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# Visualising the Landscape of Digital Transformation and Sustainability: A Bibliometric Analysis

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**Abstract - Digital transformation and sustainability are buzzwords in the era of globalisation. As the digital era reshapes industries, its intersection with innovation offers a unique pathway to achieving sustainable goals. This concept developed not in India but globally. Digital transformation is becoming an important part of sustainable development, helping activities of all sizes become more efficient and sustainable. There has been a drastic growth in research on digitalisation and sustainability globally.**

**Despite this expansion, the research landscape remains fragmented, and a consolidated global perspective is still lacking. This study addresses that gap through an analysis of 9,872 documents indexed in the Scopus Core Collection between 2016 and 2026, analysed using VOSviewer. It examines publication output; the most productive authors, countries, institutions, funding agencies, and journals; and the networks of co-cited and bibliographically coupled authors, journals, and documents. The results show that Ghobakhloo, M., is the productive author; the European Commission is the leading funding agency; China is the most productive country; and Jiangsu University is the most productive institution. The co-citation and bibliographic coupling networks reveal the scholarly communities, influential journals, and foundational documents within the fields. Finally, the study identifies research directions offering guidance for researchers, policymakers, and practitioners seeking to align digital innovation with sustainable development.**

**Keywords: Digital transformation; digitalisation; sustainable development; bibliometric analysis; VOSviewer; Scopus**

## 1. INTRODUCTION

Digital transformation is no longer just about companies adopting new technology to work faster or cut costs. As per previous reports, it has become closely tied to sustainability, as firms are increasingly expected to use AI, IoT, blockchain, and big data to reduce their environmental footprint while staying competitive. This shift has been furthered by climate commitments, investor ESG expectations, and stricter regulations, all of which are forcing organizations to rethink how digital and sustainability goals align.

For a long time, these two areas were studied separately. Digital transformation was mostly discussed in information systems and Industry 4.0 literature, while sustainability was studied under environmental economics or CSR. In recent years, these two streams have begun to merge, leading to new ideas such as green digitalization, sustainable Industry 4.0/5.0, and digitally enabled circular economy models. As a result, research output in this space has grown rapidly, but it is scattered across many disciplines and journals, making it hard to get a clear, consolidated picture of this particular field.



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This research conducts a bibliometric analysis of 9872 Scopus-indexed documents on this topic published between 2016 and 2026, and uses VOSviewer for visualization. It examines publication trends over time, the most productive authors, countries, institutions, and journals, and the underlying co-authorship, co-citation, and keyword networks that shape the field. The goal is to give researchers a clearer overview of how this area has developed so far and to highlight where future research could focus.

Based on this, the study aims to answer the following research questions:

RQ1: What are the key publication trends and developments in research on Digital Transformation and Sustainable Development over time?

RQ2: Who are the leading authors, institutions, journals and countries contributing to the field, and what do their collaboration patterns reveal about the research landscape?

RQ3: Which publications are influential based on citation patterns, and what contributions have they made to the development of the field?

RQ4: What are the major research themes, emerging topics and knowledge clusters in Digital Transformation and Sustainable Development, as revealed through analysis?

## 2 RESEARCH METHODOLOGY

A bibliometric study is a method for identifying and evaluating the structure and growth of a research field. Bibliometric analysis examines publication trends, citation patterns, influential authors, institutions, countries, and thematic clusters. Previous studies have shown that bibliometric analysis is effective at mapping research areas such as sustainability and digital transformation. Therefore, this study uses analysis to explore the current research on Digital Transformation and Sustainability. Bibliometric analysis focuses on publication trends, citation networks, co-authorship, and keyword co-occurrence to identify contributors, major research themes, and new directions in the domain area.

### 2.1 Data collection method

The Scopus Database, a scientific resource recognised for its extensive collection of peer-reviewed literature, was used in the bibliometric study. Because of its extensive disciplinary coverage, strict indexing guidelines, and integrated bibliometric tools—all crucial for conducting organised, high-quality bibliometric analysis—Scopus was specifically chosen. Additionally, the Scopus database is acknowledged for its extensive coverage, indexing peer-reviewed articles in a variety of disciplines. It is an essential tool for bibliometric research because it provides reliable citation metrics. The strict editing guidelines guarantee that only credible journals are included, reducing the likelihood of low-quality sources. The search keywords (digital transformation; Sustainability). The title-based article search resulted in 9872 documents published between 2015 and 2026.

### 2.2 Data Analysis Method

This research employed two bibliometric analysis methods: Descriptive (publication trends, contributing countries and affiliations) and network analysis (co-word and co-authorship). Bibliometric analysis was chosen because it provides a systematic and reliable way to examine a large amount of research. It helps identify publication trends, understand connections between different research areas, and explore collaboration patterns that may be difficult to recognise through other methods.


