The Role of Digital Economy in Reducing Economic Disparities: A Bibliometric Review

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ABSTRACT

The main objective of this study is to map scholarly articles on the area of the role of the digital economy in bridging regional economic disparity, and to establish an analytical framework of current developments, emerging trends, and future directions. This study employs a comprehensive bibliometric analysis, which includes bibliographic coupling and co-word analysis to develop an analytical framework that captures recent developments, prevailing trends, and future directions in this field. The current themes identified through bibliographic coupling highlighted that the digital economy is recognized as a crucial driver in reducing regional economic disparity through the spillover mechanism. Nevertheless, the co-word analysis identified the digital divide and uneven agglomeration as emerging trends and key challenges for regional development in the future. The originality of this study lies in its specific focus on the complex role of the digital economy in reducing regional economic disparity. To the best of the authors' knowledge, this particular intersection has not been examined exhaustively with bibliometric methods, and this study is the first of its kind in this respect, offering a nuanced understanding that bridges digital transformation research with regional development scholarship.

Keywords: Digital Economy, Economic Disparity, Regional Development, Bibliometric Review
JEL Classification: R11, O33, O18

1. INTRODUCTION

In the last two decades, the worldwide adoption of digital technology in economic activities has propelled a structural movement towards a digital economy. It is characterized by higher productivity, faster innovation, and more efficient and faster economic development. In regional economic development, the digital economy not only serves as an impetus to high-quality economic growth but is also an indispensable mechanism for increasing interregional connectivity. With this interregional connectivity, spillover effects become a reality, in which the benefits of the digital economy extend from developed to less developed areas (Ding et al., 2022; Liu et al., 2022; Ma et al., 2023).

While it holds tremendous potential to boost economic growth, regional economic growth still faces uneven access to digital infrastructure, digital competence, and technological availability. These disparities draw out a digital divide that contributes to the growth of economic inequalities between regions. Thus, the benefits of the digital economy become localized in advanced regions or growth poles, which possess adequate digital infrastructure, a highly skilled workforce, and advanced technological ability compared to other areas (Luo and Zhou, 2022; Fu et al., 2024; Zhang et al., 2022; Zhao et al., 2022).

Empirically, in recent years, the use of bibliometric analysis has become increasingly popular and well-known among researchers in different disciplines. However, bibliometric analysis that solely describes the complex relationship between the digital economy and the reduction of regional economic disparity is still relatively rare. Given the persistent spatial disparities and the risk of regional development imbalances, mapping these relationships is crucial not only for the development of scientific knowledge but also

to offer useful information for the creation of effective regional policies.

In general, previous studies have also examined the role of the digital economy, but with different emphases. Rahim Thaha et al. (2025) employed bibliometric analysis to show the map of research on the digital economy and Small and Medium-sized Enterprises (SMEs). Kovač et al. (2024) employed bibliometric methods to examine scholarly research on digitalization in the European Union and the Western Balkans, with a focus on the factors for the digital divide and efforts to bridge it. Tyagi (2023) used bibliometric analysis to highlight the prevailing scene of contemporary digital divide scholarship and chart the future directions of research. Zhang (2024) conducted a bibliometric study on Design for Digital Equity (DDE) to explore research developments, intellectual structure, and potential future research directions. Barik (2023) utilized a bibliometric approach to analyze digital divide research output from 2001 to 2020, evaluating both qualitative and quantitative growth in the literature over time.

The novelty of this study lies in its unique emphasis on the multi-faceted impact of the digital economy in reducing regional economic disparities to expose the newest developments, emerging issues, and future trends. To the authors' best knowledge, this unique combination has not been thoroughly studied based on bibliometric methods, and therefore, this study is the first to tackle this subject, offering a nuanced understanding that bridges digital transformation research with regional development scholarship. In general, previous studies have also examined the role of the digital economy, but with a different emphasis, and this study focuses more on the relationship between variables that have never been studied before.

The general objective of this study is to track research articles on the role of the digital economy and its contribution to the reduction of regional economic disparities and to develop an analytical model of current developments, current trends, and future directions. The specific objectives of this study are summarized in the following research questions (RQs):

1. What are the recent research themes and present developments regarding the digital economy's contribution to reducing regional economic disparities in terms of bibliographic coupling analysis?
2. What are the emerging trends, critical topics, and future trends of concern regarding the role of the digital economy in bridging regional economic gaps, as identified through co-word analysis?

2. METHODOLOGY

2.1. Bibliometric Approach
In recent years, bibliometric analysis has been widely used and consolidated as a research tool globally in various disciplines by researchers. In particular, bibliometric analysis is widely used to measure the research productivity of individuals and organizations, map scientific progress worldwide, identify knowledge gaps, identify future research areas, and support evidence-based decision-making (Lim and Kumar, 2024; Donthu et al., 2021).

Bibliographic coupling analysis is a bibliometric mapping technique that provides an updated view of the references drawn from various studies. It aids in the recognition of documents interrelating with citations and helps organize scientific literature through similar bibliographies. The basic premise of this technique is that articles that cite the same citation source are believed to be connected, and the intensity of the connection is based on the number of references they share (Becerra and Ratovicius, 2022). From this technique, researchers can get a clear picture of research groups, understand how topics are interrelated, observe how research is progressing, and identify current research trends in a field. Therefore, this method is very effective in identifying new emerging topics and recent publications in a growing field (Lim and Kumar, 2024; Donthu et al., 2021; Mukherjee et al., 2022).

