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# A Perspective on Digital Agility: An In-Depth Analysis with Bibliometrics and R Programming

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**A Perspective on Digital Agility: An In-Depth Analysis with Bibliometrics and R Programming**

**Abstract**

**Background.** With the acceleration of digital transformation, organizations must adopt agile structures. Digital agility has become a central theme in management, information systems, and organizational studies. Exploring its temporal development and research trends offers valuable insight for future studies.

**Aim.** This study aims to reveal research trends and developments in the field by examining the studies conducted in the field of digital agility between 1984 and 2025 using bibliometric methods.

**Method.** Using 1009 articles from the Scopus database, data were analyzed with Biblioshiny via the Bibliometrix R package. The analysis included word trend analysis, citation analysis, Latent Dirichlet Allocation (LDA), and thematic mapping.

**Findings.** Organizations in the USA and Europe contribute the most to digital agility. In the word analysis, *organizational agility*, *digital transformation*, and *innovation* are among the most striking concepts. Thematic mapping results reveal that academic interest in this field has increased with technological developments. As a result of LDA analysis, digital agility was classified under themes such as management-related issues, digital procurement processes, transformation and technology-oriented studies, information systems and decision-making processes, and organizational flexibility.

**Conclusion.** The LDA analyses revealed thematic trends not present in previous studies, thereby highlighting gaps in the field and potential areas for future research.

***Keywords:*** Digital agility, bibliometric analysis, R Biblioshiny program, Scopus database.

**Dijital Çevikliğe Bir Bakış: Bibliyometri ve R Programlama ile Derinlemesine Bir Analiz**

**Öz**

**Arka plan.** Dijital dönüşümün hızlanmasıyla birlikte, örgütlerin çevik yapıları benimsemesi gerekli olmuştur. Dijital çeviklik, yönetim, bilgi sistemleri ve örgütsel çalışmaların odak noktası hâline gelmiştir. Bu olgunun zamansal gelişimi ve araştırma eğilimlerinin incelenmesi, gelecek çalışmalar için bir referans sunmaktadır.

**Amaç.** Bu çalışma, 1984–2025 yılları arasında dijital çeviklik alanında yapılan çalışmaları bibliyometrik yöntemlerle inceleyerek, alandaki araştırma eğilimlerini ve gelişimi ortaya koymayı amaçlamaktadır.

**Yöntem.** Scopus veri tabanından alınan 1009 makale, R programlama dilindeki Bibliometrix paketinde yer alan Biblioshiny arayüzüyle analiz edilmiştir. Kelime eğilim analizi, atıf analizi, LDA (Latent Dirichlet Allocation) ve tematik haritalama yöntemleri birlikte kullanılmıştır.

**Bulgular.** Dijital çeviklik alanında en fazla katkıyı ABD ve Avrupa'daki kurumlar sağlamaktadır. Yapılan kelime analizinde *örgütsel çeviklik*, *dijital dönüşüm* ve *yenilik* en dikkat çeken kavramlar arasında yer almaktadır. Tematik haritalama sonuçları, teknolojik gelişmelerle birlikte bu alana olan akademik ilginin arttığını ortaya koymaktadır. LDA analizleri sonucunda dijital çeviklik, yönetimle ilişkili konular, dijital tedarik süreçleri, dönüşüm ve teknoloji odaklı çalışmalar, bilgi sistemleri ile karar verme süreçleri ve kurumsal esneklik gibi temalar çerçevesinde sınıflandırılmıştır.

**Sonuç.** LDA analizleri, önceki çalışmalarda yer almayan tematik eğilimleri belirleyerek alandaki boşlukları ve potansiyel araştırma alanlarını görünür kılmıştır.

***Anahtar Kelimeler:*** Dijital çeviklik, bibliyometrik analiz, R Biblioshiny program, Scopus veri tabanı.

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## 1. Introduction

The concept of digital agility is expressed as the capacity of organizations to adapt quickly and effectively to changing market conditions using digital technologies, optimize their operational processes and gain a competitive advantage (Warner & Wäger, 2019). In today's developing digital transformation processes, businesses need to adapt to digital agility in order to gain a competitive advantage. With the rapidly developing technology in the external world, people and organizations can have the ability to adapt to their environment quickly thanks to IoT, artificial intelligence and briefly SMACIT technologies (Riera & Iijima, 2017). At this point, people and institutions that adopt digital agility can produce fast and effective solutions to problems by processing rapidly generated data and obtaining meaningful outputs (Bughin et al., 2018).

Agile businesses are organizations that are future-oriented, open to innovations in their environment and have adopted a continuous learning methodology (Garvin et al., 2008). It offers advantages to organizations in many aspects, such as developing quick solutions, increasing customer satisfaction and maintaining lifetime customer value (Kumar & Reinartz, 2016). Because digital agility is a relatively new phenomenon in the literature, no detailed bibliometric analysis has been conducted on its development; existing studies have employed conventional methods. Based on this research gap in the literature, this study aims to provide insights into research trends and developments in digital agility, particularly for future studies. The purpose of this research is to analyze studies conducted in the field of digital agility between 1984 and 2025 using bibliometric methods to reveal research trends and developments in the field.

The phenomenon of digital agility has evolved within similar constructs such as strategic agility, digital transformation, and maturity. This interactive process, which influences each other, can sometimes compromise semantic clarity. Shaping strategic agility is closely linked to understanding customers. It is based on the idea that agility, as a requirement of learning and market orientation, requires specific organizational practices. Internal and external integration is necessary to ensure a cohesive and coordinated response to adapt to unpredictable changes in organizations (Braunscheidel & Suresh, 2009). As a result of this strategic renewal (Warner & Wäger, 2019) and integration, organizations can successfully achieve agility. Guo et al. (2025) aimed to reconcile these differing perspectives by dividing strategic agility into two dimensions: entrepreneurial agility and adaptive agility. They found that while strategic learning increases entrepreneurial agility, it has an inverted U-shaped effect on adaptive agility. The phenomenon of digital agility, which can be evaluated within the phenomenon of digital transformation as an umbrella concept, is seen to be discussed and modeled in the literature as the transformation of organizational trends (market and learning) into organizational practices and the emergence of agility (Braunscheidel & Suresh, 2009).

In businesses that adopt digital agility, a strong and positive communication structure emerges between employees and employers. This increases employee satisfaction and provides a healthier working environment with committed and responsible employers (Çallı & Çallı, 2021). Overcoming organizational inertia stands out as a critical element in reducing the obstacles and difficulties encountered in business processes. Thus, it is aimed for the processes to have a more dynamic, fluid, lean and human-focused structure. The points that should be used for this should be definability, fluidity, measurability, leanness, compatibility with human nature, flexibility, speed and repeatability (İleri & Soylu, 2010). Despite this importance, it is seen that a comprehensive

evaluation has not been made in the literature regarding the theoretical development of digital agility studies.

When the scientific studies on the subject are examined, it is observed that the majority of the studies are conducted using software tools such as VOSviewer and CiteSpace (Hameed et al., 2024; Stratone, 2023; Susitha et al., 2024). In this study, both Biblioshiny and LDA were used together, providing methodological richness. In addition, it was determined that the open-source Biblioshiny software integrated with the R programming language was not directly used in bibliometric studies in the field of digital agility, and this constitutes a limitation in the literature. The Bibliometrix library offers the opportunity to conduct in-depth analysis of data from a methodological perspective with the help of quantitative and visual data (Aria & Cuccurullo, 2017).

This study aims to reveal the development dynamics and research trends of the subject by analyzing the academic literature focusing on digital agility between 1984-2025 with bibliometric methods. In this bibliometric study, 1009 articles obtained from the Scopus database were examined and various analyses were conducted with the Biblioshiny program in the R programming language, such as H-index, most cited publications and authors, most active countries and institutions, and number of publications by year. The study findings revealed that especially US and European-based institutions are pioneers in the field of digital agility, terms such as *organizational agility*, *digital transformation* and *innovation* are prominent. The popularity of topics related to digital agility has increased with technological developments, and digital agility is gathered under five main themes with LDA modeling. The study seeks answers to the following research questions.

$RQ_1$. Which authors are cited the most among the studies conducted on digital agility between 1984-2025 from the Scopus database?

$RQ_2$. How has the digital agility literature changed over time and what are the prominent research focuses?

$RQ_3$. What are the studies with high h-index in the field of digital agility and the systematic impact values of these studies?

$RQ_4$. Which countries have contributed the most to the field of digital agility and in which region are they concentrated?

$RQ_5$. What are the trending topics in the field of digital agility? Which fields of study are on the rise and in decline?

The remainder of the study is organized into five sections. In the second section, the methodology section used in the study, the data generation process and analysis steps are discussed in detail. In the third section, the literature review is conducted in a controversial manner. In the fourth section, the findings obtained are explained in a way that will answer the research questions. In the fifth and last section, the theoretical contribution of the study is discussed and suggestions for future studies are presented.

## 2. Methodology

The data obtained in this study were analyzed using Bibliometrix, one of the libraries of the R software, and LDA (Latent Dirichlet Allocation), one of the Topic Modeling Approaches. The bibliometric analysis conducted within the scope of the study differs from the existing literature in

terms of the method used and the use of a different source. The research data includes 1009 articles obtained from the Scopus database. The academic studies conducted between 1984-2025 on the subject of *digital agility* in the Scopus database were analyzed using the Biblioshiny program in the Bibliometrix library in the R programming language.

