

A Bibliometric Analysis of the Kerala Model of Development Literature

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Abstract

The Kerala model of development has attracted nearly five decades of research across development economics, political sociology, feminist studies, environmental studies, and public health. Yet the literature has not been systematically mapped in terms of its intellectual structure, thematic evolution, and collaborative patterns. This study presents a bibliometric analysis of 93 peer-reviewed documents retrieved from Scopus and Web of Science and analyzed using Biblioshiny. The results show a field that has expanded steadily but remains highly fragmented. Thematic mapping indicates that decentralization is central to the literature but remains theoretically underdeveloped, while palliative care has developed as a largely separate strand with limited connection to mainstream development studies. The analysis also shows that the foundational works of Parayil (1996) and Véron (2001) continue to shape the field despite major social and policy changes in Kerala. Overall, the study suggests the need for greater theoretical integration, more consistent keyword use, and stronger comparative research to support cumulative knowledge building.

Keywords : *Kerala model of development, bibliometric analysis, thematic mapping, human development, development studies*

1. Introduction

The question of what development means, and how it is achieved, has generated one of the most contested intellectual debates in modern social science. For much of the twentieth century, the dominant answer came from modernization theory, most influentially articulated by Rostow (1960), who argued that all societies follow a broadly linear path from traditional economies through a capital-driven take-off toward high mass consumption. Development, in this framework, was fundamentally synonymous with economic growth: raise investment rates, industrialize, and social outcomes would follow.

This consensus was challenged from multiple directions. From the structuralist tradition, Prebisch (1950) and the Latin American dependency theorists demonstrated that the international economic order systematically transferred value from peripheral to core economies, making underdevelopment not a starting condition awaiting transformation but an ongoing product of global capitalist relations. Frank and Wallerstein extended this into a world-systems framework, permanently reshaping the terms of development debate even where dependency theory's prescriptions proved difficult to operationalize.

By the 1980s, multilateral institutions had settled into the Washington Consensus, codified by Williamson (1989) and implemented through structural adjustment programs prescribing fiscal discipline, liberalization, privatization, and withdrawal of the state from productive sectors. Within a decade, however, the evidence had turned against it. Stiglitz (1998) documented that the Washington Consensus had failed on its own criteria, namely sustained growth, poverty reduction, and reduced inequality, across the countries where it had been most rigorously applied. The underlying model assumed perfect information, ignored institutional contexts, and treated economic growth as both the means and the end of development.

The deepest theoretical challenge came from a different direction. Sen (1999), drawing on a philosophical tradition stretching from Aristotle through Rawls, argued that development should be understood as the expansion of human freedoms and capabilities, not the accumulation of income or output. Economic growth may contribute to these capabilities, but it is neither sufficient nor necessary for them. Functioning institutions, social entitlements, and political freedoms can achieve high levels of human development at modest income levels, while high GDP per capita is fully compatible with widespread deprivation. This

capability approach provided the theoretical basis for Mahbub ul Haq's Human Development Index, launched in 1990, which repositioned GDP from an end of development to, at best, a means toward it.

The most direct empirical application of this framework to a subnational context came in Dreze and Sen's (1997) comparative study of Indian states, in which Kerala served as the primary demonstration that improvements in the quality of life of the poor are the direct result of effective public action rather than economic growth. Ramachandran's detailed chapter within that volume provided the most comprehensive historical account of the model's mechanisms available in the literature, tracing Kerala's social achievements to the combined action of mass organizations and state policy against social, political, and economic oppression. It is within this evolving theoretical debate that the Kerala model acquired its international significance.

Kerala, occupying just 1.18% of India's land area, entered formal existence on 1 November 1956 with per capita income approximately 20% below the national average and per capita industrial output barely a quarter of the all-India figure (Murari, 2018). Yet within three decades it had achieved social indicators placing it apart from every other Indian state and comparable in several dimensions to middle-income nations. Infant mortality declined from 128 per thousand live births in 1951 to 16.5 by 1991, against a national average of 91. Literacy approached universality. Life expectancy for women reached 74 years when the Indian average stood at 60. The female-to-male ratio reached 1,040 women per 1,000 men against the national figure of 928 (Parayil, 1996). These outcomes were achieved not through high economic growth but alongside persistently modest per capita income. This constituted direct empirical evidence against the premise that growth must precede welfare, a challenge to the modernization paradigm, a validation of Sen's capabilities argument, and a refutation of the Washington Consensus's neglect of the developmental state. The earliest systematic documentation of these achievements was provided by Franke and Chasin (1994), who defined the Kerala model as high material quality-of-life indicators coinciding with low per capita incomes, distributed through land reform, food distribution, public health investment, and sustained political mobilization. Their account established the empirical benchmarks against which subsequent research has measured the model's achievements and failures.

Kerala's trajectory became, in Parayil's (1996) foundational article in *Third World Quarterly*, a practically realized prototype of sustainable development, demonstrating through democratic means that radical improvements in human welfare were achievable without high throughput growth. The enabling mechanisms included comprehensive land reform, universal food distribution, free universal education with emphasis on female literacy, high mandated agricultural wages, and the deepening of democratic institutions through labor movements and civic organizations. These were not market outcomes but products of sustained political mobilization and redistributive state action rooted in a historically distinctive civil society tradition that predated formal statehood (Murari, 2018). The political economy of this process was most rigorously theorised by Heller (1999), who demonstrated through comparative fieldwork that Kerala's development was driven by the sustained mobilization of subordinate classes through a cadre-based Communist Party operating within democratic institutions. This produced the preconditions for a democratic developmental state that achieved redistribution precisely because organized labor had been politically incorporated rather than excluded.

Véron (2001) argued that by the turn of the millennium the original model had been succeeded by a new phase oriented toward participatory local governance and environmental sustainability, born from the 1996 People's Plan Campaign. Yet this evolution generated its own contradictions. Feminist researchers have mounted sustained critiques: Sreekumar (2007) identified the gender paradox as Kerala's defining contradiction, with high welfare indicators coexisting with limited public participation and persistent subordination within household structures. Bhalla and Meher (2019) documented unemployment among highly educated women reaching 20 to 30 percent, and Alexander (2025) has shown that women's labor force participation remains far below the national average. Kjosavik and Shanmugaratnam (2004) argued that indigenous communities were conceptualised as a frozen class within the development framework. John et al. (2022) documented persistent under-representation of Scheduled Caste and Scheduled Tribe students in technical higher education, and Vipitha (2023) showed that the land reform's inability to redistribute plantation land left Dalit and Adivasi landlessness structurally unresolved. Environmental research has identified escalating degradation driven by construction, sand mining, and wetland conversion (Nikhil Raj and Azeez, 2024). Kannan's (2023) sixty-year reassessment

traced how Gulf migration generated remittance-driven growth while exposing the model's inability to transform productive sectors such as agriculture and industry.

The model's resilience was most recently tested in its response to COVID-19. Chathukulam and Tharamangalam (2021), whose article records the highest citation-per-year rate in this corpus at 10.0, argued that Kerala's pandemic governance drew on the institutional legacies of decentralized governance and community health infrastructure. A separate and internationally recognized strand has also developed around community-based palliative care. Kumar (2013) identified this as a system anchored in volunteer participation and local governance structures, and Gowri and Abdul (2025) have positioned it within the SDG 3 framework as a policy instrument with implications beyond the state's borders.