Co-word analysis or keyword co-occurrence analysis is used in bibliometric research to help analyze and map the co-relationship among words employed within scholarly papers. This is useful in tracking trends in research and identifying key themes within specific domains of study. The underlying principle of this method is that words appearing together in the same publication extremely frequently tend to be related to the same research field, and there is a close connection between them (McAllister et al., 2022). The main advantage of co-word analysis is its ability to provide an overview of mapping keywords, where the process of creating an analytical framework delineates emerging patterns and areas of future research (Lim and Kumar, 2024; Donthu et al., 2021).

2.2. Searching Strategy and Data Collection Procedure
The protocol and steps by Donthu et al. (2021) were used to conduct a bibliometric analysis, which included bibliographic coupling and co-word analysis. These processes are as follows: First, defining the objective and scope of the study. Second, selecting the bibliometric analysis method. Third, collecting important data for bibliometric analysis. Fourth, conduct a bibliometric analysis and report the findings.

The data search in Scopus utilized the combination of search strings (1-2) incorporated in Table 1. The Scopus database was used as the source for bibliometric data. This database includes 84 million documents and features over 25,000 peer-reviewed journals from more than 7,000 publishers worldwide. It maintains its quality by indexing a large number of journals and using input from trusted reviewers (Elsevier, 2023). This ensures that the information available through Scopus undergoes rigorous validation and adheres to established standards for scientific reliability and consistency (Singh et al., 2021; Elsevier, 2023).

The Scopus database does not index book chapters, books, and conference papers, but only journal articles due to concerns about peer review quality, source quality, analysis level, and susceptibility to citation (Cortegiani et al., 2020; Frandsen, 2022). It only takes into account publications in the English language and spans from 2011 up to April 2025. The gathering of data was done on April 24, 2025. The process of searching began in 2011 since there was no data or publications regarding this matter before that year.

Table 1: The search string of the scopus database

No	Keywords	Justification
1	TITLE-ABS-KEY (("digital economy" OR "ICT adoption" OR "digital transformation" OR "e-commerce" OR "Fintech" OR "digital inclusion" OR "platform economy" OR "sharing economy")	To identify literature related to the role of the digital economy.
2	AND ("regional disparit*" OR "regional inequalit*" OR "Urban-Rural Gap" OR "Regional Divide" OR "Geographic Disparit*" OR "Interregional disparit*" OR "economic disparit*" OR "income convergence" OR "Spatial Disparit*" OR "spatial inequalit*" OR "territorial imbalance" OR "regional development" OR "Spatial Economic Disparit*" OR "regional difference" OR "Place-based inequalit*"))	To identify literature related to regional economic disparity

Source: Created by authors based on VOSviewer and bibliometric metadata

3. FINDINGS AND DISCUSSION

3.1. Descriptive Analysis

The Scopus database yielded 448 scientific articles, excluding conference proceedings, books, and book chapters. The articles received a cumulative total of 5,343 citations, averaging 11.93 citations per article. Without self-citations, the citation count was 5,072. Thirty-five sources were cited more than 35 times, yielding an h-index of 35. The relatively high average number of citations is corroborative evidence of the extensive influence and heavy referencing of this field by others. There have been dramatic changes in publications and citations over the years. In 2022, there was a sharp increase with a record number of 57 publications and 515 citations. The maximum number of publications was seen in 2024 at 160 publications and 2,201 citations. Figure 1 illustrates the citation trend and the number of publications trend.

3.2. Bibliographic Coupling

The bibliographic coupling will function to map current thematic issues and critical progress in the role of the digital economy and regional economic disparity. Setting the threshold accurately and appropriately is a crucial step. If the threshold is too low, there is a possibility of repetitive themes and clusters. Conversely, a threshold set too high will create gaps in relevant clusters. From the literature, there are no specific criteria for setting the threshold value (Nawanir and Fauzi, 2024; Geng et al., 2020). However, many other studies set it through an iterative process by considering various citation levels to produce coherent document clusters (Geng et al., 2020; Mukherjee et al., 2022; Lim and Kumar, 2024).

A threshold of 16 was chosen based on several trials to optimize the clarity and significance of the document clusters (Nawanir and Fauzi, 2024; Geng et al., 2020). A total of 448 documents retrieved from the Scopus database were used to conduct the bibliographic coupling analysis. Of the 448 documents, 77 met the threshold, with the minimum number of citations per document set at 16. This analysis produced 4 main clusters. One cluster was excluded because it only included 1 document, leaving a total of 3 clusters used in the analysis. The range of citation numbers of the documents is from a maximum of 304 to a minimum of 16, while the range of total link strength associated with each document is from a maximum of 44 to a minimum of 0. In this analysis, the documents with the highest citation numbers are Liu et al. (2022), Ding et al. (2022), and Cheng et al. (2023). The top 10 highly cited articles of bibliographic coupling are demonstrated in Table 2.

