

EDUCATIONAL ADMINISTRATION: A BIBLIOMETRIC STUDY OF GLOBAL KNOWLEDGE ABSORPTION AND INNOVATION

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Abstract. This research aims to map and analyze global trends in the field of Educational Administration, focusing on knowledge absorption and innovation using bibliometric techniques. The method used involves bibliometric analysis to identify publication patterns, research trends, and relationships between subfields of knowledge. Research data were taken from various global academic literature relevant to educational administration and innovation. In collecting data, the researcher uses a literature system as a reference, namely Publish or Perish. In this application, we can select related articles or journal data from Crossref, Google Scholar, Google Scholar Profile, PubMed, Microsoft Academic, Scopus, and Web of Science. Research results show that innovation and knowledge absorption in educational administration are still concentrated in developed countries, while many institutions in developing countries face challenges in adopting these innovations. Furthermore, it was found that international collaboration and technology integration are key factors for the success of educational innovation. This study provides an important contribution to understanding global trends in educational innovation and offers recommendations to strengthen the adoption of innovations through better international collaboration and technology integration.

Keywords: Educational Administration, Bibliometrics, Knowledge Absorption, Global Innovation, Collaboration

Abstrak. Penelitian ini bertujuan untuk memetakan dan menganalisis tren global di bidang Administrasi Pendidikan, dengan fokus pada penyerapan pengetahuan dan inovasi menggunakan teknik bibliometrik. Metode yang digunakan melibatkan analisis bibliometrik untuk mengidentifikasi pola publikasi, tren penelitian, dan hubungan antar subbidang ilmu pengetahuan. Data penelitian diambil dari berbagai literatur akademik global yang relevan dengan administrasi pendidikan dan inovasi. Dalam pengumpulan data, peneliti menggunakan sistem literatur sebagai referensi, yaitu Publish or Perish. Dalam aplikasi ini, kita dapat memilih artikel atau data jurnal terkait dari Crossref, Google Scholar, Google Scholar Profile, PubMed, Microsoft Academic, Scopus, dan Web of Science. Hasil penelitian menunjukkan bahwa inovasi dan penyerapan pengetahuan dalam administrasi pendidikan masih terkonsentrasi di negara-negara maju, sementara banyak institusi di negara-negara berkembang menghadapi tantangan dalam mengadopsi inovasi tersebut. Selain itu, ditemukan bahwa kolaborasi internasional dan integrasi teknologi merupakan faktor kunci keberhasilan inovasi pendidikan. Penelitian ini memberikan kontribusi penting untuk memahami tren global dalam inovasi pendidikan dan memberikan rekomendasi untuk memperkuat adopsi inovasi melalui kolaborasi internasional dan integrasi teknologi yang lebih baik.

Kata Kunci: Administrasi Pendidikan, Bibliometrika, Penyerapan Pengetahuan, Inovasi Global, Kolaborasi

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INTRODUCTION

Educational administration is one of the important pillars in the development of a quality, inclusive, and sustainable education system (Abaalkhail & Irani, 2015; Abu-Alruz et al., 2018; p, 2023; Wang et al., 2022). As the main driver in managing and directing the course of education, educational administration plays a strategic role in ensuring that the educational process runs effectively (Albert & Grzeda, 2014; Li, 2024; Rais et al., 2024; Susanto & Kumar, 2022; Uygur et al., 2020). In the context of increasingly intensive globalization, this role becomes more complex, not only limited to internal challenges such as resource management, curriculum, and performance evaluation, but also encompassing adaptation to external challenges in the form of the ever-evolving dynamics of knowledge and innovation at the global level (Jin, 2023; Mahmudin, 2023; Suwarni, 2023; Yin, 2023).

Along with the rapid development of information and communication technology, global innovation in education continues to accelerate (Butyrina et al., 2022; Meng, 2024; Zhang & Zhao, 2023). These innovations encompass various aspects, ranging from teaching methods, technology-based learning approaches, to more inclusive and sustainable educational policies (Krabonja et al., 2024; Majid & Mafarjaa, 2024; Vo & Tran, 2023). The absorption of global knowledge and innovation has become crucial for improving the quality of education, especially in facing the increasingly complex needs of students and the ever-competitive demands of the job market (Mok & Khai, 2024; Qi & Wang, 2020; Teixeira et al., 2021). In this regard, educational institutions are required to keep up with international trends and best practices, in order to prepare competent and adaptive graduates for global changes.

However, the reality is that many educational institutions in various countries, especially in developing countries, have not yet optimally utilized the knowledge and innovations that are developing globally (Kalema et al., 2016; Law, 2021). Some educational institutions are still trapped in traditional patterns that tend to resist change, especially regarding educational innovations that require the adoption of new technologies and more dynamic policy adjustments (Bourrie et al., 2016; Ogwu et al., 2022; Zhu & Engels, 2013). Limited access to information resources, policies that are not aligned with innovative needs, and resistance to change have become the main obstacles in the process of adapting to global innovations. This condition has the potential to hinder the growth of educational quality that is expected to compete in the era of globalization (Olanrewaju et al., 2021; Utina et al., 2023; Бypов et al., 2020).

