Journal of Posthumanism

2025
Volume: 5, No: 5, pp. 2763–2787
ISSN: 2634-3576 (Print) | ISSN 2634-3584 (Online)
posthumanism.co.uk

DOI: https://doi.org/10.63332/joph.v5i5.1670

Increasing Local Content and Economic Growth Based on Research and Technological Innovation: A Bibliometric Analysis

Agus Krisnowo[1], Subchan[2], Arman Hakim Nasution[3], Adhi Dharma Permana[4]

Abstract

Various countries have implemented local content policies to protect local products. Most of them focus on the use of local labor and natural resources. The aspect of research and innovation as local content has not been widely adopted. This study analyzes research trends, local content and economic growth that intersect with research and innovation through bibliometric analysis. We use the Research Information System for frequency analysis, VOSviewer for data visualization, and Biblioshiny for metrics and citation analysis. We obtained 134 published research articles from the Scopus and Web of Science (WoS) databases, covering the years 2003 to 2023. The results show that the highest number of publications occurred in 2020. The most cited article discussed domestic content and technology intensity. A promising future research topic is the impact of engineering design in increasing local content. It can be developed in the requirements for the auction process.

Keywords: *Local Content, Economic Growth, Bibliometrics, Research and Innovation, Auction Process.*

Introduction

Technological research and innovation are crucial in enhancing content localization, significantly impacting a country's economic growth. Through research and innovation, companies can develop products that effectively solve problems, increase efficiency, and maintain high quality. These improvements lead to greater productivity and a competitive advantage. In this context, government support for research and innovation is vital, fostering an environment conducive to developing local industries. Increased research and technological innovation investment is expected to stimulate long-term economic growth and strengthen a country's position in the global economy. However, there is still limited research and information on implementing R&D instruments and technological innovation concerning local content requirements, and much of it has not been widely published. Currently, most local content requirements focus primarily on calculating tangible assets.

The growth of knowledge-based industries through research and innovation significantly drives the creation of high-quality jobs, increases per capita income, and reduces dependence on imports (Olufowoshe, 2011). Research results by Deringer et al (Deringer BH et all, 2018) clearly demonstrate that innovation efforts backed by robust research lead to more competitive

[1] Ph.D Student in Managament Technology, Interdisciplinary School of Technology and Management, Sepuluh Nopember Institute of Technology Surabaya, Surabaya, Indonesia, Research Center for Process and Manufacturing Industry Technology, National Research and Innovation Agency, Tangerang Selatan, Indonesia.
[2] Department of Mathematics, Sepuluh Nopember Institute of Technology, Surabaya, Surabaya, Indonesia.
[3] Public,Business, and Industrial Policies Center– Sepuluh Nopember Institute of Technology Surabaya, Surabaya Indonesia.
[4] Research Center for Transportation Technology, National Research and Innovation Agency, Tangerang Selatan, Indonesia, Email: aguskrisnowo@yahoo.com, (Corresponding Author).

local products and services, significantly enhance competitiveness in the global market, and contribute directly to economic growth. Concerning local content requirements (LCR), Lin SH and Weng Y, 2020 asserts that stricter LCR policies do not improve productivity and production simultaneously. The factors that influence local content policies can be effectively categorized into four areas: (i) market size and stability, (ii) policy design and coherence, (iii) limitations of domestic content requirements, and (iv) the depth, size, and stability of the industry—all of which are critical to ensuring the continuity of production processes for domestic producers (Kaziboni L and Stern M, 2021). When innovation occurs domestically, it creates significant opportunities to develop local supply chains, supports the growth of diverse industrial sectors, and actively reduces economic inequality between regions. Moreover, domestic content requirements serve to promote cluster growth and drive socio-economic development (Maponga OP and Musa C, 2021). Therefore, investment in research and innovation plays a vital role as a catalyst for sustainable economic growth.

One of the major benefits of implementing local content requirements is the facilitation of technology transfer activities. Investor companies must provide training and development opportunities for local companies to help them meet LCR targets (Ramdoo I, 2018). In an innovation-based industrial development strategy, research and innovation are indispensable for cultivating new technologies through enhanced scientific knowledge and engineering capabilities (Ekolu S, 2018,Li P et all, 2023. Innovation is unequivocally recognized as a key mechanism to tackle sustainable development challenges (Boons F et all, 2012,Silvestre BS, 2015).

Research and innovation are essential for enhancing a country's local content, which, in turn, drives economic growth and technological advancement. Local content contributes value to the economy by utilizing local resources, labor, and services. By integrating research and innovation into local strategies, countries can improve their competitiveness, stimulate industrial growth, and promote sustainable development. Examining the impact of research and innovation (R&I) on local content shows that R&I facilitates technological upgrades in local industries. For example, in the oil and gas sector in Kazakhstan, advancements in digitalization and innovations in the drilling and extraction processes have been crucial (Heim I, 2018). This perspective aligns with the idea that developing research and development (R&D) infrastructure and enhancing innovation capacity is vital for local economic development, enabling the diffusion and adoption of new technologies within various industries (Bučar M, 2013).

With local content developments, value addition by local enterprises is expected to occur by maximizing the benefits from local and natural resources that lead to economic and industrial growth (Kazzazi A and Nouri B, 2012). Meanwhile, the government's role is to set scientific and educational priorities that enhance strategic local content to align with global market needs, as experienced by the petroleum industry (Nurcahyo R et all 2019). The development of human resources and skills is another aspect that is crucial to sustaining local industries to produce local content (Muhongo RS, 2020). In addition, the national innovation system must be based on a strong solid scientific base, the lack of which can hinder the effective implementation of local content strategies (Улыбышев ДН et all, 2022).

There are gaps between research and innovation (R&I) and their application at the local level, where local product content is crucial. While R&I can positively influence local content, challenges such as policy misalignment and inadequate scientific infrastructure can impede progress. To address these issues, countries need adaptive strategies tailored to their unique

economic and social contexts, enabling them to leverage R&I more effectively for sustainable development.

The research-innovation gap is influenced by broader systemic factors. For instance, economic development, government policies, and cultural attitudes toward innovation can significantly impact the effectiveness of bridging efforts. High-income countries often lead in advanced research due to better infrastructure and resources, while low- and middle-income countries may focus on basic needs, affecting their innovation capabilities (Ibrahim N et all, 2023). Additionally, the innovation gap is not solely a result of process inefficiencies but also involves missing components in the traditional innovation models that need to be addressed (Huber D et all, 2014a,2017b).

In particular, most research and innovation fail to reach the prototyping and testing phase due to a lack of or insufficient resources; thereby, promising research fails to reach commercialization due to insufficient support [Liening A et all, 2018]. There also may be cultural and attitudinal barriers where, in some regions, such as India, a self-centered approach and a lack of application-oriented research further exacerbate the gap, leading to the application of outdated technologies and inefficient systems (Singh K and Nirmal A V, 2017).

To bridge the gap between research and innovation (R&I) and downstream application, several approaches may resort to, among others, improving design thinking and innovation sprints (Bongiovanni I et all, 2023), establishing entrepreneurial partnerships among the researchers and industry and commercialization process (Murdock KA et all, 2017), developing start-up programs to overcome the valley of death and drive innovation (Liening A et all, 2018), and developing Parallel Research-Business Processes that integrate customer and market needs into science-based research (Koppinen S et all, 2010).

Government policy plays a crucial role in fostering research and innovation, which are essential for technology development and enhancing local content. Governments can stimulate technological advancements, support local industries, and ensure sustainable economic growth by implementing strategic policies. These policies can take various forms, including public procurement, local content requirements, and innovation incentives, each contributing uniquely to the development of technology and local capabilities.