The application of the bibliographic coupling method identified three clusters. Cluster 1 (red), consisting of 34 articles, is

Figure 1: Number of publications and citations in the scopus database
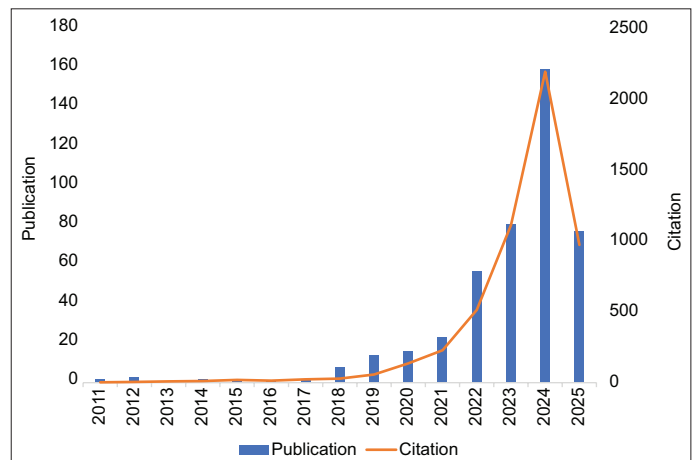
Source: Scopus database retrieved on 24 April 2025

categorized as "Digital Economy, Spatial Coupling, and Regional Disparities." The majority of studies in this cluster focus on the spatial-temporal analysis of digital economy development and regional economic growth. Luo and Zhou (2022) confirmed that the spillover effect mechanism related to digital technology development in advanced regions triggers growth in both the digital economy and the overall economy in developing and lagging regions. In addition, the formation of interdependent, integrated, and coordinated relations between the digital economy and high-quality economic development (coupling coordination) triggers mechanisms that promote balanced development among regions, ultimately bridging regional gaps and achieving economic convergence (Shen et al. 2022; Shang et al., 2025).

Cluster 2 (green), consisting of 18 articles, is labeled as "Regional Digital Divide and Spatial Inequalities." The majority of the works in this cluster emphasize that differences in digital access and infrastructure are the primary drivers of economic development gaps and regional disparities. Digitalization can influence regional development through spillover effects, whereby innovation in more advanced regions may spill over to less advanced regions, potentially widening or alleviating inequalities, depending on the intensity of the spillover and the absorptive capacity of the lagging regions. Lucendo-Monedero et al. (2019) emphasized that the digital divide is not only determined by infrastructure availability but also by socioeconomic conditions, individual digital competencies, and physical distance. Meanwhile, Wang et al. (2021) found that while the spread of Internet businesses has failed to eradicate spatial disparities at the national level, online consumption has been promising in attenuating consumption disparities in space and promoting welfare, though not necessarily

for economic disparities. Besides, Haefner and Sternberg (2020) argued that digitalization provides the opportunity to reduce regional disparities by enhancing market access and information flows to less developed areas. The cluster of bibliographic coupling is described in Table 3.

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Cluster 3 (blue), composed of 10 articles, categorized as "Fintech, Digital Financial Inclusion and Regional Economic Development." This cluster explains how the application of Fintech and regional digital financial inclusion acts as a driver for increasing the quality of regional economic development. Fintech and other forms of digital financial inclusion plans are crucial in driving economic growth, reducing economic barriers, and breaking regional isolation, previously out of touch with traditional finance. Their impact on reducing regional gaps in development is highly dependent on infrastructure development and the development of digital skills, particularly in underdeveloped areas. Hasan et al. (2020) emphasized that Fintech has developed significantly in terms of increasing the quality of financial inclusion. Discrepancies in development between more and less developed areas remain a serious issue, however. This discovery suggests that Fintech development still fails to completely level out the financial access between regions. Therefore, there is a necessity to implement fairer financial inclusion policies to reduce regional development imbalances (Zhao et al., 2022). The network visualization of bibliographic coupling is displayed in Figure 2.

3.3. Co-word Analysis

A co-occurrence analysis of keywords (co-word analysis) was conducted using the Scopus database. This analysis helps to identify key gaps in the literature, emerging trends, future research directions, critical issues, and topics related to the role of the digital economy in reducing regional economic disparity. After several iterations, a threshold of 10 was selected to optimize the document clusters for clarity and relevance. Thresholds 11, 12, and 13 were deemed too high, resulting in too few clusters and the risk of overlooking relevant documents, while thresholds 8 and 9 led to cluster saturation (Geng et al., 2020; Mukherjee et al., 2022; Lim and Kumar, 2024).