The main problem in educational administration is the slow process of adapting to global innovations. This is often caused by several factors, such as lack of access to adequate resources, both in the form of technology and academic literature, insufficient relevant training for educators and administrators, and cultural resistance to change (Kuo, 2009; Lyanda et al., 2023; Yuliandari et al., 2023). In addition, educational policies that do not always align with global dynamics often become obstacles in the implementation of innovations. The impact of this issue is not only felt at the level of education management but also affects the quality of the teaching and learning process in the classroom, which ultimately limits graduates' ability to compete in an increasingly global and dynamic job market (Fernández-Cruz et al., 2016; Zhou & Saong, 2023).

Although many studies have been conducted on educational administration and innovation, there is still a gap in the literature regarding the absorption of knowledge and global innovation in this field. Most existing research focuses on the implementation of educational policies at the local or national level, without delving deeply into how global knowledge and innovation are adopted and integrated into the education systems of various countries. This raises the need to further explore how educational institutions, especially in developing countries, can leverage global knowledge and innovation to improve the quality of their education. This gap needs to be filled with more systematic research, considering the importance of a deep understanding of how global knowledge can be integrated into the education system to promote broader and more sustainable innovation (Fischer et al., 2022; Miletić et al., 2022; Pan et al., 2023).

As a solution to this problem, a more systematic approach is needed in absorbing global knowledge and innovation into educational administration. One relevant approach is bibliometric studies, which allow us to understand the extent to which global knowledge absorption occurs in educational administration. By using bibliometric analysis, we can identify research trends, scientific collaboration networks, as well as contributions from various countries and institutions in the development of knowledge related to educational administration (Kosch & Szarucki, 2020; Kurdak et al., 2023). This study also allows us to see publication and collaboration patterns that can serve as a foundation for developing education policies that are more adaptive to global innovations.

This research aims to systematically examine the absorption of global knowledge and innovation in educational administration through a bibliometric study approach. Thus, this research not only provides an overview of global trends in educational management but also offers empirically-based solutions that can support the capacity building of educational

institutions in innovation. Through the identification of research trends and global collaboration patterns, it is hoped that educational institutions can optimally utilize global knowledge to enhance their quality and competitiveness at the international level.

The novelty of this research lies in its approach, which uses bibliometric analysis to identify and analyze patterns of knowledge absorption and global innovation in educational administration. This approach provides a new contribution to the literature by focusing on how global knowledge can be integrated into the national education system to enhance competitiveness and overall education quality. Furthermore, this research fills the gap in the literature by providing a new perspective on the relationship between global innovation and the sustainability of educational administration in the era of globalization. By using data from Google Scholar processed through the Publish or Perish (PoP) tool, this research explores the distribution of research topics and affiliations related to educational administration, knowledge absorption, and global innovation, providing comprehensive insights for the development of future educational policies (Nova et al., 2023)..

METHOD

This research uses a qualitative descriptive method to describe the data used in this study. We collected journals based on publication searches in journals indexed by Google Scholar. Detailed information on library information searches has been explained in previous research (Husaeni, 2022). Journal data related to the topic "Educational Administration: Absorption of Knowledge and Global Innovation." In collecting data, the researcher uses a literature system as a reference, namely Publish or Perish. In this application, we can select related articles or journal data from Crossref, Google Scholar, Google Scholar Profile, PubMed, Microsoft Academic, Scopus, and Web of Science. Publish or Perish is used to conduct a literature search on the selected topic. Therefore, the database from the research was obtained.

This research uses Google Scholar, journals with selected topics from the last 10 years between 2016 and 2025, and 940 articles were found during this period related to "Educational Administration: Absorption of Knowledge and Global Innovation." The journal criteria are that all journal information must be indexed by Google Scholar and align with the topic search required in this research, which is the information technology learning media environment. The data is then imported into VOSviewer. After being imported, the data is processed to match the desired or selected keywords. Furthermore, VOSviewer transforms the input data into an appropriate data map. Additionally, we studied the variation in the number of publications per year and classified the 10 articles with the highest citations from 100 articles per publisher

RESULTS AND DISCUSSION

Based on the search results using the Publish and Perish software, a total of 940 articles related to the topic "Educational Administration: Knowledge Absorption and Global Innovation" were found, published in scientific journals between the years 2016 and 2025. The number of article publications per year shows a fairly varied pattern, as shown in Table 1 and Figure 1. During the period from 2016 to 2020, the number of articles remained relatively stable with a slight increase year by year. In 2016, 127 articles were published, followed by an increase in 2017 with 133 articles. Although there was a slight decrease in 2018 with 122 articles, the number of articles increased again in 2019 to 137 articles and peaked in 2020 with 157 articles. This increase indicates a significant interest in the topics of educational administration and global innovation during that period.

