THE EVOLVING LANDSCAPE OF INDIAN SCHOLARLY OUTPUT: ANALYTICAL STUDY OF SCIMAGO JOURNAL & COUNTRY RANK (SJR) -INDEXED PUBLICATIONS

Mr. Nilesh Jagdish Thaware
(M.LISc., SET)
Research Scholar
Dept. of Library & Information Science
Rashtrasant Tukadoji Maharaj Nagpur University

Dr. Subhash W. Dhote
(M.LISc., M.Phil., Ph.D.)
Research Guide & Librarian
H.B.T. Arts and Commerce College,
New Subhedar Layout, Nagpur.
Rashtrasant Tukadoji Maharaj Nagpur University

Abstract :

This paper presents a theoretical examination of the evolution and characteristics of scientific publication trends from India as reflected in the SCImago Journal & Country Rank (SJR) database. While empirical studies have addressed the growth in volume and subject distribution of Indian research output, this paper focuses exclusively on constructing a theoretical framework to interpret the trajectory, drivers, and systemic implications of India's increasing presence in the global scientific publishing landscape as measured by the SJR indicator. Drawing upon theories from scientometrics, innovation systems, and post-colonial science policy, the paper analyses the structural, institutional, and epistemic dynamics that underlie Indian research productivity and visibility. It argues that India's rising SJR profile is not merely a function of increased publication volume but is shaped by complex interactions between national research policy, global knowledge hierarchies, and the strategic alignment of scientific production with international citation networks. The paper concludes with theoretical implications for understanding the changing geography of scientific knowledge production.

Keywords : Scientific publications, research trends, scientometrics, innovation systems, bibliometrics, scientific knowledge.

Introduction :

In recent decades, India has emerged as a significant contributor to global scientific research output, with consistent growth in the number of publications indexed in major citation databases. The SCImago Journal & Country Rank (SJR), derived from Scopus data, provides a valuable lens to assess both the volume and the prestige-adjusted impact of national research systems (Falagas et al., 2008). While numerous studies have quantified India's publication growth empirically (e.g., Sharma, 2019; Chaudhuri et al., 2020), a dedicated theoretical understanding of the underlying processes shaping the SJR publication trend from India remains underexplored.

This paper aims to fill this gap by developing a theoretical framework for interpreting the expansion and transformation of India's scientific publishing in the SJR database. It does not present new empirical data but synthesizes existing literature through the lenses of scientometric theory, national innovation systems (NIS), and critical science policy studies. The central thesis is that India's growing SJR profile reflects not only quantitative expansion but also strategic integration into global knowledge networks, mediated by domestic policy reforms and historical legacies.

Theoretical Foundations :

1. Scientometrics and the SJR Indicator :

Scientometrics, as defined by de Solla Price (1963), applies quantitative methods to study scientific activity. At the heart of scientometric analysis lies the measurement of research performance through bibliographic indicators. The SJR is a prestige-based metric that considers both the number of citations received by a journal and the importance or prestige of the journals where those citations originate (González-Pereira et al., 2010). Unlike the Impact Factor, which is based solely on citation counts, SJR uses an algorithm inspired by Google's PageRank, assigning greater weight to citations from high-status journals.

The theoretical justification for using SJR in national comparisons lies in its ability to capture the "networked prestige" of research. In this view, knowledge production is a social process embedded in citation networks, where visibility and influence depend on epistemic legitimacy conferred by peer-reviewed communities (Whitley, 2000). Thus, a country's rise in SJR rankings signals not merely productivity but also its integration into transnational academic epistemic communities.

2. National Innovation Systems (NIS) :

The National Innovation Systems framework (Lundvall, 1992; Freeman, 1987) provides a theory of how institutions, firms, universities, and governments interact to produce technological knowledge and innovation. In the context of research publications, NIS theory suggests that scientific output is shaped by systemic factors such as funding regimes, higher education structures, and policy incentives.

India's innovation system has undergone transformation since the post-liberalisation era of the 1990s, shifting from a state-centric model to a more market-oriented and performance-based research regime (Kapur & Mehta, 2005). Policies such as the "Digital India" initiative, increased funding for research (e.g., through the Science and Engineering Research Board), and emphasis on university rankings have incentivized publication in indexed journals (Planning Commission of India, 2011). The growth in SJR-listed publications from India can thus be theoretically interpreted as a systemic response to policy-driven innovation goals.

3. Post-Colonial Science and Epistemic Dependence :

Drawing from post-colonial theory of science (Said, 1978; Subramanian, 2010), India's scientific publishing trajectory must be viewed through the lens of epistemic dependence. Despite decolonisation, the global scientific order remains centred in the Global North, with English-language journals, Western peer-review systems, and citation networks privileging certain epistemic communities (Chimni, 2003). India's increasing publication output in SJR-indexed journals may reflect a strategic adaptation to these global norms—what Bhutta (2009) calls "citation diplomacy"—to gain legitimacy and visibility.