The minimum number of occurrences of a keyword was set at 10; out of 2,385 keywords, 58 keywords met the threshold. The range

**Table 2: Top 10 most highly cited documents based on bibliographic coupling analysis**

Rank	Publication	No. of citation	Total link strength
1	Liu et al. (2022). Digital economy development, industrial structure upgrading, and green total factor productivity.	276	42
2	Ding et al. (2022). Digital economy, technological innovation and high-quality economic development.	255	8
3	Cheng et al. (2023). The impact of the urban digital economy.	184	6
4	Vicente and López (2011). Assessing the regional digital divide across the European Union-27.	181	16
5	Deng et al. (2019). Fintech and sustainable development.	147	5
6	Linkov et al. (2018). Governance strategies for a sustainable digital world.	146	2
7	Zeng et al. (2017). E-commerce in the agri-food sector: A systematic literature review.	119	6
8	Zhao et al. (2022). Digital economy, entrepreneurship, and high-quality economic development.	99	2
9	Lucendo-Monedero et al. (2019). Measuring the digital divide at regional level.	98	18
10	Xing et al. (2023). Unleashing the potential: exploring the nexus between the low-carbon digital economy and regional economic-social development.	90	44

Source: Created by authors using VOSviewer and bibliometric metadata

Table 3: The cluster of bibliographic coupling

Cluster, No, and color	Cluster label	Number of articles	Representative articles
1 (red)	Digital Economy, Spatial Coupling, and Regional Disparities	34	Luo and Zhou (2022); Shi et al. (2023); Di et al. (2024); Shen et al. (2022); Tang et al. (2021); Xiao et al. (2023); Chen et al. (2023); Tao et al. (2024).
2 (green)	Regional Digital Divide and Spatial Inequalities	18	Lucendo-Monedero et al. (2019); Wang et al., (2021); Holl and Rama (2024); Vicente and López (2011); (Wang et al. (2021); Haefner and Sternberg (2020); Sidorov and Senchenko (2020); Korovkin et al. (2023).
3 (blue)	Fintech and Regional Digital Financial Inclusion	10	Deng et al.(2019); Zhao et al. (2022); Hasan et al. (2020); Yang and Wang, (2022); Haupert (2022); Siddiqui and Siddiqui (2020).

Source: Created by authors using VOSviewer and bibliometric metadata

Figure 2: Network visualization of bibliographic coupling analysis
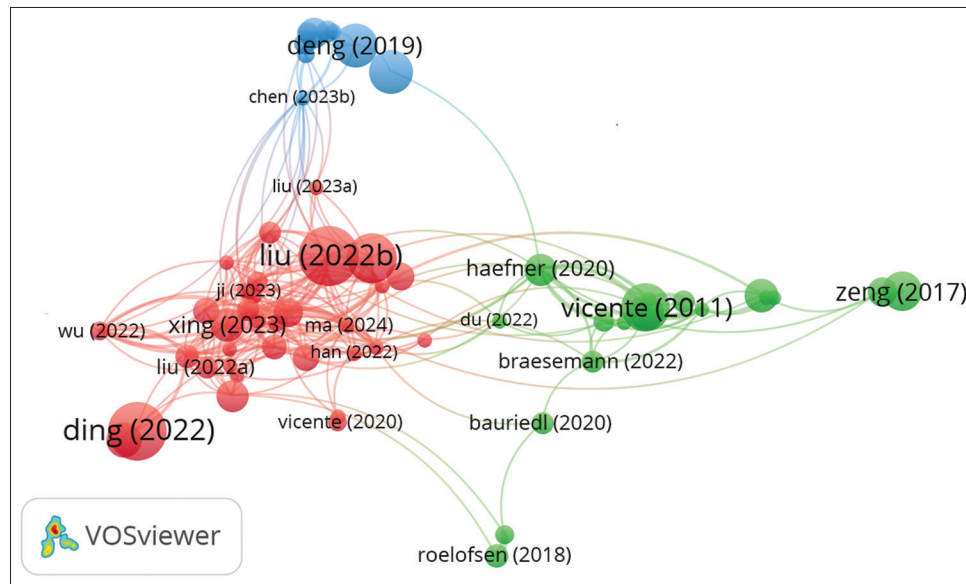
Source: Created by authors using VOSviewer and bibliometric metadata

of occurrences of the keyword is from a maximum of 162 to a minimum of 10. The range of total link strength associated with each keyword is from a maximum of 823 to a minimum of 23. This analysis produced 4 main clusters. In this analysis, the highest occurring keywords are "China" (162), "digital economy" (150), "regional development" (97), and "economic development" (64). The top 15 keywords of the keyword co-occurrence are presented in Table 4.

Cluster 1 (red), consisting of 20 words, is titled "Digital Innovation, Digital Transformation, and Regional Development Gaps." It reflects the dimension of digital innovation through digital transformation to diminish economic disparities between regions, such as rural and urban regions, or developed and underdeveloped/poor regions. Digitalization is an innovation driver in the various economic sectors, driving market access, improving financial services and information, and driving economic activity in developed, developing, urban, and rural regions (Yoo and Yi, 2022; Simon Kaggwa et al., 2023). Equitable digital innovation and transformation in non-core areas not only serve as regional economic development drivers but also play a strategic role in connecting efforts to reduce regional gaps (Jia and Zhu, 2024; Wang et al., 2023).