Each country has different needs. Therefore, local content policies must be aligned with other sector policies, such as economic, political, and social development, for their success (Kazzazi A, Nouri B, 2012). Local content policies must also aim to protect domestic industries. Overly strict policies can be counterproductive to their competitiveness, reducing them as an effect of too much external limit on competition and innovation (Есмагамбетов ДБ et all, 2022). The government's innovation policies should focus on local developments that cultivate relationships, leading to the effective application of new ideas and economic growth (Seravalli G, 2008)

Several areas where government policy plays an important role include (i) public procurement and innovation, (ii) advancing innovation, (iii) promoting local content policies, and knowledge transfer. According to Yu Z, 2019 public procurement policies are instrumental in driving innovation by creating demand for new technologies and reducing or limiting uncertainties associated with innovation. Especially those that require a certain intensity level of dedicated resources to overcome their learning curve. In Iran, both horizontal and vertical public procurement policies have been implemented to stimulate demand for technology and

innovation. Such policies aim to promote local production, reduce import dependency, and meet domestic needs through technology advancements (Attarpour MR, et all, 2024).

Governments with authority can play a key role in creating new markets and fostering a competitive environment that attracts innovative advancements. Katz Y et all, 2021 highlighted the example of Israel, whose government policies have successfully positioned the country as a leader in innovation. Public policy can also be used to facilitate collaborations between local research teams and industrial partners, which enhances technological upgrading and local innovation. This facilitation is of particular importance where there is a mismatch between public R&D facilities and local skilled labor (Crescenzi R, 2021).

Governments can also enforce policies that mandate a certain minimal level of local sourcing, which not only protects domestic industries but also encourages foreign companies that own the technology to invest in local technological development in an effort to narrow the technology gap (Cui S and Lu LX, 2017). Local content policies are vital for knowledge transfer and technological capacity building, especially in industries like oil and gas. In Nigeria, the Local Content Policy has facilitated partnerships, training, and R&D, significantly enhancing the technological capabilities of Indigenous firms (Emumena De, 2023).

Despite being essential for technology development, government policies must be carefully designed to address potential conflicts of interest with other areas, such as ethical and structural challenges. In the case of Iran, legal monitoring and incentive mechanisms are crucial for successful policy implementation (Bagheri Nasrabadi M et all, 2021). Innovation policies should also consider the systemic nature of innovation, which incorporates user feedback and focuses on economic growth and social inclusion. A systematic approach can help address more global and complex challenges, such as climate change and resource depletion (Chaminade C and Lundvall B-Å., 2019).

While government policies can foster innovation and local content, challenges remain. Structural issues like inadequate infrastructure and a lack of skilled labor can hinder the adoption of new technologies. Policymakers also face the challenge of balancing innovation with ethical practices. Thus, these policies need ongoing evaluation and adaptation to effectively respond to changing economic and social conditions.

The impact of increasing local content driven by research and innovation on a country's economy requires a comprehensive analysis to determine its relevance. Freeman C and Soete L, 2012 identified technical innovation as a crucial factor in economic growth. Schumpeter J, 1934 argued that innovation demands entrepreneurial skills to manage existing or new resources, aligning them with new scientific discoveries in the production process and regulating output.

This study aims to analyze published works that discuss research and innovation in relation to the rise of local content and its impact on economic growth. It will focus on literature that is frequently cited, utilizing bibliometric analysis. The bibliometric method allows for the examination of the relationship between specific topics and other related subjects through published journals and articles, assessing how often they are cited together (Fetscherin M and Heinrich D, 2015). Moreover, bibliometric analysis is highly effective for measuring and evaluating scientific publications (Carmona-serrano N et all, 2020). Descriptive analysis is a hallmark of bibliometric studies (Donthu N et all, 2021). However, quantitative analysis with a statistical approach can also be applied using this method (Ellegaard O and Wallin JA, 2015). Additionally, the bibliometric method tests novelty and conventionality in international research

collaborations. Results indicate that such collaborations do not necessarily lead to an increase in new articles (Wagner CS et all, 2019). In fact, international collaborations often result in fewer combinations of new and conventional knowledge. Barriers related to cost and communication can suppress innovation in these collaborations.

There are four key benefits of employing bibliometric analysis:

1) Analyzing trends, research quality, and authors using statistical indicators such as citation rates (Vieira M et all, 2021);

2) Providing evidence for the impact of research and development in specific fields (Su J et all, 2015);

3) Discovering new and emerging research areas (Santa Soriano A et all, 2018; Lara-Rodríguez JS et all, 2019);

4) Identifying potential research collaborators and suitable publication sources (Gerdsri N and Kongthon A, 2018; Wrigley J et all, 2019).

The impact of increasing local content driven by research and innovation on a country's economy requires a comprehensive analysis to determine its relevance. Freeman and Soete, 2012 identified technical innovation as a crucial factor in economic growth. Schumpeter J, 1934 argued that innovation demands entrepreneurial skills to manage existing or new resources, aligning them with new scientific discoveries in the production process and regulating output.

This research aims to gather data and information related to research and development (R&D) and technological innovation, specifically concerning local content and the economic growth of a country. To achieve this, several specific questions will be analyzed, including:

1. How are publication citation metrics related to a specific topic?

2. What are the most commonly used keywords?

3. Which country produces the most publications?

4. Who is the most prolific author?

5. Which publication sources are the most active?

6. What are the most cited articles?

7. How are existing topics clustered?

8. What are the research potentials related to the topic?

Methodology

Data and Search Strategy

Although Scopus indexes more unique sources that are not covered by WoS (Pranckutė R, 2021), in this study, data searches are still carried out on the Scopus and Web of Science (WoS) databases to enrich the literature sources further. The Scopus and WoS databases are the largest databases of abstracts and citations of peer-reviewed literature (scientific journals, books, conference proceedings, etc.) in the field of science and technology (Van Nunen K et all, 2018). These two databases are used to complement each other because some publications may only be

indexed in Scopus or vice versa. Searches were conducted using keywords ("Research" OR "Technology" OR "Innovation" OR "Intelectual Property*") AND ("Local Content" OR "Domestic Content" OR "Regional Content") AND ("Economic" OR "Economic growth" OR "Productivity"). The search is carried out in the Title, Abstract, or Keywords field or Title-Abs-Key in Scopus and Topic in WoS, with the aim of expanding the search results, where keywords will be found in the Title, Abstract, or Keywords fields or all three. The search is limited to publications published in the 2003-2023 range, including document types in the form of journal articles, conference papers, and document sources in the form of journals and conference proceedings (theses and dissertations are not found in the search). The number of publications found from the Scopus database is 108 documents, while WoS is 73. Data cleaning was carried out to eliminate duplication (47 documents), so that the final publication was obtained as many as 134. The metadata of this publication is then exported in the form of BibTex/RIS and combined for further analysis using VOSviewer and Biblioshiny software.