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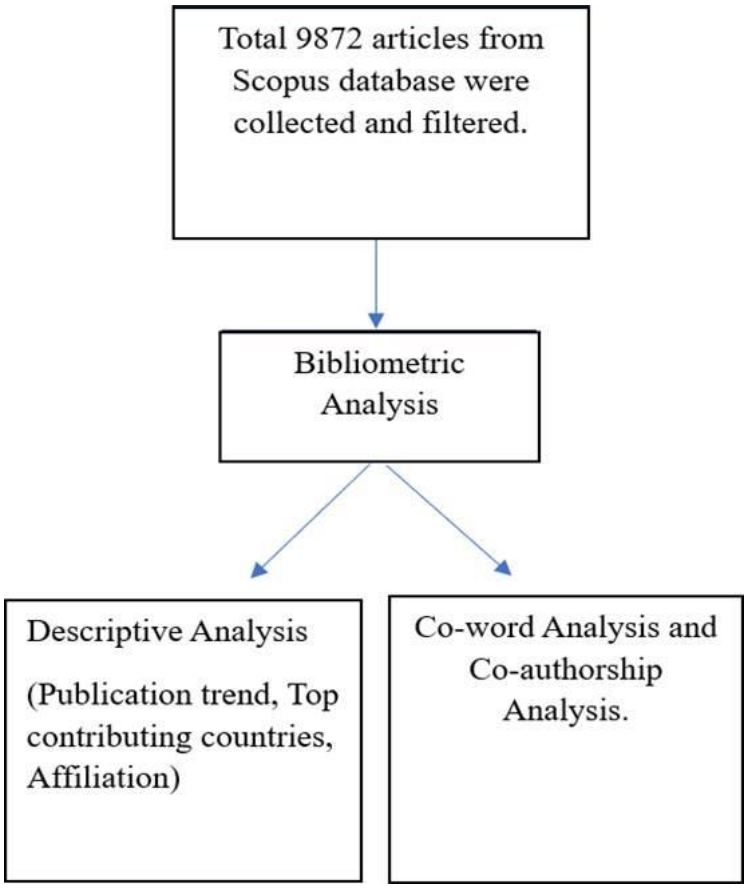



**Fig.1 Data Screening and Analysis Procedure**

Source: Author

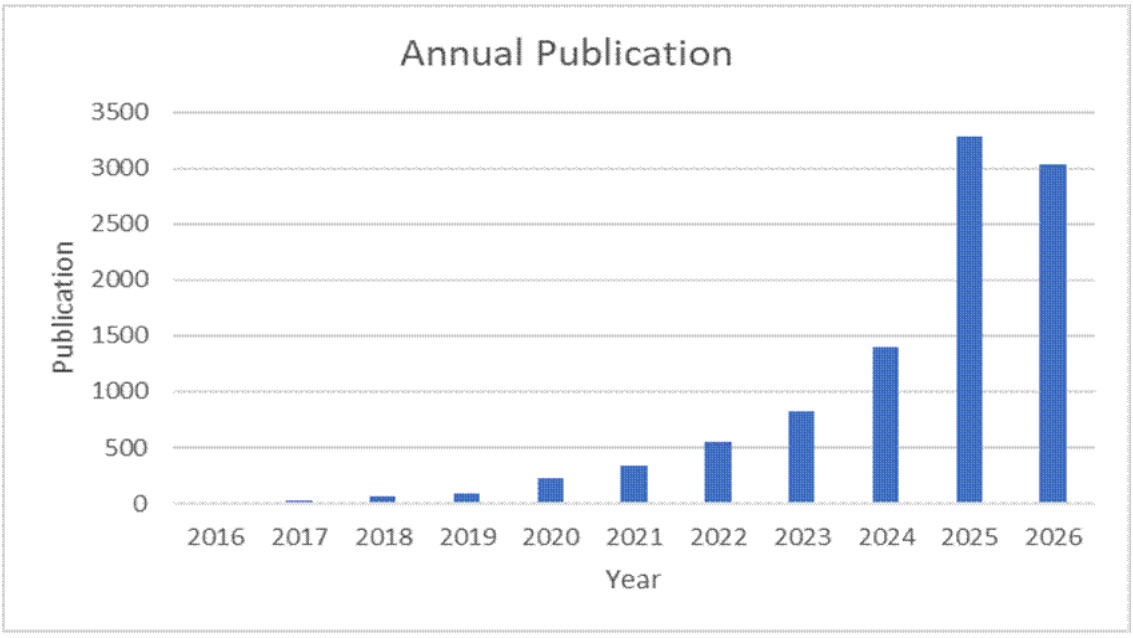



**Figure 1- Annual Publication**

*Source*: Author (Scopus Database)



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Unlike traditional literature reviews, this study focuses on the ten most-cited articles on sustainability and digital transformation to understand the main areas of research and identify topics that need further investigation. To analyse the collected data, we used VOSviewer, a software tool that helps organise and visually present research findings. It shows the connections between articles, authors, and research topics through maps and colour-coded clusters. These visual representations make it easier to understand how different studies are related, which topics are closely connected, and how research in this field has developed over time. VOSviewer also helps identify important research themes and gaps by analysing publications from databases such as Scopus and Web of Science. Figure 1 shows the steps followed to select, screen, and analyse the data for this study.