Cluster 2 (green), consisting of 14 items, is titled "Digitalization, inequality, and economic change." The cluster revolves around the complex relationship between digitalization, socio-economic inequality, and the impacts of digital technological innovation on economic change (Haefner and Sternberg, 2020). The most significant words addressed are digital divide, digital technology, digitalization, economic aspect, industry, internet, human, and economic development. With the arrival of the digital era, digital technological advancements have contributed significantly towards increasing productivity, improving industrial competitiveness, and encouraging regional economic development (Luo and Zhou, 2022). However, these advancements have not been evenly

Table 4: Top 15 keywords in the co-occurrence of keywords

Rank	Keywords	Occurrences	Total link strength
1.	China	162	823
2.	Digital economy	150	582
3.	Regional development	97	319
4.	Economic development	64	411
5.	Innovation	49	277
6.	Digitization	48	262
7.	Sustainable development	47	225
8.	Digital transformation	44	106
9.	Spatiotemporal analysis	34	198
10.	Electronic commerce	29	106
11.	Human	26	202
12.	Green economy	25	150
13.	Economic aspect	24	206
14.	Economic growth	23	114
15.	Spillover effect	22	171

Source: Created by authors using VOSviewer and bibliometric metadata

distributed in all regions—urban and rural areas or forward and backward regions—and have thus led to an ongoing digital gap (Zhang et al., 2022; Zhao et al., 2022). The digital divide hinders inclusive growth since the benefits of digital progress do not extend everywhere and reach all segments of society at an equal level (Fu et al., 2024). The cluster of co-word analysis is described in Table 5.

Cluster 3 (blue) with 12 items is titled "Innovation Spillovers and Regional Transformation." The sample keywords include spillover effect, spatial spillover effect, technological innovation, regional planning, economic and social effects, carbon emission, and Fintech. This category highlights how technological advancement and the evolution of digital financial services, in particular Fintech, produce spillover effects that allow digital advantages to be dispersed across regions, e.g., rural and underdeveloped areas (Yang et al., 2023; Bian et al., 2025). Such spillovers allow innovation not to be limited to advanced areas but can also propel

economic change and inclusive development in hitherto excluded areas. Initiatives towards equitable regional development, however, also face significant challenges, including the possibility of spillover effects "negative externalities, like draining poor areas" resources to cities or the establishment of new inequalities through uneven technological adoption (Zhao et al., 2022; Zhang et al., 2021).

Cluster 4 (yellow) with 12 items, is titled "Spatial dynamics, agglomeration, and digital economy." This cluster reflects the interrelationship between digital economic growth, spatial dynamics of agglomeration, and industrial action. Agglomeration is accountable for generating regional economic growth through the accumulation of economic activities in growth nodes. This concentration enhances productivity and stimulates innovation through knowledge spillovers, industrial interaction, and the provision of adequate infrastructure (Li and Liu, 2024; Jiang et al., 2022). The network visualization of keyword co-occurrence is displayed in Figure 3.

4. IMPLICATIONS, LIMITATIONS, AND RECOMMENDATIONS
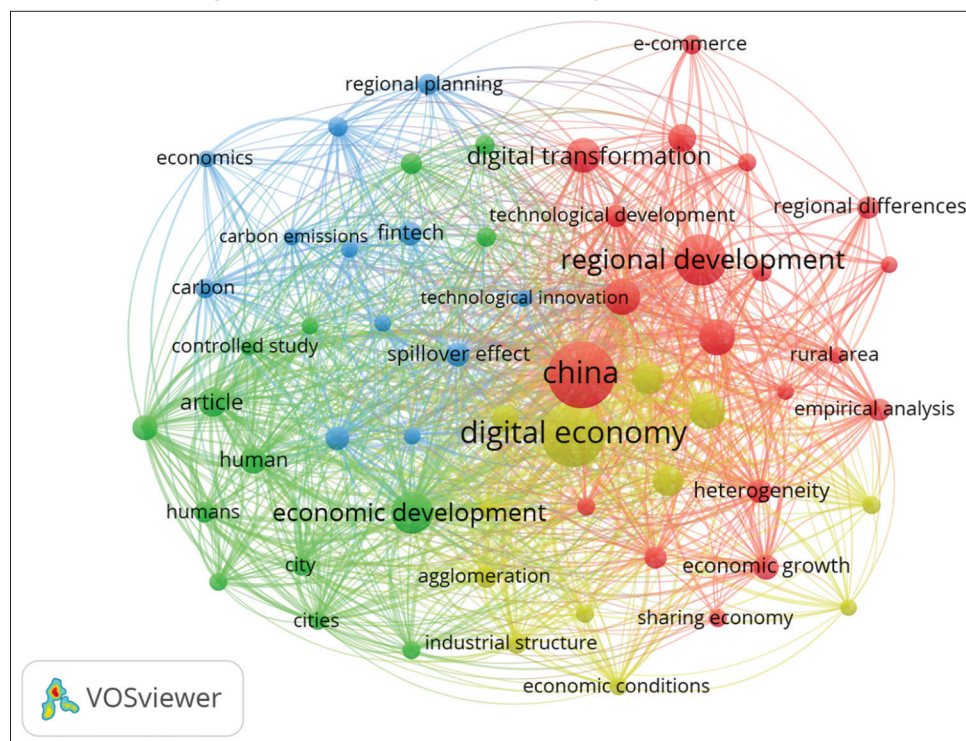
4.1. Theoretical Implications

This study provides significant theoretical contributions to development economics literature, regional economics, and the digital economy. The findings enhance understanding of the intersection of digital economy dynamics with territorial development, particularly in growth acceleration, disparities reduction, and regional innovation enhancement. In the process of regional development, the digital economy is the main driver that spurs productivity growth, technological innovation, and resilient regional infrastructure. This is in accordance with the theory of endogenous growth that defines technology and innovation as drivers of regional competitiveness. Moreover, by locating digital transformation in regional contexts, this study offers an interdisciplinary theoretical framework reconciling digital economy research with spatial development and territorial resilience theories that are often argued separately in existing studies.

