

The Challenges, Trends, and Strategies of Education Learning Technique in Higher Education for the Post COVID-19

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Abstract: The COVID-19 pandemic has resulted from the government management policy in higher education to provide distance learning. This study analyzes the development trend of educational management research publications in e-learning education. The research involved qualitative methods with bibliometric analysis—the data source from the article database in Scopus from 2019–2022. Two points are obtained as the result of this study. First, based on territory, the authors who wrote the most publications on education management in universities during COVID-19 were Aleshkovski, I.A. Gasparishvili, A.T. Krukhmaleva, O.V., reaching 3.5. As a result, with the criteria for the most published territories about education management during the COVID-19 pandemic, the United States occupied 43 publications and received the highest search rating from 2019 to 2022. Second, learning management strategies could be provided by elaborating on e-learning as a teaching tool, integrating e-learning into teaching and learning strategies, working on a pre-strategy, and the executive decision to top-down investments in the information and technology infrastructure.

Keywords: The COVID-19 pandemic, Education, Management strategy, Higher education, Learning technique

INTRODUCTION

In December 2019, COVID-19 first appeared in Wuhan, China, and quickly spread worldwide (Nurhas et al., 2022). Globally, all countries and regions have suffered from the negative effects of the COVID-19 pandemic (Nicol & Bice, 2022). The COVID-19 pandemic has also caused uncontrolled falls and disruptions in many sectors, including education (Vásquez, 2022). Based on data released by The United Nations Educational Scientific and Cultural Organization (UNESCO) (2020), schools were closed in about 190 countries worldwide, while schools were partially or regionally closed in four countries due to the pandemic. This situation forced nearly 91% of students at all education levels to face the pandemic's negative effects, which are associated with more than 1.5 billion students (Bahtilla et al., 2022; Boche, 2022).

The COVID-19 pandemic has forced the government to provide a policy for social distancing learning or remote learning (Chang et al., 2022). The COVID-19 pandemic has changed education management using technology from face-to-face to distance learning (Shohel et al., 2022). New challenges and representations of the changes encountered before and after the COVID-19 pandemic are significant

educational changes (Amoako et al., 2022). Figure 1 shows a different change before and after the COVID-19 pandemic. Before the COVID-19 pandemic, there was direct face-to-face interaction between the teacher and students. In contrast, after experiencing the COVID-19 pandemic, two options could be done in the world of education: face-to-face and online or communicating remotely (E-learning) (Pu et al., 2022). Several opportunities and challenges related to e-learning, higher education, and COVID-19 emerged.

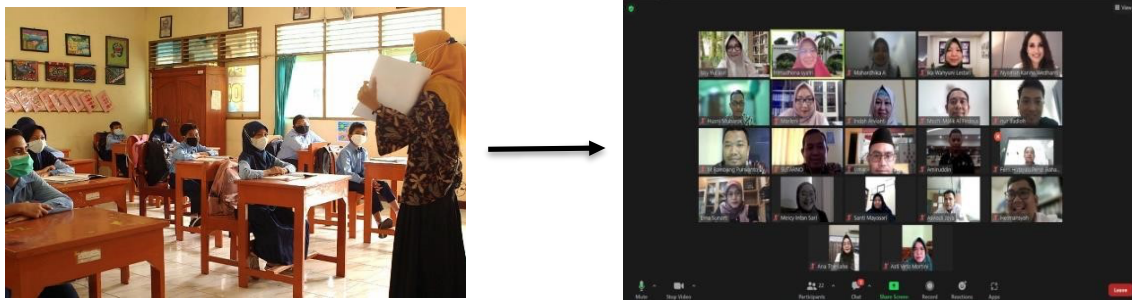


Figure 1. Changes Before and After the COVID-19 Pandemic

Most universities have shared the best ways to deliver course material remotely, engaging students and educators in online learning and assessments using Blackboard, Microsoft Teams, Zoom, or other online platforms (Pu et al., 2022; Shohel et al., 2022). Some countries implemented distance education systems during the COVID-19 pandemic to ensure that higher education could continue uninterrupted (Salakhova et al., 2022). Universities face significant challenges due to increasing awareness of globalization, transparency, and sustainability (Stracke et al., 2022). The transformation in pedagogical and didactic approaches that focus on students and course material may be accessed through accessibility, collaborative learning, and networking (Lytras et al., 2022).

