age: science through the life course (Black et al., 2017)	10.1016/S0140-6736(16)31389-7	754	125.667	45.85
Green Revolution: Impacts, limits, and the path ahead (Pingali, 2012)	10.1073/pnas.0912953109	696	63.273	19.508
Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses (Sayer et al., 2013)	10.1073/pnas.1210595110	608	60.800	17.538
Social Enterprises as Hybrid Organizations: A Review and Research Agenda (Doherty et al., 2014)	10.1111/ijmr.12028	591	65.667	18.649
The health of homeless people in high-income countries: descriptive epidemiology, health consequences, and clinical and policy recommendations (Fazel et al., 2014)	10.1016/S0140-6736(14)61132-6	589	65.444	18.585
The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment (Chetty et al., 2016)	10.1257/aer.20150572	554	79.143	28.084
Talking to Children Matters: Early Language Experience Strengthens Processing and Builds Vocabulary (Weisleder & Fernald, 2013).	10.1177/0956797613488145	533	53.300	15.375

5. Bibliometric coupling of documents

Bibliometric coupling evaluates prior researchers' writings on a subject, identifies main ideas, and illustrates the scholarly argument's character. Figure 8 depicts a scientific map that identifies critical documents (impact) and their relationships (centrality) using k-means clustering. This study selected all 23,939 documents with a coupling cluster frequency of at least 10 percent, as determined by references. The impact of the document was quantified by the number of global citations. Two clusters were created based on the topic's importance and significance, each with a distinct color scheme of red and blue. Among these is the red cluster 1, with a centrality of 0.492, an impact of 3.440, and 90 documents. Alkire and Foster (2011) proposed a new methodology for multidimensional poverty measurement consisting of an identification method ρk that extends the traditional intersection and union approaches, and a class of poverty measurements Mα with normalized local citations of 823. According to Mair and colleagues, with normalized local citations of 487, much effort goes into building on data from rural Bangladesh and analyzing the work of a prominent intermediary organization; they uncovered institutional voids as the source of market exclusion and identified two sets of activities—redefining market architecture and legitimating new actors—as critical for building inclusive markets (Mair, Marti and Ventresca, 2012). Alkire and Santos (2014), with normalized local citations of 282, presented the Multidimensional Poverty Index (MPI), a measure of acute poverty, understood as a person's inability to meet minimum international standards in indicators related to the Millennium Development Goals and core functioning.

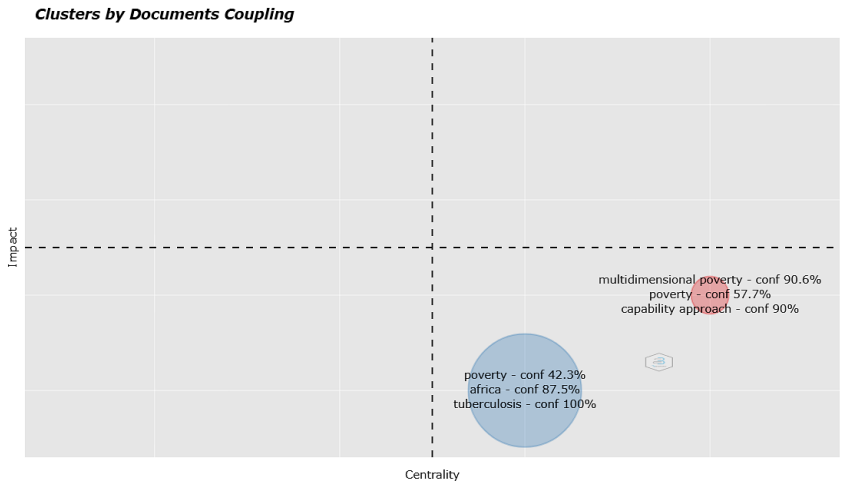

Figure 8 Bibliometric coupling of documents

Richter et al. (2017), Hoddinott et al., (2013), and Lu, Black and Richter (2016) were found to be the prominent authors in the blue cluster 2, with a centrality of 0.375, an impact of 2.936, and 108 documents. Their research interests included the following: expanding on the long-term benefits of early intervention and growing commitment to early childhood development, and recognizing that increasing support for the youngest children is essential for enhancing health, human capital, and well-being throughout the life course. First, to realize the goal of the Sustainable Development Goals (Richter et al., 2017), it is crucial to provide services and treatments that promote early childhood development. Second, the authors used instrumental variable regression to correct estimation bias and adjust for potentially confounding factors. The results show that growth failure in early life has profound adverse consequences over the life course on human, social, and economic capital (Hoddinott et al., 2013). Finally, they investigated the risk of poor development among young children in low-income and middle-income countries with estimation and analysis at the global, regional, and national levels. Between 2004 and 2010, the number of children affected by stunting or poverty decreased; however, it is not enough. It is