This breadth of engagement reflects the Kerala model's genuine significance across development economics, political sociology, feminist theory, environmental studies, public health, and migration studies. The common theoretical proposition across all these strands is that the relationship between economic growth and human welfare is not deterministic. Public action, democratic institutions, and redistributive politics can substitute for or precede material accumulation, and the conditions of development are as much political as they are economic. That proposition places the Kerala model in direct theoretical conversation with Sen's capabilities approach, in opposition to Washington Consensus orthodoxy, and in partial dialogue with structuralist traditions that emphasize the role of the state and the politics of distribution.

The consequence of this disciplinary breadth, however, is a scattered, fragmented, and intellectually unmapped body of literature. Despite nearly five decades of research engagement, this field lacks a systematic review. The structural properties of the literature, which journals carry it, which institutions produce it, how its thematic priorities have evolved, and what remains underexplored, are unknown. This gap matters particularly now. The post-2015 SDG framework has renewed global interest in Kerala as a reference case for low-income states achieving high human development, and the post-2015 period accounts for 67.7% of all publications in this corpus. Identifying the thematic architecture of this reinvigorated literature and its research gaps is therefore not a retrospective exercise but a prerequisite for producing rigorous and cumulative knowledge in a field that is actively expanding.

Purpose of the study

This study fills this gap through a bibliometric analysis of 93 peer-reviewed documents on the Kerala model of development, retrieved from Scopus and Web of Science and analyzed using Biblioshiny, the interactive interface of the Bibliometrix R-package (Aria & Cuccurullo, 2017). It maps the field's intellectual structure, thematic evolution, collaboration patterns, and research gaps. Specific objectives include identifying key authors and journals, tracing thematic shifts over time, and highlighting underexplored areas

Methodology

Data collection

Bibliometric data were retrieved from Scopus and Web of Science core collection (comprehensive social science coverage). These databases were selected because they provide the most comprehensive and consistently structured bibliometric metadata available for social science literature, including author affiliations, citation counts, author keywords, and cited references. A combined Boolean search string was applied simultaneously across both databases on May 5, 2026. The search used three complementary search terms connected by the OR operator to ensure comprehensive coverage of terminological variants used across the literature:

Scopus: TITLE-ABS-KEY ("Kerala model of development" OR "Kerala model" OR "Kerala development model")

Web of Science: TS = ("Kerala model of development" OR "Kerala model" OR "Kerala development model")

The search term "Kerala model of development" was retained from prior studies of this literature to ensure backward comparability. Two additional terms, "Kerala model" and "Kerala development model", were added to capture terminological variants used in more recent literature that do not employ the full canonical phrase. Filters were applied in both databases to restrict results to English-language documents with no date restriction, allowing the full temporal span of the literature to be captured. Document types were not restricted at the database search stage; filtering for document type was conducted during the subsequent screening phase.

The Scopus search returned 76 records and the Web of Science search returned 62 records, for a combined total of 138 records before deduplication. The two datasets were exported and merged using Biblioshiny's built-in merge function, which identified and removed 34 duplicate records, yielding a post-deduplication corpus of 104 records.

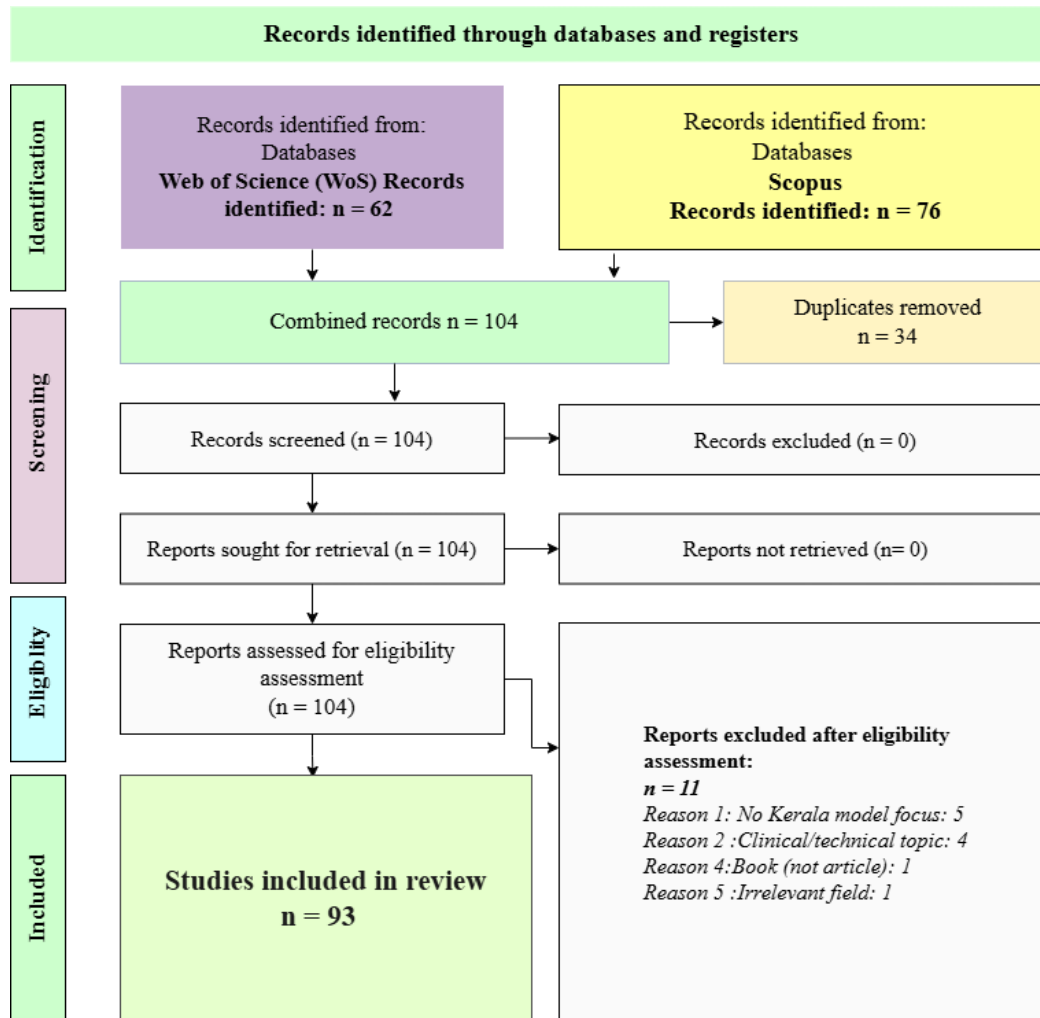
Screening and Eligibility Assessment

All 104 records were subjected to a two-stage screening procedure following PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2021), as illustrated in Figure 1. In the first stage, records were screened on the basis of title, abstract, and keyword metadata. No records were excluded at this stage, as all 104 had been retrieved through exact phrase matching and initial inspection confirmed the presence of relevant content in each case. In the second stage, records were assessed for eligibility against a single pre-specified criterion: the document must substantively engage with the Kerala model of development as a primary or significant analytical focus. Documents in which the Kerala model appeared only incidentally, as a passing reference within a broader argument, were excluded.