## 3 RESEARCH AND DISCUSSIONS

### 3.1.1 Top contributing countries

**Table: Top Contributing Countries**

**Source:** Author (Scopus Database)

| No. | Country | Publications |
|---|---|---|
| 1 | China | 1,347 |
| 2 | India | 1,091 |
| 3 | United Kingdom | 637 |
| 4 | Italy | 598 |
| 5 | United States | 563 |
| 6 | Germany | 524 |
| 7 | Indonesia | 425 |
| 8 | Malaysia | 427 |
| 9 | Spain | 427 |
| 10 | Turkey | 383 |
| 11 | Saudi Arabia | 348 |
| 12 | Portugal | 300 |
| 13 | Australia | 299 |
| 14 | Russian Federation | 280 |


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| | | |
|---|---|---|
| 15 | France | 259 |
| 16 | **Undefined** | **230** |
| 17 | Brazil | 227 |
| 18 | Poland | 210 |
| 19 | Romania | 203 |
| 20 | South Africa | 199 |
| 21 | Vietnam | 195 |
| 22 | Greece | 181 |
| 23 | Thailand | 179 |
| 24 | Ukraine | 175 |
| 25 | **UAE** | **170** |

Table 1 represents the top-contributing countries in the fields of digital transformation and sustainability, based on the number of publications indexed in the Scopus database. China emerged as the leading contributor, with **1,347 publications**, followed by India with **1,091 publications**. This indicates the strong research interest of these countries in digital transformation, technological development, and sustainability-related issues. The United Kingdom ranked third with **637 publications**, followed by Italy with **598 and the United States with 563**. Germany also demonstrated a significant contribution, with **524 publications**, reflecting the increasing importance of digital technologies and sustainable development in advanced economies.

Among Asian countries, **Indonesia (425)**, **Malaysia (427)**, and **Saudi Arabia (348)** were among the major contributors. Malaysia ranked slightly higher than Indonesia, while Spain recorded **427 publications**, indicating comparable research productivity. Turkey contributed **383 publications**, followed by Portugal with **300 and Australia with 299**. The Russian Federation and France recorded **280** and **259 publications**, respectively. These findings demonstrate that research on digital transformation and sustainability has attracted considerable scholarly attention across both developed and emerging economies.

The table further shows the contributions of countries such as **Brazil (227)**, **Poland (210)**, **Romania (203)**, **South Africa (199)**, **Vietnam (195)**, **Greece (181)**, **Thailand (179)**, and **Ukraine (175)**. The **UAE**, with **170 publications**, ranked 25th among the contributing countries. The UAE's presence among the leading contributors highlights the growing research emphasis on digital transformation, innovation, smart technologies, and sustainability in the Middle East.

Overall, the publication distribution shows that **China and India are the dominant contributors** to research on digital transformation and sustainability, accounting for substantially higher publication


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outputs than the other countries. The strong representation of European countries, including the United Kingdom, Italy, Germany, Spain, Portugal, France, Poland, Romania, and Greece, demonstrates the importance of sustainability-oriented digital transformation within European research. Similarly, contributions from Asian and Middle Eastern countries highlight the growing scholarly interest in using digital technologies to address sustainability challenges. The findings therefore suggest that digital transformation and sustainability have become globally significant research areas, with increasing contributions from both developed and developing economies.

### 3.1.2 Top contributing affiliations

**Table: Documents by Affiliation**

| Sl. No. | Affiliation | Documents |
|---|---|---|
| 1 | University of Johannesburg | 76 |
| 2 | Politecnico di Milano | 64 |
| 3 | Bina Nusantara University | 61 |
| 4 | Symbiosis International Deemed University | 54 |
| 5 | Lovely Professional University | 50 |
| 6 | Bucharest University of Economic Studies | 46 |
| 7 | Graphic Era Deemed to be University | 42 |
| 8 | NorgesTeknisk-Naturvitenskapelige Universitet | 41 |
| 9 | Universidade de Aveiro | 41 |
| 10 | Jiangsu University | 38 |
| 11 | Sapienza Università di Roma | 38 |
| 12 | Universiti Kebangsaan Malaysia | 37 |
| 13 | Universiti Sains Malaysia | 34 |
| 14 | Amity University | 34 |
| 15 | Christ University | 34 |
| 16 | Universiti Teknologi MARA | 33 |
| 17 | University of Zagreb | 33 |
| 18 | University of Melbourne | 33 |


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| | | |
|---|---|---|
| 19 | Financial University under the Government of the Russian Federation | 33 |
| 20 | Chandigarh University | 32 |
| 21 | Imam Mohammad Ibn Saud Islamic University | 31 |
| 22 | LUT University | 31 |
| 23 | University of Tehran | 31 |
| 24 | Tecnológico de Monterrey | 30 |
| 25 | King Saud University | 30 |

### 3.1.2 Top contributing affiliations

Table 2 presents the top contributing affiliations in research on digital transformation and sustainability, based on documents indexed in the Scopus database. The **University of Johannesburg** emerged as the leading contributing affiliation, with **76 publications**, followed by **Politecnico di Milano (64)** and **Bina Nusantara University (61)**. **Symbiosis International Deemed University** and **Lovely Professional University** ranked fourth and fifth, with 54 and 50 publications, respectively. The strong contribution of these institutions indicates their growing research interest in digital transformation, technological innovation, and sustainability-related issues.