Database	**Field and Query**		**Number of Findings**
Scopus	(TITLE-ABS-KEY ("Research" OR "Technology" OR "Innovation" OR "Intelectual Propert*") AND TITLE-ABS-KEY ("Local Content" OR "Domestic Content" OR "Regional Content") AND TITLE-ABS-KEY ("Economic" OR "Economic growth" OR "Productivity"))		148 documents
	Year filter	2003-2023	139 documents
	Filter document types	article, conference paper	111 documents
	Source type filter	Journal, conference proceeding	108 documents
WoS	“Research” OR “Technology” OR “Innovation” OR “Intelectual Propert*” (Topic) AND “Local Content” OR “Domestic Content” OR “Regional Content” (Topic) AND “Economic” OR ”Economic growth” OR “Productivity” (Topic)		82 documents
	Year filter	2003-2023	81 documents

	Filter document types	article, proceeding paper	73 documents
Number of Scopus and WoS findings			181 documents
Duplicate removal of 47 documents			134 documents
Number of final findings for analysis			**134 documents**

Table 1. Stages of Data Retrieval

Data Analysis

Bibliometric analysis techniques are categorized into two main types: (1) performance analysis and (2) science mapping (Donthu N et all, 2021,Kamaludin K and Prasetyadi A, 2023,Patty ENS et all, 2023). Performance analysis assesses the contributions of research entities, measuring the productivity of researchers, institutions, and countries while also identifying the most researched topics. In contrast, science mapping focuses on the relationships among research entities, visualizing connections between research topics and identifying key clusters within the field (Muchlian M and Honesti L, 2023).

This paper conducts a bibliometric data analysis emphasizing performance based on quality and quantity. The quantity is measured by the total number of publications (TP), whereas quality is indicated by the total number of citations (TC), the number of cited publications (NCP), the average citations per publication (C/P), and the average citations per cited publication (C/CP) (Hirsch JE, 2007). Additionally, the g-index (G) and h-index (H) are often included in bibliometric measures to predict future academic achievements rather than relying solely on standard metrics.

These indicators can be applied at various levels, including country, organization, journal, and author levels. Data is processed and analyzed using Biblioshiny software, which extracts Research Information System (RIS) data from the Scopus and Web of Science (WoS) databases. The following step involves visualizing the research network to understand the relationships between nodes, including authors, affiliations (organizations), countries, citations, and keywords. However, this study focuses solely on keyword co-occurrences to explore the potential of local content and economic growth regarding Research and Innovation in the past, present, and future.

Keyword analysis is performed based on frequency, edges, and clusters. Various research themes are interconnected to form clusters, represented by the connections between nodes (keywords) and edges (relationships between keywords) (Dhamija P and Bag S, 2020). Larger nodes signify higher occurrences in keyword visualizations, while thicker edges indicate stronger relationships. Meanwhile, cluster analysis categorizes similar keywords within one group while differentiating them from those in another, thereby identifying research interests and keyword combinations within that cluster. Cluster mapping is performed using VOSviewer software, an open-access program for creating and visualizing bibliometric maps (Visser M et all, 2021,Patty ENS et all, 2023).

Result and Discussion

Citation Metrics

Figure 1 shows the number of publications from 2003-2023 along with the average number of citations per publication related to the topic of Research and Technological Innovation in Improving Local Content and Economic Growth. In general, the number of publications from 2003-2023 has fluctuated, where the highest number of publications occurred in 2020, namely 14 publications, and in 2016 as many as 13 documents, in 2021 and 2023 12 publications each. Regarding citations, 5 publications produced in 2013 received the highest average citations per publication, which was 37.2.

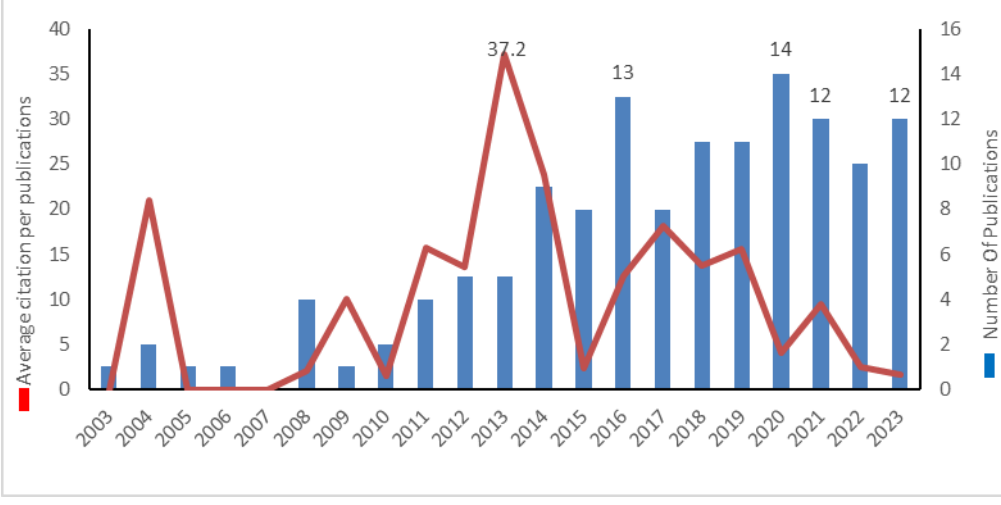

Figure 1. Number of Publications and Average Citations By Year

Most Used Keywords

Table 2 and Figure 2 show the most widely used keywords related to the topic of Research and Technological Innovation in Improving Local Content and Economic Growth as a result of the analysis using Biblioshiny. The most widely used keyword is the gas industry, with 15 occurrences. In second place are the keywords economics and local content, each having an occurrence of 14. The keyword sustainable development is in third place with 12 occurrences. High-frequency keywords show the popularity of a specific topic [57]

Keywords	Occurrences
gas industry	15
economics	14
local contents	14
sustainable development	12
productivity	11
economic and social effects	10
gasoline	9

energy policy	8
offshore oil well production	8
technology transfer	8

Table 2. Top keywords

Source: Biblioshiny

Figure 2. Keyword Word Cloud Visualization

Source: Biblioshiny

Top Ten Publications Producing Countries

Table 3 and Figure 3 show the top ten countries that contributed to producing the most publications related to the topic of Research and Technological Innovation in Improving Local Content and Economic Growth. The first to third countries that produced the most consecutive publications were China (22 publications), the United Kingdom (20 publications), and Canada (13 publications).

Country	**Number of publications**
Cina	22
United Kingdom	20
Canada	13
USA	12
Australia	11
Indonesia	11
South Korea	11
South Africa	8
Brazil	7
Chile	7

Table 3. Top 10 Countries

Source: Biblioshiny

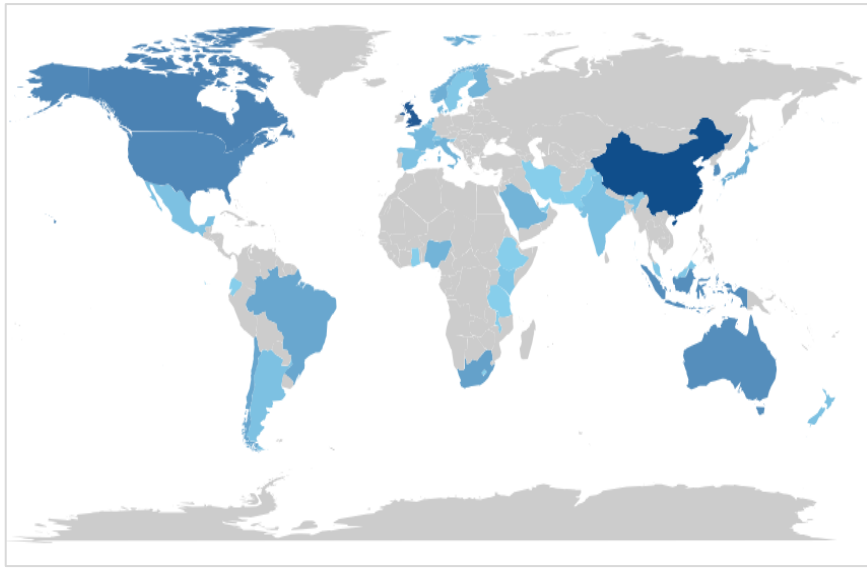

Figure 3. Visualization of the Most Publication-Producing Countries

Source: Biblioshiny

Most Productive Writer

Table 4 and Figure 4 show the top ten authors with the highest number of publications related to the topic of Research and Technological Innovation in Improving Local Content and Economic Growth. In general, a total of 335 authors produced a number of publications that did not differ significantly, i.e. between 1 and 3 publications. The authors with the most publications (3 documents) include Dietsche E., Ovadia J and Weldegiorgis