However, after reaching its peak in 2020, the number of published articles experienced a significant decline. In 2021, only 105 articles were published, and this number continued to decline in the following years. The year 2022 recorded 69 articles, while the year 2023 produced only 49 articles. This decline continued in 2024 with 27 articles, reaching a low point in 2025 with only 14 articles published. This drastic decline indicates a shift in interest towards the topic or the possibility that the topic of knowledge absorption and global innovation in educational administration is becoming saturated in research. External factors, such as changes in educational policies, shifting research trends, and the impact of the global pandemic, may have contributed to the decline in the number of publications after 2020.

Table 1. Number of articles published between 2016 and 2025

Tahun	Artikel
2016	127
2017	133
2018	122
2019	137
2020	157
2021	105
2022	69
2023	49
2024	27
2025	14

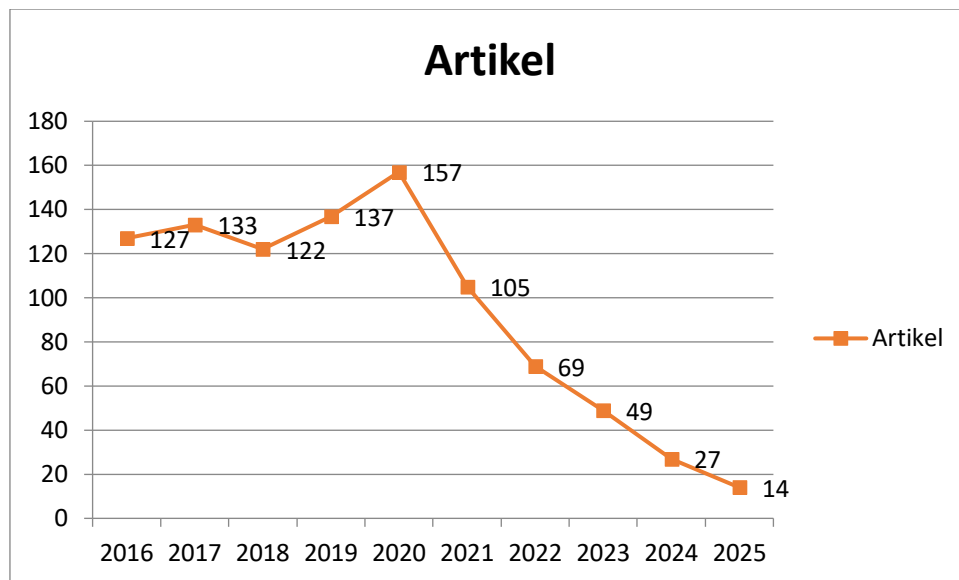


Figure 1. Graph of the number of articles published per year (2016-2025)

Overall, these graphs and tables reflect an initial upward trend in the number of publications related to educational administration, which was then followed by a sharp decline, especially after 2020. Out of a total of 940 articles related to Educational Administration: Knowledge Absorption and Global Innovation, 15 articles stand out with a very high number of citations, reflecting their significant impact on the development of knowledge in the field of education, as shown in Table 2. Articles with the highest citations, such as "ChatGPT for good? "On opportunities and challenges of large language models for education" (2023) with 4155 citations and "Covid-19 pandemic and online learning: the challenges and opportunities" (2023) with 4102 citations, show how technology, especially artificial intelligence and online learning, has become the focus in responding to modern educational challenges. These articles show that digital transformation in education has become a crucial solution, especially post-Covid-19 pandemic, which forced a global shift towards technology-based learning.

Furthermore, the research listed in this table also includes literature reviews and long-term studies on innovation in educational policy. For example, articles such as "Fifteen years of research on business model innovation" (2017) with 3115 citations and "The relation between 21st-century skills and digital skills: A systematic literature review" (2017) with 2758 citations make significant contributions to understanding how business model innovation and 21st-century skills can be integrated into the education system. These articles highlight the importance of developing digital literacy and future skills in preparing learners for the ever-changing challenges in an increasingly digitalized work environment. This emphasizes that the

absorption of global knowledge not only involves educational technology but also encompasses adaptation to global social and economic changes.

The existence of these 15 highly cited articles also underscores the importance of the global adoption and absorption of innovation in educational administration. These articles not only serve as a foundation for researchers in understanding technology trends in education but also function as a guide for policymakers and education practitioners. Further research can be focused on the application of technological innovations and educational policies in local and regional contexts, particularly in developing countries that face unique challenges in accessing technology. Furthermore, further studies could explore how educational administration can play a key role in sustainably integrating global innovations, ensuring that digital transformation brings inclusive and equitable benefits to all layers of society.

