

Bibliometric review on digital platforms in Africa

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ABSTRACT

A bibliometric study is performed on digital platforms in Africa, systematically mapping the principal contributors, prevailing thematic areas, and prospective avenues for future investigation. The analysis underscores the significant role played by South Africa, alongside a specific group of other English-speaking nations—including Nigeria, Kenya, Ghana, Ethiopia, Uganda, and Zimbabwe. Among the core topics most frequently addressed are the digital and gig economies, online learning environments, social media applications, digital health, and mental health—domains that continue to hold considerable relevance in light of accelerating advancements in artificial intelligence and machine learning. The continent's combination of rapid demographic growth and substantial investments in digital infrastructure constitutes a uniquely favorable context for the proliferation of digital platforms. Moreover, the literature also identifies a range of peripheral yet noteworthy themes, such as mobile money, financial inclusion, innovation and entrepreneurship, agriculture, youth engagement, and sustainable development. Collectively, these insights contribute to a more comprehensive understanding of both the current state and the evolving trajectory of digital platform research across the African continent.

Keywords: Digital Platform, Online Platform, Digital Economy, Gig Economy, Africa

I. INTRODUCTION

A digital platform is generally defined as a digital infrastructure or system that facilitates the exchange of goods, services, or information between multiple users or entities (De Reuver et al., 2018). It provides a foundation on which various stakeholders, including consumers, producers, and third-party developers, can interact and engage in transactions. Digital platforms usually involve several features such as the facilitation of interactions, creation of value, technological infrastructure, business models, scalability, or ecosystem development. Furthermore, digital platforms enable interactions between different user groups. For instance, a marketplace platform connects buyers and sellers, while a social media platform connects users with each other. They create value by facilitating exchanges that would be difficult to realize without the platform's infrastructure. This value creation often comes from network effects (Belleflamme & Peitz, 2018), where the platform becomes more valuable as more users participate, thus, digital platforms provide the technological foundation necessary for these interactions. This includes software, hardware, and services that support user engagement and transactions, as well as specific business models that leverage data, user activity, and network effects. Such digital platforms may generate revenue through transaction fees, subscriptions, advertising, or other

mechanisms (Rohn et al., 2021), and are designed to scale and accommodate a growing number of users and interactions. Their architecture supports expanding usage without a proportional increase in costs, while fostering the development of ecosystems (Hein et al., 2020), including third-party developers, service providers, and complementary businesses that build on the platform's capabilities.

The development of digital platforms in developing countries such as those within Africa can be seen as a means to address various socio-economic challenges, promote development, and leverage technology to improve the quality of life and economic opportunities across the continent (Daramola & Etim, 2022). Several factors position the African continent as an excellent target for the development of digital platforms. For instance, Africa's annual population growth is the highest in the world, and the population is notably young. As of 2024, Africa's population is estimated to be around 1.5 billion people. The United Nations projects that Africa's population will continue to grow rapidly, potentially exceeding 2.5 billion by 2050, nearly doubling its current size. Moreover, the median age in Africa is young, with a considerable proportion of the population under 15, and as these and as these younger generations enter adulthood, they are expected to further contribute to population growth. This demographic trend is crucial for amplifying network effects for digital platforms. Additionally, a growing population translates into increasing economic activity. Digital platforms can leverage this economic potential by offering services that facilitate trade, finance, and entrepreneurship, thus driving economic development. The continent's diverse needs, including access to financial services, education, and healthcare—can be effectively addressed through digital platforms. With many people lacking access to traditional services, digital platforms provide scalable solutions to these gaps. Despite existing infrastructure challenges, there has been significant investment in digital infrastructure, including improvements in internet connectivity and mobile networks. This progress provides a solid foundation for digital platforms to operate and expand. The potential is substantial, as many people in Africa are unbanked or underbanked. Digital platforms, particularly those related to mobile money and financial services, play a crucial role in enhancing financial inclusion and providing access to financial products and services.