necessary to urgently expand effective interventions targeting the most vulnerable children (Lu, Black, and Richter, 2016).

6. Trend topics

Topics emerged as a result of the phrase frequency observed in this poverty study. The timeline below shows the subjects referenced most often. The most frequently used keywords are at the top of the list, and their occurrences are represented on the timeline. Figure 9 illustrates the topics' evolution from 2011 when it was published. According to the timeline, i32 was the most discussed topic in 2013. The United States, millennium development goals, neighborhood effects, and women's health were in the spotlight in 2014. In 2015, HIV/AIDS, REDD, food prices, and payments for ecosystem services were often discussed topics. Between 2016 and 2017, neighborhoods, health insurance, prevention, AIDS, poverty measurement, HIV, obesity, Tanzania, developing countries, and risk factors were widespread in the poverty research domain. Research on poverty began to explore topics that became popular in 2018. Between 2019 and 2021, China, mental health, food insecurity, sustainable development, sustainability, energy poverty, public health, financial inclusion, SDGs, energy justice, COVID-19, pandemic, SARS-CoV-2, the COVID-19 pandemic, and lockdown were popular interesting topics.

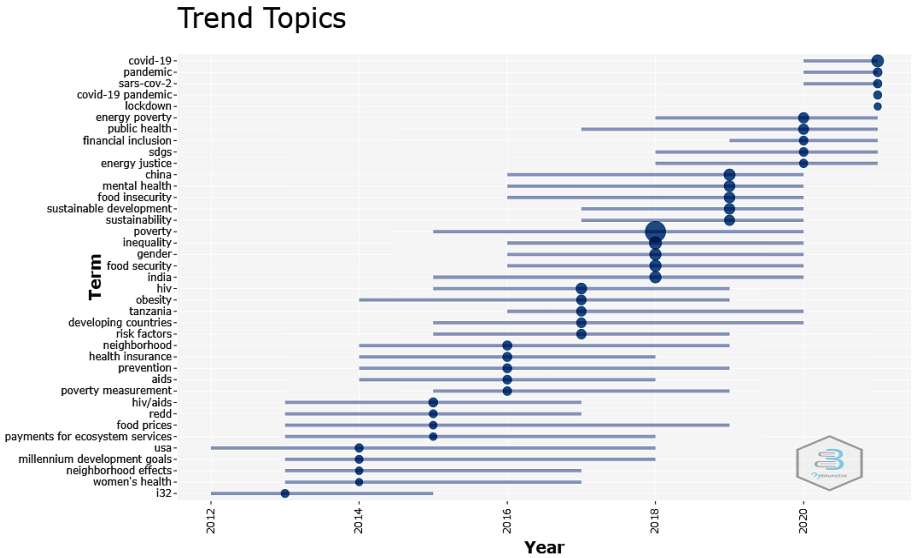

Figure 9 Topic historiography timeline

7. Thematic map

As seen in the graphic below, this research created a theme map by first separating it into four subject quadrants based on the density and centrality of the topics. The problems located in the upper-right quadrant require a closer look, as well as more in-depth research. By contrast, the upper-left quadrant features a separate subject that is uncommon and developing quickly. This subject has a high density but a low centrality. The lower-left quadrant contains motifs that are descending in density. By contrast, the lower-right quadrant contains essential themes that have a high degree of centrality but a low level of density. The timeline in Figure 10 demonstrates that the highest potential topics for future research include poverty, COVID-19, India, children, gender, Africa, inequality, health, and food security.