Table 2. Educational administration articles: the most cited on knowledge absorption and global innovation

No	Cites	Title	Year	Source	Publisher
1	4155	ChatGPT for good? On opportunities and challenges of large language models for education (Kasneci et al., 2023)	2023	Learning and individual ...	Elsevier
2	4102	Covid-19 pandemic and online learning: the challenges and opportunities (Adedoyin & Soykan, 2023)	2023	Interactive learning environments	Taylor & Francis
3	3316	Artificial intelligence in education: A review (Salas-Pilco et al., 2022)	2020	Ieee Access	ieeexplore.ieee.org
4	3115	Fifteen years of research on business model innovation: How far have we come, and where should we go? (Foss & Saebi, 2017)	2017	Journal of management	journals.sagepub.com
5	2838	Studies of expansive learning: Foundations, findings and future challenges (Engeström & Sannino, 2017)	2017	Introduction to Vygotsky	taylorfrancis.com
6	2758	The relation between 21st-century skills and digital skills: A systematic literature review (Laar et al., 2017)	2017	Computers in human ...	Elsevier
7	2624	Past, present and future of Industry 4.0- a systematic literature review and research agenda proposal (Liao et al., 2017)	2017	International journal of ...	Taylor & Francis
8	2558	Understanding the role of digital technologies in education: A review (Haleem et al., 2022)	2022	Sustainable operations and ...	Elsevier
9	2359	Project-based learning: A review of the literature (Kokotsaki et al., 2016)	2016	Improving schools	journals.sagepub.com

10	2233	Six transformations to achieve the sustainable development goals (Sachs et al., 2019)	2019	Nature ...	nature.com
11	2198	Innovation and diffusion models in policy research (Berry & Berry, 2018)	2018	Theories of the policy process	taylorfrancis.com
12	2188	Organic agriculture in the twenty-first century (Reganold & Wachter, 2016)	2016	Nature plants	nature.com
13	2174	ChatGPT utility in healthcare education, research, and practice: systematic review on the promising perspectives and valid concerns (Sallam, 2023)	2023	Healthcare	mdpi.com
14	2050	Governing the smart city: a review of the literature on smart urban governance (Meijer & Bolívar, 2016)	2016	International review of administrative ...	journals.sagepub.com
15	2031	Culturally responsive school leadership: A synthesis of the literature (Khalifa et al., 2016)	2016	Review of educational ...	journals.sagepub.com

The number of keywords for the research topic that can be linked to Educational Administration: Knowledge Absorption and Global Innovation is limited to one. The collection of research article data was then gathered to analyze the relationship between these terms. The data obtained on the topic of Educational Administration: Knowledge Absorption and Global Innovation is divided into Twenty-Six (26) clusters as shown in Table 3.

Table 3. Education administration cluster: absorption of knowledge and global innovation

Zabihollah	Items
Cluster 1 (72 items)	accountability, action, advance, amr, antimicrobial resistance, artificial intelligence, awareness, big data, burden, call, cancer, cardiovascular disease, care, care system, chemistry, childbirth, chronic pulmonary disease, complex problem, conservation, critical examination, current knowledge, decision, development, digital innovation, ecology, educator, environment, further innovation, health, health challenge, health facility, health information technology, health management, innovation ecosystem, innovative approach, innovative initiative, innovative strategy, innovative technology, innovative way, insight, interprofessional education, involvement, knowledge transfer, lancet commission, life, local knowledge, management, morbidity, national learning health, nature, non communicable disease, pathway, patient, patient outcome, prevalence, prevention, primary health care system, progress, public, recommendation, research question, safety, scientific knowledge, self management, source, sub saharan africa, sustainable tourism, system, teacher stress, treatment, woman, world health organization
Cluster 2 (62 items)	advancement, chatgpt, civic responsibility, classroom, comparative review, concern, construction, construction project, country, course, critical success factor, critical thinking, csf, curriculum, decision making, digital competence, digital health, discipline, dyslipidemia, educational context, educational system, emotional learning, ethical challenge, global evidence, global knowledge economy, global level, globe, graduate employability, higher education systematic literature review, horizon, information, initiative, innovation skill, innovative model, innovative solution, innovative start, instance, integration, key factor, landscape, large language model,