This raises theoretical concerns about the nature of knowledge produced: is Indian science reproducing Western paradigms, or creating alternative epistemic spaces? The concentration of Indian publications in applied sciences (e.g., engineering, medicine) versus social sciences and humanities (SSH) in SJR data suggests a hierarchy of global recognition, where certain disciplines are more readily assimilated into international citation economies (Kumar, 2015).

The SJR Publication Trajectory from India: A Theoretical Interpretation :

1. Quantitative Expansion and the Productivity Imperative :

India's publication output in SJR-indexed journals has grown significantly since the early 2000s. According to SCImago data (2024), India ranked 3rd globally in total publications in 2022, up from 11th in 2007. This growth can be theoretically attributed to the "publish or perish" culture institutionalized across Indian academia. Universities and research institutions use publication records in indexed journals as a key performance indicator for promotions, funding, and accreditation (Yadav, 2019).

From a structural-functionalist perspective, this reflects an increasing formalisation of academic evaluation systems, aligning Indian science with global standards. However, as Merton (1973) warned, such institutional incentives may lead to "Matthew effects," where researchers from elite institutions (e.g., IITs, IISc) disproportionately contribute to the national SJR profile, reinforcing existing hierarchies.

2. Subject-Specific Dynamics and the Global Division of Scientific Labour :

The SJR data reveals a pronounced dominance of Indian publications in engineering, computer science, materials science, and medicine (Chhabra & Gupta, 2021). Theoretically, this can be explained by the "division of scientific labour" (DSSL), a concept adapted from Durkheim to scientometrics (Leydesdorff & Wagner, 2008).

India's research specialisation reflects a strategic niche in global science: it contributes heavily to technologically scalable, citation-rich domains that align with national development goals (e.g., IT infrastructure, pharmaceuticals) and attract international

collaboration. However, this specialisation may also indicate a structural dependency, where India functions as a "data generator" or "technical executor" rather than a "theoretical innovator" in global science networks (Subramanyam, 1986).

3. Institutional Stratification and Core-Periphery Structures :

Network theory in scientometrics posits that scientific collaboration occurs within core-periphery structures, where core journals and institutions dominate citation flows (Leydesdorff, 2001). Indian publications in SJR journals often stem from a small number of elite institutions, with the Indian Institutes of Technology (IITs), the Indian Institute of Science (IISc), and Council of Scientific and Industrial Research (CSIR) laboratories forming the "core" (Kumar & Singh, 2022).

This stratification mirrors Wallerstein's (1974) world-systems theory: within the global scientific system, India occupies a semi-peripheral position—producing significant knowledge but still dependent on core journals (mostly based in Europe and North America) for validation. The theoretical implication is that India's SJR visibility is mediated by its ability to access and collaborate with core institutions, rather than by autonomous epistemic authority.

4. Policy-Driven Science and the Performance Regime :

India's rise in SJR rankings must also be understood through the lens of the "audit culture" in academia (Shore & Wright, 1999). National policies such as the National Education Policy (NEP) 2020 and the emphasis on institutional rankings (e.g., NIRF) have institutionalised metrics like SJR, H-index, and Scopus indexing as benchmarks of excellence (UGC, 2020).

This creates a performative feedback loop: institutions invest in research infrastructure, incentivize faculty to publish in indexed journals, and form international collaborations—all aimed at boosting SJR visibility. Theoretically, this constitutes a "regime of scientific performativity" (Espeland & Sauder, 2007), in which the measurement of science shapes the practice of science itself.

4. Theoretical Contradictions and Limitations :

While the growth in SJR publications signals progress, several theoretical contradictions arise:

- **Volume vs. Impact Paradox** : India's publication volume has grown rapidly, but its average SJR indicator per document remains below the global average (SCImago, 2024). This reflects a "quantity-quality trade-off" often observed in emerging research systems (Butler, 2003).
- **Language and Epistemic Marginalisation** : Most Indian publications in SJR

journals are in English, marginalizing regional languages and indigenous knowledge systems (Sharma, 2011). This aligns with theories of linguistic imperialism in science (Phillipson, 1992), where English functions as a gatekeeper to global visibility.

- **Citation Inequality**: A small fraction of Indian research receives the majority of citations, consistent with Pareto principles in scientometrics (Radicchi et al., 2008). This inequality reflects structural imbalances in research funding and infrastructure.

These contradictions suggest that while India is increasing its presence in the SJR landscape, its epistemic autonomy and scholarly influence remain constrained by global power asymmetries.

Conclusion :

The trend of increasing SJR publications from India is a multifaceted phenomenon requiring theoretical rather than purely empirical interpretation. This paper has argued that the expansion is driven by the interplay of institutional incentives, national innovation policy, and India's strategic adaptation to global scientific norms. Theoretical frameworks from scientometrics, innovation systems, and post-colonial studies reveal that India's scientific rise is embedded in complex relationships of prestige, dependency, and performance.

Future research should explore the qualitative dimensions of Indian knowledge production—such as theoretical originality, societal impact, and interdisciplinary integration—beyond SJR metrics. Moreover, policymakers must balance the push for global visibility with the need to foster locally relevant, epistemically diverse research ecosystems.

India's journey in the SJR landscape is not just a story of growth but a case study in the globalization of science and the contestation of epistemic authority in the 21st century

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