Eleven records were excluded following eligibility assessment. The reasons were: no substantive Kerala model focus ($n = 5$), clinical or technical content with no development model engagement ($n = 4$), book-length work rather than article or chapter ($n = 1$), and irrelevant disciplinary field ($n = 1$). The final corpus retained for analysis comprised 93 documents. This is consistent with bibliometric studies of similarly specialist literatures; Donthu et al. (2021) note that corpus size should reflect the actual scope of the field rather than an arbitrary threshold.

It is important to note that this study is a bibliometric analysis, not a systematic review of full-text documents. Eligibility assessment was therefore conducted on the basis of database metadata, including titles, abstracts, author keywords, and journal source, rather than full-text reading. This approach is standard and well-established practice in bibliometric research (Donthu et al., 2021; Zupic and Cater, 2015) and is consistent with the analytical objectives of the study.

Figure 1 :- PRISMA flow diagram illustrating the search, deduplication, screening, and inclusion process for the Kerala model of development bibliometric corpus.



Data Analysis

All analyses were conducted using Biblioshiny, the interactive interface of the Bibliometrix R-package (Aria and Cuccurullo, 2017), which has been widely adopted in bibliometric research for its capacity to integrate multiple analytical techniques within a single computational environment (Aria et al., 2020; Thakuria et al., 2024). The study generated 11 analytical outputs. A bibliometric overview established the structural profile of the corpus, covering document types, authorship patterns, and citation indicators. Annual scientific production was mapped to trace temporal trends in research output. Bradford's Law analysis identified the core journals carrying this literature, while Lotka's Law analysis examined the

distribution of author productivity across the field. Citation analysis of the ten most cited documents illuminated the theoretical foundations and intellectual anchors of the field. Country scientific production and collaboration network mapping assessed the geographic distribution of research output and the extent of international co-authorship. Keyword frequency and co-occurrence analysis identified the dominant conceptual terms and their relational structure across the corpus. Thematic mapping using Callon's strategic diagram classified research themes by their centrality to the field and their internal coherence, providing a structural representation of the field's intellectual organization (Callon et al., 1991; Cobo et al., 2011). Finally, author co-authorship network analysis examined the collaborative structure of the field and identified the presence or absence of knowledge brokers across thematic communities (Donthu et al., 2021; Mukherjee et al., 2022).

Results

Bibliometric Overview

The bibliometric overview provides a structural profile of the Kerala model of development literature as identified through the three-term systematic search. The final corpus of 93 documents spans 1989 to 2026, drawn from 78 distinct source journals, books, and edited volumes. The corpus includes 77 journal articles, five early access articles, four book chapters, four reviews, two editorial materials, and one letter. The document average age of 9.78 years reflects a literature that draws substantially on both foundational texts and recent literature, rather than being dominated by either.

The average citation count of 11.55 per document indicates moderate scholarly impact across the corpus as a whole, though citation impact is distributed unevenly, as the most cited documents analysis confirms. The international co-authorship rate of 5.38% is low, signaling that collaborative engagement across national boundaries remains limited. With 166 unique authors contributing to 93 documents, and a co-authors per document figure of 1.97, the literature is characterized by predominantly solo or small-team authorship. The 287 author keywords indexed across the dataset reflect considerable terminological diversity, a pattern consistent with an emerging and interdisciplinary field that has not yet consolidated around standardized conceptual vocabulary.

Table 1 :- Bibliometric Overview of the Kerala Model of Development Literature (1989–2026)

Indicator	Value
Timespan	1989–2026
Total documents	93
Source journals and books	78
Annual growth rate (1996–2025)	5.8%
Document average age	9.78 years
Average citations per document	11.55
Total unique authors	166
Single-authored documents	47 (50.5%)
Co-authors per document	1.97
International co-authorship rate	5.38%
Author keywords (DE)	287
Keywords Plus (ID)	187
Journal articles	77
Book chapters	4
Reviews	4
Other document types	8

Note. Annual growth rate is calculated from 1996 (the first year with sustained scholarly output) to 2025, excluding the partial year 2026. Biblioshiny reported a growth rate of 0% due to the influence of the 1989 outlier publication; the figure reported here is based on manual recalculation using the CAGR formula $[(n_{2025} / n_{1996})^{(1/29)} - 1]$, where n represents annual output.

Table 2 :- Top 15 Most Productive Affiliations in the Kerala Model of Development Literature

Rank	Affiliation	Country	Articles	Active period
1	Indian Institute of Technology (IIT) System	India	8	2007–2025
2	Centre for Development Studies	India	5	2006–2016
3	Government Medical College	India	5	2022
4	IIT Hyderabad	India	5	2019–2024
5	Malabar Cancer Centre	India	5	2015–2024
6	IIT Madras	India	4	2016–2025
7	Norwegian University of Life Sciences (NMBU)	Norway	4	2004–2015
8	Kerala University of Health Sciences	India	3	2022
9	Mahatma Gandhi University	India	3	2021–2023
10	Sree Saraswathi Thyagaraja College	India	3	2021–2024
11	Ambedkar University Delhi	India	2	2023–2024
12	Central European University	Hungary	2	2009
13	George Institute for Global Health	India/Australia	2	2024
14	Institute for Social and Economic Change (ISEC)	India	2	2021
15	Tata Institute of Social Sciences	India	2	2019–2021

Note. Note. Articles = number of affiliated documents in the corpus. Active period = first and last year of contribution. IIT campuses aggregate (rank 1) totals 17 articles across all IITs (Hyderabad=5, Madras=4, others=8); individual campuses listed separately where metadata allows disaggregation. Incomplete address fragments excluded. Only affiliations ≥ 2 articles listed beyond rank 10. Government Medical College cluster reflects 2022 publications.

Annual Scientific Production

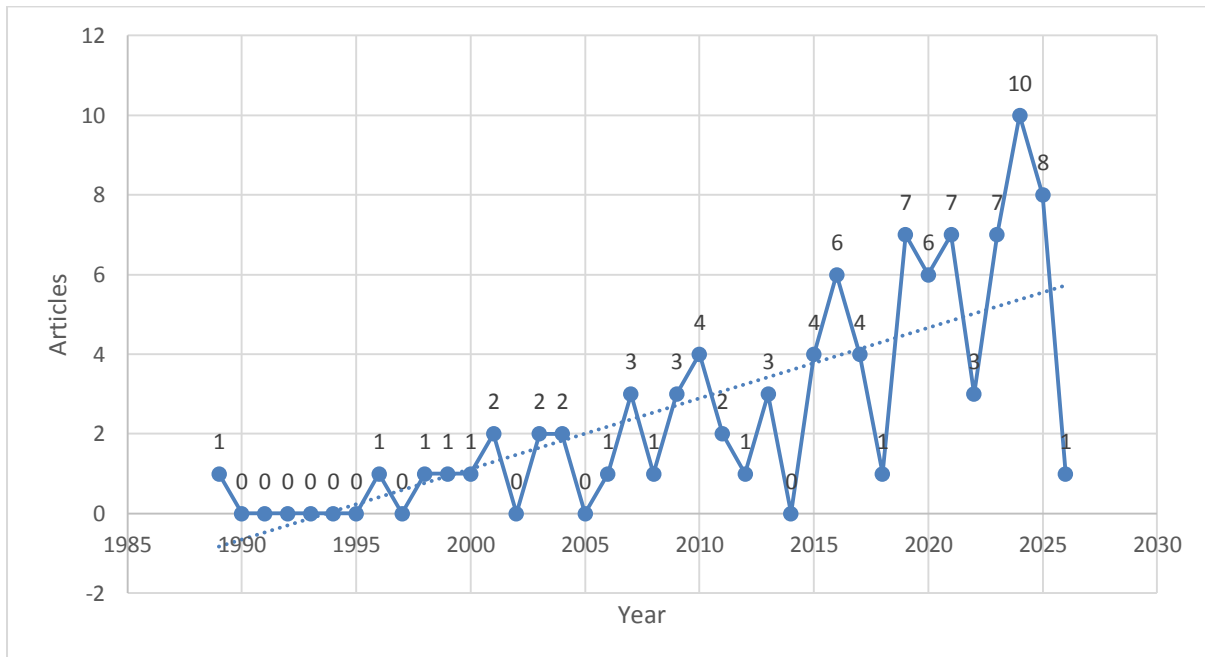
The annual scientific production of the Kerala model of development literature, presented in Figure 2, spans nearly four decades from 1989 to 2026. The overall publication trajectory reveals three discernible phases of research activity.