The **Bucharest University of Economic Studies** contributed 46 publications, followed by **Graphic Era Deemed to be University (42)**. **Norges Teknisk-Naturvitenskapelige Universitet** and **Universidade de Aveiro** each recorded 41 publications, while **Jiangsu University** and **Sapienza Università di Roma** each contributed 38 publications. These results demonstrate the active involvement of institutions from Europe and Asia in research related to digital transformation and sustainability. **Universiti Kebangsaan Malaysia** also showed a significant contribution, with 37 publications.

Further, **Universiti Sains Malaysia, Amity University, and Christ University** each contributed

34 publications. **Universiti Teknologi MARA, University of Zagreb, University of Melbourne, and Financial University under the Government of the Russian Federation** recorded 33 publications each, while **Chandigarh University** contributed 32 publications. **Imam Mohammad Ibn Saud Islamic University, LUT University, and University of Tehran** each recorded 31 publications. The presence of several Malaysian and Indian institutions among the leading affiliations indicates the increasing academic interest in digital transformation and sustainability in emerging economies.

**Tecnológico de Monterrey** and **King Saud University** each contributed 30 publications, completing the top 25 affiliations. Overall, the distribution of publications indicates that research on digital transformation and sustainability is geographically diverse, with prominent contributions from institutions across **Asia, Europe, Africa, Australia, and Latin America**. The strong representation of universities from Malaysia and India, alongside institutions from European and Middle Eastern countries, highlights the growing global importance of integrating digital technologies with sustainable development objectives.


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The findings further suggest that universities are increasingly addressing the relationship between technological innovation, organisational transformation, and sustainability. The presence of institutions from both developed and developing economies demonstrates that digital transformation and sustainability have become important areas of multidisciplinary academic research. Thus, the leading affiliations reflect the **global and interdisciplinary nature of the research domain**, with universities playing a significant role in generating knowledge and supporting sustainable digital transformation.

### 3.2 Network analysis

**Table 3**: Co-occurrence of Keyword

*Source*: Author (Scopus Database & VOS viewer Software)

| No | Keyword | Co-occurence | Total Link strength |
|---|---|---|---|
| 1 | Digital Transformation | 2412 | 5828 |
| 2 | Sustainability | 1827 | 4898 |
| 3 | Artificial Intelligence | 671 | 1938 |
| 4 | Industry 4.0 | 524 | 1575 |
| 5 | Digitalization | 501 | 1292 |
| 6 | Sustainable Development | 405 | 1042 |
| 7 | Circular economy | 339 | 985 |
| 8 | Innovation | 265 | 851 |
| 9 | Blockchain | 175 | 647 |
| 10 | Bibliometric analysis | 192 | 577 |
| 11 | Industry 5.0 | 202 | 546 |
| 12 | Digital Technologies | 177 | 509 |
| 13 | Machine learning | 145 | 460 |
| 14 | Internet of Things | 127 | 456 |
| 15 | AI | 107 | 406 |
| 16 | Technology | 129 | 401 |
| 17 | Big data | 95 | 390 |
| 18 | IOT | 105 | 388 |
| 19 | Resilience | 111 | 358 |


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| | | | |
|---|---|---|---|
| 20 | Smart cities | 126 | 357 |

Table 3 presents the co-occurrence analysis of Keywords, providing essential insights into the thematic structure and intellectual focus of research on organisational sustainability during digital transformation. The frequency of keyword occurrence reflects the prominence of a topic, while total link strength indicates the strength of its connections with other keywords in the research network. Digital Transformation is the most frequent keyword, with **2414 occurrences and the highest total link strength of 5828**. This indicates that digital transformation represents the central theme of the research landscape and is strongly interconnected with several other technological, organisational, and sustainability-related concepts. Its dominant position suggests that current research increasingly examines digital transformation as a broad strategic phenomenon influencing organisational processes, innovation and technological development.

Sustainability is the second most prominent keyword, with **1827 occurrences and a total link strength of 4898**. Its high frequency and strong connectivity demonstrate that sustainability is another major research focus and is closely associated with digital transformation. The strong presence of both digital transformation and sustainability suggests that the literature increasingly views technological advancement not only in terms of efficiency and innovation but also in relation to environmental and long-term organisational objectives. The substantial strength of the sustainability link indicates that it is connected to diverse technological and strategic themes across the research landscape.