Given the immense potential that digital platforms hold on the African continent, there has been a significant increase in the literature on this topic. However, few studies currently provide a comprehensive synthesis of this research, aimed at identifying key actors, the primary themes being discussed, and

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the major challenges being considered. As such, this paper seeks to address these gaps. Specifically, the research questions explored in this paper are as follows:

- Who are the most influential actors in the research on digital platforms in Africa (e.g., key authors, institutions, and countries)?
- What are the main themes being covered in the existing literature?
- What are the potential future research directions that should be considered for further investigation?

By addressing these questions, this study aims to offer a clearer understanding of the landscape of research on digital platforms in Africa, highlighting the influential contributors and identifying areas for future exploration.

To address these questions, we rely on a bibliometric literature review approach. This method is particularly suited given the substantial and rapidly growing volume of publications on the topic, and our objective is to provide a comprehensive, overarching view of this research landscape (Donthu et al., 2021). A bibliometric analysis allows us to systematically identify influential actors, thematic trends, and research gaps by quantitatively analyzing the structure and patterns within the existing body of work. Through this approach, we aim to offer a clear and data-driven synthesis of the state of research on digital platforms in Africa.

The remainder of this paper is structured as follows: Section 2 provides a detailed explanation of the methodology adopted for the study. Section 3 presents the main findings observed, in connection with our research questions. Section 4 offers a discussion of these findings in relation to existing literature. Finally, Section 5 concludes the study, summarizing the key insights and contributions.

II. METHODOLOGY

This study adopts a systematic literature review (SLR) approach. Unlike traditional narrative reviews, SLRs emphasize methodological rigor, thoroughness, systematization, and reproducibility (Mengist et al., 2020). Figure 1 presents the global methodology used for this study, incorporating a global framework (SALSA), a formalism to represent certain steps in the process (PRISMA), and the method used to analyze selected documents (bibliometric analysis).

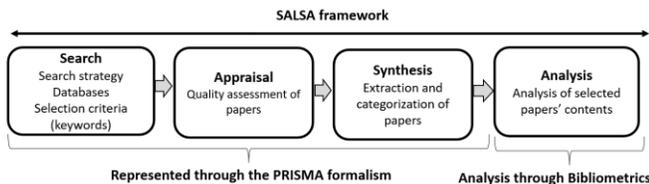


Fig 1. Global methodology of the study

Various frameworks have been developed for conducting SLRs, with the Search, Appraisal, Synthesis, and Analysis (SALSA) framework being one of the most widely adopted (Grant & Booth, 2009). The search phase involves defining the study's scope and locating documents through databases. The

appraisal phase selects relevant studies based on quality criteria, while synthesis categorizes data for further evaluation. Finally, analysis interprets the results using methods like quantitative or qualitative analysis. In this study, PRISMA formalism represents the first three SALSA steps, while the bibliometric approach guides the analysis. The results of the analysis allow us to provide answers to the research questions elaborated in the introduction.

A. Search, appraisal, and synthesis of documents

The scope of this study is shaped by the research questions outlined in the introduction. To ensure transparency in the first three SALSA steps, we employed the well-known PRISMA formalism (Page et al., 2021), encompassing the phases of "identification," "screening," and "inclusion" (Figure 2). For the search, we selected Scopus, the largest database of scholarly articles, which offers 60% more coverage than Web of Science (Comerio & Strozzi, 2019). This choice ensured comprehensive literature exploration. The Scopus database significantly overlaps with other major databases like Web of Science (99.11%) and ScienceDirect (100%) (Singh et al., 2021). Additionally, Scopus has established specific indexing partnerships with key organizations such as ACM, IEEE, and SpringerLink. These agreements ensure that Scopus covers 100% of peer-reviewed journals and conferences from ACM Digital Library, IEEE Xplore, and SpringerLink, providing extensive access to high-quality scientific documents from these sources.