The first phase, from 1989 to 2005, was characterized by sparse and irregular output. Only 12 documents were published across this period, with several years recording no output at all. The lone 1989 publication, Jeffrey's examination of women and the Kerala model, stands as the earliest indexed contribution to this literature. Research output remained minimal through the 1990s, with the notable exception of Parayil's (1996) foundational article in *Third World Quarterly*, which gave the field its theoretical anchor.

The second phase, from 2006 to 2016, marks a period of modest but consistent growth. Twenty-eight documents were published during this decade, with annual output ranging from one to six articles per year. The peak of six articles in 2016 coincides with the consolidation of the United Nations Sustainable Development Goals in September 2015, suggesting that renewed global interest in alternative development pathways contributed to increased research attention. This phase also saw the emergence of new thematic strands, including feminist critiques of the model and early work on palliative care.

The third and most productive phase, from 2017 to 2026, accounts for the majority of total output in the corpus. Annual production accelerated markedly from 2019 onward, reaching a peak of 10 articles in 2024. The COVID-19 pandemic generated a distinct stimulus to literature between 2020 and 2022, as Kerala's pandemic governance attracted sustained international attention. The post-2015 period as a whole account for 63 of 93 documents, or 67.7% of the total corpus, providing strong empirical support for the argument that the SDG framework has reinvigorated research engagement with the Kerala model.

Figure 2:- Annual scientific production of Kerala model of development literature (1989–2026).



Journal Sources and Bradford's Law Analysis

The analysis of journal sources reveals that publications on the Kerala model of development are dispersed across a wide range of outlets. Bradford's Law analysis identified 17 journals constituting Zone 1 of the core publication zone, with no single source accounting for more than three articles. Three journals share the top position, each contributing three articles: Contemporary Voice of Dalit, Critical Asian Studies, and the Journal of South Asian Development. The prominence of Critical Asian Studies and the Journal of South Asian Development reflects the field's established roots in Asian area studies and interdisciplinary development Research. The appearance of Contemporary Voice of Dalit as a co-equal leader signals a meaningful presence of caste-focused literature within this literature, a finding that was not visible in earlier analyses of this field.

World Development, one of the most widely cited journals in development economics, contributes two articles and occupies Zone 1 alongside nine other sources. Its relatively modest representation, despite the field's alignment with development studies, reflects the interdisciplinary and regionally specific character of Kerala model Research. Notably, two palliative care journals, the Indian Journal of Palliative Care and the Indian Journal of Medical and Pediatric Oncology, also appear in Zone 1, marking the emergence of a distinct

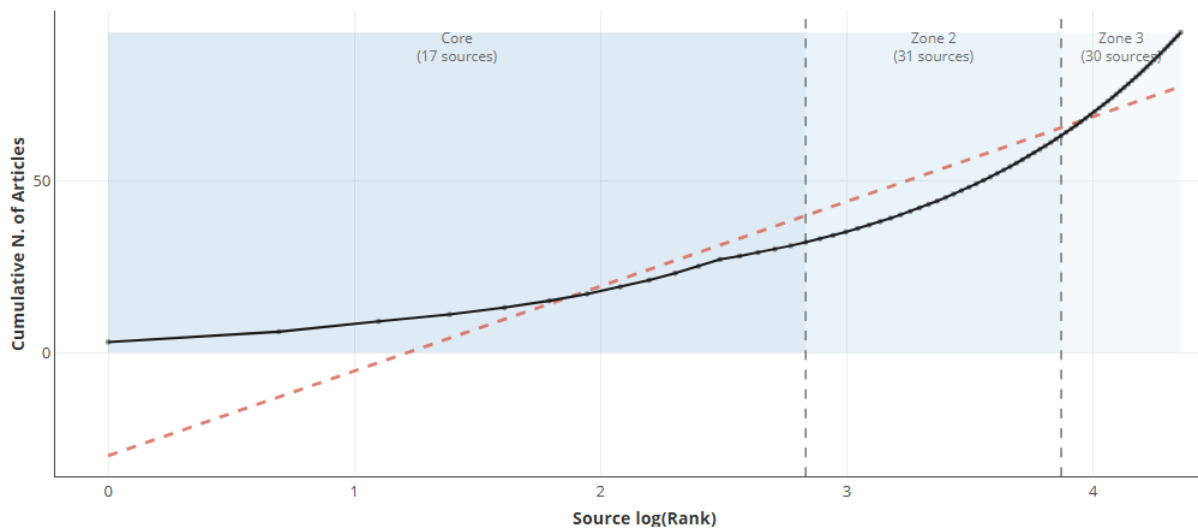
health-focused strand of Kerala model Research that was not captured in previous analyses of this literature.

The Zone 1 distribution spanning critical area studies, development economics, feminist literature, palliative care, and ecology is consistent with Bradford's Law predictions for a scattered, interdisciplinary literature with no dominant disciplinary home. Zones 2 and 3 together account for 61 journals, each contributing a single article, confirming the extreme scatter that defines this field.

Table 3:- Journal Sources and Bradford's Law Analysis

Source	Rank	Frequency	C F	Zone
Contemporary Voice of Dalit	1	3	3	1
Critical Asian Studies	2	3	6	1
Journal of South Asian Development	3	3	9	1
Capitalism, Nature, Socialism	4	2	11	1
Indian Journal of Gender Studies	5	2	13	1
Indian Journal of Medical & Paediatric Oncology	6	2	15	1
Indian Journal of Palliative Care	7	2	17	1
Inter-Asia Cultural Studies	8	2	19	1
International Journal for Equity in Health	9	2	21	1
Oxford Development Studies	10	2	23	1
Political Economy of Development in India	11	2	25	1
World Development	12	2	27	1
Other Zone 1 sources (5 journals, 1 article each)	13– 17	1	32	1
Zone 2 sources (31 journals)	—	1 each	63	2
Zone 3 sources (30 journals)	—	1 each	93	3

Note. CF = cumulative frequency, Zone 1 comprises 17 sources accounting for 34.4% of all articles. Zone 2 comprises 31 sources (33.3%). Zone 3 comprises 30 sources (32.3%). Freq = number of articles published. The Political Economy of Development in India entry refers to a two-chapter book within the same edited volume.