	leadership, learner, learning, management platform, management practice, middle income country, neurosurgery, origin, pedagogical innovation, pedagogy, phenomenon, reform, scaling, school leadership practice, sel, singapore, specific country, systematic scoping review, technology use, vast majority
Cluster 3 (56 items)	academic, academic world, account, antecedent, area, comprehensive literature review, consequence, coopetition, core knowledge, debate, definition, distribution, eco innovation, eco innovation determinant, educational institute, educational leadership, employee performance, engineering innovation, entrepreneur, entrepreneurial ecosystem, entrepreneurship, framework, future research avenue, global citizenship education, global innovation, global problem, innovation indicator, innovation network, innovation system, institution, integrated aedes management, integrative literature review, intersection, knowledge exchange, knowledge production, latin america, linkage, middle east, model, motivation, network, north africa, region, regional innovation system, relation, research direction, respect, responsible research, stock, sustainability innovation, sustainable entrepreneurship, sustainable transition, teacher education, technologies, understanding, wealth
Cluster 4 (56 items)	academic research, activity, administration, book, boundary, comprehensive overview, culture, difficulty, digitization, disaster, early childhood education, economic, engineering, enterprise, financial sector, financial service, financial technology, fintech, future perspective, global financial centre, icts, innovative application, innovative product, international business, international cause, international management, investment, marketing, mathematics, number, organizational structure, poverty, pressure, priority, programme management, quest, regulator, requirement, research innovation, scholar, school education, science, small business, steam, steam learning, stem, stem education, strategic approach, supply chain management, technology, technology management, tradition, trend, ventilator, vision, world war ii
Cluster 5 (54 items)	academic setting, africa, agri food, analytic, big data analytic, building, capacity, challenges, child, climate, climate change, climate change education, climate smart agriculture, covid, detail, determinant, disruption, educational researcher, environmental welfare, example, food sector, food security, food supply chain, global economy, global vision, green deal innovation, history, innovation, intelligent financial fraud detection practice, leader, lesson, medium, organisational climate, pandemic, port, post pandemic era, potential innovation, promotion, prospect, responsibility, scientific literature, structural equation, supply chain, surgical education, systematic review, technology innovation, term, tertiary education, transformation, university social responsibility, web, west africa, young person
Cluster 6 (51 items)	4th industrial revolution, action research, business process management, capability, city, cloud computing, co-creation, commercialization, communication technology, competency, construction site, consumer, device, digital technology, digital transformation, distance, element, emphasis, energy innovation, global knowledge network, global scale, hope, ilter, impact, incremental innovation, industry, innovation climate, innovation process, innovative process, innovative tool, internet, IoT, new era, new knowledge, operations management, product innovation, quality management, radical innovation, reality, risk management, scientific mapping, smart city, smart sustainable city, society, standard, strategic human resource management, survey, thing, transfer, transformational leadership, transition
Cluster 7 (51 items)	agile methodology, benefit, business model innovation, characteristic, complex, content analysis, contribution, department, digital age, dynamic, educational environment, educational experience, educational setting, european union, expansive learning, factual knowledge, focus, foundation, generative artificial intelligence, globalization, infrastructure, innovative learning, innovative learning environment, innovative learning environments, integrated view, interconnected world, knowledge building, leadership development, leadership theory, medium sized enterprise, new

	technology, new way, possibility, preschool, primary education, project management, school, school leader, school leadership, secondary school, sense, startup, state ownership, structure, student, student achievement, student voice, technology park, theoretical foundation, theoretical model
Cluster 8 (50 items)	assessment, authentic leadership, behavior, biobank, clinical simulation, community, complexity, curriculum innovation, digital education, discourse, educational administrator, educational innovation, educational technology, educational tourism, entertainment, europe, examination, faculty, form, game, gamification, health professions education, help, higher education, higher education sector, imagination, implementation, innovative methodology, innovative use, leadership style, local development, medical education, medicine, microlearning, open education, organisational innovation, outcome, patient safety, pharmacy practice innovation, practitioner, psychological capital, question, researcher, role, scoping review, serious game, simulation, teaching, united states, virtual teaching
Cluster 9 (43 items)	agriculture, ai teaching, augmented reality, diagnostic, ecosystem, education service, establishment, experience, fertility management, food system, forum, future, future prospect, future research agenda, generative ai, global perspective, global sustainability, government innovation, holistic innovation, importance, innovation generation, innovation paradigm, innovation practice, innovations, knowledge acquisition, learning outcome, majority, mining sector, new approach, opportunity, precision, precision agriculture, recent innovation, reflection, responsible innovation, review article, sample, smart farming, social science, soil health, sustainable agriculture, value chain, work
Cluster 10 (42 items)	approach, attention, author, biology, business model, change management, clinical expertise, conceptual framework, conference, contextual factor, corporate performance, digital, digital frontier, digital innovation management, digital revolution, digitalization, dynamic capability, educational practice, engagement, function, fund, global innovation ecosystem, information modelling, information technology, knowledge management, knowledge management system, literature review, management scholar, multimorbidity, organisational culture, pediatric high-grade glioma, prior knowledge, process, project, proposal, servitization, social innovation, stakeholder, sustainable education, thinking, trends, venturing
Cluster 11 (42 items)	asset management, blockchain, blockchain technology, classification, college, concept, current innovation, current practice, current trend, diabete, discrimination, district, diversity, diversity research, entrepreneurial education, extent, future research direction, future trend, global knowledge production, global south, health innovation, health research, human resource management, improvement, inquiry, management education, matter, narrative review, paramount importance, potential, present, production, profession, project team, resource management, security, something, success, suggestion, team performance, vocational education, year
Cluster 12 (41 items)	acquisition, adaptability, company, competition, competitive advantage, context, digital leadership, e-leadership, e-learning, educational policy, efficiency, english, english language education, feature, first century learning, flexibility, foreign language, global market, indonesia, innovation performance, innovative HR strategy, innovative perspective, intelligence, interview, knowledge creation, knowledge management research, metaverse, philippine, potential application, professional, research engagement, review approach, school administrator, school principal, significance, stage, teacher, teleworking, time, university ranking, uzbekistan
Cluster 13 (36 items)	category, circular economy, cloud manufacturing, coevolution, conceptualization, cooperation, customer, digital information, distance education, employability, employee innovative behavior, entrepreneurial university, fashion industry, generation, government, higher education worldwide, innovative ability, innovative business model, key characteristic, key concept, key role, manufacturing, medium enterprise, model innovation, organizational innovation, power, previous research,