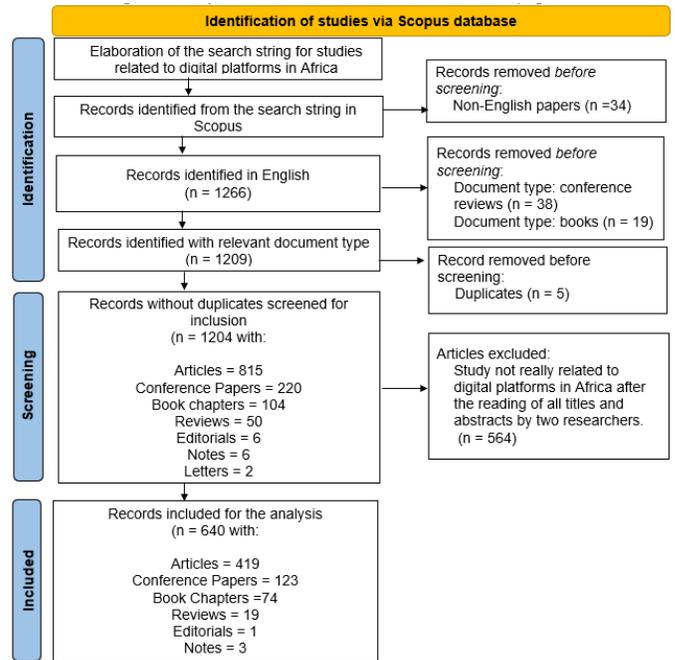


Fig 2. PRISMA diagram

For defining the search string which fits the topic of our study (digital platforms in Africa), we combined a set of keywords usually used to refer to digital platforms (digital platform, online platform, web platform, cloud platform, virtual platform, software platform, technology platform, Internet platform, service platform, and portal platform), with a set of

keywords related to Africa (Africa, and all countries names in Africa).

The execution of this search string on Scopus (on 26th August 2024) in titles, abstracts, and keywords fields initially returned 1 290 documents. Next, we successively removed non-English documents (34 documents), conference reviews (38 documents), books (19 documents), and duplicates (5 documents) (mainly papers which was published both as conference paper and journal article). The identification step ends up with 1204 documents eligible for the screening (appraisal) step. For this step, two researchers reviewed all document titles and abstracts to ensure they were relevant to the study's topic. A synthesis meeting was performed by the two researchers to make decisions on certain documents where they had expressed divergent opinions regarding their inclusion. The documents excluded at this stage were mainly those whose study scope did not focus on Africa (or had only minimal impact on this continent), research that referenced online platforms solely for data collection (e.g., Google questionnaires) to study a topic unrelated to digital platforms, or studies focused on traditional web applications or blogs (which do not qualify as digital platforms). This process excluded 564 documents, leaving 640 for further analysis. The retained documents included mostly journal articles (419), conference papers (123), book chapters (74), research notes (3), one editorial, and one data paper.

B. Analysis of documents

Bibliometric analysis is a well-established and increasingly utilized method for systematically examining large sets of scientific literature (Donthu et al., 2021; Mukherjee et al., 2022; Tchunte & El Haddadi, 2023). Its application is expanding across disciplines, making it highly effective for science mapping, especially in contexts where the growing emphasis on empirical research has led to extensive, fragmented, and sometimes contentious areas of study (Aria & Cuccurullo, 2017; Tchunte, 2022). This is the case for the study conducted in this paper, where a large dataset (selected 640 documents) on a rapidly growing subject must be analyzed. Bibliometrics analysis usually relies on two kinds of analysis: performance analysis and science mapping (Donthu et al., 2021). Performance analysis typically involves evaluating research components (e.g., authors, institutions, countries, journals) using a variety of metrics over time or specific periods. These metrics include total publications, total citations, average citations, and indices such as the h-index. This analysis can help in identifying potential collaborators, influential journals, or key researchers. Science mapping, on the other hand, combines quantitative analysis, classification, and visualization to explore relationships between research elements. Techniques like citation analysis, co-citation, and bibliographic coupling help unveil the intellectual structure of a field when paired with network analysis (Donthu et al., 2021). The popular Bibliometrix-R software package (Aria & Cuccurullo, 2017) is used in this paper to perform the bibliometric analysis.