Figure 3 :- Bradford's Law Analysis

Author Productivity and Lotka's Law Analysis

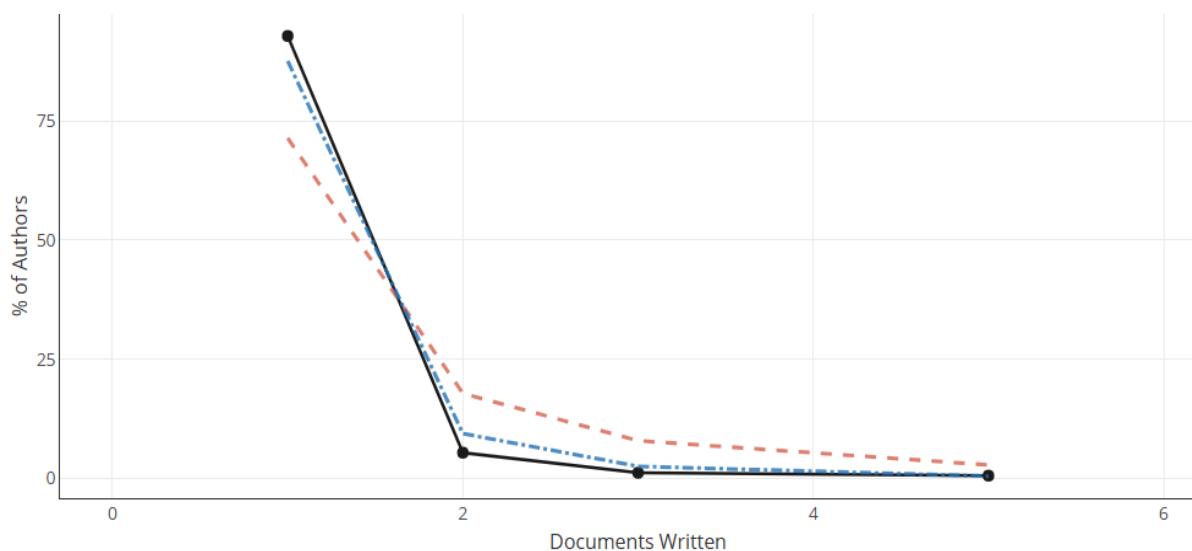
The most productive authors in the Kerala model of development literature, presented in Table 4, reveal a field in which sustained individual research engagement is rare. Devika J. emerges as the most productive author with five publications spanning 2006 to 2016, addressing themes of gender, caste, participatory democracy, and the construction of the Kerala model woman. This breadth of engagement across multiple decades places her as the field's most consistent theoretical voice on questions of gender and governance. Haneefa M. and George P. N. each contribute three articles, though the latter's work is concentrated in the palliative care strand of the literature. Jeffrey R. and Parayil G. appear with two publications each, both of whom produced foundational texts that continue to anchor the field's theoretical debates.

Lotka's Law analysis of author productivity distribution, presented in Figure 4, confirms a pronounced departure from the theoretical expectation. A striking 92.8% of authors, representing 154 individuals, contributed only one publication each, considerably exceeding the theoretical threshold of 80%. Only 9 authors (5.4%) produced two publications, falling well short of the expected 20%. Two authors produced three publications, and one author produced five. This distribution confirms that this field is sustained largely by one-time contributors rather than a stable core of productive researchers, a structural feature that constrains cumulative knowledge-building and theoretical consolidation.

Table 4 :- Most Productive Authors in the Kerala Model of Development Literature

Author	Articles	Affiliation	Active period
Devika J.	5	Centre for Development Studies, India	2006–2016
Haneefa M.	3	IIT Jammu / IIT Delhi, India	2019–2025
George P. N.	3	India	2024
Jeffrey R.	2	International	1989–2004
Parayil G.	2	International	1996–2003
Cairó G.	2	Spain	2001–2023
Kjosavik D. J.	2	NMBU, Norway	2004–2015
Azeez E. P. A.	2	India	2019–2021
Joseph J.	2	India	2016–2024

Note. *Articles column reflects total publications in the corpus for each author. Active period denotes first and last year of publication within the corpus.*

Figure 4:- Author Productivity Distribution: Lotka's Law Analysis

Note. *Theoretical proportions are based on Lotka's inverse square law. Observed proportions are derived from the Kerala model of development corpus ($n = 93$). The*

departure from theoretical expectation is notable: 92.8% one-time authors versus the expected 80%.

Most Cited Documents

The ten most cited documents in the corpus, presented in Table 5, illuminate the theoretical foundations of Kerala model research across three decades. Véron's (2001) article in *World Development*, with 133 total citations and a citation per year rate of 5.1, remains the most cited contribution to this literature. Its central argument that a "new" Kerala model had emerged, prioritizing participatory governance and environmental sustainability alongside redistribution, established a conceptual distinction that continues to orient debates in the field. Parayil's (1996) foundational article in *Third World Quarterly* ranks second with 86 citations, confirming its enduring status as the theoretical origin point of the modern Kerala model debate.

Three notable changes distinguish this citation landscape from earlier analyses of this field. First, Kuriyan et al. (2008), published in *Information Society*, appears as the third most cited document with 74 total citations and a normalized total citation score of 6.41, the highest in the entire list. This article examines ICT-for-development interventions through the lens of the Kerala model, reflecting the field's engagement with technology and informational dimensions of development that remain underexplored in the existing literature. Second, Devika (2010), published in the *Journal of Asian Studies*, enters the top ten with 69 citations and a normalized score of 3.58, confirming her position as the most influential contemporary researcher in this field. Third, Chathukulam and Tharamangalam (2021) record the highest citation per year rate in the corpus at 10.0, signaling continued and rapidly growing interest in Kerala's post-pandemic governance model.

The most cited documents span monetary economics, participatory governance, ICT and development, feminist political economy, and palliative care, confirming the multidisciplinary character of the Kerala model literature. The absence of any single dominant disciplinary framework is consistent with the extreme journal scatter identified in the Bradford's Law analysis.

Table 5:- Most Cited Documents in the Kerala Model of Development Literature

Paper	Source	TC	TCpY	NTC	DOI
Véron (2001)	World Development	133	5.1	1.96	https://doi.org/10.1016/S0305-750X(00)00119-4
Parayil (1996)	Third World Quarterly	86	2.8	1.00	https://doi.org/10.1080/01436599615191
Kuriyan et al. (2008)	Information Society	74	3.9	6.41	https://doi.org/10.1080/01972240701883948
Devika (2010)	Journal of Asian Studies	69	4.1	3.58	https://doi.org/10.1017/S0021911810001506
Kumar (2013)	Curr. Opin. Palliat. Care	69	4.9	1.88	https://doi.org/10.1097/SPC.0b013e3283610255
Chathukulam & Tharamangalam (2021)	World Development	60	10.0	3.72	https://doi.org/10.1016/j.worlddev.2020.105207
Jeffrey (2004)	Pacific Affairs	42	1.8	1.35	https://www.jstor.org/stable/40023536
Sharma et al. (2013)	Indian Journal of Psychiatry	29	2.1	0.79	https://doi.org/10.4103/0019-5545.105554
Parayil & Sreekumar (2003)	Journal of Contemporary Asia	28	1.2	1.93	https://doi.org/10.1080/00472330380000291
Anand et al. (2000)	J. Epidemiol. Community Health	28	1.0	1.00	https://doi.org/10.1136/jech.54.4.247

Note. *TC = total citations; TCpY = total citations per year; NTC = normalized total citations (impact relative to documents published in the same year). Source journal titles are abbreviated.*

Country Scientific Production and Collaboration

The country scientific production analysis confirms the overwhelmingly India-centric geographic distribution of this literature. India accounts for the majority of affiliated authors across the corpus. Australia records the highest average citations per article at 42.0, followed by the USA (20.4) and Germany (19.5), compared to India's average of 7.4, confirming that international contributions, though fewer in number, tend to produce substantially higher-

impact work. Germany's presence in the corpus reflects the influence of European area studies literature on Kerala, particularly through work on mental health and development.