Table 5: Cluster of keyword co-occurrence (co-word analysis)

Cluster, No, and color	Cluster label	Number of keywords	Representative keywords
1 (red)	Digital innovation and regional development gaps	20	Digital transformation, e-commerce, innovation, regional development, regional difference, rural area, rural development, urban development, urbanization.
2 (green)	Digitalization, inequality, and economic change	14	Digital divide, digital technology, digitalization, economic aspect, industry, internet, human, economic development
3 (blue)	Innovation Spillovers and Regional Transformation	12	Spillover effect, spatial spillover effect, technological innovation, regional planning, economic and social effect, carbon emission, Fintech
4 (yellow)	Spatial dynamics, agglomeration, and digital economy	12	Agglomeration, digital economy, digitization, spatial distribution spatiotemporal analysis, industrial structure, green economy, economic condition.

Source (s): Created by authors using VOSviewer and bibliometric metadata

Figure 3: The network visualization of keyword co-occurrence

Source: Created by authors using VOSviewer and bibliometric metadata

4.2. Practical Implications

First, investment in proper and well-distributed physical infrastructure—such as digital technology infrastructure—is a strategic move to narrow the digital divide and can help to decrease economic development disparities between regions through enhanced linkages and favorable spillover dynamics. Second, investing in intangible areas such as empowerment of people and human resource ability, particularly in digital competence, is essential to include economic development to be equitable and inclusive, and encourage participative activities in the digital economy, particularly in rural and underdeveloped areas. In addition, collaborative efforts across agencies at the local and national levels are essential to link digital policies to overall regional development goals. Policymaking involving an integrated approach is encouraged for policymakers to pursue infrastructure development, digital skills development, and governance facilitation frameworks simultaneously to provide a smooth transmission of digital economy benefits into balanced territorial development. This integrated route can strengthen local absorptive capacity, enable sustainable innovation systems, and ultimately promote long-term socio-economic resilience.

4.3. Limitations and Recommendations for Future Research

The limitations of this study: First, the data were gathered from the Scopus database alone, without regard to other databases such as Web of Science (WoS), Google Scholar, Dimensions, etc. Second, the research employs just bibliometric methods to quantitatively analyze publication trends, development issues being undertaken, emerging and salient themes, and future directions. Bibliometric analysis should therefore be complemented with other methods, i.e., meta-analysis and systematic literature reviews, to validate the results.

This study gives some future research suggestions: First, future studies are advised to expand the literature coverage through the integration of different databases—for example, a combination of the Scopus and Web of Science databases, or Scopus and Dimensions. This approach can reduce the potential bias in the data. Second, future studies are recommended to combine bibliometric analysis with a systematic literature review (SLR) or with meta-analysis to increase the richness and quality of the findings.

5. CONCLUSION

The bibliographic coupling analysis results showed that current studies on the contribution of the digital economy and regional economic inequality are focused on three broad groups, i.e.: (1) Digital economy, spatial coupling, and regional disparities; (2) regional digital divide and spatial inequalities; and (3) Fintech, digital financial inclusion, and regional economic development. These clusters reflect the prominent thematic priorities in the current academic discussion on the nexus between digital change and spatial and economic disparities. Furthermore, the co-word analysis further identified four forward-looking clusters that map out the trajectory of future research and future issues within the topic. These are themes of (1) Digital innovation and interregional disparities, (2) digitalization, inequality, and economic change, (3) innovation spillover and regional transformation, and (4) spatial dynamics, agglomeration, and the digital economy. These themes characterize the evolution of academic concern with explicating how digitalization can diminish or enhance interregional inequalities. Second, the digital economy plays a crucial role in regional economic growth through enhanced productivity, technological innovation, and the development of local infrastructure.

6. ACKNOWLEDGEMENT

REFERENCES

Barik, N. (2023), Global research on digital divide during the past two decades: A bibliometric study of Web of Science indexed literature. Global Knowledge, Memory and Communication, 74, 272-283.

Becerra, G., Ratovicius, C. (2022), Social sciences and humanities on big data: A bibliometric analysis. Journal of Information Systems and Technology Management, 19, e20221901.

Bian, J., Tang, D., Fang, Y. (2025), The dual impact and spatial spillover effects of the digital economy on urban-rural integration. Sustainability (Switzerland), 17(2), 545.

Chen, C., Ye, F., Xiao, H., Xie, W., Liu, B., Wang, L. (2023), The digital economy, spatial spillovers and forestry green total factor productivity. Journal of Cleaner Production, 405, 136890.

Cheng, Y., Zhang, Y., Wang, J., Jiang, J. (2023), The impact of the urban digital economy on China's carbon intensity: Spatial spillover and mediating effect. Resources, Conservation and Recycling, 189, 106762.