III. RESULTS

Table 1 presents the main descriptive statistics about the analyzed 640 scientific papers about on digital platforms in Africa. These documents were published between 2005 and 2024 (up to 28th August 2024), from 477 different sources (journals, conferences, book chapters) and 2 430 different authors. All these documents have an average of 4 co-authors, an international co-authorship rate of 31.56%, and an average of 6.33 citations per document. They refer to a total of 26 434 other documents and contain a total of 2143 distinct keywords (provided by authors). The growth in the number of publications is significant, with an annual growth rate of 22.8%.

Metric	Value
Timespan	2005:2024
Sources	477
Documents	640
Annual Growth Rate	22.8%
Number of Authors	2 430
International Co-Authorship	31.56%
Co-authors per Document	4.01
Number of Distinct Keywords	2 143
Number of references	26 434
Average Citations per Documents	6.33

Table 1. Descriptive statistics

Figure 3 explicitly illustrates the growth in the number of publications over the years. Interest in the topic remained relatively low until 2015, after which a modest increase is observed, with an inflection point observed in 2018, proceeding from around 10 published documents in 2015 to approximately 150 in 2023. It is important to note that the decrease in 2024 is simply due to incomplete data, as only the first eight months of the year are included in the dataset.

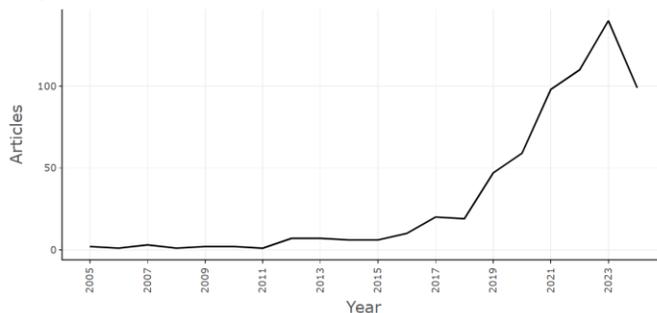


Fig. 3. Evolution of scientific production

Table 2 presents the most prolific institutions, highly dominated by institutions in South Africa (University of Johannesburg, University of Cape Town, University of the Witwatersrand, University of Pretoria, University of Kwazulu-Natal, University of South Africa), one university in Uganda (Makerere University), a singular European university from Norway (Oslo University), and the University of Zimbabwe.

Affiliation	Number of documents
University of Johannesburg	34
University of Cape Town	30
University of Witwatersrand	29
University of Nairobi	28
University of Pretoria	25
University of Oslo	23
University of Kwazulu-Natal	20
University of South Africa	20