Numerous academic articles on e-learning in higher education have been published in numerous international publications during the COVID-19 pandemic, and several scientific studies also have been released (Chang et al., 2022; Dagiene et al., 2022; Bahtilla et al., 2022). In detail, Bahtilla et al. (2022) remarked that since distance learning is required during COVID-19, e-learning is unrestricted in the educational system. This research connects authors' work from various disciplines (James, 2022; Shamsir et al., 2022). Big data related to education management research in e-learning education impact of the COVID-19 pandemic has been done quite a lot (Akramy, 2022). As a result, data processing is required by researchers for a variety of reasons, including bibliometric analysis to analyze frequently accomplished studies.

Through co-citation analysis, this research demonstrates how social networks can develop around a specific topic at any given time. This publication's novelty is supposed to be shown by previous research due to the differences in this study. This study examines journal papers published in education management during the COVID-19 pandemic. Bibliometric studies are one way to collect, process, and analyze research article metadata from various databases such as Google Scholar, Scopus, and the Web of Science. The databases in Google Scholar

and Scopus provide information regarding the general structure of articles. Through bibliometric studies, one can understand the hierarchy of science and research development on a particular theme (Ma et al., 2022), research gaps, and the quantity of qualitative and quantitative references from one paper to another (Crawford & Cifuentes-Faura, 2022).

Therefore, the research method of this study uses qualitative methods with bibliometric analysis (Grynyuk et al., 2022; Laranjeira et al., 2022). Citation and publication-based performance measurement techniques are used more to answer research questions (Oliveira et al., 2022; Salem et al., 2022). The bibliometric analysis allows the researcher to follow up on studies, institutions, and scientific fields related to the selected area of study (Celik et al., 2022; Yuan et al., 2022). Therefore, this study was conducted to discover the development trend of articles about the Scopus database e-learning from 2019 to 2022. The analysis includes citations, authors, type classification, territorial groupings, and issuing universities (James, 2022). This study aims to examine how the pandemic is impacted by the development trend of educational management research articles published in scientific journals that Scopus index, review citation analysis, and examine the author's keyword issue trend analysis.

METHODS

The study was conducted in two stages, including obtaining a data set and analyzing the data set using VOSviewer. The source of data came from the article database in Scopus. Scopus was selected as our database because it is comprehensive and well-known in Indonesia. Data in Scopus was sorted in the last five years by choosing the type of document, journal articles with high citations, and limiting the collection time with vulnerabilities from 2019 to 2022; as a result, 429 articles were obtained. The journal article data was then downloaded from the Scopus database in a RIS-type format and imported into VOSviewer for analysis. Then the RIS data is imported with a created map to find the bibliographic data (Apriliyanti & Alon, 2017). Bibliometric research on education management in e-learning education is conducted infrequently because of the pandemic.

The journal article data was then downloaded from the Scopus database in a RIS-type format and imported into VOSviewer for analysis. Then the RIS data was imported with a created map to find the bibliographic data (Apriliyanti & Alon, 2017). The initial search identifies publications related to policy research in their titles, abstract, or keywords: (TITLE-ABS-KEY (e-learning) AND TITLE-ABS-KEY (education AND management) AND TITLE-ABS-KEY (Covid-19)) AND (LIMIT TO (PUBYEAR, 2022) OR LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019)). Figure 2 illustrates a research process separated into three stages: inclusion and exclusion; at this step, the researcher selects and sorts irrelevant past studies to be used as data sources. The second step is data extraction, during which the articles retrieved in the previous phase are imported and processed using VOSviewer tools. The final step is the data analysis using VOSviewer to generate data visualization.