Table 6 :- Country Scientific Production and Average Citation Impact

Country	Total Citations	Average Citations per Article
India	407	7.4
USA	102	20.4
Australia	42	42.0
Germany	39	19.5
Hungary	27	27.0
United Kingdom	22	5.5
Canada	12	12.0
South Africa	11	11.0
Kenya	2	2.0
Singapore	1	1.0

Note. *TC = total citations received by documents affiliated with each country. Average citations per article = TC divided by number of affiliated documents. Data retrieved from Biblioshiny on May 5, 2026.*

The country collaboration network analysis reveals a strikingly sparse structure. Only three collaboration links were identified across the entire corpus: India with Australia (one co-authored document), India with Canada (two documents), and India with the United States (two documents). The absence of any India-United Kingdom collaboration is a notable departure from what might be expected given the UK's established South Asian area studies tradition. There is also a complete absence of South-South collaboration links, specifically no co-authored research between India and Bangladesh, Malaysia, the Philippines, or other Global South nations despite the obvious relevance of the Kerala model as a reference case for low-income high-development countries.

Figure 5:- Country collaboration network for Kerala model of development literature.



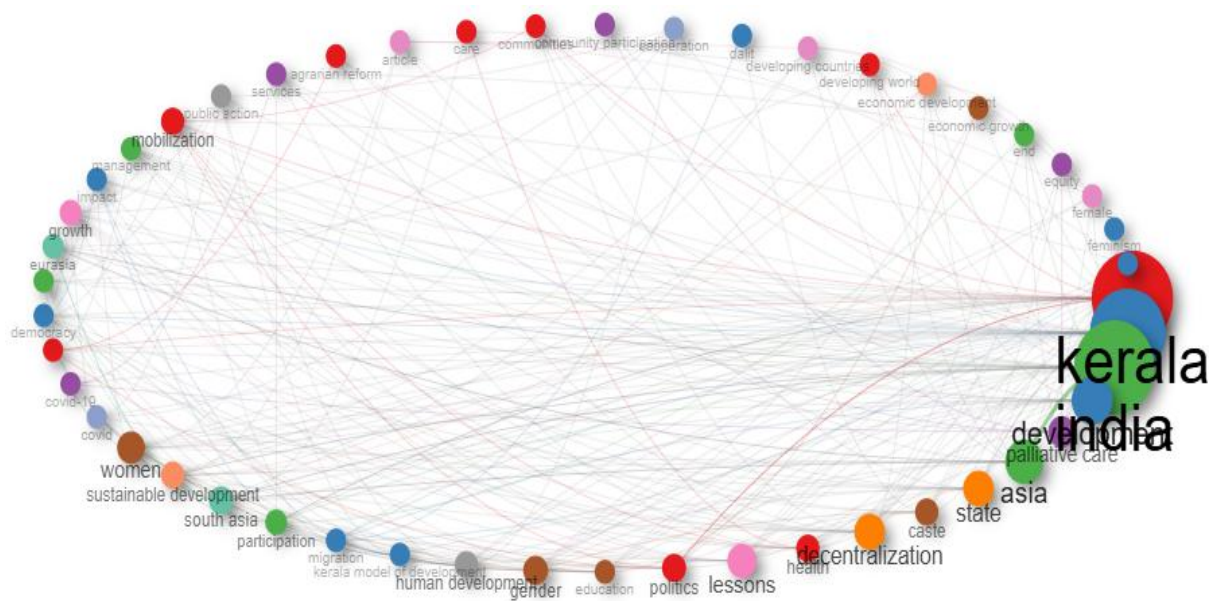
Keyword Frequency and Co-occurrence Analysis

The keyword frequency analysis identified 287 unique author keywords across the corpus. This figure is large relative to the corpus size of 93 documents and reflects the absence of standardized indexing practice across this literature. The term Kerala appears as the most frequent anchor keyword, followed closely by Kerala model. The co-occurrence of these two terms as separate keywords in the same corpus underscores a structural inconsistency in how authors have indexed their work. Additional variations such as Kerala model of development appear as a third distinct entry, confirming that authors have not converged on a common keyword for the same conceptual referent. This terminological fragmentation is itself a bibliometric finding, indicating that the field lacks the disciplinary coherence that would produce convergent indexing behavior.

The keyword co-occurrence network analysis, visualized in Figure 6, identified six substantive thematic clusters within the literature. The first and largest cluster, anchored by Kerala and India, encompasses terms including human development, education, public action, sustainable development, democracy, and economic growth. This cluster represents the intellectual core of the Kerala model debate, encompassing both the macro-level development indicators and the political economy arguments that have defined the field since Parayil (1996). The second cluster is anchored by Kerala model and includes terms such as state, migration, COVID-19, remittances, and participatory development, reflecting the field's

engagement with governance, transnational labor, and pandemic-era research. The third cluster groups palliative care with community participation and equity, marking the Kerala model of palliative care as a self-contained sub-literature that engages with the broader Kerala model framework primarily as a healthcare governance reference. The fourth cluster groups decentralization, Adivasis, and agrarian reforms, confirming that indigenous community literature constitutes a distinct thematic strand within the literature. The fifth cluster centers on feminism, Kudumbashree, women empowerment, and participation, reflecting the sustained feminist strand in this literature anchored by Devika's body of work. The sixth cluster groups caste, Dalit, and power, identifying a distinct critical strand that has grown notably in the post-2015 period, particularly within Contemporary Voice of Dalit.

Figure 6 :- Keyword co-occurrence network of the Kerala model of development literature.



Thematic Map Analysis

The thematic map, presented in Figure 7, applies Callon's strategic diagram framework to classify research themes by centrality (relevance to the field) and density (internal coherence). The motor themes quadrant, representing themes that are both central and internally developed, contains two clusters: Kerala model (centrality 3.17, density 77.4) and Kerala (centrality 2.89, density 62.4). These two clusters form the intellectual engine of the field. The Kerala model cluster encompasses development, state, education, human development, migration, COVID-19, and remittances. The Kerala cluster includes politics,