The main reason for choosing the Bibliometrix library is to show that important systematic findings can be obtained in a short time with the no-code approach and because of the superiority of providing researchers with different tools in bibliometric work areas. Researchers can perform data loading, various analysis and visualization quickly and effectively. All figures were designed by the authors using R and Bibliometrix; no copyrighted visuals were used.

The intertopic distance map on the left, created using multidimensional scaling, represents the distances and distributions of themes. The alpha value can be adjusted between 0 and 1 using the relevance metric; this adjustment assesses the specificity of terms to a topic by balancing them with overall word frequencies. The percentages on the map represent the weight of each topic across all texts (Sievert & Shirley, 2014). Terms in Topic 1 were listed as the most significant and important terms and included phrases such as *data, digital, work, technology, innovation*.

Based on the LDA outputs, the topics were grouped, and these groups were determined to be five to ensure a balanced and meaningful reflection of thematic diversity. This number was determined based on commonly preferred practices in the bibliometric analysis literature and the interpretability of the resulting output. These topics, shown in Table 1, were analyzed after examining the LDA results. The most dominant keywords for each topic were analyzed, and the thematic headings of the topics were labeled based on the researchers' evaluation. At this stage, the evaluation was made by taking into account the semantic relationships of the terms with each other and their compatibility within the scope of digital agility.

In the study, many bibliometric techniques such as network analysis, collaboration relationships, h-index, country and region-based productivity were used to map the digital agility literature in order to reveal the current status of the digital agility phenomenon (Waltman, van Eck & Noyons, 2010). Within the scope of this study, a research flow was presented by taking into account the stages of systematic literature review. This study was prepared based on the SPAR-4 (Scientific Procedures and Rationales) SLR (Systematic Literature Review) flowchart developed by (Paul et al., 2021), expressed in the diagram in Figure 1. It reveals the methodological process steps for systematically analyzing scientific studies on digital agility.

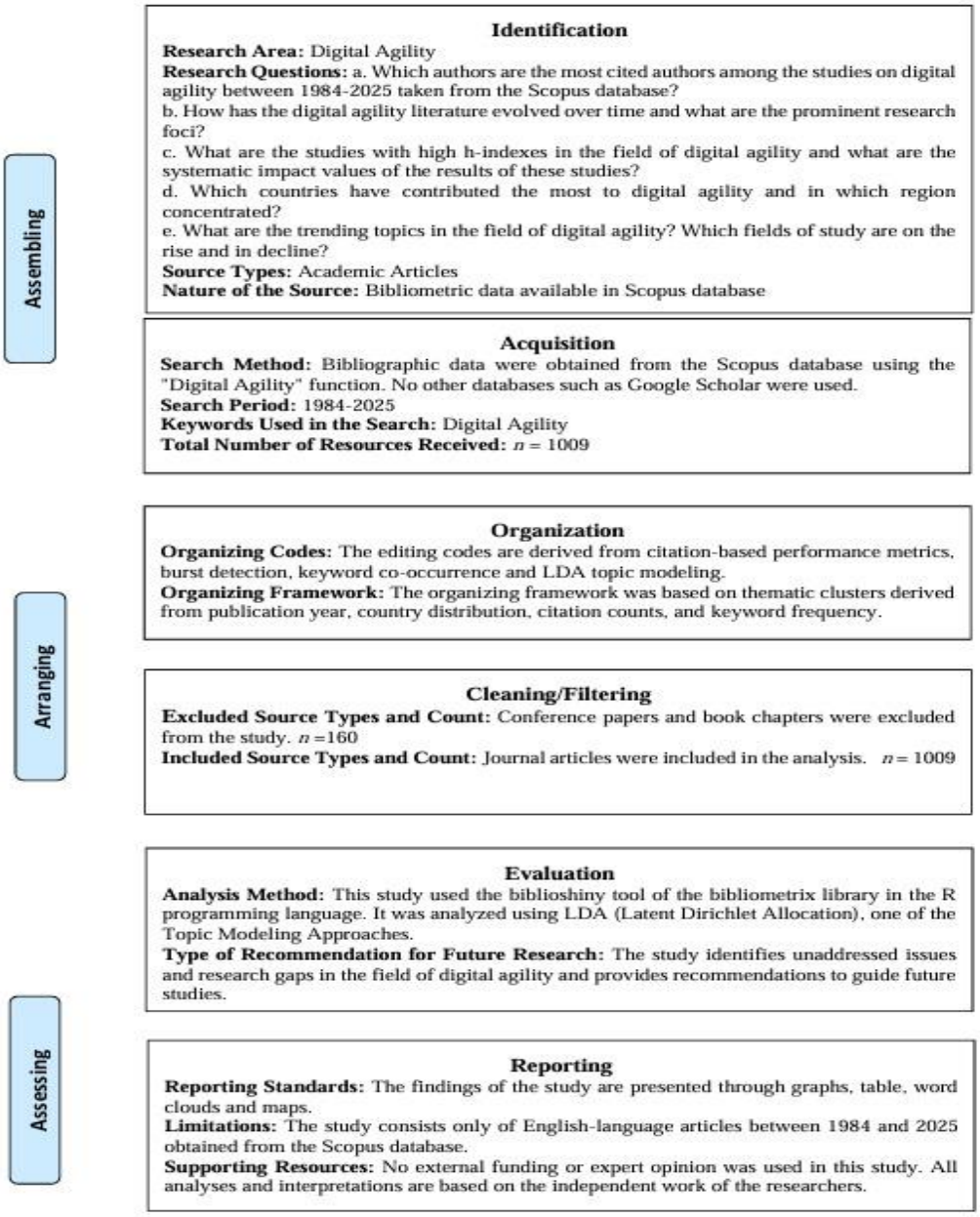
The diagram in Figure 1 depicts the research process divided into three primary stages. These are Assembling, Arranging and Assessing stages. The Assembling stage includes the organization of the knowledge that forms the basis of the study. Under the title of Identification, the research area of the study is stated as *Digital Agility* and academic articles published in the Scopus database between 1984 and 2025 are included in the review, conference proceedings and book chapters are not included.

In the Identification section, shown in Figure 1, research questions were specified regarding who the most cited authors are, trends in the literature, the impact of studies with high H-index, geographical contributions, and determining trending topics. In the Acquisition section, it was stated that the data was obtained only from the Scopus database, the time period, the keyword *Digital Agility* was used in the search process, and a total of 1009 sources were reached. In the examinations

conducted with Bibliometrix, publications with high impact in the field of digital agility were presented under the title of *Most Relevant Sources*. Within the scope of the H-index, the level of influence of researchers in the field is shown in the graph titled *Sources Local Impact by H Index*. In addition, the productivity of publications in publication platforms was evaluated thanks to the *Sources Production over Time* graph, and as a result, it was determined which journals were active and which were more in the background. The *Most Relevant Authors* graph, which analyzes the authors, identifies those who publish the most in the field of digital agility, thus identifying the names that will lead the work that researchers will do in this field. In addition, the *Authors Production over Time* graph presents the authors' annual contributions to the academy descriptively.

**Figure 1**

*General Framework of the Research*

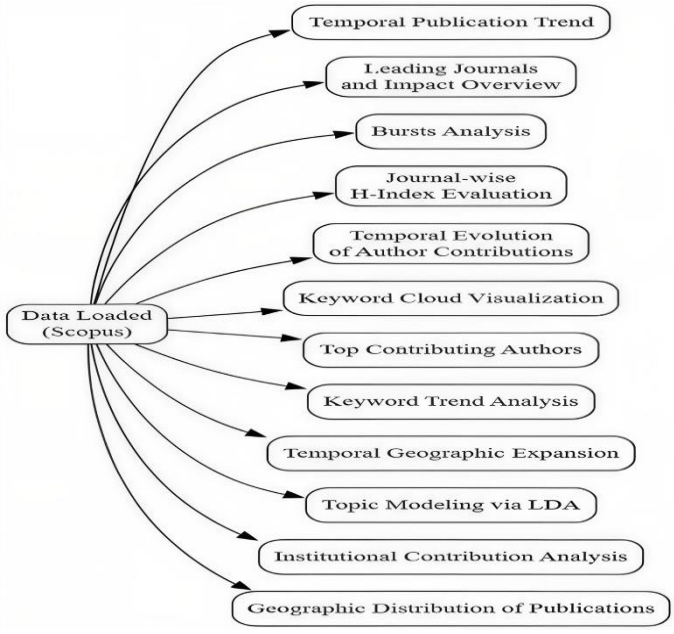



*Note.* Created by the authors, adapted from Paul et al. (2021)

When the concept of digital agility is examined in the context of institutions and organizations, the institutions with the most publications are listed with the *Most Relevant Affiliations* graph. In addition, the course of the publication numbers of these institutions over time is included in the *Affiliations Production over Time* graph. The Arranging section includes the processes of organizing and filtering the data. In the Organization section, an analysis organized by dividing into thematic clusters based on publication year, country distribution, citation counts and keyword frequencies is presented. This structure was created using bibliometric techniques (e.g. burst detection, co-occurrence, LDA topic modeling). In the Cleaning/Filtering section, conference proceedings and book chapters were excluded from the scope of the study and only articles published in refereed journals were included in the analysis. The last section, the Assessing stage, includes conducting analyses and presenting the results obtained. In the Evaluation section, the Biblioshiny tool, which works with the R programming language used in bibliometric analysis studies, was used. In addition, this study presents the gaps in the field of digital agility and suggestions for future research. In the reporting phase, it was stated that the findings were presented through graphs, tables, word clouds and maps, that the study was limited to English articles only and that it was conducted independently without any external financial support or expert opinion. Figure 2 presents the analysis methods used in this study.