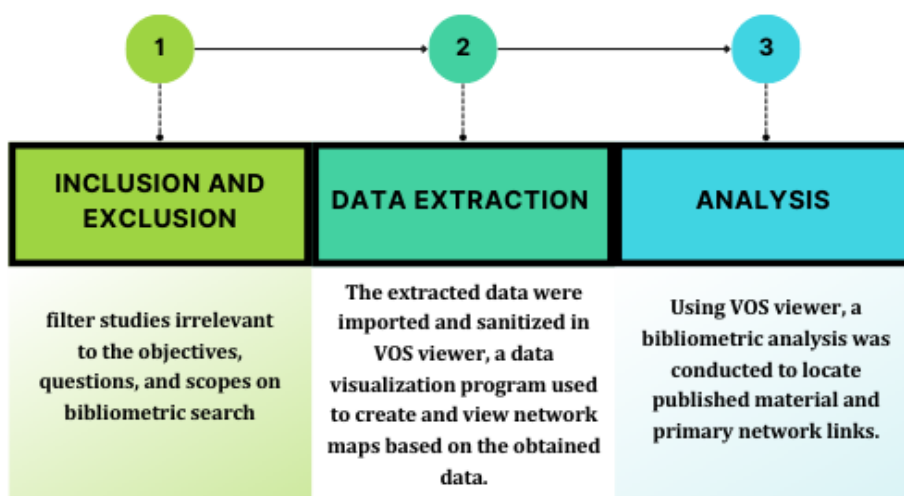


Figure 2. Research Process

The data can then be displayed through network visualization, overlays, and density; as a result, clustering can be known from the data obtained. An initial search yielded 1683 publications, selected only based on the publication. Data analysis followed four main procedures. First, descriptive statistics were performed based on the WOS database to extract relevant descriptive analyses on the publication of articles, particularly on: Number of relevant papers, Number of citations and self-citations, and Number of h-indexes (Crawford & Cifuentes-Faura, 2022). VOSviewer software analyzed bibliometric meta-data by clustering bibliographies, term co-occurrence, and citations. For bibliographic coupling, the relationship of elements such as publication, journal, and author. According to the number of shared resources, two sources' references to the same publication are considered coupled bibliographies. The development of domains through time can be shown by analyzing keyword co-occurrence (Bahtilla et al., 2022). As a result, it is a useful technique for locating hot issues in each field of research. Researchers can identify popular study areas and academic articles by analyzing citation data.

RESULTS AND DISCUSSION

The findings of this study are data on the development of educational management research publications in e-learning education that impacts the COVID-19 pandemic, as well as how the strategy of higher education learning during the pandemic.

Data on the Development of Educational Management Research Publications in E-Learning Education Impacts the COVID-19 Pandemic.

Scientific journals with Scopus indexing that have published articles on pandemic effect education management research are reviewed, including citation analysis and keyword phrase trend analysis by authors. The researchers identified

the analysis of the most cited citations in articles on distance education management in colleges from 2019 to 2022. There are categories of search results and data collection from Scopus, the discovery of articles based on the author or researcher, the type of publication or research, and the region or territory (see Figure 3).