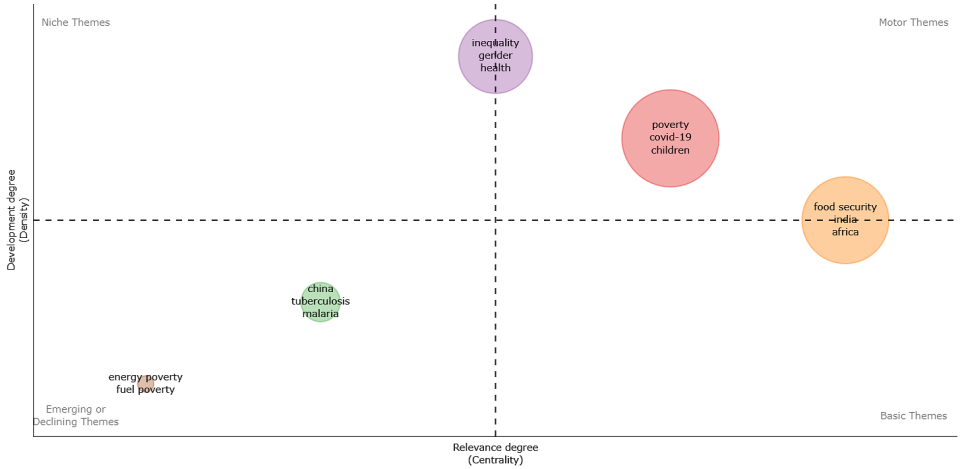

Figure 10 Thematic map

8. Foundations of research and conceptual framework

Thematic evolution in bibliometrics is becoming important for providing a historical view of research and a science-based paradigm for directing future research prospects (Moral-Munoz et al., 2018). It highlights the most critical research issues and shows how they have evolved by providing a glimpse into the future of the field (Chen et al., 2019).

Figure 11 shows the development of the five most commonly used terms in poverty research sources from 2011 to 2022 based on the co-occurrence network. The word network cluster, which represents domain-specific themes, was clustered together to create a map of thematic progression. A cut-off date of 2019 or 2020 was selected based on the volume of public documents.

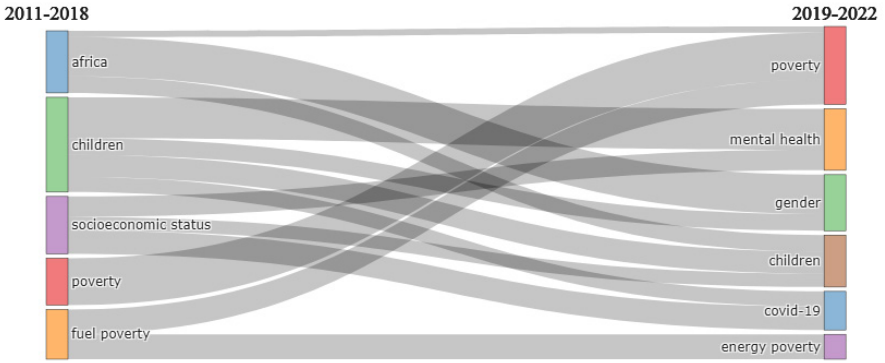

Figure 11 Thematic evolution of authors' keywords

The size of the boxes in Figure 11 indicates the frequency of keywords' appearance and themes. From 2011 to 2018, the most popular words were 'Africa,' 'children,' 'socioeconomic status,' and 'poverty,' followed by 'fuel poverty,' which were then merged into the next time slice (2019-2022) as 'poverty,' 'mental health,' 'gender,' 'children,' 'COVID-19,' and 'energy poverty,' respectively. This demonstrates that 'Africa' and 'fuel poverty' have shifted to a new well-known form, 'poverty,' due to the authors' ongoing interest in these topics. 'Poverty' was separated into two branches in the following time slice (2019-2022): 'Africa' and 'fuel poverty,' whereas 'energy poverty' was classified into two branches: 'gender' and 'children.' These keywords have been a big subject since 2018. Throughout history, the word 'poor' has appeared in various contexts. However, the subject evolution map shows that 'socioeconomic status' was the primary focus of scientists' research during the time slice 2018-2022, followed by 'gender' and 'mental health.'