Writer	Number of documents
Dietsche E.	3
Ovadia J.	3
Weldegiorgis F.	3
Ahmad S.	2
Chun B.	2
Franks D.	2
Hanif M.	2
Kwon C.	2
Nilsen T.	2
Nilsson E.	2

Table 4. List of Top 10 Writers Productivity

Source: Biblioshiny

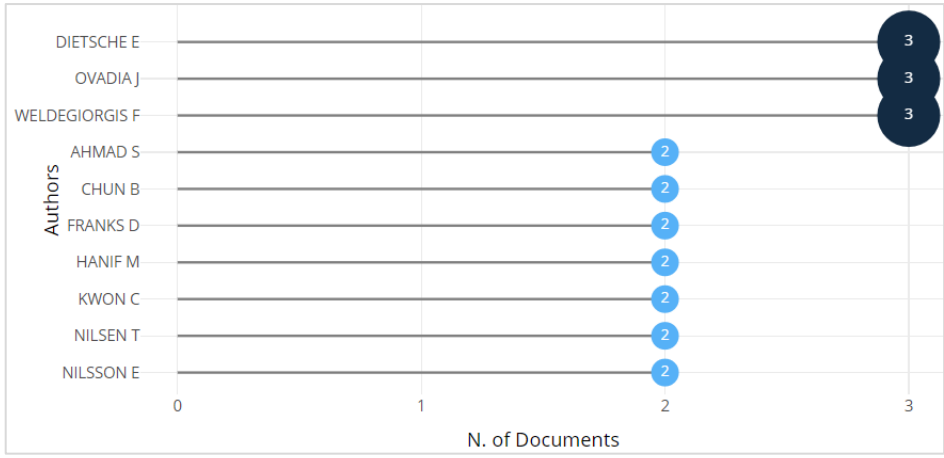

Figure 4. Writer Productivity

Source: Biblioshiny

The Most Active Sources of Publications

Table 5 shows the ten publication sources that produced the most publications, along with information on the number of citations, the scope of research area subjects, and journal quartile information related to the topic of Research and Technological Innovation in Improving Local Content and Economic Growth. The information in this table can be useful for determining journals, publication purposes, or finding references. The Extractive Industries and Society Journal is the source of publications with the highest number of documents and citations, namely 4 documents with 137 citations. This journal has the subject scope of Earth and Planetary Sciences (Economic Geology), Environmental Science (Management, Monitoring, Policy, and Law), and Social Sciences (Development, Geography, Planning, and Development). It is a Q1 journal in the field of development.

Publication sources	**Number of documents**	**Total number of citations**	**Subyek**	**Quartile (Q)**
Extractive Industries and Society	4	137	Earth and Planetary Sciences (Economic Geology), Environmental Science (Management, Monitoring, Policy and Law), Social Sciences (Development, Geography, Planning and Development)	Q1 (Development)
Resources	4	33	Economics,	Q1

Policy			Econometrics and Finance (Economics and Econometrics), Environmental Science (Management, Monitoring, Policy and Law), Social Sciences (Law, Sociology and Political Science)	(Economics and Econometrics)
Proceedings of The Annual Offshore Technology Conference	4	3	Energy (Energy Engineering and Power Technology), Engineering (Mechanical Engineering, Ocean Engineering, Safety, Risk, Reliability and Quality)	-
Energy	3	90	Energy (Energy Engineering and Power Technology, Energy (miscellaneous), Fuel Technology, Renewable Energy, Sustainability and the Environment), Engineering (Building and Construction, Civil and Structural Engineering, Electrical and Electronic Engineering, Industrial and Manufacturing Engineering, Mechanical Engineering), Environmental Science (Management, Monitoring, Policy and Law, Pollution), Mathematics (Modeling and Simulation)	Q1 (Building and construction)
Energy Policy	3	56	Energy (Energy (miscellaneous)), Environmental Science	Q1 (Energy (miscellaneous))

			(Management, Monitoring, Policy and Law)	
Library Philosophy and Practice	3	10	Arts and Humanities (Philosophy), Social Sciences (Library and Information Sciences)	-
Economic Modelling	2	20	Economics, Econometrics and Finance (Economics and Econometrics)	Q1 (Economics and Econometrics)
Economies	2	4	Economics, Econometrics and Finance (Economics, Econometrics and Finance (miscellaneous)), Social Sciences (Development)	Q2 (Development)
Society of Petroleum Engineers – Arctic Technology	2	2	Earth and Planetary Sciences (Geochemistry and Petrology, Geotechnical Engineering and Engineering Geology)	-
International Petroleum Technology Conference, IPTC 2022	2	-	Earth and Planetary Sciences (Geochemistry and Petrology, Geophysics, Geotechnical Engineering and Engineering Geology), Energy (Fuel Technology)	-

Table 5. List Of The 10 Most Active Sources of Publications

Top Ten Most Cited Articles

Citational analysis is a basic science mapping technique that operates on the assumption that citations reflect the intellectual linkages between publications that are formed when one publication cites another [58]. One can analyze the most influential publications in a research field to understand the intellectual dynamics of the field by looking at the number of sites. Table 6 and Figure 5 contain the top ten most cited articles. Upward's (2013) publication entitled "Weighing China's Export Basket: The Domestic Content and Technology Intensity of Chinese Exports" in the Journal of Comparative Economics received the most citations, namely 175 times. In second place, Haftu's (2019) article entitled "Information Communications Technology

and Economic Growth in sub-Saharan Africa: A Panel Data Approach" received 116 citations. In third place, the article Ovadia (2014) entitled "Local content and natural resource governance: the cases of Angola and Nigeria" received 106 citations.

Author/ Year	**Title of publication**	**Publication sources**	**Number of citations**
Upward (2013)	Weighing China's export basket: the domestic content and technology intensity of Chinese exports	Journal of Comparative Economics, 41 (2), May 2013: 527-543	175
Haftu (2019)	Information communications technology and economic growth in sub-Saharan Africa: a panel data approach	Telecommunications Policy, 43(1), February 2019: 88-99	116
Ovadia (2014)	Local content and natural resource governance: the cases of Angola and Nigeria	The Extractive Industries and Society, 1(2), November 2014: 137-146	106
Baker (2017)	The political economy of technological capabilities and global production networks in South Africa's wind and solar photovoltaic (pv) industries	Political Geography, 60, September 2017: 1-12	80

Rui (2018)	A comprehensive investigation on performance of oil development in Nigeria: technical and non-technical and gas analyses	Energy, 158(1), September 2018: 666-680	69
Van kerkhoven (2014)	The hyperlocal in practice: innovation, creativity and diversity	Digital Journalism, 2(3), 2014: 296-309	63
Esteves (2011)	Enhancing the benefits of local content: integrating social and economic impact assessment into procurement strategies	Impact Assessment and Project Appraisal, 29(3), 2011: 205–215	54
Ahmad (2016)	Commitment to and preparedness for sustainable supply chain management in the oil and gas industry	Journal of Environmental Management, 180(15), September 2016: 202-213	53
Ovadia (2012)	The dual nature of local content in Angola's oil and gas industry: development vs. Elite accumulation	Journal of Contemporary African Studies, 30(3), 2012: 395–417	52
Mwombe (2014)	Evaluation of information and communication technology utilization by small holder banana farmers in Gatanga district, Kenya	The Journal of	38