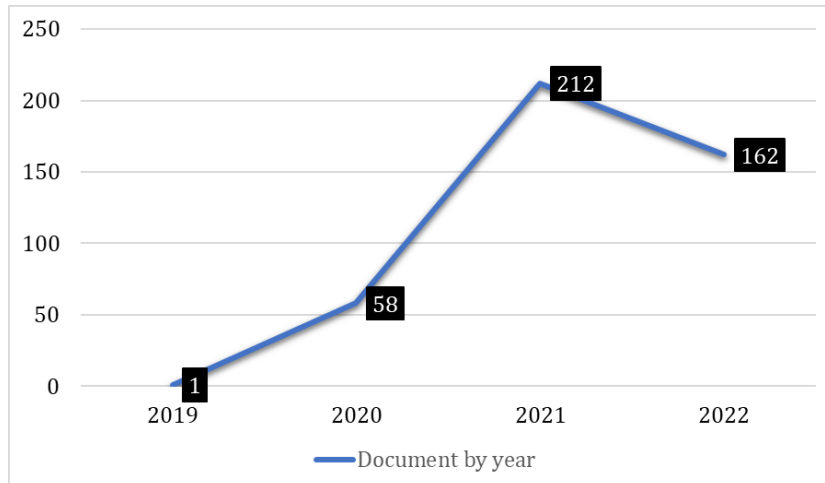


Figure 3. Document by Publications

This finding shows that 250 articles are divided into two types of documents. Documents consist of several types. Whether in survey research or books, it appears to increase starting from 2019 and the highest in 2021. it reached 215 publications because, at that time, the issue of the COVID-19 pandemic also increased, then decreased in 2022 to 155 publications. This publication is based on keywords in the form of education management in universities during the COVID-19 pandemic.

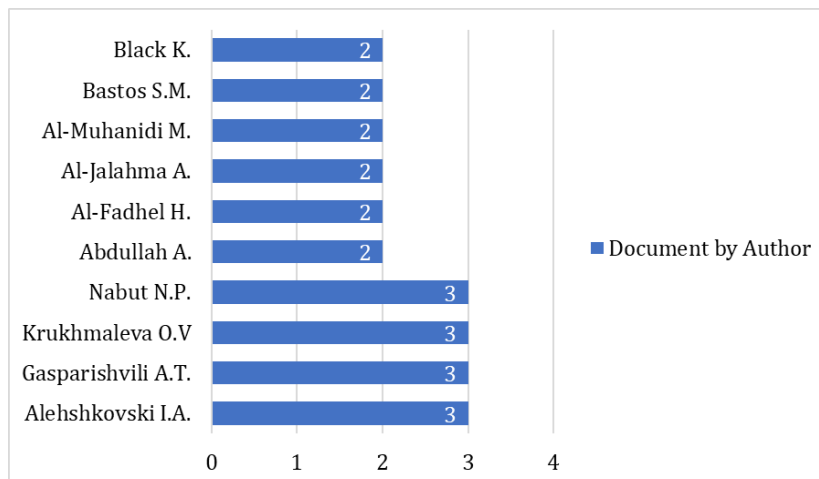


Figure 4. Publication Document by the Author

A search by author resulted in 15 authors who managed to rank highest as the most searched document on this theme. The publication has the highest-ranked author because all three authors are experts specifically focused on digital-

based education management. In addition, the COVID-19 pandemic was observed by Aleshkovski, I.A. Gasparishvili, A.T. Krukhmaleva, O.V. reached 3.5% of searches. Then other authors like Narbut, N.P. Abdullah, A. Al-Fadhel, H. Al-Jalahma, A. Al-Muhanadi, M. Bastos, S.M. Black, K reached 2% searches during 2019-2022 (see Figure 4).