	review, risk management strategy, service, service innovation, south africa, strategic management, sustainable business model, theoretical review, value creation
Cluster 14 (36 items)	ability, academic literature, access, attitude, communication, competence, critical analysis, critical consciousness, effect, engineering education, hard skill, higher education institution, individual, innovation capability, institutional innovation, learning organization, main aim, necessary knowledge, new generation, order, organizational learning, organizational performance, palliative care, performance, problem, report, social control, social study, soft skill, sustainability leadership, sustainable development, tiktok, tool, user, utilization, value
Cluster 15 (34 items)	accounting, agenda, collaborative innovation, competitiveness, conflict management, current debate, disruptive innovation, economy, family business, family firm, firm performance, fourth industrial revolution, general management, global value chain, human capital, innovation efficiency, innovation field, intellectual capital, journal, knowledge economy, literature, management system, open innovation, operation, organization, point, present debate, research field, rural area, sector, systematic literature review, un sdgs, view, world bank
Cluster 16 (33 items)	academia, advantage, attribute, blended learning, change process, design thinking, diffusion, education, empirical study, funding, future study, global knowledge base, global knowledge society, governance, innovative pedagogy, knowledge management practice, new perspective, online, online learning, practice, professional learning community, psychology, rogers, scholarship, selection, social medium, student learning, theoretical framework, theory, translation, unesco, volume, world knowledge
Cluster 17 (31 items)	actor, bioeconomy, centre, collaboration, demand, education privatization, educational institution, employability skill, excellence, expertise, global challenge, global knowledge, global mindset, innovative practice, instrument, legitimacy, popularity, public sector, roadmap, solid waste management, south korea, strategy, sustainability transition, sustainable food system, sustainable innovation, technical innovation, variety, waste management, welfare policy, workplace
Cluster 18 (30 items)	adoption, aspect, connection, creativity, employee involvement, exploration, flight instructor, frugal innovation, high skilled migration, individual level, influence, innovation capacity, innovative behavior, innovative behavior relationship, job satisfaction, organizational culture, organizational factor, personality, perspective, psychological safety, recent research, responsible management, school student, sme performance, smes performance, stream, sustainability, theme, top management support, total quality management
Cluster 19 (28 items)	achievement, assumption, bibliometric review, body, constraint, development education, education development, educational administration, equity, evaluation, global trend, green product innovation, grey literature, mathematics education, methodology, mobile learning, pandemic era, policy maker, project risk management, quality, research, research trend, retail business model innovation, student attitude, study, sustainable construction, sustainable development goal, university competitiveness
Cluster 20 (26 items)	building information modeling, construction industry, covid19 pandemic, deep learning, dilemma, educational research, employee, environmental policy, environmental quality, future direction, future innovation, global burden, green human resource management, green innovation, healthcare, innovative method, interplay management decision, management perspective, main driver, mixed method, present status, resource, special issue, technique, technological innovation
Cluster 21 (25 items)	art literature, considerable attention, corporate social innovation, digital divide, direction, education field, education system, empirical evidence, empirical research, existence, future research, knowledge base, knowledge sharing, light, mechanism, pattern, professional development, publication, relationship, research study, section, state, teacher leadership, teacher professional learning, united state

Cluster 22 (25 items)	analysis, application, barrier, bibliometric analysis, business, complexity theory, enabler, evolution, financial innovation, fuzzy, growth, hospitality, innovation incubator, innovation research, innovation type, integrative review, knowledge structure, management literature, management research, organisation, overview, qualitative comparative analysis, service innovation research, technology adoption, tourism
Cluster 23 (23 items)	clinical innovation, decade, dissemination, effectiveness, entrepreneurial competence, entrepreneurship education, evidence, facilitator, foreign aid, gamification education, graduate medical education, health profession, health professional, implementation science, issue, nursing leadership, process innovation, product, regional development, serious gaming, smallholder, solution, training
Cluster 24 (23 items)	critical review, current state, economic development, economic growth, external use, first century, higher education image, inflow, innovation policy, innovation strategy, internal innovation, knowledge, knowledge gap, level, market, mission, outflow, outreach, pathways, policy instrument, reason, research landscape, space
Cluster 25 (15 items)	comprehensive review, creation, cultural distance, empirical literature, engineering product lifecycle management, firm internationalization, implication, interest, management innovation, meta analysis, multiplayer online role playing game, open educational practice, open educational resource, past decade, resilience
Cluster 26 (10 items)	entrepreneurship development, innovation failure, innovation management, integrative framework, open access, research agenda, sharing, societal impact, stakeholder engagement, strategic foresight