**Figure 2**

*Analysis Method*




With this diagram, the studies on digital agility were comprehensively evaluated as part of a systematic process, and the exclusion and inclusion criteria were specified. Each section was detailed to ensure that the research process was supported and conducted with transparent and scientific foundations.

Multiple analysis tools were used in the study, and detailed information about these tools is discussed in the findings section. The tools used in the analysis were chosen to ensure that the data on digital agility obtained from the Scopus database were analyzed quickly, effectively, and regularly, and to provide researchers with a comprehensive reference in a short time regarding digital agility studies in the existing literature.

LDA (Latent Dirichlet Allocation), one of the topic modeling approaches used in the R programming language, text mining techniques (Blei, Ng & Jordan, 2003) and bibliometric analysis applications were preferred because they provide a flexible and powerful working environment. The Bibliometrix package was used because it easily analyzes and interprets complex data sets with descriptive methods. While topic modeling with LDA, R stands out as a powerful tool in processing text data and creating logical theme clusters (Grün & Hornik, 2011). At the same time, being open source, containing many different packages and being effective in terms of statistics, it allows researchers to have full control authority in data analysis processes. In addition, the quality outputs provided by packages such as ggplot allow the findings to be expressed in an understandable and interesting way (Wickham, 2016). For these reasons, R is the programming language frequently preferred in bibliometric and text mining studies (R Core Team, 2025).

This study, which examines the evolution of digital agility in the literature, also adopted the Topic Modeling approach (TMA) in terms of methodological diversity. Topic modeling approaches, including machine learning and statistical methods, have been developed to determine conceptual trends in texts (Blei, 2009). These methods offer effective tools in the field of natural language processing (NLP) in revealing latent themes in large text collections by analyzing not only at the word level but also at the level of deeper conceptual structures. The four basic topic modeling techniques widely used in the literature include LDA (Latent Dirichlet Allocation), LSA (Latent Semantic Analysis), NMF (Non-negative Matrix Factorization), and BERTopic (Egger & Yu, 2022). In this study, only the LDA (Latent Dirichlet Allocation) method was used, considering its prevalence in other bibliometric analyzes.

## 3. Literature

In recent years, businesses that want to gain a competitive advantage in the digitalized world with developing technology trends need to be agile in both their corporate applications and information infrastructures. In order to gain a competitive advantage with their corporate applications, businesses need to prioritize value creation (Amit & Han, 2017), developing dynamic managerial capabilities (Adner & Helfat, 2003), having organizational duality, and design and revise their strategies according to the conditions of the era (Antonizzi & Smuts, 2020). In addition, they need to prioritize corporate applications aimed at preventing digital resistance to change (Akarsu & Parmaksız, 2024). On the digital side of the phenomenon, they need to increase their digital platform capacities and have their employees adopt agility and lean applications. Agility has been addressed in different ways in the literature. Hameed et al. (2024) aimed to reveal the effect of management information systems on organizational agility with a bibliometric analysis. The study touched on how these two concepts affect each other and what role they play in the digital agility processes of companies. In another study, Atienza-Barba et al. (2024) examined the effects of artificial intelligence technologies on agility in detail. It was suggested that artificial intelligence technologies accelerate organizational decision-making processes, but there are various deficiencies in the applicability of these technologies.

The concept of agility is not only associated with technology, but also emphasized that it is related to behavioral units and structural change within the organization (Salmela et al., 2022). Grover (2022) states that companies that adapt to digital agility use four basic components of digital agility and thus classifies the factors that will affect the adoption of digital agility by companies. These

components are defined as modular design and packaged capabilities, development of a two-way digital culture, platform use and synchronicity with data. Duvivier and Gupta (2023) emphasized that in order for the concept of digital agility to be adopted and developed within the organization, digital technologies should be adopted in strategic goals and these technologies should be made compatible with the processes and included in autonomous processes.

In addition, Chouki et al. (2021) have addressed the integrated nature of design thinking and agility in digital production. This study examined how and in what ways design-oriented thinking and the concept of agility mutually affect each other. In another study, Vendraminelli et al. (2023) addressed the potential contributions of design-oriented thinking to digital transformation processes. The strategic importance of data virtualization for increasing digital agility was examined by (Earley, 2016). The study emphasized the importance of digital agility in preventing obstacles such as data security, management, and quality of data virtualization. This will help companies adapt to the changing and evolving data landscape by supporting digital agility processes. Ghezzi and Cavallo (2020) addressed agile business model innovation in the context of digital entrepreneurship and examined this process within the framework of lean startup approaches.

The study conducted by Ciampi et al. (2021) stated that the relationship between digital agility and digitalization affects each other bidirectionally. Here, attention is drawn to the complexity of the relationship and they emphasize that being agile in the technology adaptation processes of companies is critical to the success of the company. In his study titled Agile Transformation Management, Franklin (2021) presented a practical agile change management framework to increase success in the planning and implementation of change processes.

There are also bibliometric analyses on digital agility in the literature. However, it is observed that these studies are mostly addressed on specific topics, mostly on the axis of digital transformation and from a contextually limited perspective. Susitha et al. (2024) examined supply chain competitiveness through agility and digital technologies and addressed this issue with a bibliometric analysis method. Sahid et al. (2023) comprehensively examined the agility literature in the FinTech field and conducted a bibliometric analysis revealing the development and trends in this field. Tomomitsu and Moraes (2021) examined the relationship between information technologies and organizational agility from a historical perspective and revealed the evolution of scientific production in this field with a bibliometric analysis method. Ragazou et al. (2022) focused on the themes of strategic ambidexterity, agility and open innovation in SMEs in their study and analyzed the research trends around these concepts with a bibliometric approach. Gouda and Tiwari (2022) mapped the talent agility literature, analyzed the development trajectory in the field, and presented a suggested agenda for future research. Atienza-Barba et al. (2024) addressed the interaction between AI and organizational agility, assessed the scientific production in the field, and discussed future research trends.

De Diego and Almodóvar (2022) examined the research trends on strategic agility over the last 25 years with a bibliometric approach and comprehensively presented the conceptual development, prominent themes, and trends of the field. Sahoo and Chaubey (2024) examined the historical development of organizational agility research and analyzed the main conceptual transformations, methodological approaches, and prominent research foci in the literature from a retrospective perspective.

AlNuaimi et al. (2022) addressed the relational structure between leadership, agility, and digital strategy in the effective management of digital transformation, analyzing how these three elements complement each other and guide digital transformation processes. Troise et al. (2022) examined the critical role of agility for SMEs to successfully exist in the environment of volatility, uncertainty, complexity and ambiguity (VUCA) in the era of digital transformation, and revealed how agility functions as a strategic competence in such environments. Li et al. (2021) revealed that organizational awareness of digital transformation is a decisive prerequisite for the development of information processing competence and that this competence plays a fundamental role in achieving agility in the market.

It is seen that the literature mostly addresses the phenomenon of digital agility together with basic and related concepts such as digital leadership (Akarsu & Parmaksız, 2025), digital transformation (Burchardt & Maisch, 2019; Gong & Ribiere, 2025; Ly, 2024), and digital strategy (Rawashdeh et al., 2024). Previous studies in the literature generally used well-known tools such as VOSviewer and CiteSpace in the analysis phase, but to the best of the author's knowledge, no studies were found using the relatively new approach, Topic Model Approach, and R software for bibliometric analysis.

## 4. Findings

This section, which includes the study results, includes analyses performed using the Bibliometrix library in R Programming and LDA outputs. The graph in Figure 3 was created using the Bursts detection algorithm and shows the intensity on the subject under study within a certain period by determining the sudden increases that occur within a certain period (Kleinberg, 2003).

The graph shows the Bursts Detection between 1995-2025 depending on the normalized citation numbers. The significant increase in studies conducted in the field of digital agility, especially in 2020, has been associated with the Covid-19 pandemic. The pandemic process has affected many disciplines as well as the digital field and has increased the need for access to information (Else, 2020).

The graphic in Figure 4 shows the journals that stand out in the field of digital agility in descending order. Sustainability journal has included studies that examine the impact of environmental problems on sustainability within the scope of digital agility. In this context, the main reason why Sustainability journal comes to the fore is to show how digital technology studies are adopted more effectively and in line with strategic goals within the framework of sustainability goals.

The Technological Forecasting and Social Change journal is known to examine the impact of the concept of digital agility on the management of digital transformation with current technology, and to include articles on sustainability and digitalization (Martin, 1995). The IEEE Access journal highlights the impact of the concept of digital agility on technological studies and research in the field of engineering. The reason why this journal stands out may be that it has fast publication processes and open access, includes works on digital evolution, advanced data analytics and smart structures, and mostly publishes studies from engineering sciences. Figure 5 explains how the most published academic journals have developed over the years in terms of their publications on digital agility.