Cortegiani, A., Ippolito, M., Ingoglia, G., Manca, A., Cugusi, L., Severin, A., Strinzel, M., Panzarella, V., Campisi, G., Manoj, L., Gregoretti, C., Einav, S., Moher, D., Giarratano, A. (2020), Inflated citations and metrics of journals discontinued from Scopus for publication concerns: The GhoS(t)copus Project. F1000Research, 9, 23847.

Deng, X., Huang, Z., Cheng, X. (2019), FinTech and sustainable development: Evidence from China based on P2P data. Sustainability (Switzerland), 11(22), 6434.

Di, K., Chen, W., Shi, Q., Cai, Q., Zhang, B. (2024), Digital empowerment and win-win co-operation for green and low-carbon industrial development: Analysis of regional differences based on GMM-ANN intelligence models. Journal of Cleaner Production, 445, 141332.

Ding, C., Liu, C., Zheng, C., Li, F. (2022), Digital economy, technological innovation and high-quality economic development: Based on spatial effect and mediation effect. Sustainability (Switzerland), 14(1), 0216.

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., Lim, W.M. (2021), How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research, 133, 285-296.

Elsevier B.V. (2020), Scopus Preview - Scopus - Welcome to Scopus. Netherlands: Elsevier. Avaliable from: https://www.elsevier.com/products/scopus/content/ [Last accessed on 2025 Jun 20].

Frandsen, T.F. (2022), Authors publishing repeatedly in predatory journals: An analysis of Scopus articles. Learned Publishing, 35(4), 1489.

Fu, L., Zeng, Y., Kang, X. (2024), Bridging the urban-rural gap: A

qualitative examination of perceived access, barriers, risks and opportunities of children's digital learning during the COVID-19 pandemic. Child and Family Social Work, 29(1), 3045.

Geng, D., Feng, Y., Zhu, Q. (2020), Sustainable design for users: A literature review and bibliometric analysis. Environmental Science and Pollution Research, 27(24), 29824-29836

Haefner, L., Sternberg, R. (2020), Spatial implications of digitization: State of the field and research agenda. Geography Compass, 14(12), 12544.

Hasan, M.M., Yajuan, L., Mahmud, A. (2020), Regional development of China's inclusive finance through financial technology. SAGE Open, 10(1), 1-16.

Haupert, T. (2022), The racial landscape of fintech mortgage lending. Housing Policy Debate, 32(2), 1825010.

Holl, A., Rama, R. (2024), Spatial patterns and drivers of SME digitalisation. Journal of the Knowledge Economy, 15(2), 1-25.

Jia, X., Zhu, T. (2024), Spatiotemporal evolution of the coupling-coordinated development of digital factors and rural-industrial integration. Sustainability (Switzerland), 16(22), 10056.

Jiang, J., Xu, Z., Lu, J., Sun, D. (2022), Does network externality of urban agglomeration benefit urban economic growth-a case study of the Yangtze River Delta. Land, 11, 586.

Korovkin, V., Park, A., Kaganer, E. (2023), Towards conceptualization and quantification of the digital divide. Information Communication and Society, 26(11), 2085612.

Kovač, N., Żmija, K., Jewel Kumar, R., Kusa, R., Duda, J. (2024), Digital divide and digitalization in Europe: A bibliometric analysis. Equilibrium. Quarterly Journal of Economics and Economic Policy, 19(2), 463-520.

Li, X., Liu, Y. (2024), The economic spillover effect of the collaborative agglomeration between manufacturing and producer services. Sustainability (Switzerland), 16(13), 5343.

Lim, W.M., Kumar, S. (2024), Guidelines for interpreting the results of bibliometric analysis: A sensemaking approach. Global Business and Organizational Excellence, 43(2), 22229.

Linkov, I., Trump, B.D., Poinsatte-Jones, K., Florin, M.V. (2018), Governance strategies for a sustainable digital world. Sustainability (Switzerland), 10(2), 440.

Liu, Y., Yang, Y., Li, H., Zhong, K. (2022), Digital economy development, industrial structure upgrading and green total factor productivity: Empirical evidence from China's Cities. International Journal of Environmental Research and Public Health, 19(4), 2414.

Lucendo-Monedero, A.L., Ruiz-Rodríguez, F., González-Relaño, R. (2019), Measuring the digital divide at regional level. A spatial analysis of the inequalities in digital development of households and individuals in Europe. Telematics and Informatics, 41, 197-217.

Luo, R., Zhou, N. (2022), Dynamic evolution, spatial differences, and driving factors of China's provincial digital economy. Sustainability (Switzerland), 14(15), 9376.

Ma, Z., Niu, X., Ma, W., Kang, Y., Xie, W. (2023), Interregional and intersectoral interaction of digital economy in China. Frontiers in Environmental Science, 11, 1138200.

McAllister, J.T., Lennertz, L., Mojica, Z. A. (2022), Mapping a discipline: A guide to using VOSviewer for bibliometric and visual analysis. Science and Technology Libraries, 41(3), 319-348

Mukherjee, D., Lim, W.M., Kumar, S., Donthu, N. (2022), Guidelines for advancing theory and practice through bibliometric research. Journal of Business Research, 148, 101-115.

Nawanir, G., Fauzi, M.A. (2024), Lean healthcare: A science mapping of current progress and future research avenues. Journal of Health Organization and Management, 39, 584-603.