Table 2 displays the distribution of articles related to "Educational Administration: Absorption of Knowledge and Global Innovation" that are most frequently cited based on clusters. These clusters are grouped based on the dominant themes of the cited articles. For example, Cluster 1 focuses on topics such as health, technological innovation, and management systems, while Cluster 2 emphasizes civil responsibility, education, as well as digital technology and global competence. This shows that innovation in education and health is an area often discussed in the context of knowledge absorption and global innovation.

This analysis shows that global issues such as health, education, technology, and innovation are important topics closely related to educational administration. For example, in Cluster 1, concepts such as "artificial intelligence" and "big data" frequently appear, emphasizing the role of technology in the management of education and healthcare services. Meanwhile, Cluster 2 highlights the importance of developing innovation skills in the field of education, with an emphasis on critical thinking and civic responsibility, demonstrating the connection between education and global community development.

Furthermore, several clusters such as Cluster 5 and 6 highlight the challenges of climate change, the agricultural sector, as well as energy innovation and smart cities, indicating the relevance of educational administration in supporting environmental innovation and sustainable development. The absorption of global knowledge also helps bridge the gap

connected to various global and multidimensional issues that make education more relevant in facing future challenges.

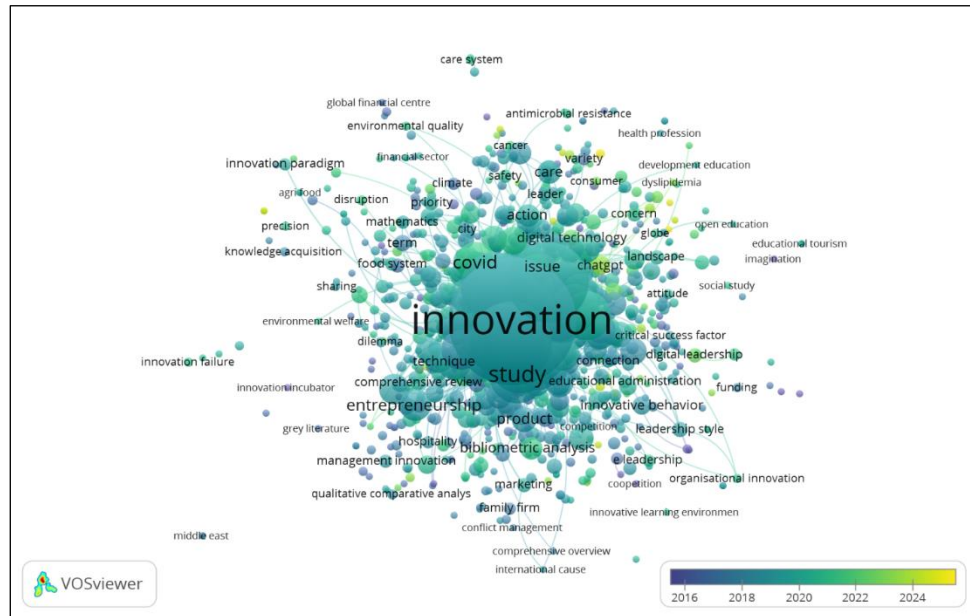


Figure 3. Overlay visualization of educational administration: absorption of global knowledge and innovation

Figure 3 shows an overlay visualization of topics related to Educational Administration: Knowledge Absorption and Global Innovation, depicting the development of research themes from 2016 to 2024. The color spectrum in this image reflects the changing trends over time, with blue representing research from the earlier years (2016-2018), green for research that developed around 2019-2021, and yellow for the most current topics (2022-2024). For example, topics such as "management innovation" and "entrepreneurship" were more frequently discussed in the early years (colored blue), while themes related to "digital technology," "leadership," and "organizational innovation" developed during the green period. This shows a transition in research focus from managerial innovation and entrepreneurship towards digital technology and leadership development within organizations.

In the most recent section, highlighted in yellow (2022-2024), there is an increased focus on topics such as "ChatGPT," "COVID," and "care system," which illustrate a global shift towards innovation in artificial intelligence and the impact of the pandemic on education and healthcare systems. This shows that current research tends to focus on the utilization of the latest technology and responses to global crises, particularly the COVID-19 pandemic. Thus, this visualization not only illustrates how the topics of education and innovation have changed over time but also shows the impact of technology and global challenges on the current landscape of research in educational administration.