9. Co-citation network analyses

The co-citation map, also called the cross-reference map, depicts the scientific structure of any body of literature by showing the frequency with which two publications are mentioned jointly in a third document (Mumu et al., 2021). This research looked at a total of 800,280 citations from different sources on the topic of poverty. The co-citation analysis was performed on 50 different articles from the poverty research field. The researchers identified citations that had been referenced a minimum of five times throughout the study. In order to show the structure and theoretical foundations of the poverty research study (Subelj, Van Eck, and Waltman, 2016), the Louvain technique was employed to cluster the selected citations. The node's size in the graph indicates the normalized number of citations associated with that node. By contrast, the thickness of the lines connecting the nodes indicates the degree of co-citation connections between the nodes. The link that connects two things, as well as their proximity, demonstrates their connection. According to Figure 12, the first author's name and publication year of the article were labeled accompanying each box. The cluster that the article belongs to is denoted by the box's color. The nodes that share the same color are grouped in this manner.

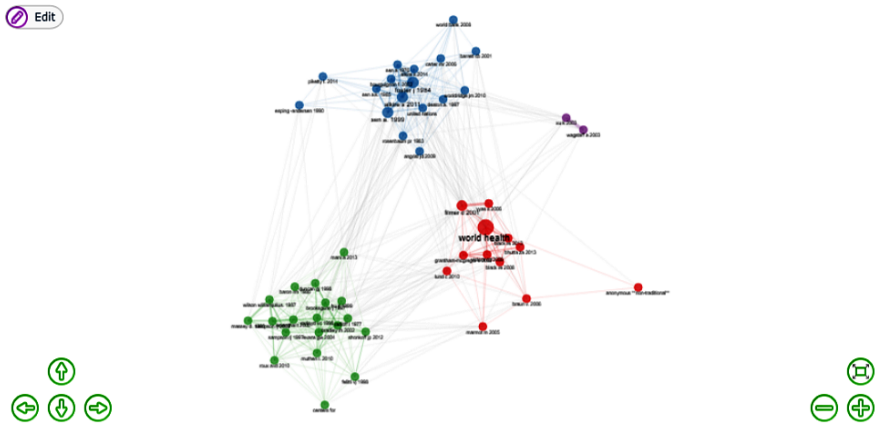

Figure 12 Co-citation network of references

Co-citation networks revealed in Table 5 are divided into three distinct clusters. The categorization is based on the most references included in the selection process. Poverty research serves as the theoretical framework for all three groups, as can be shown by the fact that it links all three together.

Table 5 Co-citation clusters as theoretical fundamentals

Cluster	Relevant citations
Cluster 1 (Red)	filmer d 2001, world health, marmot m 2005, grantham-mcgregor s 2007, braun v. 2006
Cluster 2 (Blue)	alkire s 2011, sen a. 1999, deaton a. 1997, townsend 1979, esping -andersen 1990
Cluster 3 (Green)	shonkoff jp 2012, mani a 2013, piketty t. 2014, bradley rh 2002, brooksgunn j 1997

The first cluster (red) shows the extent of poverty research in the UK and explains its existing setups by Filmer and Scott. Asset indices are typically derived from indicators of goods that are effectively public at the household level, while expenditures are often dominated by food, an almost exclusively private good. In settings where individually consumed goods are the main component of expenditures, asset indices and per capita consumption yield the least similar results (Filmer and Scott, 2012). The second cluster (blue) is poverty and family structure: the widening gap between evidence and public policy issues. Alkire and Foster (2011) proposed a new methodology for multidimensional poverty measurement, consisting of an identification method that extends the traditional intersection and union approaches and a class of poverty measures Mα. Shonkoff and Garner (2012) presented an eco-bio developmental framework that illustrates how early experiences and environmental influences can leave a lasting signature on the genetic predispositions affecting emerging brain architecture and long-term health. Mani et al. (2013) hypothesized that poverty directly impedes cognitive function and presented two studies to test this hypothesis. First, they experimentally induced thoughts about finances and found this reduced cognitive performance among poor, but not well-off,

participants. Second, they examined the cognitive function of farmers over the planting cycle and found that the same farmer shows diminished cognitive performance before harvest, when poor, compared to after harvest, when rich. Instead, it appears that poverty itself reduces cognitive capacity, as represented in the last cluster (green).