Artificial Intelligence, with **671 occurrences and a total link strength of 1938,** represents another significant technological theme. Its relatively high link strength indicates that AI is strongly associated with digital transformation, innovation and other emerging technologies. Similarly, Industry 4.0, with **524 occurrences and a link strength of 1575,** highlights the importance of smart manufacturing, automation, interconnected systems and data-driven industrial processes. The prominence of Industry 4.0 suggests that digital transformation is being examined extensively within industrial and technological contexts.
Digitalisation, appearing **501 times with a total link strength of 1292,** further reinforces the central role of digital transformation, indicating that the literature explores not only the strategic implications of digital transformation but also the practical process through which organisations adopt and integrate digital technologies. Sustainable development, with **405 occurrences and a link strength of 1042,** highlights the connection between digital transformation and broader sustainability objectives. This indicates that technological transformation is increasingly being positioned within a wider framework of economic, environmental and social development.

The keywords Circular Economy and Innovation, with 339 and 265 occurrences, respectively, also show meaningful co-occurrence, with total link strengths of 985 and 851. The presence of a circular economy highlights growing interest in resource efficiency, waste reduction, and sustainable production models, while innovation underscores the importance of technological and organisational change in achieving these objectives. Their relatively high link strengths suggest that sustainability-oriented innovation and circular approaches are increasingly connected to digital technologies.

Several emerging technologies also exhibit a moderate yet important presence in the co-occurrence network. Blockchain records **175 occurrences and a total link strength of 647,** while Machine learning


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records **145 occurrences and a link strength of 460**. Internet of Things (IOT) appears with **127 occurrences and a link strength of 456**, whereas Big Data has **95 occurrences and a link strength of 390.** These technologies indicate that the literature is moving beyond general discussions of digital transformation towards specific technological applications that can enable data-driven decision-making, automation, monitoring and intelligent systems.

The occurrence of AI as a separate keyword, with **107 instances and a total link strength of 406,** further emphasises the growing importance of artificial intelligence in the research field. Likewise, IoT, appearing separately from Internet of Things, records **105 occurrences and a link strength of 388**. The presence of full and abbreviated forms suggests that different terminology is being used across the literature to describe similar technological concepts. Nevertheless, their combined presence reinforces the importance of intelligent and connected technologies within the research landscape.

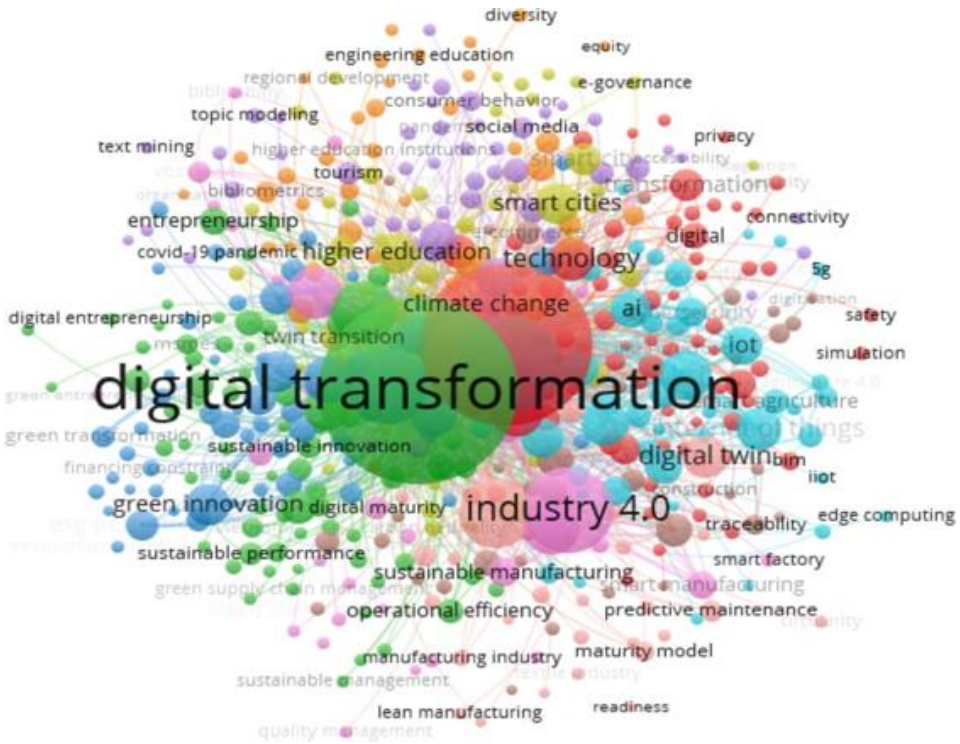
The keywords Industry 5.0, Digital Technologies, and Technology further demonstrate the evolution of research from Industry 4.0-oriented automation towards more advanced, human-created technological paradigms. Industry 5.0 records **202 occurrences and a total link strength of 546,** while digital Technologies records **177 occurrences and a link strength of 509.** The emergence of Industry 5.0 indicates that recent scholarship is beginning to extend beyond automation and efficiency towards concepts such as human-technology collaboration, resilience and sustainable industrial development.