**Figure 3**

*Bursts Analysis*

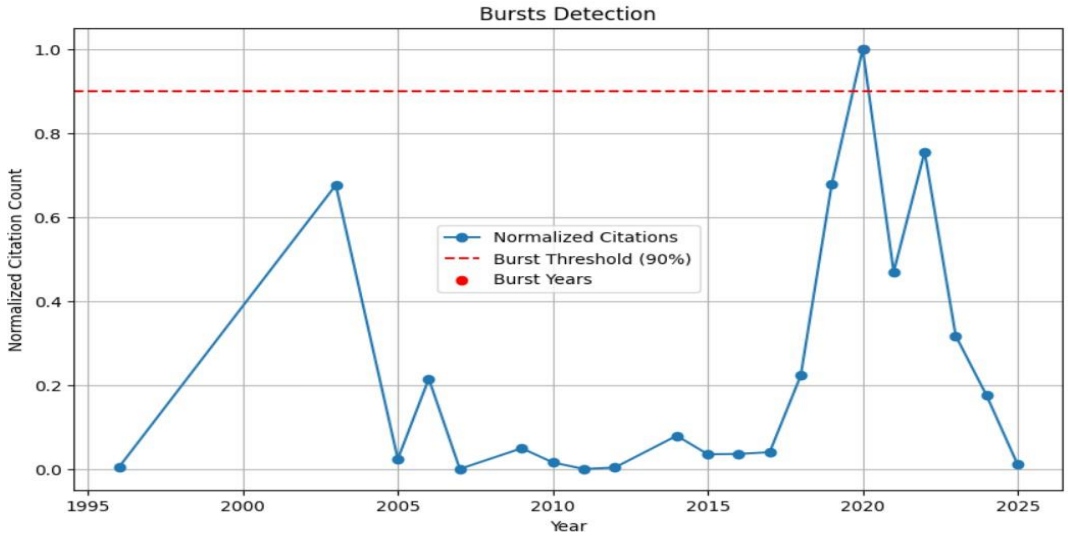
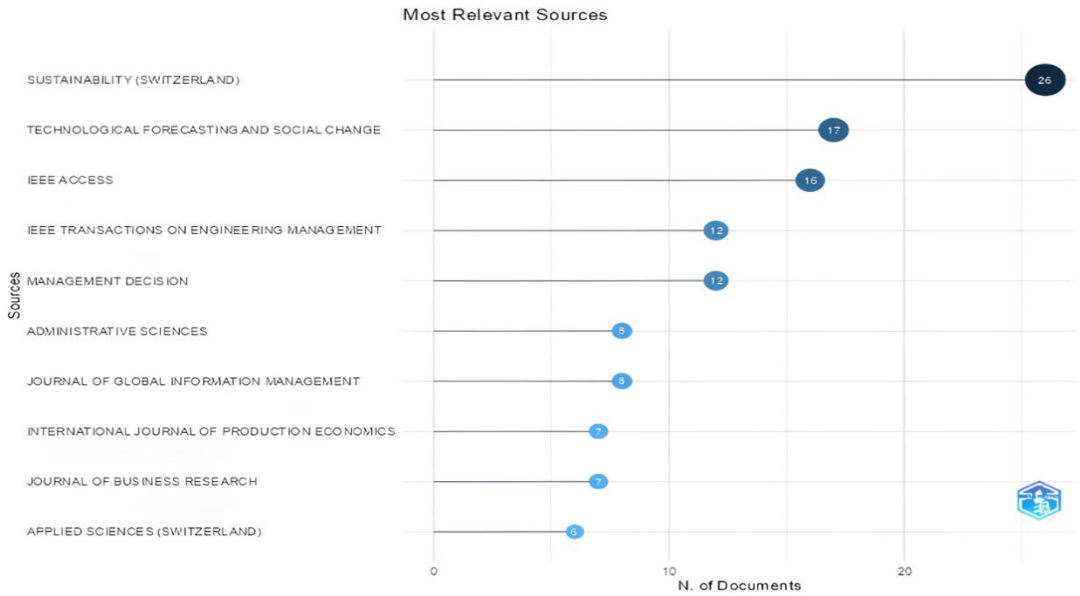



**Figure 4**

*Digital Agility Journals*




As a result of the analysis in Figure 6, the local impacts of researchers working in the field of digital agility are compared and presented according to the H-index values. The H-index is a method used to measure the productivity and impact of a researcher in the scientific field (Hirsch, 2005). The researchers with the highest impact degree are *Liy*, *Chen X*, *Kraus S*, *Kumar A*, *Lil*, *Mihardjo LWW*, and *Sasmoko*. These names have signed the most cited studies in the field.