10. Author collaboration networks

Understanding research direction in a wide range of study areas requires knowledge of the author's collaboration network (Mumu, Tahmid, and Azad, 2021). This collaboration frequently leads to the creation of academic hubs that promote the development and future expansion of research fields. The co-author network shown in Figure 13 depicts the connections between academics on a country-by-country basis (Donthu, Kumar, and Pattnaik, 2020). The countries that have made the most enormous and significant contribution to the growth of the field of poverty research are shown in Figure 13 based on co-authorship. With a cut-off of five publications and five citations, 50 distinct countries achieved the threshold with three clusters, 57 links, and a total link strength of 55. The circle's diameter corresponds to the total number of publications in a particular nation. The level of participation is indicated by the line thickness and circle spacing. The quantity of documents created by authors representing two or more countries determines the overall strength of a country's ties.

Three main networks have evolved in the study of poverty, led by the United Kingdom (red cluster), Japan (green cluster), and Germany (blue cluster). Race-related power relations within these countries have resulted in a situation where African Americans experience extreme social, economic, and political marginalization if not outright exclusion. The UK (link strengths 14) is the most significant country in collaborative poverty research, followed by the United States (link strengths 12). After briefly reviewing the four theoretical frameworks that support welfare ethnographic research, they investigated five techniques or themes in anthropological studies of welfare restructuring in the United States. The ethnographic study of poverty and the social reproduction of low-income families is a key area of concentration in this discipline. It is because of the expose of a welfare reform dilemma running counter to the prevalent discourse (Morgen and Maskovsky, 2003).

Figure 13 Co-authorship based on countries

From the green cluster, these countries investigate the linkages between rural poverty, risk, and development. Based on the author's previous work in the field, this article summarized the contributions of recent theoretical and empirical research on the relationship between risk and rural poverty in developing countries. In particular, the author explored what to do and what individuals do not know about risk-coping techniques in disadvantaged rural civilizations of the present day. Governments and international organizations provided methods for re-examining and enhancing these initiatives (Fafchamps, 2003). The authors in the blue cluster had comparable discussions regarding the quality of poverty-related studies. By contrast, they found that food consumption and poverty were highly variable seasonally and annually. According to econometric studies, consumption is affected by idiosyncratic and standard shocks, such as rainfall and household-specific crop failure. Families also benefit from the seasonal incentives offered by the fluctuating labor market and rising prices (Alkire and Foster, 2011). The publishing weightage grew dramatically due to numerous agreements spanning distinct periods. The most prolific organization is the poverty research center at the University of Oxford in the UK, which has a link score of 3, a link strength of 10, and collaboration documents of 10.

Discussion

The study's findings have a wide range of practical and theoretical implications. First, the publication initially presents a comprehensive historical narrative of poverty studies during the past 60 years. Second, it highlights the literature's most significant and productive authors, publications, and countries. This lays a solid and necessary starting point for scientists who want to figure out ideas for further study and journals to disseminate their work. Third, scholars will be able to focus on the most important and influential articles, as well as the most recent ones.

Finally, academics collaborating with social developers and data scientists may use this study's findings to identify research subjects that resolve the problem of the gaps discovered. For example, a more significant study is required to conduct comprehensive assessments of financial literacy and access to financing that are integrated with poverty studies. The documents show a lack of research, as relative poverty is a dynamic, multi-faceted, and regional problem. Taking multidimensional measurements of each site and developing long-term procedures that fit them are critical in the new era. The study of poverty from a long-term and economic viewpoint has also been the subject of a few recent publications dealing with these issues. Nevertheless, there is a research gap in this area and more in-depth studies on poverty research with an emphasis on sustainability and a cost-benefit analysis for developing countries or rural communities might be carried out in the future. Yu and Huang (2021) provide an overview of the state of the research. In the future, it will be important to strengthen the integration of disciplines and pay attention to the contributions of marginal disciplines to research on poverty reduction.

Additionally, when dealing with a large-scale public issue like poverty, an integrated knowledge management framework is needed that goes beyond any particular subject or technique. From the perspective of bibliometrics' descriptive nature, this will provide a conceptual overview that is highly beneficial in making sense of the research environment. According to the 3D creativity framework

(Vuong et al., 2022), information is input for generating innovations. Therefore, to increase the probability of generating innovations, one has to increase the number of useful insights, which can be achieved by increasing the amount of information processed and the processing speed.