		Agricultural Education and Extension, 20(2), 2014: 247–261	

Table 6. List of Top Ten Most Cited Articles

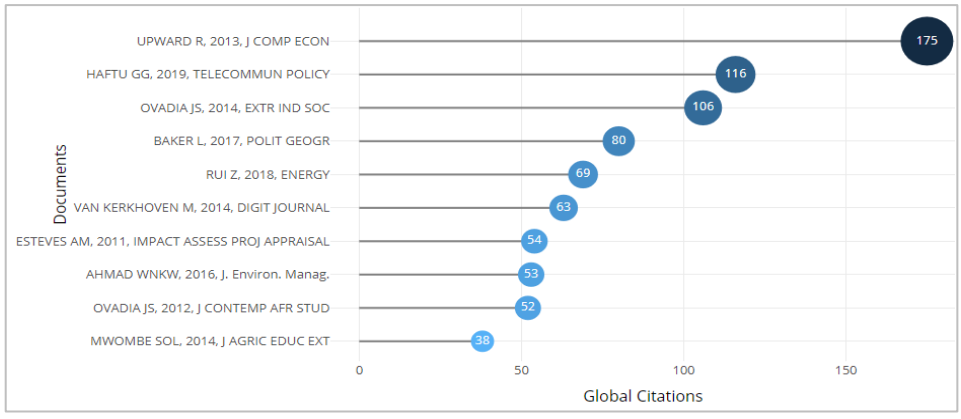

Figure 5. Top Ten Most Cited Articles

Source: Biblioshiny

Topic Clustering

Topic clustering can be used to find out the trend of research topics. This paper obtains topic clustering through keyword co-occurrence analysis using VOSviewer software. Co-occurrence analysis is carried out with the analysis unit of author keywords (keywords determined by the researchers themselves), considering that the keywords represent the content of the publication created rather than the keywords generated by the machine. From a total of 443 existing keywords, cleaning was carried out (a combination of keywords that are written differently but have the same meaning) so that 420 keywords were obtained. Of the 420 keywords, only 274 are interconnected and displayed in visualizations in 5 clusters (minimum cluster size=30). The visualization of the keyword network is shown in Figure 6

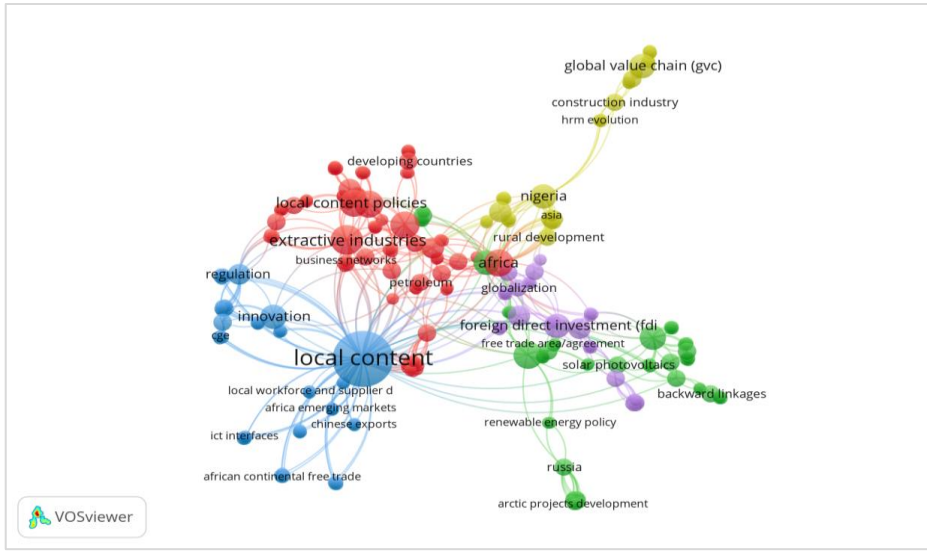

Figure 6. Keyword Network Visualization

Cluster	Keywords
1 (red)	Africa, angola, automotive industry, backward and forward linkages, business networks, commitment, content, critical review, crude oil, developing countries, development, diversification, economic benefit, economic growth, economic impact assessment, economic transformation, emerging markets, enhancement, entrepreneurship, export capacity, export composition, export diversification, extractive industries, focus groups, food industry products, gateway, ghanaian small and medium enterprises, government relations, hyperlocal, import composition, in-country value, indigenous workforce, industrial development, industrial linkages, industrialisation, internal factors, international oil companies (iocs), interviews, iran's export performance, iranian content, kazakhstan, law, linkage, literature review, lithium, local, local content policies, local news, local procurement, local suppliers, local supply, local workforce, logit model, mineral utilisation, mining, national oil companies (nocs), nationalism, natural resource governance, natural resources, nigerian government, oil and gas, oil and gas development, online news, petroleum, petroleum industry, preparedness, procurement, reform, regional development, regional trade partners, requirements, russian market, small and medium scale industries, social impact assessment, supercycle, supply, supply chain, supply chain integration, supply chain management, sustainable development goals, sustainable supply chain management, system dynamics, vaca muerta, willingness to invest
2 (green)	arctic projects development, auctions, backward linkages, brazilian industry, climate change, concentrated solar power (csp), decarbonization, design elements, domestic content requirement, economic development, finite element analyses, free trade area/agreement, global production networks,

	green industrial policy, income impacts, india, indigenous oil firms' participation, industrial policy, input-output model, job creation, labor policy, lc policy, local content regulation, local content requirements, localization, manufacturing, mining industry, norway oil sector, oligopoly, prototype, quality competition, rare earth-free, regional content exports, regional green growth, regional impact, renewable electricity, renewable energy, renewable energy policy, ripple effects, rules of origin, russia, social, social accounting matrix, socio-economic impacts, solar energy, solar photovoltaics, south africa, synthetic control, technological capabilities, technology adoption, technology localization, technology spillovers, technology transfer, value added chain, vested interests, wind, wind energy, wind power industry, world input-out table
3 (blue)	Aboriginal, africa emerging markets, african continental free trade agreement, australian book industry, automation, brazil, cge, chinese exports, corporate configuration, cultural policy, dark emu, development minerals, digitization, economic modelling, employment, energy policy, environmental assessment, foreign firms, gdpr, ict interfaces, impact benefit agreements, independent television production, indigenous firms, industrial base, innovation, institutional structures, integrated reporting, inter-sectoral linkages, iptv, knowledge sharing, lgpd, local content, local content 2.0, local language interfaces, local participation in extractive industries, local participation in oil and gas industries, local workforce and supplier development, maori language, mines, minority language, mobile workforce, netflix, offshore wind, omv, ott video, ownership, policy, privacy enhancing technologies, regulation, rural businesses, social shaping of technology, socio-economic agreements, svod, technology intensity, undrip, value, vertical integration, vertical specialisation, welsh language
4 (yellow)	Asia, construction industry, developmental state, domestic value chains (dvc), embodied energy, firm exports, food crisis, food policy, food security, foreign investment, gdp per capita, global value chain (gvc), hrm evolution, hrm policies, hrmps, indonesia, industrial agglomeration, input-output, international trade, internet, mobile, multiscalar analysis, nigeria, political threats, power resources, public policy, rural development, state-in-society approach, state society conflicts, structural transformation, sub-saharan africa, system gmm, tanzania, trade in value-added (tiva), uneven development, urban bias, value-added exports, vertical specialisation trade
5 (purple)	advanced and emerging economies, app developers, app distribution, app stores, china, contract strategies, economic co-benefits, emerging growth poles, foreign direct investment (fdi), gas, ghana, globalization, government procurement, host government, information and communication technology, infrastructure projects, investment-centred global value chains, latin america, local content production, local sourcing, media democratisation, mobile app industry, mobile communication and development, mobile media, multinational corporations, oil, oil and gas industry, political economy, resource curse, sourcing, state capitalism, sustainability, united states