Finally, Resilience and Smart cities, with 111 and 126 occurrences respectively, demonstrate the application of digital technologies to broader organisational and societal challenges. The presence of resilience suggests growing interests in how digital technologies can help organisations and systems adapt to disruption and uncertainty, while smart cities reflect the application of digital technologies to urban management, infrastructure and sustainable development.

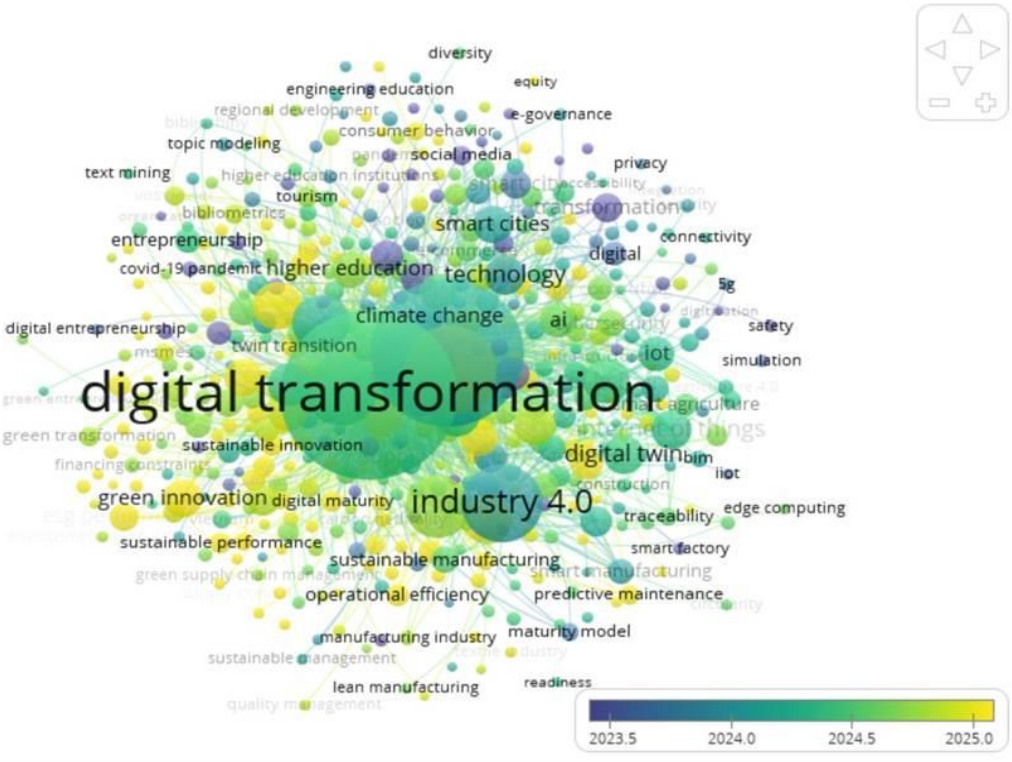
Overall, the co-occurrence results reveal a strongly interconnected research ecosystem centred on digital transformation and sustainability. Digital transformation functions as the principal technological and strategic theme, while sustainability provides a broader objective within which digital transformation is increasingly examined. Around these central themes, clusters involving Artificial Intelligence, Industry 4.0, Digitalization, Innovation, Circular Economy, Blockchain, Machine Learning. IoT and big data indicate the growing integration of emerging technologies into organizational, Industrial and sustainability-oriented research. The relatively strong linkages among these keywords suggest that the literature is not treating digital technologies in isolation; rather, contemporary research is moving towards an integrated perspective in which digital transformation, technological innovation and sustainability are mutually reinforcing dimensions of organizational and societal development.


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Network visualisation of the Co-occurrence of Keywords
Source: Keywords (Scopus Database & VOS viewer Software




Overlay visualisation of the Co-occurrence of keywords.

Source: Keywords (Scopus Database & VOS Viewer Software).



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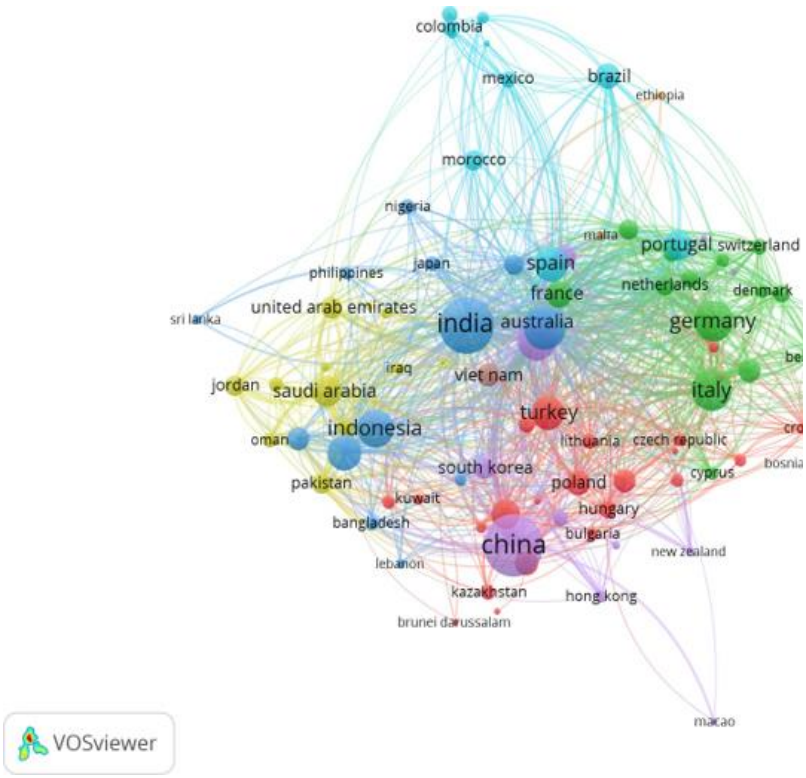
### 3.2.1 Co-authorship of the countries