Moreover, the general public's and the government's perspectives on scientific study are significant for a nation's growth. The problem is considerably more severe in areas with lower incomes, further inhibiting the benefits of scientific study on poverty-related issues. When implementation of science policy fails to deliver knowledge scientifically to the public, that failure usually reflects several problems: weak planning and management of resources; inadequate capacity of the science institutions—scientists included—in addressing problems faced by society, from science, technology, engineering and mathematics education to productivity at work, and to emerging healthcare issues, and so on (Vuong, 2018).

In conclusion, while we were unable to find research specifically focused on poverty alleviation in Southeast Asia, our research results suggest that solutions such as access to cash and microfinance can help individuals build sustainable livelihoods and escape poverty; high-quality research and accurate information can help inform policy development. Additionally, studies on the role of government in poverty alleviation, such as the one focusing on countries in the Greater Mekong Sub-region, may provide insights that can be applied in other contexts.

On the other hand, this research has limitations; one of them is its sole reliance on the WoS database to find relevant documents. Moreover, additional documents were disregarded because they did not include sufficient relevant information. In upcoming research initiatives, it may be beneficial to use other prominent academic repositories, such as Scopus, Dimension, and PubMed, to carry out various evaluations and provide a more thorough qualitative and quantitative assessment of the research front on this problem. The procedures' strengths in scope are not enough to compensate for their weaknesses in terms of the examination that they perform in-depth. It was challenging to conduct a more in-depth analysis of the research topic without first studying

various methodologies and models. For this reason, bibliometric methods emphasize the output rather than the article's content.

Conclusion

Through ongoing study and development, the issue of poverty is expected to be resolved in many aspects. The rise in volume, diversity, and honesty of efforts to alleviate poverty has led to situations that have overcome the world's poverty limitations. Before starting research on poverty alleviation methods, it would be a good idea to undertake a bibliometric analysis using poverty research documents from the WoS database, an excellent source of information. Based on an analysis of the most recently published documents (23,939) and the most recent period of research (2011-2022), this bibliometric method defines the state of the art in poverty studies as future development in the field. Various bibliometric methods were used to investigate the most productive and influential authors, institutions, nations, journals, and publication patterns on the subject over time.

According to the findings of various scientific mappings of bibliometric data, such as co-citation networks, bibliometric coupling networks, and co-authorship networks, the subject of poverty study may be broken down into nine primary subfields: (1) poverty, (2) COVID-19, (3) India, (4) children, (5) gender, (6) Africa, (7) inequality, (8) health, and (9) food security. Additionally, the findings show that **World Development** is the most significant journal on poverty research in this field followed by **PloS One** and **Proceedings of the National Academy of Sciences of the United States of America.** According to citations and publications, Raver et al. (2011) **(CSRP's Impact on Low-Income Preschoolers' Preacademic Skills: Self-Regulation as a Mediating Mechanism)** is the most productive author in this field, taking into account the h-index and g-index, as well as the amount of time spent contributing to this research domain. The most frequently cited article in the collection is Development as Freedom (1999) (Sen, 2014). The most often used keyword is 'poverty,' followed by 'inequality' and 'COVID-19.' The United States is the most productive country in this area regarding publications and citations, followed by the UK, China, Australia, and Canada. With 10 links and 14 link strengths, the UK is the most collaborative country, followed by the US with 12 link strengths. Additionally, this assessment indicates that the US and the UK, the US and Canada, the US and China, and the UK and South Africa shared their documents.

This study has several limitations. First, data sources are limited to WoS, and data is collected and analyzed in only one database. We chose it because WoS allowed more dataset downloads than the Scopus database. However, importing and analyzing data from other sources might give a different result. In addition, we found that there are many inconsistencies in data format between Scopus and WoS. Therefore, we separated two analysis projects depending on the databases.

Acknowledgments

This research was funded by the Faculty of Humanities and Social Sciences, Khon Kaen University, Thailand, grant number HUSO-2565, and supported by the Center for Research on Plurality in the Mekong Region, Faculty of Humanities and Social Sciences, Khon Kaen University.

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