**Figure 5**

*Temporal Coverage of Digital Agility Journals*

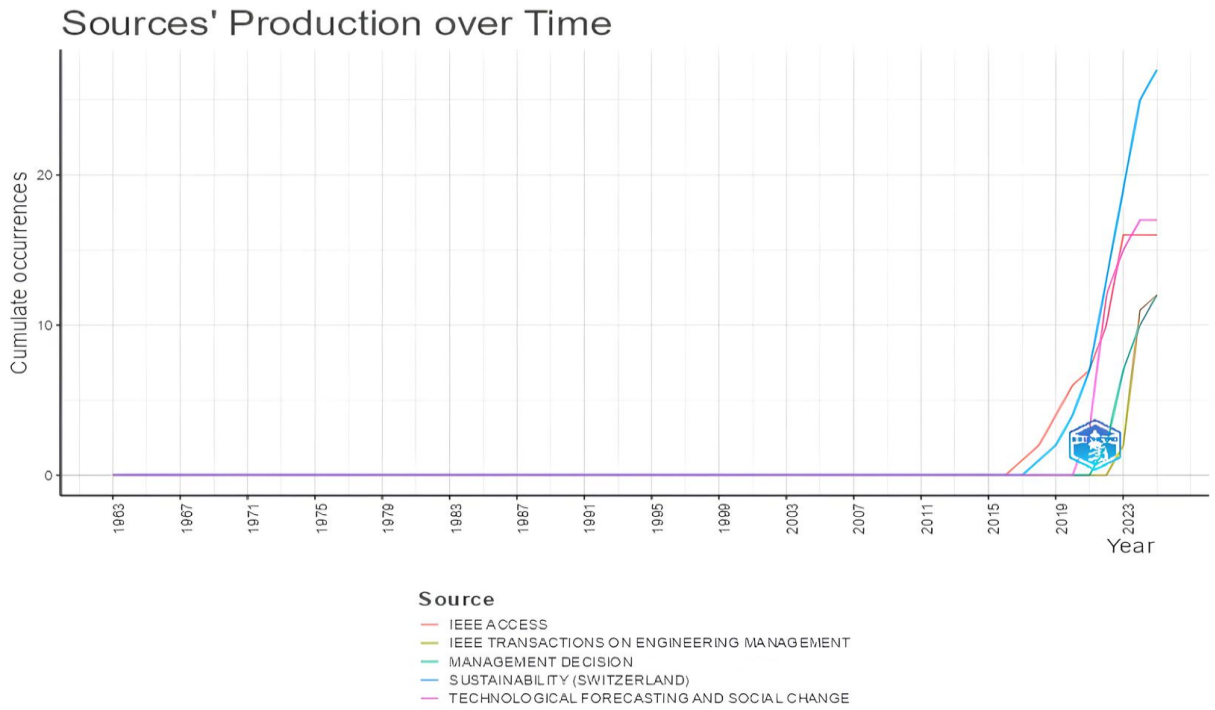



**Figure 6**

*H-Indexes*

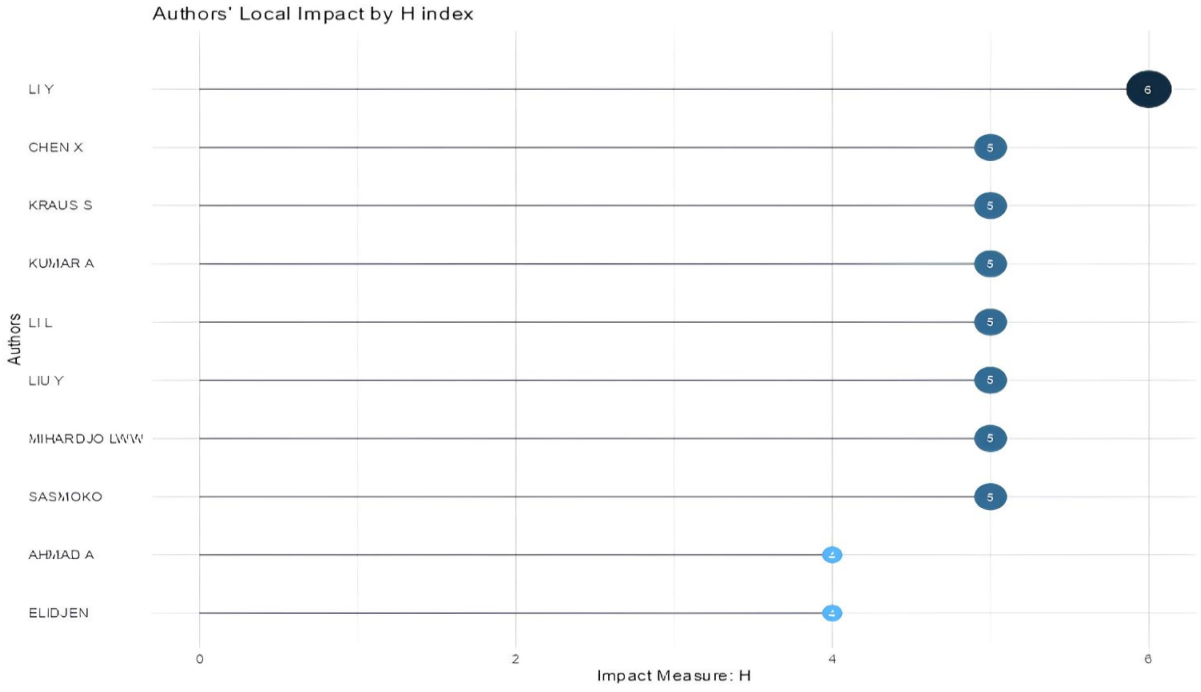
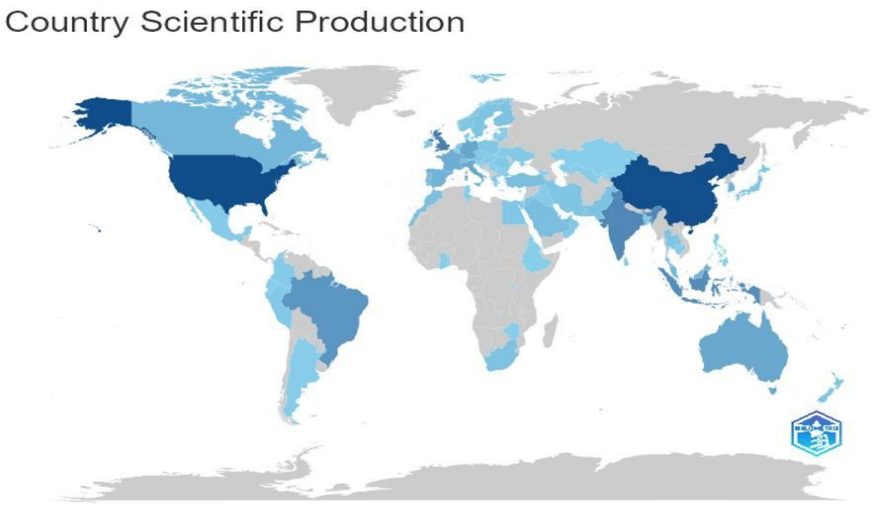


**Figure 7**

*Geographical Coverage*




When the map in Figure 7 is examined, the countries and regions where the most studies have been conducted in the field of digital agility are shown. Here, it is observed that countries such as North America, Western Europe and China have conducted more studies in the field of digital agility. This situation is also consistent with other research findings (Mongeon & Paul-Hus, 2016). In this direction, China's being at the forefront may have played a role in having a large database such as Scopus. At the same time, it has been determined that countries in the Asia-Pacific region have also recently conducted studies on this subject, which is consistent with research findings showing that the research capacity of the field of digital agility has expanded (Wagner & Leydesdorff, 2005).

When the trends of these countries over time are examined in Figure 8, countries such as China, India and the USA are seen. It is observed that China accelerated its work in the field of digital agility in 2010 and after. At the same time, we can say that Indonesia, one of the developing countries, increased its work after 2018. At this point, it can be said that the scope of digital agility is gradually expanding and gaining a global character.

Figure 9 shows the trending topics in studies on digital agility over the years and how often these topics are mentioned. For example, the fact that subtopics such as *agribusiness, Pakistan, literacy, supply chains, leadership, supply chain agility, digital transformation, decision making, Covid-19, agility* and *digital technologies* are represented with larger bubbles in recent years, especially in 2020 and after, indicates that these topics are frequently included in 1009 articles. In addition, the fact that the term *Covid-19* is prominently included in 2020 and after shows that the pandemic and its effects are considered as an important research area in the articles. It is thought that the reason why the term Pakistan is included in the trending topics may be due to the high research intensity on this subject in that country. The chart highlights the research areas that have attracted attention in articles, particularly in terms such as *digital transformation, Covid-19, agility,* and *digital technologies* as of 2010.

**Figure 8**

*Geographical Coverage Depending on Time*

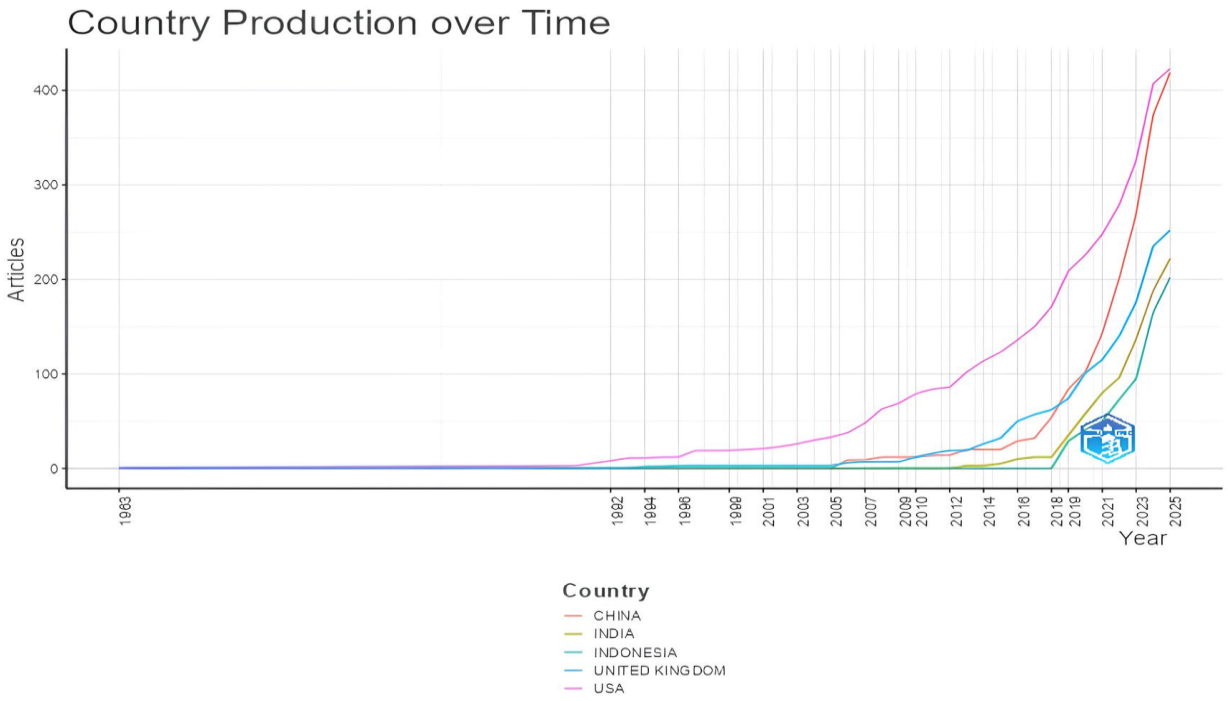
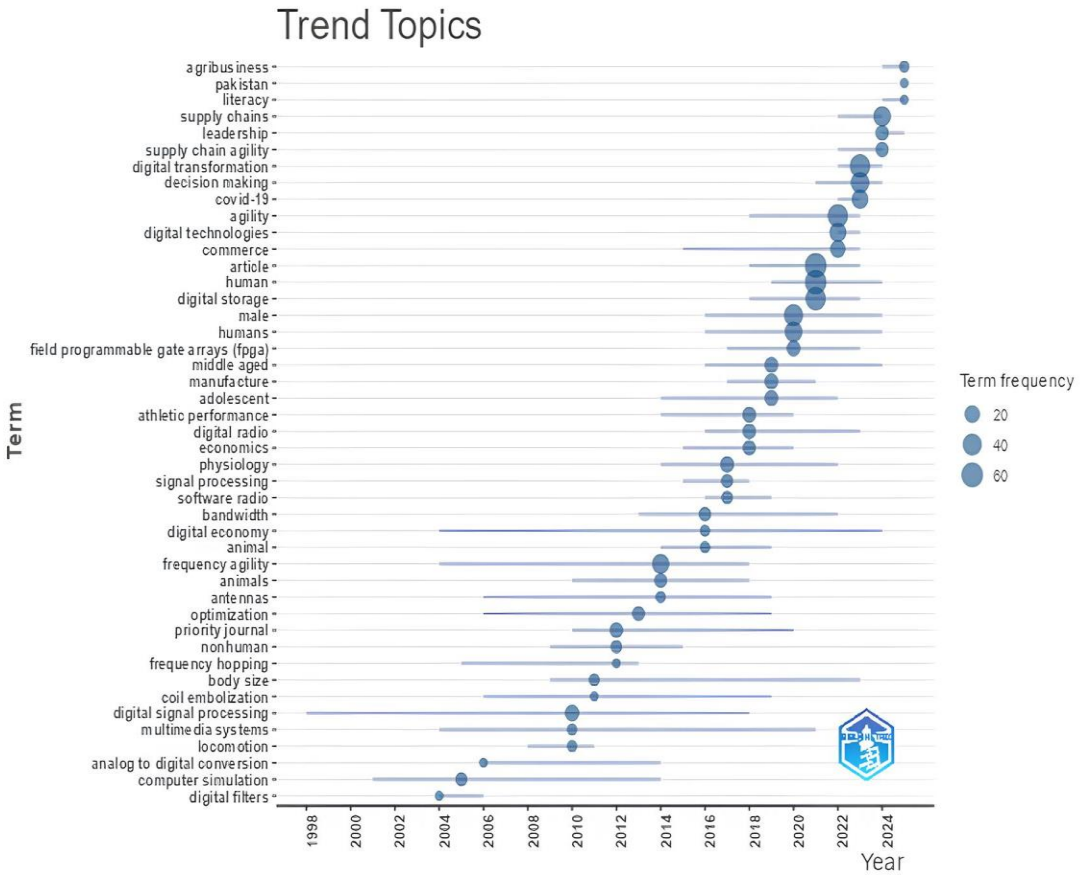



**Figure 9**

*Trend Topics Analysis*



The wide range of terms in the analysis is related to the fact that the articles included in the study have themes taken from different disciplines and research areas. This situation can contribute to potential remarkable interdisciplinary areas for future researchers. At the same time, the most frequently discussed important research areas in the articles (Heimerl et al., 2014) are presented as a word cloud in Figure 10 as they are addressed in their studies. The prominence of terms such as *digital transformation, human/humans, agility, decision making* and *digital technologies* shows that these terms are centrally positioned in the context of the articles included in the study and that the phenomenon is mostly addressed in the axis of digital transformation. Other terms represent subheadings of these main topics, related contexts or special research themes. Figure 10 presents the key research trends in a concise and accessible format.