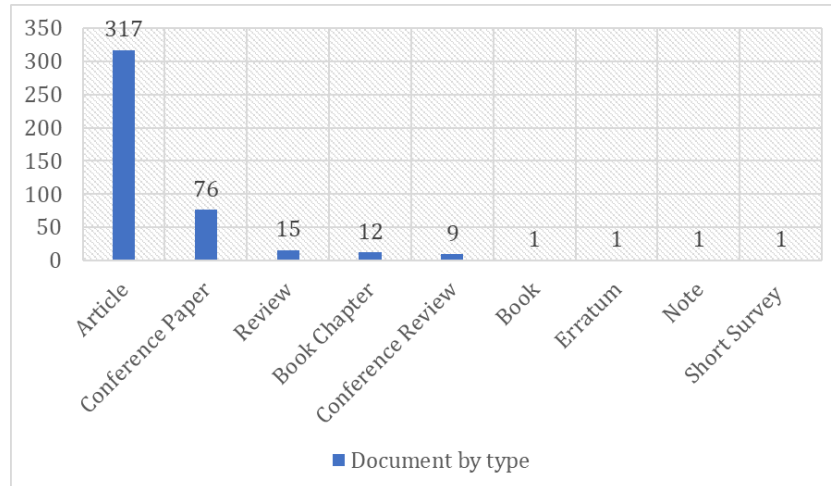


Figure 5. Publication Documents by Type

The third finding is based on the type of research provided in Figure 5. Ten publications are found: short surveys, notes, erratum, book conferences, reference revisions, book chapters, review conferences, papers, and articles. Of all the most frequently sought-after publications occupying the highest presentations were articles, with a percentage of 73.4%. An article is a type of research that presents completeness of content ranging from literature reviews, methods, and discussions. The lowest sought-after article is in the short survey type section and erratum because there is only a literature review and some theoretical frameworks related to education management in state universities during the COVID-19 pandemic.

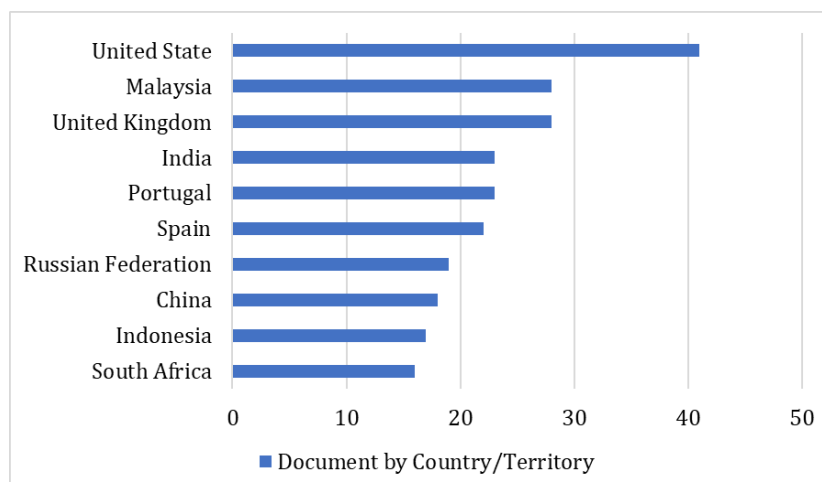


Figure 6. Publication of Documents by Territory

Further findings document searches based on territories or regions found 242 countries with the highest percentage of searches with keywords COVID-19 and 243 education management. The highest percentage of searches by countries are the 244 United States, Malaysia, United Kingdom, India, Portugal, Pain, Russia, Federation 245 China, Indonesia, and South Africa. The 15 countries with 246 publications and the most sought-after are the United States, 247 with the most researchers and publications, 43 publications, and the most frequently 248 sought-after. The lowest is short Africa, with 15% of publications on education and 249 management in the past higher education (see Figure 6).

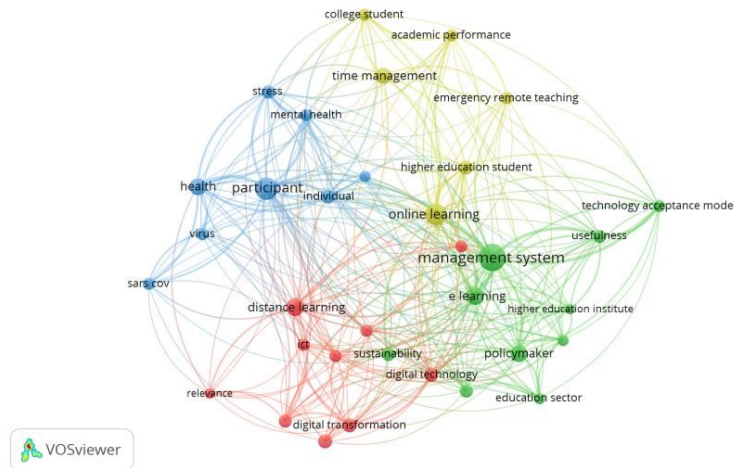


Figure 7. The Results Analysis by VOSviewer Software

Figure 7 shows that the large keyword node size is the management system. In 268 addition, other keywords that have relevance to management: Time management, 269 higher education students, e-learning education, sector, policy marker, higher 270 education institution, digital transformation, distance learning, sustainability, digital 271 technology, online learning, emergency remote teaching, and academic performance. 272 The difference in the color of the connecting lines in Figure 4 shows cluster 273 relationships in educational management. The other keywords are divided into 6 clusters, each with a relationship in its visualization. Clusters indicate that a term has been connected. The first place with 250 total link strengths is keyword education management. They created a strong link between the keywords used in the pandemic management of education and the appearance of multiple keywords in each cluster.