Table 7. Distribution of Keywords in Each Cluster

Research Potential

Topics that are still not much/rarely researched can be potential research to be carried out. The potential of this research can be known from the visualization of density (Figure 7), namely from the keywords that are on the outermost line (aqua color). Keywords located in aqua color are keywords that have a small occurrence weight and low total link strength / not much connection to the dominant keyword (reddish yellow). So research topics that have not been widely carried out can be related to the keywords auctions, design elements, information and communication technology, international trade, mobile workforce, oil and gas development, rural businesses, and sustainable development goals. So research topics that have not been widely carried out can be related to the keywords auctions, design elements, information and communication technology, international trade, mobile labor, oil and gas development, rural businesses, and sustainable development goals. A more detailed discussion regarding several research potentials can be described as follows:

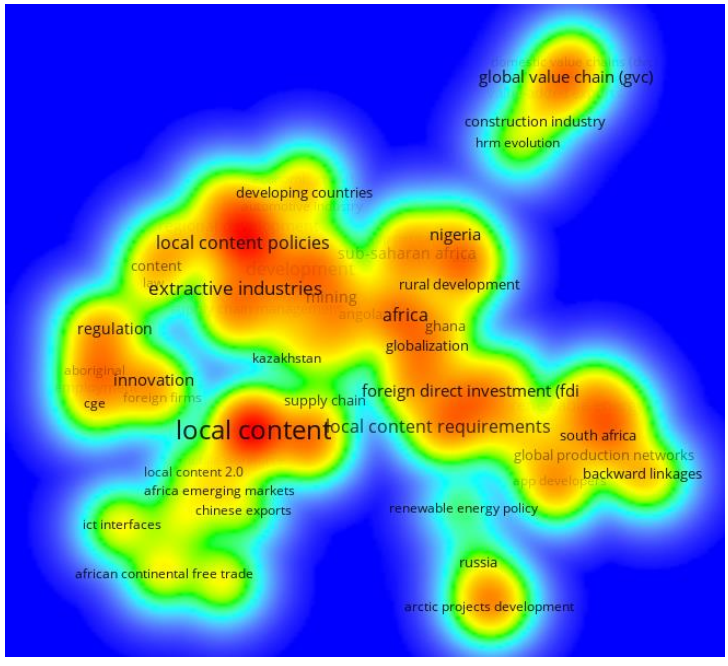

Figure 7. Keyword Density Visualization

Auctions:

Research and innovation can definitely be incorporated into Local Content Requirements (LCRs) in auction mechanisms. This can be an interesting research area, especially in industries like renewable energy, telecommunications, oil and gas, and infrastructure development, where governments often use auctions to allocate resources or projects.

Auctions have a strategic role in increasing local content, especially in research and innovation-based industries, such as UAVs (Unmanned Aerial Vehicles). Requirements for domestic content levels and price preferences for local products have been widely implemented by several countries. However, not many have linked this to strengthening local research and innovation. Partnership scheme requirements that require foreign companies to work with local companies in production and technology transfer need to be added.

A well-designed auction can encourage research and innovation in local industries. If the specifications in the auction encourage innovation (for example, UAVs with AI features or local composite materials), this will stimulate industry to invest in research and encourage industry players to allocate more funds to local product development.

In addition, incentives for local players in auctions can foster an innovation ecosystem, universities, R&D institutions, startups, and technology companies are encouraged to collaborate in the development of UAVs based on local technology.

How can auction designs incentivize local R&D and innovation? because there is also research that shows that local content policies do not have a positive impact on technology development in the renewable energy sector in Kenya [59].

Design Elements

The design of elements/components in production process activities plays a very important role in increasing local content and can encourage economic growth based on research and innovation. The engineering design of a product component, its specifications can be designed with local capabilities, for example related to the availability of local materials, the manufacturing capabilities of the industry and designed with a modular system.

How this strategy can be implemented is something worth studying?

Information and Communication Technology:

Analysis of the impact of information and communication technology on digital inclusion and the gap in access to technology. As well as research on the application and use of information and communication technology in certain sectors, such as health, education, or government. How ICT can enhance national innovation capacity, create more advanced industries, and accelerate technology-based economic growth. ICT accelerates research and innovation through AI, IoT, and big data that support more efficient design and manufacturing.

International Trade:

Although international trade is often associated with imports, international trade can also support the strengthening of local industries and increasing local content. One way is by utilizing collaboration with foreign companies through joint ventures or technology licensing can increase the capacity of local industries in producing components or implementing policies. Offset Agreements (countertrade, technology transfer, and foreign direct investment/FDI) in procurement contracts can require foreign investors to build production facilities domestically.

The research potential in this case is how international trade creates opportunities for local industrial expansion, increased investment in research, and strengthened technological competitiveness in the global arena? How international trade can be a means to improve domestic industrial capabilities, by obtaining the necessary technology, raw materials, and access to global standards?

Sustainable Development Goals:

The SDGs provide direction for sustainable economic development by encouraging technology, local industry, and environmentally friendly innovation. for example, in SDG 8: Decent Work and Economic Growth; in SDG 9 related to Industry, Innovation, and Infrastructure; in SDG 12: Responsible Consumption and Production; SDG 4: Quality Education; SDG 7: Affordable and

Clean Energy; SDG 17: Partnerships to Achieve the Goals.

How can the implementation of SDGs encourage policies that strengthen local industry, create jobs, and ensure that increasing local content is carried out with a sustainable approach? How can the implementation of the SDGs encourage investment in sustainable research and innovation, ensuring that technology-based economic growth continues to take into account social, environmental and inclusive factors?

Conclusion

Based on the results of searching and collecting data from the Scopus and WoS databases, published from 2003-2023 in the form of journal articles and procedural articles, 134 publications related to the topic of Research and Technological Innovation in Improving Local Content and Economic Growth were obtained. In general, the number of publications from 2003-2023 has fluctuated; the highest number of publications occurred in 2020, namely 14. Regarding citations, 5 publications produced in 2013 received the highest average citations per publication, which was 37.2. The most widely used keyword is the gas industry, with 15 occurrences. The country that produces the most publications related to the topic is China (22 publications). The authors with the most publications (3 documents) include Dietsche E, Ovadia J., and Weldegiorgis F. Jurnal Extractive Industries and Society is the source of publications with the highest number of documents and citations, namely 4 documents with 137 citations. The most cited article is Upward's (2013) publication entitled "Weighing China's export basket: the domestic content and technology intensity of Chinese exports" in the Journal of Comparative Economics with 175 citations. The clustering of research topics is divided into 5 clusters, namely Automotive and Extractive Industry Development in Developing Countries, Renewable Energy Development and Economic Diversification in the Arctic Region and Related Countries, Local Economic and Cultural Empowerment in the Digital Era in Various Regional Contexts, Economic Development and Food Security in the Context of Infrastructure Development in Asia and Africa, and Economic Transformation and the Role of Technology in Global Development. The potential research that can be carried out is related to the keywords auctions, design elements, information and communication technology, international trade, mobile workforce, oil and gas development, rural businesses, and sustainable development goals.