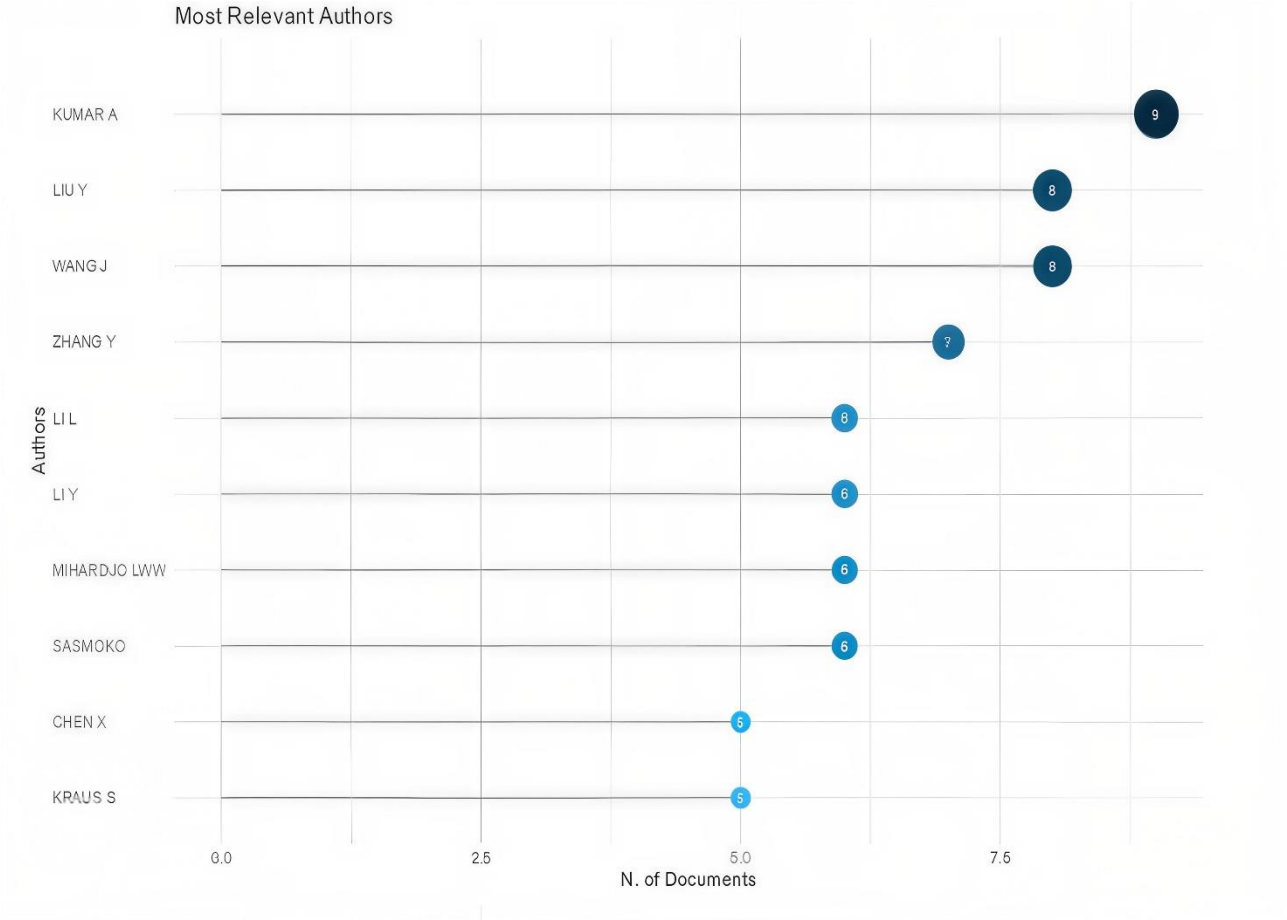
**Figure 10**

*Word Cloud*


The most influential authors in the field of digital agility are given in Figure 11. When the graph is examined, authors such as *Kumar, Luly, Wang J* and *Zhang Y* have conducted studies in this field, and the inclusion of Chinese authors in the list shows that there has been intense interest in the field of digital agility in recent years (Zupic & Čater, 2015) with support from the literature. Sohag et al. (2021) also supported the findings in their study, examining the impact of information digitalization on the agility of local institutions in ASEAN countries and providing evidence on the role of digitalization in institutional adaptation and flexibility processes. The inclusion of Western researchers such as Sascha Kraus in the graph shows the global impact of the topic of digital agility and the author's handling of digital-related phenomena (Mishra et al., 2016).

**Figure 11**

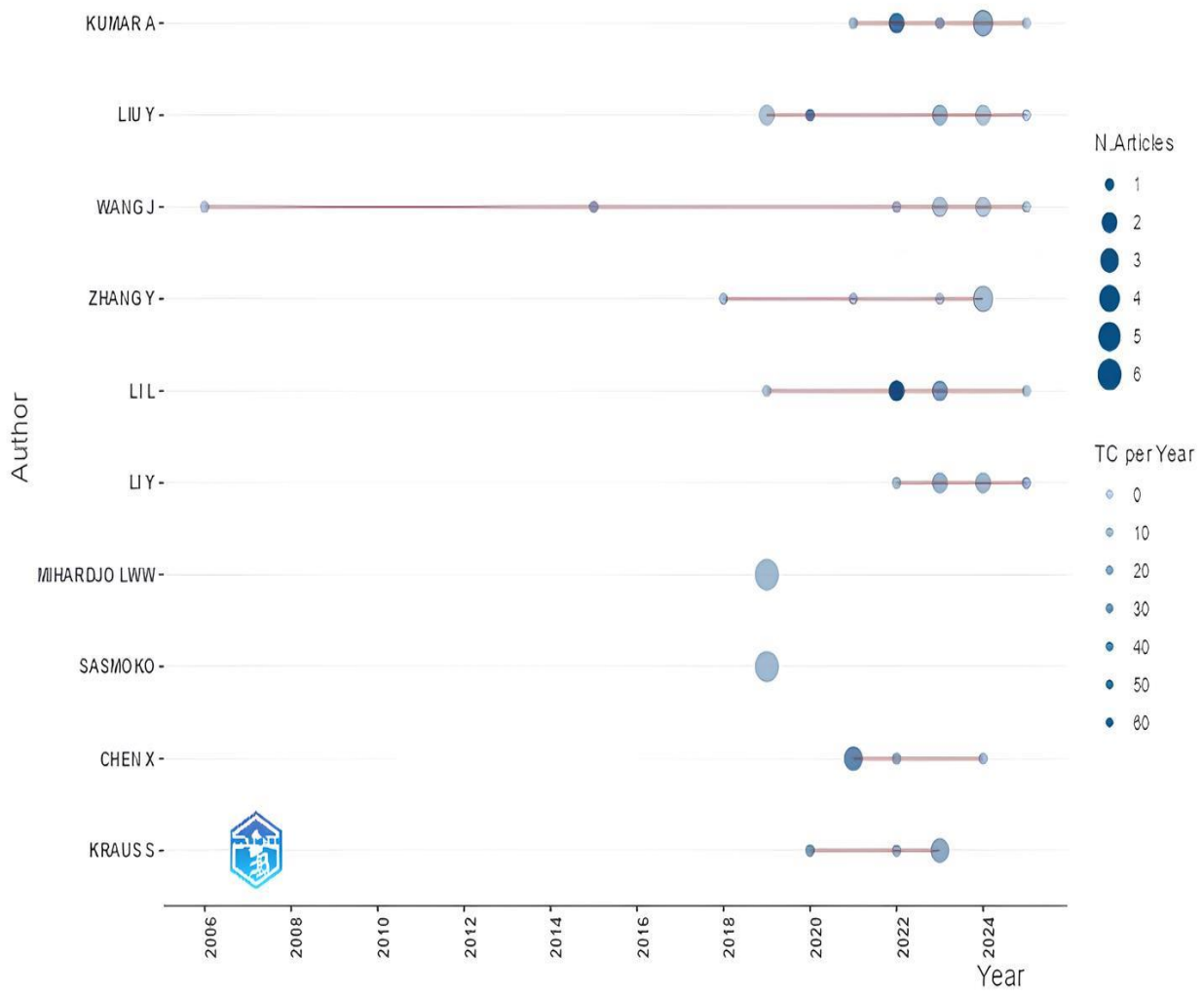
*The 10 Most Influential Researchers on Digital Agility*




In the graph in Figure 12, when the authors who have conducted academic studies in the field of digital agility are examined in time, we see that these studies have shown a significant increase. It is observed that the number of citations has increased after 2010. The periods in which this increase occurred are related to the period when the concept of digital agility was included in the academic literature and became the focus (Sambamurthy et al., 2003). The increase in studies in the field of digital agility as of 2010 has been significantly affected by the spread of smart mobile devices and technologies in particular. Smartphones, tablets and other mobile technologies have enabled businesses and individuals to act more quickly, flexibly and interactively in digital environments. The use of these technologies has increased the speed of access to information, digitalized business processes and accelerated digital transformation, thus highlighting the need for businesses to be agile. Digital infrastructure supported by mobile technologies has paved the way for the development of agile business models that can quickly adapt to changing market conditions and has increased interest in digital agility in the academic field (Sharma et al., 2024).