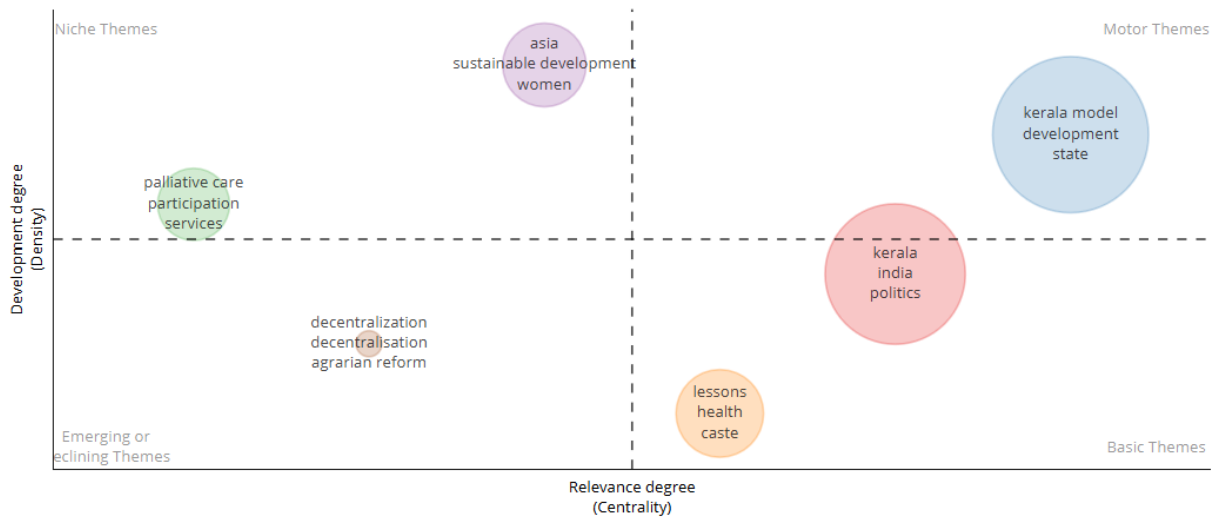
gender, South Asia, feminism, and Kudumbashree. The co-presence of both COVID-19 and remittances within the motor themes confirms that the field has absorbed both the pandemic governance literature and the Gulf migration literature into its mainstream, reflecting genuine responsiveness to Kerala's evolving empirical reality.

The niche themes quadrant, representing internally coherent but peripheral themes, contains the Asia cluster (centrality 1.95, density 152.8) and the palliative care cluster (centrality 0.71, density 72.9). The Asia cluster is highly developed internally, grouping sustainable development, women, developing countries, and social change, but its low centrality indicates that comparative Asia-focused research has not been integrated into the mainstream Kerala model debate. The palliative care cluster is particularly notable. With a density score of 72.9 and eight core documents, it represents a well-developed and internally coherent research community. However, its very low centrality of 0.71 confirms that this strand has developed largely in parallel with, rather than in dialogue with, the mainstream development model literature.

The basic themes quadrant, containing themes with high centrality but low density, includes the lessons cluster (centrality 2.30, density 53.4). This cluster groups caste, health, democracy, and growth, indicating that these themes attract broad scholarly attention but have not yet coalesced into internally coherent research programmes.

The decentralization cluster (centrality 1.79, density 61.3) falls within the emerging or declining themes quadrant, occupying the lower-left of Callon's diagram. This means it is neither sufficiently central to the field's mainstream nor internally developed enough to constitute a coherent research program. Given that Kerala's 1996 People's Plan Campaign is among the most extensively documented experiments in participatory democratic decentralization in the developing world, this positioning is among the most striking findings of this study. It indicates that despite the volume of descriptive attention decentralization receives across individual articles, researchers have not built a cumulative, theoretically connected body of work around it. This represents a significant and addressable research gap.

Figure 7 :- Thematic map (Callon's strategic diagram) of the Kerala model of development literature.

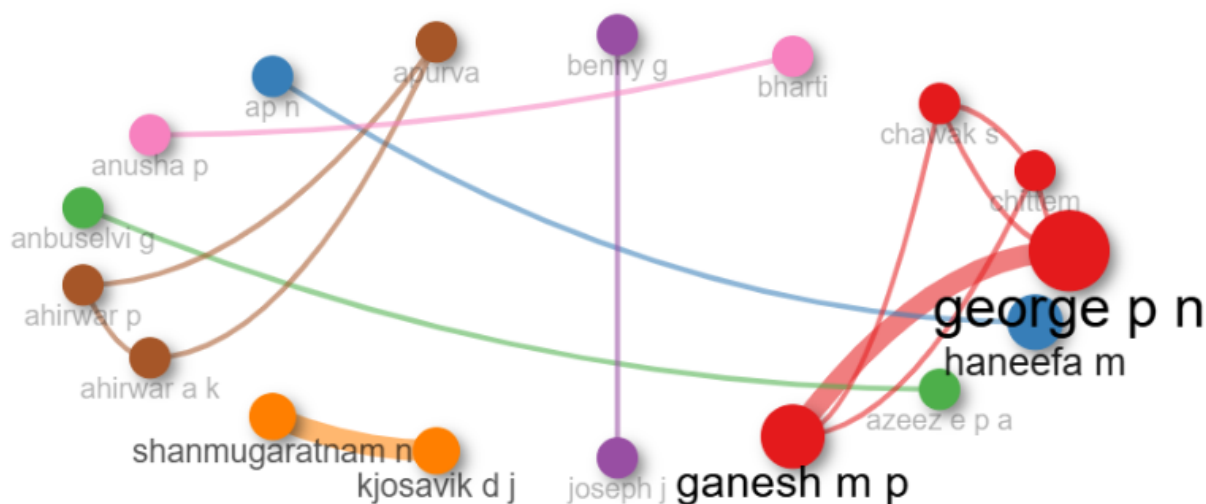


Author Co-authorship Network

The author co-authorship network, presented in Figure 8, reveals the collaborative structure of Kerala model literature and confirms the fragmented, small-cluster pattern anticipated by the Lotka's Law analysis. The network consists of a series of small, disconnected dyads with no overarching interconnected community. The identified pairs include George P. N. and Ganesh M. P., Haneefa M. and AP N., Azeez E. P. A. and Anbuselvi G., Joseph J. and Benny G., and Kjosavik D. J. and Shanmugaratnam N. The last of these, representing the Norway-India research axis in indigenous community development, is the only partnership with an international dimension.

The complete absence of any edges connecting these dyadic clusters to one another confirms that no scholar is acting as a knowledge broker between the field's different collaborative groups. This structural gap severely constrains the cross-fertilization of theoretical perspectives across the literature's thematic strands, particularly between the development economics strand, the feminist and gender studies strand, and the recently emerged palliative care strand.

Figure 8 :- Author co-authorship network of the Kerala model of development literature.



Discussion

The most significant structural observation to emerge from this analysis is that the Kerala model of development literature is expanding rapidly without becoming more coherent. Post-2015 growth is real and substantial, and the SDG framework has clearly renewed global interest in Kerala as a reference case for achieving high human welfare at modest income levels. But growth in volume is not the same as growth in understanding. A field dispersed across 78 source journals, sustained primarily by one-time contributors, and organized around thematic clusters that do not communicate with one another is a field at risk of accumulating observations without advancing explanations.

This matters because the Kerala model is not simply a descriptive claim about what happened in one Indian state. It is a generalizable argument about the relationship between public action, social mobilization, and human development with direct implications for how development policy is designed in low-income contexts worldwide. If the literature surrounding that claim is structurally incapable of building cumulative knowledge, the claim itself remains perpetually underexamined. The SDG framework, for all its value in directing attention back to the Kerala experience, may be compounding this problem by attracting short-term, policy-oriented engagement rather than sustained theoretical investment. As Leal Filho et al. (2018) have noted, SDG-aligned academic production tends to gravitate toward measurable welfare indicators while underweighting the structural and political conditions that make those outcomes achievable. That tendency is visible in the thematic map:

governance, health, and gender indicators cluster in the motor zones, while agrarian transformation, industrial policy, and fiscal structure remain on the margins.