**Table 4: Co-authorship of Countries**

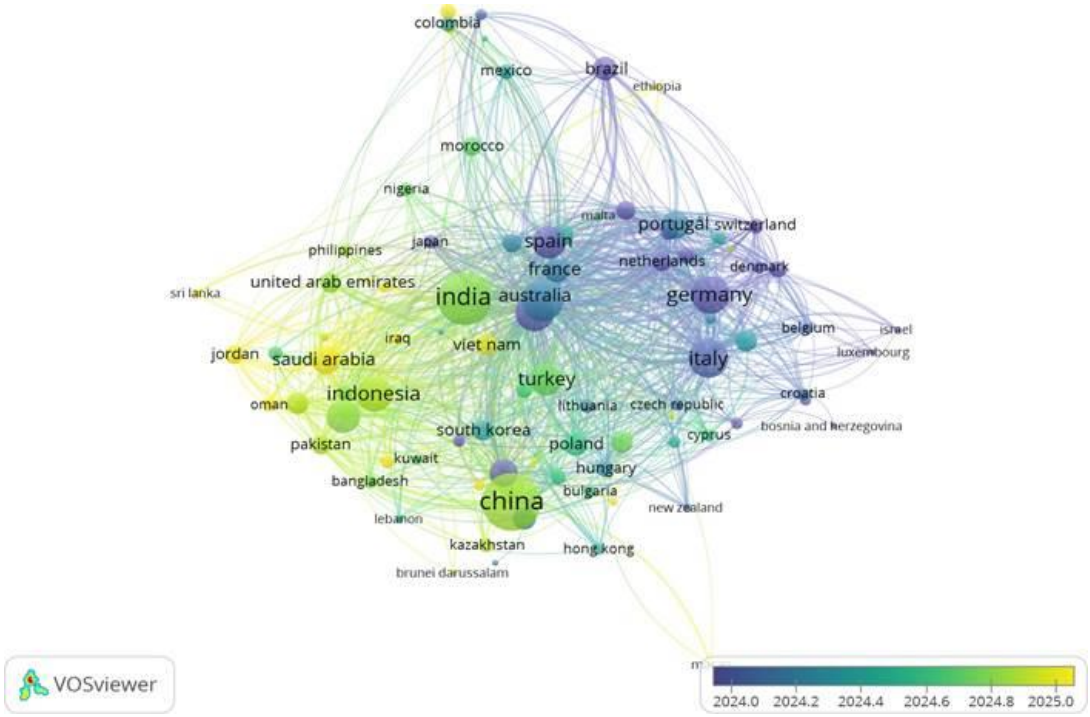
| Sl. No. | Country | Documents | Citations | Total Link Strength |
|---|---|---|---|---|
| 1 | United Kingdom | 596 | 11,486 | 928 |
| 2 | India | 1,042 | 10,277 | 720 |
| 3 | China | 1,242 | 17,089 | 685 |
| 4 | United States | 532 | 14,086 | 669 |
| 5 | Italy | 570 | 11,212 | 501 |
| 6 | Germany | 517 | 11,325 | 484 |
| 7 | Malaysia | 414 | 4,491 | 465 |
| 8 | Spain | 410 | 8,726 | 439 |
| 9 | France | 241 | 6,617 | 418 |
| 10 | Australia | 283 | 6,033 | 417 |
| 11 | Saudi Arabia | 326 | 4,267 | 389 |
| 12 | Turkey | 359 | 3,290 | 299 |
| 13 | Netherlands | 129 | 3,362 | 245 |
| 14 | Portugal | 290 | 3,386 | 244 |
| 15 | Greece | 176 | 2,716 | 225 |
| 16 | Sweden | 137 | 5,462 | 216 |
| 17 | Pakistan | 133 | 1,815 | 213 |
| 18 | United Arab Emirates | 163 | 2,333 | 212 |
| 19 | Canada | 145 | 2,860 | 208 |
| 20 | Indonesia | 450 | 1,602 | 206 |


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Network visualisation of co-authorship among countries. Source: Author (Scopus Database & VOS viewer Software




Overlay visualisation of the co-authorship of the countries. Source: Author (Scopus Database & VOS viewer Software).