**Figure 12**

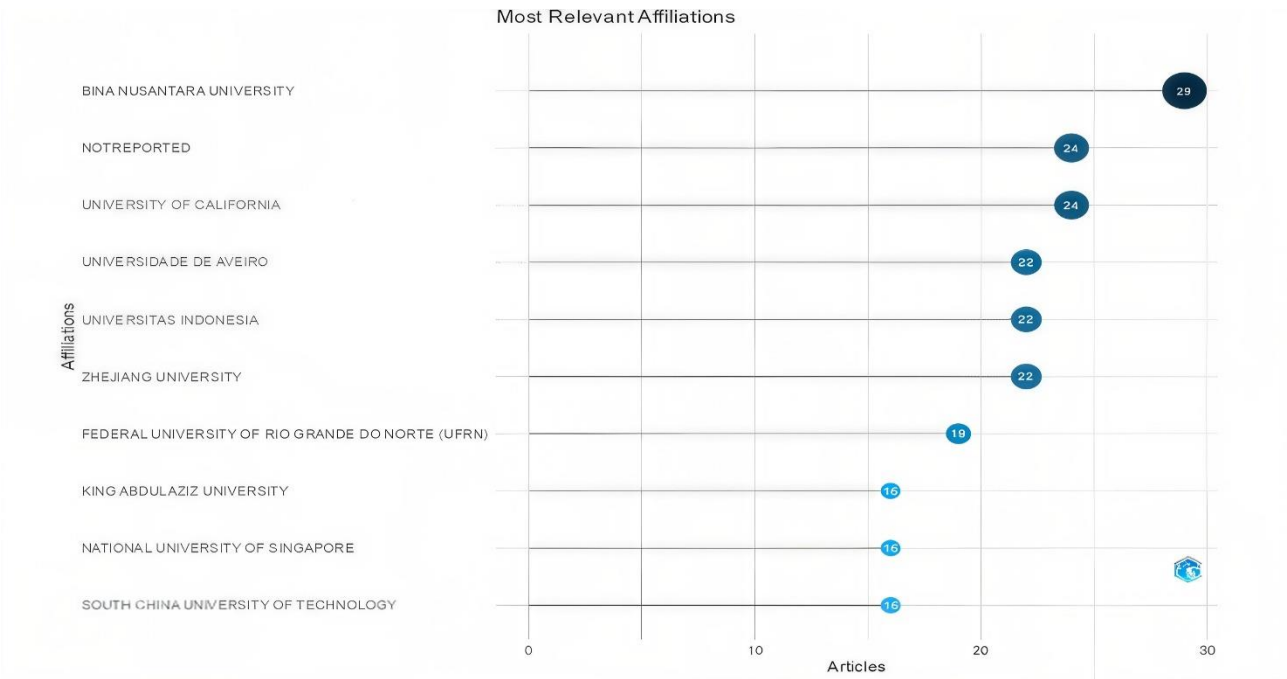
*Temporal Trend of Authors' Research*




When the graph in Figure 13 is examined, the top ten institutions that have contributed the most to the field of digital agility are listed. At the top of the list, Bina Nusantara University from Indonesia has contributed the most to the field of digital agility with 29 publications. The fact that the institutions in the graph are located in different continents shows the impact of the concept of digital agility on institutions globally. The institutions in the graph represent the first examples of the concept of digital agility in the literature and have played an important role in the acceleration of this concept and reaching a leading position in the field with the developing and transforming technology over time.

**Figure 13**

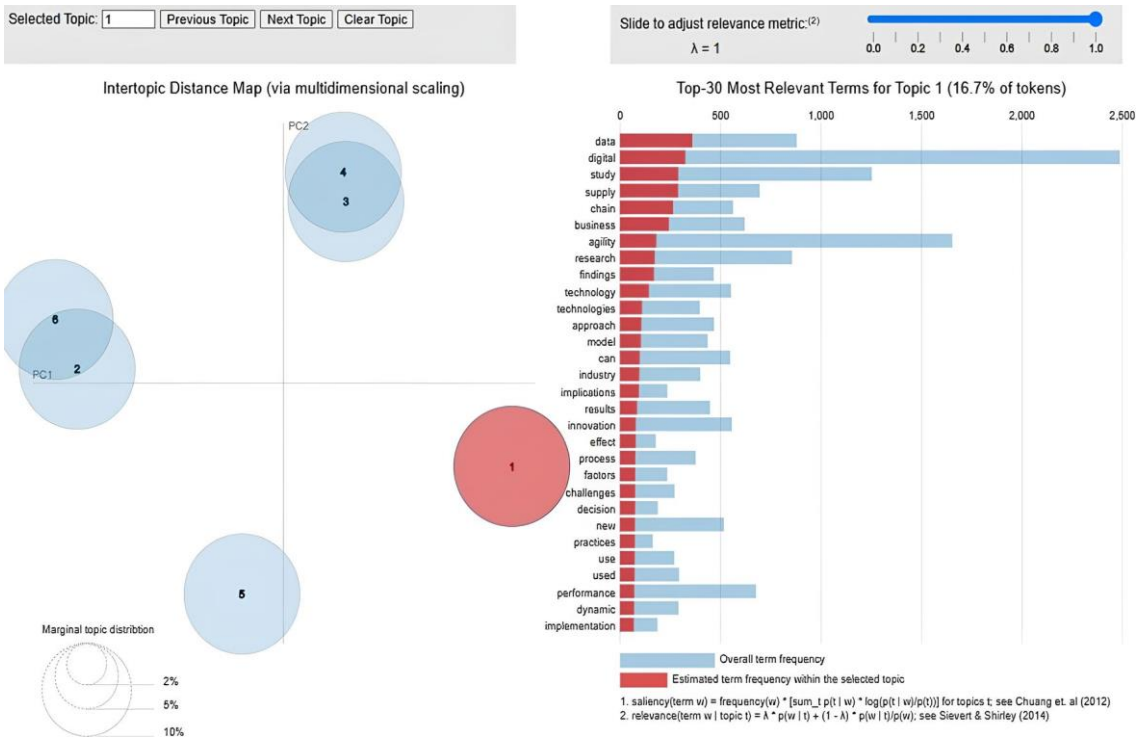
*Institution-Based Evaluation of Digital Agility Studies*




Finally, the topic clusters and subheadings created to make sense of the trends and subheadings in the scientific literature based on the summaries of the articles included in the research using LDA analysis via the R programming language are presented in Figure 14 (Griffiths & Steyvers, 2004).

**Figure 14**

*Topic Modeling with LDA*



The map created using multidimensional scaling with the intertopic distance map on the left side represents the distances and distribution of the themes to each other. The alpha value can be adjusted between 0 and 1 with the relevance metric adjuster, this adjustment evaluates the level of specificity of the terms to the topic by balancing them with the general word frequencies. The percentages on the map show the weight of each topic in all texts (Sievert & Shirley, 2014). The terms in Topic 1 are listed as the most decisive and important terms and include expressions such as *data, digital, study, technology, innovation*. As a result of the LDA outputs obtained, the topics were clustered and thematic headings were created. These headings shown in Table 1 revealed the scope of the digital agility topic in the literature and the tendencies of the researchers in the specified years.

**Table 1**

*Classification of Digital Agility Themes*

| Topic | Thematic Meaning |
|---|---|
| Agility, organizational agility, strategic agility, digital agility, dynamic capabilities, leadership, performance | Digital Agility and Management |
| Supply chain agility, supply chain management, supply chain resilience, resilience, covid-19, supply chains | Digital Supply Chain |
| Digital transformation, digitalization, digitization, digital technologies, industry 4.0, innovation | Digital Transformation and Technology |
| Decision making, information technology, artificial intelligence, data analytics, knowledge management | Information Systems and Decision |
| Resilience, dynamic capabilities, strategic agility, small and medium-sized enterprise, covid-19 | Institutional Resilience and Flexibility |

*Note.* Created by the authors

## 5. Discussion and Conclusions

In the light of this study, the findings obtained from the examinations conducted by finding answers to all research questions and the areas supported and differentiated in the existing literature were discussed controversially. The most fundamental contribution of this study to the field is that it reveals the development course of digital agility studies and reveals the prominent topics by differentiating from the studies handled in different contexts and with known methods. By providing the opportunity to look at the field of digital agility from a broad perspective, the general status of the current literature was determined and the literature was advanced by contributing to the understanding of this newly developing concept for researchers.