This close connection demonstrates how this issue is constantly being discussed. The node color can indicate the year the article containing that keyword was published. The node's color indicates the length of the topic covered in the study; likewise, the node's color indicates the topic's actuality. Figure 7 illustrates similar keywords and clusters by color. For bibliometric categorization, image mapping is used to obtain a clear picture, while clustering is used to obtain a broad overview (Ngoatle et al., 2022). Each circle represents a frequent keyword or term. The number of problems linked to the term in the document title determines how big the circle is—the number of pages related to a specific keyword or term increases as the circle size increases.

Strategies for Higher Education Learning during the Pandemic

Sustainability correlates with education management during the COVID-19 pandemic (Shamsir et al., 2022). The learning management strategy is a comprehensive plan from educators to produce effective student achievement through academic success (Woldegiorgis, 2022). A teaching strategy helps teachers use methods and resources to achieve specific goals (Boche, 2022). The following are learning management strategies that can be carried out according to the Organization for Economic Cooperation and Development (OECD) (2005) during the COVID-19 pandemic: a) Most universities that answered were able to provide a variety of lectures and e-learning projects earliest known more than ten years, as well as some further evidence of a long-standing and explicit commitment to flexible/distance learning modes and improved pedagogy.

Some institutions cited a sense of emerging market/student demand for e-learning in various forms (Hossain et al., 2022). b) Implementing a top-down institutional e-learning strategy will build as necessary on local accomplishments (Ngoatle et al., 2022). Integrating e-learning with a consultation before and after documentary evidence into teaching and learning strategies (and maybe other fundamental techniques, including student assistance and IT human resources) (Tsantopoulos et al., 2022). The formation of specialized groups or subcommittees to develop strategic developments. c) Work on “pre-strategies” towards discrete e-learning strategies – with a consultation before and after documentation (Grynyuk et al., 2022). A special committee or sub-committee is formed to oversee strategic developments. d) The executive team made a “top-down” investment in IT infrastructure, and the center’s support of lecturers’ e-learning initiatives will be based on these criteria (Tholen et al., 2022). Following continuing strategy adjustments in response to events, “discrete” vs. “integrated” and “top-down” vs. “bottom-up” questions are always being examined.

CONCLUSION

The findings of this study led the researchers to conclude that online learning, utilized during the COVID-19 pandemic, was an educational issue. To ensure that the educational process is carried out correctly, the most cited distance learning journals in universities and the most cited distance learning publications in public universities were adopted and administered as effectively as feasible. As a result of the COVID-19 outbreak, which demanded all levels of educational institutions, notably higher education, to adjust their learning processes, the problem of human resources in educational institutions has only sometimes received sufficient attention. The institution and its leadership must enhance its resources to overcome this issue. Due to the tremendous demand for knowledge and information during the COVID-19 pandemic, some tertiary institutions were compelled to boost their digital technology resources due to changes in the education system caused by the epidemic.

In other words, the COVID-19 pandemic has necessitated increased resources at several universities. Creating a server with a greater storage capacity is vital to boost data download speed and enhancing services. To keep up with technological

developments, they must develop and improve the abilities of their users as well as their online services and digital courses. There are at least two limitations to this study. This study relies on a limited number of keywords, and the database utilized to collect the articles may also provide regulations. Even if this research uses formal techniques such as the VOSviewer application and Mendeley, the author's subjective judgment can nevertheless result in the insertion of errors. The sample size of future studies should be increased by broadening the keywords and databases consulted. In addition, it is essential to compare analysis results using different bibliometric analysis software (e.g., BibExcel and HistCite).

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