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## CO-AUTHORSHIP OF THE COUNTRIES

Co-authorship refers to collaboration between two or more authors in publishing research. Analysing co-authorship networks using bibliometric techniques helps assess the level and patterns of collaboration in digital transformation and sustainability research. Table 4 shows country-level co-authorship based on Total Link Strength (TLS), which reflects the cumulative strength of a country's international collaborative ties. Higher TLS values indicate stronger international collaboration and greater connectivity within the global research network.

The United Kingdom records the highest TLS (928) despite producing 596 documents, highlighting its strong position in international collaboration. India ranks second in TLS (720), with 1,042 documents. China has the highest publication output (1,242) and citations (17,089), but its TLS (685) is lower than that of the United Kingdom and India. The United States has 532 documents, 14,086 citations, and a TLS of 669, demonstrating substantial scholarly influence.

These findings indicate that publication volume and citation impact do not necessarily correspond directly with international collaboration intensity.

Italy, Germany, Malaysia, Spain, France, and Australia also occupy important positions. Italy and Germany record TLS values of 501 and 484, respectively, while Spain, France, and Australia record TLS values of 439, 418, and 417, respectively. Malaysia is notable for its TLS of 465, indicating extensive collaboration despite lower publication output than China and India. Saudi Arabia also shows considerable connectivity, with 326 documents and a TLS of 389.

The network comprises several major collaboration clusters. A European cluster includes Germany, Italy, France, Spain, Portugal, the Netherlands, Belgium, Denmark, and Switzerland. China forms another major cluster, with strong links to South Korea, Poland, Hungary, Bulgaria, Kazakhstan, and Hong Kong. India occupies a central position in an Asian cluster that includes Indonesia, Pakistan, Bangladesh, the United Arab Emirates, Saudi Arabia, Malaysia, and Vietnam. A further cluster includes Latin American and African countries such as Brazil, Mexico, Colombia, Morocco, Nigeria, and Ethiopia, demonstrating the field's geographical expansion.

The United Kingdom and the United States serve as strategically important hubs, while countries such as India, China, Malaysia, Saudi Arabia, Indonesia, and the UAE demonstrate increasing connections between emerging and developed economies. These collaborations support the exchange of technological knowledge, policy experiences, and sustainability practices.

Figure 6 presents the overlay visualisation of country co-authorship, with colours representing the average publication year. Earlier contributions are generally shown toward the blue and green spectrum, while yellow indicates more recent activity. Established contributors such as Germany, Italy, the United Kingdom, France, and Spain maintain a sustained presence, whereas countries including Saudi Arabia, Jordan, Colombia, and Sri Lanka show more recent participation.

Overall, the co-authorship network demonstrates a highly interconnected and geographically diverse research ecosystem. China and India lead in publication output, while the United Kingdom demonstrates the strongest collaborative connectivity. The network also reveals growing participation from emerging


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economies, confirming that digital transformation and sustainability have become a globally collaborative research field.

## CONCLUSION

This bibliometric study provides a detailed picture of the changing dynamics between digital transformation and sustainability. Digital transformation has become a key term in the literature and is highly co-occurring with sustainability, suggesting a growing focus on technology as an enabler of sustained environmental, economic, and societal goals beyond efficiency and innovation.

This connection is echoed by the keyword co-occurrence analysis, which shows that digital transformation and sustainability are the most prominent and strongly connected concepts. The multidisciplinary nature of the field is illustrated by the use of artificial intelligence, Industry 4.0, digitalization, sustainable development, the circular economy, as well as innovation, while machine learning, blockchain, the Internet of Things, and big data reflect a trend toward technology-based sustainable development. These technologies can enable the following: Data-driven decision-making, Resource optimization, Operational efficiency, and transparency. It is worth emphasising that interest in digital technologies for resource efficiency, waste minimization and sustainable production and consumption is also underscored by the circular economy's importance.

In short, sustainability and digital transformation are now viewed as two sides of the same coin in advancing society and organizations, rather than being studied independently. Digital technologies improve organisational efficiency, creativity, and resilience, and sustainability strongly influences the course and implementation of digital transformation. Therefore, adopting new technology won't be the only way to advance in the future; a mix of cutting-edge technologies and sustainability-focused tactics will probably be required.

In practice, organizations, policymakers, and other stakeholders should actively implement AI, IoT, blockchain, and big data technologies in their digital strategies to improve resource management and sustainability outcomes, while considering economic performance, environmental responsibility, and social value. The bibliometric research is academically informative; it clarifies the domain's intellectual and thematic structure and lays the foundation for further research.

There is still time to explore the role of digital transformation in achieving sustainability across industries, regions, and organizations. Further research could also consider the measurable sustainability impacts of new technologies and facilitate a more in-depth examination of digital infrastructure, technological accessibility, organizational preparedness, and the environmental costs of digital technologies. This work can contribute to a more holistic and universal vision of how digital transformation can be strategically leveraged to advance sustainable development.


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