The extreme journal scatter identified through Bradford's Law is, in part, an unavoidable consequence of genuine interdisciplinarity. The Kerala model touches questions that belong to development economics, political sociology, feminist theory, environmental studies, and public health, and no single journal is well positioned to be the primary venue for all of them. But scatter also has causes that are not inevitable. When researchers publish on the Kerala model without building a shared citation practice, index the same concept under three different keyword phrases, or pursue questions already addressed by adjacent thematic communities they are simply unaware of, that is not a function of interdisciplinarity. It is a function of insufficient engagement with prior work which in turn reflects a literature that has not generated the review articles, critical forums, and field-wide collaborations that would allow researchers to locate themselves within an ongoing conversation.

The positioning of decentralization in the emerging or declining themes quadrant is among the most consequential findings of this study. Kerala's 1996 People's Plan Campaign is one of the most extensively documented experiments in participatory democratic planning in the developing world. It has generated an enormous volume of descriptive work. What it has not generated is a sustained research program asking whether and how decentralization actually changed distributional outcomes, what the limits of participatory planning proved to be in practice, and what institutional conditions determined whether local governments could translate participatory processes into genuine development gains. The field has been more comfortable describing institutional arrangements than evaluating their consequences.

The palliative care cluster presents a different problem. It is internally coherent and well developed, but almost entirely isolated from the mainstream development literature. This isolation is analytically costly. Kerala's palliative care model and its broader development model share the same institutional foundations: civil society mobilization, local government structures, and community participation logic. Kochuvilayil et al. (2023) demonstrated that palliative care management committees operate through the same horizontal community linkages that underpin the model's participatory governance heritage. Yet researchers in palliative care and researchers in development studies have produced their work in near-

complete isolation from one another, leaving shared questions about sustainability, volunteer participation, and institutional transferability unanswered on both sides.

The absence of knowledge brokers in the co-authorship network compounds this problem. Newman (2024) has shown that theoretical integration across disciplines requires researchers whose collaborative reach crosses disciplinary boundaries. No such researcher currently operates in this field. Meanwhile, the field's theoretical anchor remains Parayil (1996) and Véron (2001) texts produced in a Kerala that differs substantially from the state today, institutionally, demographically, fiscally, and in its integration into global labor markets. Empirical coverage has expanded considerably since 2015, with new work on Gulf migration, pandemic governance, early marriage, environmental degradation, and foreign aid dependence entering the corpus. No successor theoretical synthesis has emerged to organize this accumulation into a revised account of what the Kerala model represents today.

The high normalized citation score of Kuriyan et al. (2008) points toward one critical gap. An article examining ICT-for-development through the Kerala model lens records the strongest citation impact relative to its publication year of any document in the entire corpus. This reflects genuine intellectual demand for analyses that connect the Kerala model to contemporary developmental processes. As Kerala increasingly positions itself as a digital economy, and as the Gulf migration circuit that has financed much of the state's consumption faces structural disruption from automation and labor nationalization policies in Gulf Cooperation Council countries, the question of whether Kerala's social achievements literacy, health outcomes, and civic participation can function as productive assets in a knowledge economy is among the most important the literature could address. This gap exists partly because the field's theoretical foundations predate Kerala's digital economy transition entirely, leaving no inherited framework for asking these questions.

The existing critical literature has documented the gender paradox, Dalit and Adivasi landlessness, environmental degradation, and remittance dependency as separate failures of the Kerala model. What it has not done is explain these failures in relation to one another. They are not independent pathologies. They are connected outcomes of the same political economy, shaped by the same structures of caste, class, and state power that produced the model's celebrated achievements in the first place. Intersectional research that traces how these dimensions of disadvantage interact within a single analytical framework is the field's

deepest unmet theoretical need. No amount of additional single-theme empirical work will resolve it. What is required is synthetic, theoretically ambitious research that takes the Kerala model

Conclusion

This study provides the first systematic bibliometric mapping of the Kerala model of development literature across 93 documents spanning 1989 to 2026. Three substantive conclusions emerge. The field's theoretical foundations have not kept pace with its empirical expansion. Parayil (1996) and Véron (2001) remain the dominant theoretical anchors despite a literature that has since documented Gulf migration dependency, fiscal crisis, pandemic governance, persistent gender and caste exclusions, and environmental degradation. These are not minor additions. They constitute a substantially changed Kerala that demands a revised theoretical account. The field has not yet produced one.

Internal fragmentation carries real analytical costs. The isolation of the palliative care strand from the participatory governance literature, the disconnection of feminist critique from the Dalit and Adivasi exclusion literature, and the near-absence of South-South comparative research mean that questions answerable through integration of adjacent work remain unanswered. No scholar currently acts as a knowledge broker across these communities.

The selective alignment of post-2015 research with SDG categories has introduced a structural bias. Themes expressible as measurable welfare indicators have grown; political economy and structural analysis have not. A literature increasingly optimized for international development institutions risks becoming progressively less useful for understanding how redistributive development actually works.

Implications

For researchers, the most urgent priority is theoretical synthesis that integrates the post-2015 empirical accumulation into a revised account of what the Kerala model represents today. Standardizing keyword indexing across the literature would immediately improve citational connectivity and discoverability. The field should converge on Kerala model of development as the canonical keyword, as it is the most specific and historically established term. Journal editors handling manuscripts on this topic should recommend it to authors, and database indexers should flag Kerala model and Kerala development model as variant terms pointing

to the same conceptual referent. The decentralization cluster demands a dedicated research program: it is the field's most institutionally central theme and its least theoretically developed.

For funding bodies, the 5.38% international co-authorship rate and complete absence of South-South collaborative links require institutional intervention. The University Grants Commission, the Indian Council of Social Science Research, and the International Development Research Centre should consider targeted calls for collaborative research placing Kerala in comparative dialogue with other low-income high-development countries.

Commissioning special issues that explicitly bridge the field's thematic strands would do more to accelerate theoretical consolidation than any number of individual submissions. The Kerala model is receiving growing global attention at precisely the moment it faces its most serious structural challenges. Drawing selectively on the celebratory strand of this literature, which accounts for much of the post-2015 growth, without equally engaging its critical dimensions will produce selectively useful and potentially misleading policy guidance.

Limitations

This bibliometric analysis is constrained by database coverage. Scopus and Web of Science provided comprehensive structured metadata but systematically underrepresent Global South journals, non-English publications, and grey literature compared to Google Scholar or Dimensions databases. The 24.6% duplicate rate across the two databases suggests topic-specific overlap, where Web of Science added only 28 unique records (26.9% incremental coverage) beyond Scopus's 76 records. Future studies should triangulate across additional databases to capture the full scope of Kerala model scholarship, particularly regional Indian and Malayalam-language contributions acknowledged but absent from this corpus.

Competing Interests

The authors declare that they have no financial or non-financial interests that could have influenced the work reported in this study.

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Ethical Approval

The study involved no experiments on humans or animals requiring formal ethical clearance.

AI Usage Declaration

Generative AI tool, Perplexity AI (Perplexity.com, 2026), were used under direct human supervision exclusively for improving writing quality. This tool were employed to enhance sentence structure, simplify complex expressions, correct grammatical errors, improve clarity, and organize manuscript sections. All intellectual content, research findings, interpretations, and conclusions are entirely the work of the authors.

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