Authorship Contribution Statement

Agus Krisnowo (conceptualization, data curation, formal analysis, methodology, writing—original draft, and revising—revised draft);

Subchan (conceptualization, supervision, and revising—revised draft);

Arman Hakim Nasution (conceptualization, methodology, validation, and revising—revised draft);

Adhi Dharma Permana (resources, proofreading, and revising—revised draft).

References

Appio, F. P., Cesaroni, F., & Di Minin, A. (2014). Visualizing the structure and bridges of the intellectual property management and strategy literature: a document co-citation analysis. Scientometrics, 101(1), 623–661. https://doi.org/10.1007/s11192-014-1329-0

Attarpour, M. R., Narimani, M., Elyasi, M., & Mohammadi, A. (2024). Public Procurement Policies to Foster Innovation Development. Foresight and STI Governance, 18(1), 33–45. https://doi.org/10.17323/2500-2597.2024.1.33.45

Bagheri Nasrabadi, M., Jassbi, A., Bonyadi Naeini, A., & Shavvalpour, S. (2021). Optimal government support policy towards technology development considering the challenges of conflict of interests, ethical and structural problems. RAIRO - Operations Research, 55(2), 1153–1169. https://doi.org/10.1051/ro/2021023

Bongiovanni, I., Townson, P., & Kowalkiewicz, M. (2023). Bridging the academia-industry gap through design thinking: Research innovation sprints. Research Handbook on Design Thinking, 102–126. https://doi.org/10.4337/9781802203134.00013

Boons, F., Montalvo, C., Quist, J., & Wagner, M. (2013). Sustainable innovation, business models and economic performance: An overview. Journal of Cleaner Production, 45, 1–8. https://doi.org/10.1016/j.jclepro.2012.08.013

Bučar, M. (2013). the Role of R&D and Innovation in Local Economic Development. 365–382. https://doi.org/10.5644/pi2013-153-22

Carmona-serrano, N., López-belmonte, J., Cuesta-gómez, J. L., & Moreno-guerrero, A. J. (2020). Documentary analysis of the scientific literature on autism and technology in web of science. Brain Sciences, 10(12), 1–20. https://doi.org/10.3390/brainsci10120985

Chaminade, C., & Lundvall, B.-Å. (2019). Science, Technology, and Innovation Policy: Old Patterns and New Challenges. Oxford Research Encyclopedia of Business and Management. https://doi.org/10.1093/acrefore/9780190224851.013.179

Crescenzi, R. (2021). R&D, Innovative Collaborations and the Role of Public Policies. 99–103. https://doi.org/10.1007/978-3-030-52391-6_14

Cui, S., & Lu, L. X. (2017). Optimizing Local Content Requirements Under Technology Gaps. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.2750316

Deringer, B. H., Erixon, F., Lamprecht, P., & Marel, E. Van Der. (2018). The economic impact of local content requirements : A case study of heavy vehicles. ECIPE Occasional Paper, 1, 1–46.

Dhamija, P., & Bag, S. (2020). Role of artificial intelligence in operations environment: a review and bibliometric analysis. TQM Journal, 32(4), 869–896. https://doi.org/10.1108/TQM-10-2019-0243

Donthu, N., Reinartz, W., Kumar, S., & Pattnaik, D. (2021a). A retrospective review of the first 35 years of the International Journal of Research in Marketing. International Journal of Research in Marketing, 38(1), 232–269. https://doi.org/10.1016/j.ijresmar.2020.10.006

Donthu, N., Reinartz, W., Kumar, S., & Pattnaik, D. (2021b). A retrospective review of the first 35 years of the International Journal of Research in Marketing. International Journal of Research in Marketing, 38(1), 232–269. https://doi.org/10.1016/j.ijresmar.2020.10.006

Ekolu, S. (2018). Relationship between Research, Innovation and Development - a Review. https://doi.org/10.4108/eai.20-6-2017.2270660

Ellegaard, O., & Wallin, J. A. (2015). The bibliometric analysis of scholarly production: How great is the impact? Scientometrics, 105(3), 1809–1831. https://doi.org/10.1007/s11192-015-1645-z

Emumena, D. E. (2023). Local Content Policy As a Tool for Knowledge Transfer Between Indigenous Oil and Gas Firms and Multinational Oil Companies. Strategic Journal of Business & Change Management, 10(3). https://doi.org/10.61426/sjbcm.v10i3.2706

Fetscherin, M., & Heinrich, D. (2015). Consumer brand relationships research: A bibliometric citation meta-analysis. Journal of Business Research, 68(2), 380–390. https://doi.org/10.1016/j.jbusres.2014.06.010

Freeman, C., & Soete, L. (2012). The economics of industrial innovation. The Economics of Industrial Innovation, 1–470. https://doi.org/10.4324/9780203357637

Gerdsri, N., & Kongthon, A. (2018). Identify Potential Opportunity for Research Collaboration Using Bibliometrics. INTERNATIONAL JOURNAL OF BUSINESS, 23(3), 259–260.

https://ijb.cyut.edu.tw/var/file/10/1010/img/864/V233-3.pdf
Heim, I. (2018). No TitleValue Co-creation and Local Content Development: Transformation, Digitalization and Innovation in the Oil and Gas Industry. 18th InternationalConferenceonInformaticsandSemioticsinOrganisations(ICISO), 313–314.
Hirsch, J. E. (2007). Does the h index have predictive power? Proceedings of the National Academy of Sciences of the United States of America, 104(49), 19193–19198. https://doi.org/10.1073/pnas.0707962104
Huber, D., Kaufmann, H., & Steinmann, M. (2014). The Missing Link – Der „Innovation Gap“. Bridging the Innovation Gap - Bauplan Des Innovativen Unternehmens, 25–45. https://doi.org/10.1007/978-3-662-43925-8_5
Huber, D., Kaufmann, H., & Steinmann, M. (2017). The Missing Link: The Innovation Gap. Management for Professionals, Part F610, 21–41. https://doi.org/10.1007/978-3-319-55498-3_3
Ibrahim, N., AbdRaboh, N. R., Bienert, A., Baig, M. R., Ismaiel, A., Mahmoud, M. A., Al Mazrouei, N., S. Almalki, Z., Younis, G. A., Eltahawey, G., Bashir, S., & A. Ahmed, H. (2023). Revolutionizing Healthcare Through Innovation and Transformation in Research: A Global Action Plan Initiative to Address Critical Gaps and Drive Progress. Global Journal of Medical Therapeutics, 5(3). https://doi.org/10.46982/gjmt.2023.106
Kamaludin, K., & Prasetyadi, A. (2023). Science Mapping of Library and Information Science (LIS) and Library Technology Studies in Indonesia. Al-Ma Mun Jurnal Kajian Kepustakawanan Dan Informasi, 4(1), 1–15. https://doi.org/10.24090/jkki.v4i1.7145
Katz, Y. (2021). Government's Role in Advancing Innovation. Randwick International of Social Science Journal, 2(2), 161–175. https://doi.org/10.47175/rissj.v2i2.236
Kaziboni, L., & Stern, M. (2021). The impact of local content policies on South Africa: Drawing lessons from foreign investors ' experience of the PPPFA and REIP4. DNA Economics, August, 1–43.
Kazzazi, A., & Nouri, B. (2012). A conceptual model for local content development in petroleum industry. Management Science Letters, 2(6), 2165–2174. https://doi.org/10.5267/ j.msl.2012.05.031
Koppinen, S., Lammasniemi, J., & Kalliokoski, P. (2010). Practical application of a parallel research-business innovation process to accelerate the deployment of research results. R and D Management, 40(1), 101–106. https://doi.org/10.1111/j.1467-9310.2009.00587.x
Lara-Rodríguez, J. S., Rojas-Contreras, C., & Duque Oliva, E. J. (2019). Discovering emerging research topics for brand personality: A bibliometric analysis. Australasian Marketing Journal, 27(4), 261–272. https://doi.org/10.1016/j.ausmj.2019.06.002
Li, P., Wang, H., Cai, Y., & Jiang, Q. (2023). Research on Future Mid-to-Long-Term New Technologies, Digital Economy Development and Innovation-Driven Development Strategy and Major Policies. In The New Journey of China's Economic and Social Development.
Liening, A., Geiger, J. M., & Kriedel, R. (2018). Bridging the gap between invention and innovation: The role of university-based start-up programs and private cooperation. FGF Studies in Small Business and Entrepreneurship, 11(1), 241–260. https://doi.org/10.1007/978-3-319-73509-2_13
Lin, S. H., & Weng, Y. (2020). Can strengthening the local content requirements meet a government's need to raise industrial productivity and production? Journal of Applied Economics, 23(1), 316–328. https://doi.org/10.1080/15140326.2020.1753468
Maponga, O. P., & Musa, C. (2021). Domestication of the role of the mining sector in Southern Africa through local content requirements. Extractive Industries and Society, 8(1), 195–210. https://doi.org/10.1016/j.exis.2020.06.001
Muchlian, M., & Honesti, L. (2023). Tren Penelitian Tanah Longsor di Indonesia Rentang Tahun 2011-2021 Berdasarkan Analisis Bibliometrik. G-Tech: Jurnal Teknologi Terapan, 7(1), 247–254.