Rahim Thaha, A., Riau, D.P., Fajar, A., Antoro, S., Aziz, F. (2025), Digital economy and SME research landscape: A bibliometric analysis of emerging themes and trends. Journal of Scientometric Research, 14(1), 272-282.

Shang, Y., Lee, H., Ma, J. (2025), A study on the spatial effects of the digital economy on regional economic growth in China. Sustainability (Switzerland), 17(5), 1-21.

Shen, W., Xia, W., Li, S. (2022), Dynamic coupling trajectory and spatial-temporal characteristics of high-quality economic development and the digital economy. Sustainability (Switzerland), 14(8), 4543.

Shi, Y., Zhang, T., Jiang, Y. (2023), Digital economy, technological innovation and urban resilience. Sustainability (Switzerland), 15(12), 9250.

Siddiqui, T.A., Siddiqui, K.I. (2020), FinTech in India: An analysis on impact of telecommunication on financial inclusion. Strategic Change, 29(3), 2331.

Sidorov, A., Senchenko, P. (2020), Regional digital economy: Assessment of development levels. Mathematics, 8(12), 2143.

Simon, K., Deborah, I.A., Samuel, O.D., Prisca, U.U., Odunayo, J.A., Stephen, O.E. (2023), Digital transformation and economic development: A review of emerging technologies' impact on national economies. World Journal of Advanced Research and Reviews, 20(3), 2541.

Singh, V.K., Singh, P., Karmakar, M., Leta, J., Mayr, P. (2021), The journal coverage of Web of Science, Scopus and Dimensions: A comparative analysis. Scientometrics, 126(6), 5113-5142.

Tang, L., Lu, B., Tian, T. (2021), Spatial correlation network and regional differences for the development of digital economy in China. Entropy, 23(12), e23121575.

Tao, J., Wang, Z., Xu, Y., Zhao, B., Liu, J. (2024), Can the digital economy boost rural residents' income? Evidence from China based on the spatial Durbin model. Economic Analysis and Policy, 81, 856-872.

Tyagi, S. (2023), Bibliometric analysis and scientific mapping of research trends on "digital divide." Global Knowledge, Memory and Communication, 74, 828-852.

Vicente, M.R., López, A.J. (2011), Assessing the regional digital divide across the European Union-27. Telecommunications Policy, 35(3), 013.

Wang, F., Wang, M., Yuan, S. (2021), Spatial diffusion of e-commerce in china's counties: Based on the perspective of regional inequality. Land, 10(11), 1141.

Wang, Z., Lin, S., Chen, Y., Lyulyov, O., Pimonenko, T. (2023), Digitalization effect on business performance: Role of business model innovation. Sustainability (Switzerland), 15(11), 9020.

Xiao, Q., Gao, M., Chen, L., Jiang, J. (2023), Dynamic multi-attribute evaluation of digital economy development in China: A perspective from interaction effect. Technological and Economic Development of Economy, 29(6), 20258.

Xing, Z., Huang, J., Wang, J. (2023), Unleashing the potential: Exploring the nexus between low-carbon digital economy and regional economic-social development in China. Journal of Cleaner Production, 413, 137552.

Yang, L., Wang, S. (2022), Do fintech applications promote regional innovation efficiency? Empirical evidence from China. Socio-Economic Planning Sciences, 83, 101258.

Yang, Liming, Chen, Y., Gao, X. (2023), Spatial spillover effect of digital-finance-driven technology innovation level based on BP neural network. Sustainability, 15(2), 1052.

Yoo, I., Yi, C.G. (2022), Economic innovation caused by digital transformation and impact on social systems. Sustainability (Switzerland), 14(5), 2600.

Zeng, Y., Jia, F., Wan, L., Guo, H. (2017), E-commerce in agri-food sector: A systematic literature review. International Food and Agribusiness Management Review, 20(4), 0156.

Zhang, B. (2024), Research progress and intellectual structure of design for digital equity (DDE): A bibliometric analysis based on citespace.

Humanities and Social Sciences Communications, 11(1), 1-18.

Zhang, J., Zhao, W., Cheng, B., Li, A., Wang, Y., Yang, N., Tian, Y. (2022), The impact of digital economy on the economic growth and the development strategies in the post-COVID-19 era: Evidence from countries along the "belt and road." Frontiers in Public Health, 10, 856142.

Zhang, W., Zhao, S., Wan, X., Yao, Y. (2021), Study on the effect of digital economy on high-quality economic development in China. PLoS One, 16, 0257365.

Zhao, S., Zhang, Y., Iftikhar, H., Ullah, A., Mao, J., Wang, T. (2022), Dynamic influence of digital and technological advancement on sustainable economic growth in belt and road initiative (BRI) countries. Sustainability, 14(23), 5782.

Zhao, T., Zhang, Z., Liang, S. (2022), Digital economy, entrepreneurship, and high-quality economic development: Empirical evidence from Urban China. Frontiers of Economics in China, 17(3), 393-426.

Zhao, Y., Goodell, J.W., Dong, Q., Wang, Y., Abedin, M.Z. (2022), Overcoming spatial stratification of fintech inclusion: Inferences from across Chinese provinces to guide policy makers. International Review of Financial Analysis, 84, 102411.