First, various analyzes were made with the R Programming Bibliometrix library used in the study and these were given within the conceptual flow in the study. Bursts Analysis revealed the journals in which important studies in the field of digital agility were published and the temporal trends of these journals. It reveals that the change in 2010 and 2020 occurred due to the worldwide use of SMACIT technologies and the COVID-19 pandemic, respectively. The study findings are consistent with the current literature findings (Ragazou et al., 2022; Sahoo & Chaubey, 2024). As a result of the burst analysis, it is shown on the graph that the concept of digital agility does not follow a stable increase or decrease but has a wavy structure. Here, the increases in the years 2000-2005 and 2020 show that digital agility was noticed in the literature, interest in agile change management increased (Franklin, 2021), and digital agility research continues to increase, especially including the artificial intelligence perspective (Atienza-Barba et al., 2024; Sahoo & Chaubey, 2024).

It is observed that these studies were published intensively in the Sustainability journal and that the journal included research in the field of digital agility in 2015 and after (Rawashdeh et al., 2024). These studies are concentrated in developed countries such as North America, Western Europe and China, but the fact that there are also studies in developing countries such as Indonesia (Yusuf et al., 2022) and India (Muduli & Choudhury, 2024) shows that the digital agility construct has gained academic interest globally. The fact that Pakistan is among the most frequently used word trends also supports the finding from the literature that the digital agility phenomenon has been studied intensively in Asian countries (Sohag et al., 2021).

When the concept of digital agility is examined on an institutional basis, the institution that has done the most work is Bina Nusantara University. The fact that this university is in Indonesia supports our research findings. The H-index, its positioning by country and region, how this positioning changes over time, the frequency analysis of the most used trend words in digital agility and their representation in the cloud structure, which authors contributed to digital agility and how their impact levels developed over time, which institutions and organizations focused on the newly developing concept of digital agility in their studies, are compatible with the general findings of the literature due to being a bibliometric study (de Diego and Almodóvar, 2022; Gouda & Tiwari, 2022; Sahid et al., 2023).

Strong dynamic managerial capabilities (Ellström et al., 2021; Harris & Helfat, 2013; Helfat & Martin, 2015) significantly enhance both strategic agility and digital readiness. Next-generation capabilities, particularly digital leadership (Akarsu & Parmaksız, 2025; Faiz et al., 2024), are prominent in the literature as accelerators of strategic agility and digital readiness (Alnuaimi et al., 2022). The digital supply chain, a relatively emerging phenomenon among the study's findings, is only just emerging in the literature. Digital agility refers to the capacity of businesses to adapt to rapidly changing socio-technical and environmental conditions and act proactively (Fayoumi & Loucopoulos, 2016), while digital supply chain innovation and collaboration are considered both an enabler and a consequence of this agility (Nishat Faisal et al., 2006).

Within the framework of the Resource-Based View (RBV) and Dynamic Capabilities Theory, supply chain capabilities developed through digital agility provide businesses with flexible, agile, and adaptive systems that deliver strategic value (Wang & Zhang, 2025). Accordingly, modeling approaches and methodologies used for redesigning digital supply chains not only enable data analysis, information flow, and operational awareness, but also enable these systems to respond quickly to environmental and societal developments (Tsolakis et al., 2023). Consequently, digital agility stands out not only as a competitive advantage but also as a critical capability that strengthens organizational resilience and business continuity in uncertain environments. The study findings reflect a general trend in the literature in this regard.

However, the findings of subject clustering under subheadings with LDA are at the forefront of the research's contributions to the field. This study has revealed thematic trends that were not found in previous studies by examining the studies on digital agility with the LDA model. In this context, the findings of the study shed light on the areas and themes that the field focuses on. The discovery of areas that are less studied on digital agility in scientific studies and also draw attention to the framework of current trends within this subject provide a general overview of new research areas. The managerial and theoretical expansions of the research findings are discussed with reference to

the findings.

### 5.1. Theoretical Contributions

This study provides important theoretical contributions to the digital agility literature in terms of both content and methodology. The subject of digital agility, which is mainly addressed through survey-based research and theoretical frameworks in the literature, has been examined in this study with numerical and systematic methods such as bibliometric analysis and LDA topic modeling. In this respect, it not only describes the trends in the literature but also reveals the development dynamics of digital agility through thematic clusters. In particular, the themes identified with LDA, such as *digital supply chain*, *institutional resilience*, *decision systems* and *technology-driven transformation*, have enabled the systematic classification of the topics covered in a scattered manner in the literature. This has contributed both to the understanding of the concept of digital agility in a broader context and to the determination of themes that can be focused on in future studies. In addition, the rise of SMACIT technologies, the effects of COVID-19 and the impact of historical and regional contexts on the literature through geographical distributions (e.g. the increase in Asian countries) have been supported with concrete data. Thus, the study provides an in-depth theoretical framework for the evolutionary course of the literature by conducting conceptual mapping and trend analysis in the field of digital agility.

### 5.2. Managerial Contributions

The findings of the study also provide important insights in terms of managerial practices. It has been shown that digital agility is not limited to technological adaptation, but also includes human and process dimensions such as workforce agility, readiness for change, and organizational resilience. It has been observed that, especially in institutions that have adopted digital agility, a positive and productive communication structure is formed between employees and employers, and this provides flexibility and efficiency in business processes. In addition, the study results provide concrete evidence for decision makers on how digital agility can serve as a tool for strategic goals such as gaining competitive advantage, simplifying processes, and rapid adaptation. The sub-discussions determined with LDA can serve as a roadmap for managers on which themes should be highlighted in their organizational structures. For example, headings such as *information systems and decision* or *institutional resilience and flexibility* can provide managerial guidance to academics and strategists on which areas should be prioritized in strategic planning. In addition, the finding that digital agility practices strengthen institutional capacity and act as a balancing element in global competition, especially for businesses operating in developing countries, should be taken into account in managerial policy development.

### 5.3. Limitations of the Study and Recommendations for Future Studies

As with every academic study, this study has some limitations. The most fundamental limitation can be considered as the exclusion of Web of Science (WoS) articles in particular. The reason for excluding Web of Science and other databases from the scope is that a single database is preferred in order to ensure data integrity and simplify the analysis process. This approach should be understandable in terms of providing in-depth meanings in a holistic manner by working on a specific database. In future studies, databases in the field of digital agility can be expanded even further, researchers can create more comprehensive analyses using WoS and other data sets and present examinations from a broad perspective. The study's limitations and recommendations for

future studies are grouped under three structured categories to enhance clarity and academic utility. These subheadings are thematic expansions, methodological directions and contextual applications.

Thematic expansions of the concept can enrich the theoretical and practical implications of future research. Researchers can combine the concepts of digital twin and digital agility to focus on providing real-time data flow in the business world and optimization and efficiency in business processes with agile methods. In this direction, studies can be conducted on integrating digital agility with digital twin and examining their use and creating proactive models. Conceptual synergies may also be explored in future research. In addition, considering the concepts of digitalization and digital agility together will play an important role in gaining speed and flexibility in business processes, as well as in gaining competitive advantage for businesses that have adopted these concepts. In this context, using digital agility and digitalization together can be beneficial in establishing strategic goals and accelerating the digitalization process of businesses. In particular, the findings of the study on subject clustering under subheadings with LDA can be guiding for future studies.

In terms of methodology, future studies can address the limitations of the current research design by adopting diverse analytical approaches. Only bibliometric and numerical analysis methods were used in this study. However, for deeper insights into how the concept of digital agility is understood, implemented and experienced at an organizational level, qualitative approaches such as case studies, in-depth interviews or the Delphi technique can be used. With these methods, the perceptions and experiences of managers, employees or policy makers regarding the concept of digital agility can be revealed more concretely. Additionally, the inclusion of advanced analytical tools can enhance the depth of bibliometric studies. In addition; analysis tools such as PyBibx, Gephi and NetworkX, as well as bibliometric and network analyses, can be included in new studies. Collaborations and literature trends in the field of digital agility can be presented clearly. Finally, emerging AI-driven NLP techniques can be utilized to follow rapid developments in the field. In the field of artificial intelligence, where the literature evolves very quickly, automatic classification, summarization and trend estimation approaches supported by large language models such as BERT and GPT can be used instead of classical scanning methods. In this way, the research field can be followed more efficiently and up-to-date. The study findings can guide researchers for subsequent studies.

Future research can also benefit from expanding the contextual scope of digital agility studies. In future studies, postgraduate theses written on digital agility can be examined through ProQuest and national thesis databases, and the differences in method and content between theses and articles can be compared. Similar studies can help identify gaps in the existing literature and look at the field from a holistic perspective. Expanding sectoral and disciplinary comparisons can provide valuable insights.

Future studies can focus on the representation of digital agility in different sectors such as health, education, finance, manufacturing or public. Similarly, the content and methodological differences of digital agility studies in different disciplines such as business, engineering, information systems and public administration can be revealed through comparative analyses. This study was limited to academic articles. However, gray literature sources such as government reports, policy documents, and sector reports published by consulting companies can also provide important information in the context of digital agility. Integrating such documents into bibliometric analyses will make the practical aspect of the literature more visible.

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