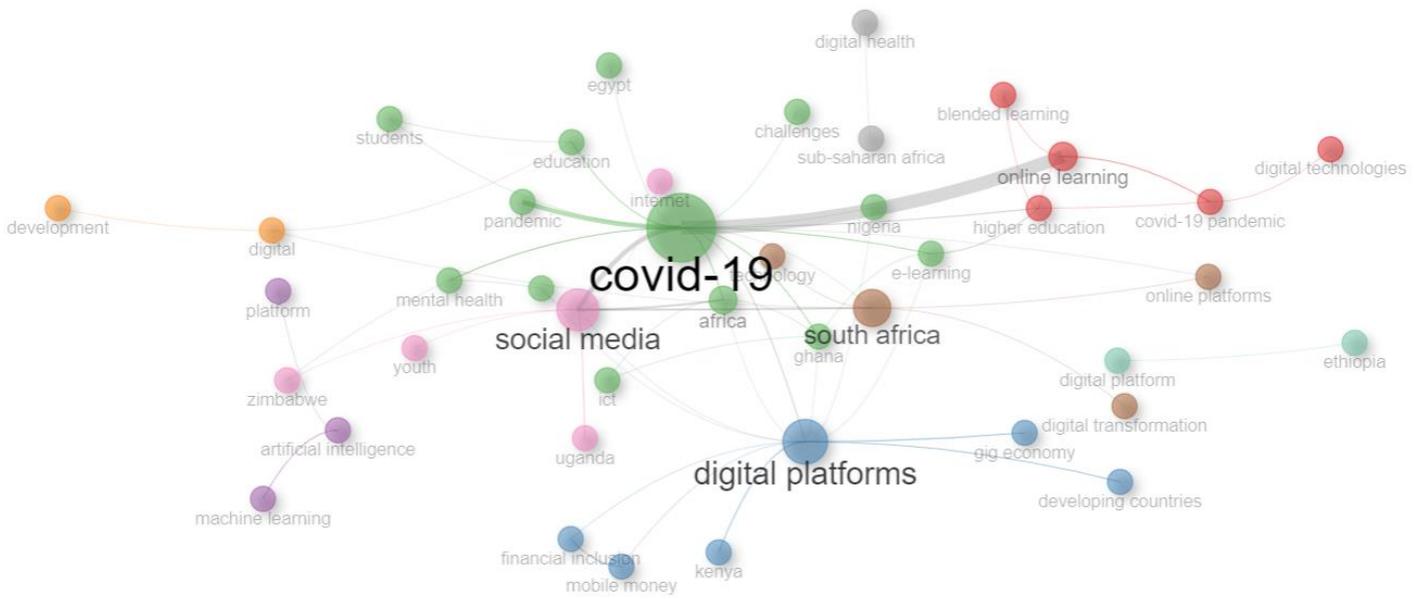


Fig 5. Co-occurrence network

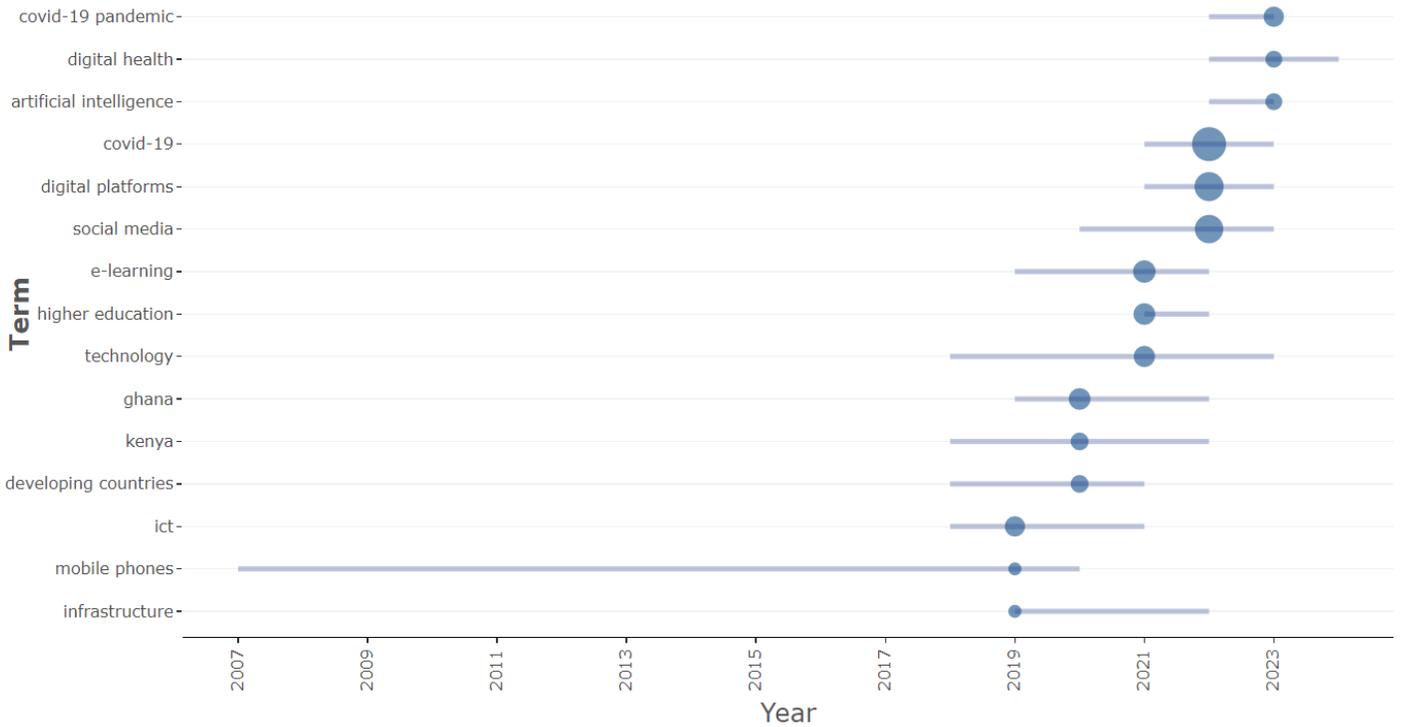


Fig 6. Trend topics

Their key findings include job creation, affordance gaps, challenges for the informal sector, and recommendations. Digital platforms have indeed created new job opportunities, particularly within the informal sector. However, many SSA platforms lack essential features, such as interfaces supporting local languages and accessibility for users with low digital literacy, which limits their overall impact. The informal sector faces several barriers, including limited government support, high internet costs, and unreliable electricity. Nevertheless, digital platforms have the potential to address issues such as the lack of social protection and formal infrastructure.

Recommendations include advocating for more inclusive platform designs, ensuring digital tools are accessible to those in informal economies, and emphasizing public-private partnerships and multimodal interfaces. (Penu, 2021), on the other hand, provides insights into how digital platforms can drive inclusive growth in African economies. It explores themes such as economic inclusion, digital transformation, and the growing role of technology-driven platforms in sectors like transportation, e-commerce, and finance. The study highlights how African digital platforms are fostering entrepreneurship, creating job opportunities, and addressing socio-economic

challenges. It identifies methodological approaches used to study these platforms, including case studies, surveys, and policy analysis, and emphasizes the need for more localized studies and the development of frameworks tailored to Africa's unique socio-economic environment.