https://doi.org/10.33379/gtech.v7i1.1968
Muhongo, R. S. (2020). Regional Content and Beyond. Energy Justice, 205–219. https://doi.org/10.1007/978-3-030-61338-9_8
Murdock, K. A., Overgaard, M. K., Jensen, M. L., & Broeng, J. (2017). Bridging the gap from research to high-technology ventures with experienced entrepreneurs. International Journal of Technology Transfer and Commercialisation, 15(4), 400. https://doi.org/10.1504/ ijttc.2017.089664
Nurcahyo, R., Hutasoit, E. L., Muslim, E., & Wibowo, A. D. (2019). A strategy of Local Content Enhancement in petroleum and natural gas industry. Proceedings of the International Conference on Industrial Engineering and Operations Management, 2019(MAR), 1017–1023.
Olufowoshe, A. (2011). Globalization and Local Content. Annual International Conference of the ASME for Engineering Management 2011 (ASME 2011), 452–458.
Patty, E. N. S., Iriyani, S. A., Hadi, H. S., Abdulrahim, A., & Irhas, I. (2023). Analisis Bibliometrik Profesionalisme Guru: Penelitian Menggunakan Aplikasi VOSViewer. Jurnal Simki Pedagogia, 6(2), 287–296. https://doi.org/10.29407/jsp.v6i2.277
Pesta, B. J., Kirkegaard, E. O. W., te Nijenhuis, J., Lasker, J., & Fuerst, J. G. R. (2020). Racial and ethnic group differences in the heritability of intelligence: A systematic review and meta-analysis. Intelligence, 78(November 2019). https://doi.org/10.1016/j.intell.2019.101408
Pranckutė, R. (2021). Scopus and Web of Science stands out for systematic reviews, offering comprehensive coverage across disciplines, including journals, conferences, and patents. Publications, 9(1), 1–59.
Ramdoo, I. (2018). Local Content: Key Characteristics, Designing Local Content Policies In Mineral-Rich Countries. http://www.jstor.com/stable/resrep21957.4
Santa Soriano, A., Lorenzo Álvarez, C., & Torres Valdés, R. M. (2018). Bibliometric analysis to identify an emerging research area: Public Relations Intelligence—a challenge to strengthen technological observatories in the network society. Scientometrics, 115(3), 1591–1614. https://doi.org/10.1007/s11192-018-2651-8
Schumpeter, J. (1934). The Theory of Economic Development. Harvard University Press: Cambridge, MA, USA.
Seravalli, G. (2008). Innovazione e sviluppo locale. Concetti, esperienze, politiche. Economia E Politica Industriale, I, 75–106. https://www.francoangeli.it/riviste/Scheda_rivista.aspx? IDArticolo=33050
Silvestre, B. S. (2015). Sustainable supply chain management in emerging economies: Environmental turbulence, institutional voids and sustainability trajectories. International Journal of Production Economics, 167, 156–169. https://doi.org/10.1016/j.ijpe.2015.05.025
Singh, K., & Nirmal, A. V. (2018). Technological advancement by bridging the gap between industry and academia. Proceedings - 5th IEEE International Conference on MOOCs, Innovation and Technology in Education, MITE 2017, 63–66. https://doi.org/10.1109/MITE.2017.00017
Su, J., Zhai, Q., & Landström, H. (2015). Entrepreneurship research in China: internationalization or contextualization? Entrepreneurship and Regional Development, 27, 50–79. https://doi.org/10.1080/08985626.2014.999718
van Nunen, K., Li, J., Reniers, G., & Ponnet, K. (2018). Bibliometric analysis of safety culture research. Safety Science, 108, 248–258. https://doi.org/10.1016/j.ssci.2017.08.011
Vieira, M., Beauchaud, M., Amorim, M. C. P., & Fonseca, P. J. (2021). Boat noise affects meagre (Argyrosomus regius) hearing and vocal behaviour. Marine Pollution Bulletin, 172. https://doi.org/10.1016/j.marpolbul.2021.112824
Visser, M., van Eck, N. J., & Waltman, L. (2021). Large-scale comparison of bibliographic data sources: Scopus, web of science, dimensions, crossref, and microsoft academic. Quantitative Science Studies,

2(1), 20–41. https://doi.org/10.1162/qss_a_00112

Wagner, C. S., Whetsell, T. A., & Mukherjee, S. (2019). International research collaboration: Novelty, conventionality, and atypicality in knowledge recombination. Research Policy, 48(5), 1260–1270. https://doi.org/10.1016/j.respol.2019.01.002

Wrigley, J., Carden, V., & von Isenburg, M. (2019). Bibliometric mapping for current and potential collaboration detection. Journal of the Medical Library Association, 107(4), 597–600. https://doi.org/10.5195/jmla.2019.764

Yu, Z. (2019). Research and Implications on OECD Governments' Procurement Policy to Promote Technology Innovation. International Journal of Sustainability Management and Information Technologies, 5(1), 15. https://doi.org/10.11648/j.ijsmit.20190501.13

Есмагамбетов, Д. Б., Кусаинова, Л. И., Галиева, А. Х., Yesmagambetov, D., Kussainova, L., & Galiyeva, A. (2022). Innovative Approach To the Development of Local Content in Public Procurement. Вестник Казахского Университета Экономики, Финансов И Международной Торговли, 4(49). https://doi.org/10.52260/2304-7216.2022.4(49).17

Улыбышев, Д. Н., Бопиева, Ж. К., Жайлауов, Е. Б., Джусупов, Х. С., Ulybyshev, D., Bopiyeva, Zh., Zhailauov, E., & Dzhussupov, Kh. (2022). Analysis of the Impact of the Domestic Scientific Sphere on the Innovative Development of the National Economy. Вестник Казахского Университета Экономики, Финансов И Международной Торговли, 3(48). https://doi.org/10.52260/2304-7216.2022.3(48).6.