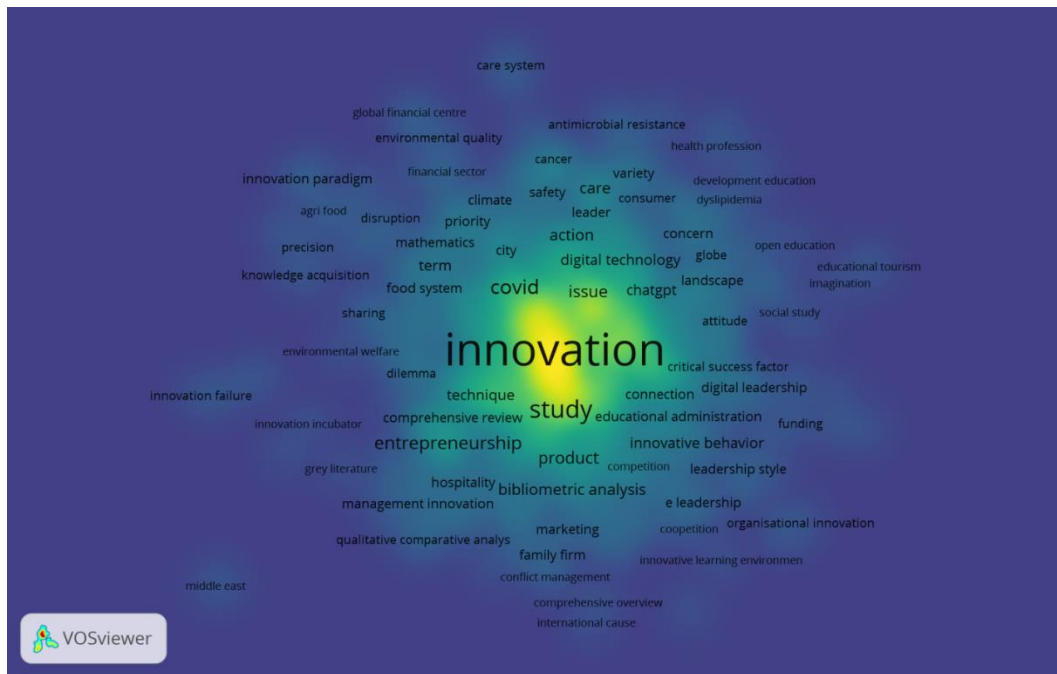


Figure 4. Visualization of educational administration density: absorption of global knowledge and innovation

Figure 4 displays a visualization of the topic density related to Educational Administration, particularly in relation to knowledge absorption and global innovation. From the image, it can be seen that the topic of innovation occupies a central position with the highest density, indicated by the bright color in the surrounding area. This shows that innovation is a key element in discussions about educational administration and how new knowledge is integrated. In addition, topics such as entrepreneurship, digital technology, and COVID also appear with high density, reflecting the importance of entrepreneurship and technology in addressing global challenges, such as the COVID-19 pandemic, in the context of education.

In areas that are slightly less frequently discussed, we see words like innovation failure, environmental quality, and antimicrobial resistance. Although these topics are less dominant, they remain part of the broader discussion on how innovation and knowledge are applied in the field of education. Interestingly, chatgpt also emerged as a topic, highlighting the relevance of AI technology in the development of modern education. Overall, this visualization provides a dynamic picture of the role of innovation in education and the absorption of knowledge in the face of global changes.

By using bibliometric analysis, we can map various research in the field of Educational Administration, particularly related to Knowledge Absorption and Global Innovation that significantly contribute to the world of education. This analysis allows us to identify key themes, such as innovation, entrepreneurship, and digital technology, which have become the

focus of research and development in this field. Furthermore, the analysis allows us to develop innovations in research by leveraging relevant relationships between various subfields of science, which can be revealed through density data visualization.

For example, further research can be conducted by delving deeper into the impact of digital technologies like ChatGPT on the process of knowledge absorption and innovation in schools or universities. Research can also be focused on the factors that hinder innovation in the field of education, as indicated by the emergence of the topic of innovation failure. To enrich insights, the study can be expanded by developing an entrepreneurship-based intervention model in the field of education or analyzing effective digital leadership strategies in facing global challenges, including the COVID-19 pandemic.

CONCLUSION

This research shows that through a bibliometric approach, we can gain a deeper understanding of global trends in educational administration, particularly in the aspects of knowledge absorption and global innovation. The analysis results reveal that there is a gap in the adoption of global innovations in many educational institutions, especially in developing countries. Many institutions still rely on traditional approaches that are often resistant to change, especially in the implementation of technology and innovative policies. This results in the quality of education still lagging behind that of developed countries.

This research offers novelty in literature analysis by using a bibliometric approach to map the interconnections between subfields of knowledge in educational administration. This research also provides new insights into publication patterns and global collaboration in educational innovation, which is expected to serve as a reference for the development of more adaptive policies in the future. Further research recommendations include an in-depth exploration of how educational institutions in developing countries can more effectively leverage global knowledge through strengthened international collaboration and more comprehensive integration of educational technology (Ng & Rezaee, 2015)

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