Beyond digital platforms themselves and their related economic aspects, our study's results reveal that research on digital platforms in Africa has experienced a significant increase since the COVID-19 pandemic. The most frequently analyzed themes in this context include online learning platforms (e.g., Basuony et al., 2020; Cranfield et al., 2021; Mortagy et al., 2022; Mulenga & Marbán, 2020), social media (e.g., Lose & Khuzwayo, 2021; Ramlagan et al., 2022; Sommariva et al., 2023; Yimenu et al., 2020), digital health (Chawurura et al., 2021; Chitungo et al., 2021; Manya et al., 2023; Youngui et al., 2024), and mental health (e.g., Chitungo et al., 2021; Dzinamarira et al., 2024; Kruger et al., 2021; Mwavua et al., 2023). These themes remain relevant today, particularly with the ongoing development of artificial intelligence and machine learning technologies (Tchuenta et al., 2024). Additionally, peripheral topics such as mobile money, financial inclusion, innovation, entrepreneurship, agriculture, youth engagement, and sustainable development are also clearly identified in the research.

V. CONCLUSION

We conducted a bibliometric study on digital platforms in the African context. This allowed us to provide an overview of the research conducted, identifying the most influential actors, the most frequently addressed themes, as well as their evolution. Thus, this study can facilitate the identification of relevant actors for establishing collaborations on this topic. It also highlights current gaps to be addressed in future research on digital platforms in Africa. Although we aimed to be as exhaustive as possible in this work, like any literature review, certain biases may still be present due to the choice of keywords used, the selection of articles based on their titles and abstracts, or the exclusive use of the Scopus database. The proposed bibliometric approach is also predominantly quantitative, and it would be relevant to complement this work with a more qualitative systematic literature review, relying on a detailed reading of the key studies on the subject.

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