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Qualitative Analysis of Teleworking Research – an International Overview

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Abstract

Because the year 2020 has brought upon the whole world unprecedented changes to the global economy and especially to the world of work, analyzing the subject of teleworking will bring more value to the field. Therefore, this paper aims to analyze the general panorama of teleworking research worldwide by analyzing articles and papers published in trustful publishers such as the Web of Knowledge database and statistical data published by international agencies. We will identify the poles for teleworking research, such as countries, authors, and institutions and correlate them through descriptive statistics. We conclude that before the COVID-19 pandemic, teleworking could have been more well-analyzed because only a tiny fraction of the workforce was occasionally working from home. From March 2020, as the infections swept the globe, many countries instructed employers to close their operations, and therefore a new era began. The study uses a wide range of bibliometric indicators provided by WOS, which analyzes the main articles, authors, and institutions. Also, we used the VOS Viewer software to map the main trends in the research field.

Keywords: teleworking, qualitative research, bibliometric research, Web of Knowledge, VOS Viewer

JEL Classification: C25, J60, J50

Introduction

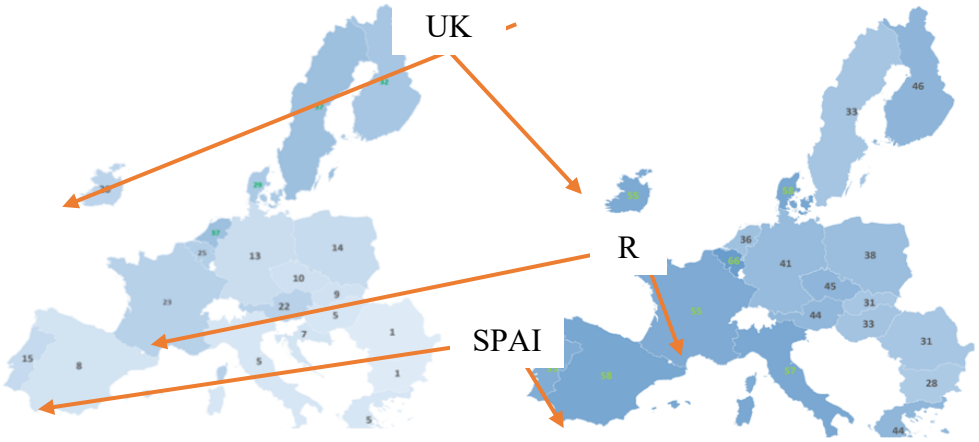
Information and communication technologies have made an extraordinary claim on work, especially organizational structure. We now talk about *"virtual enterprises"*, *"borderless economy,"* or even the end of geography, but the future is still unknown, and the present is shaping too fast.

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The fact that ICT will dematerialize many human activities is accepted, but measuring the added value from this type of knowledge rather than the traditional physical product will be an issue. Telework is a well-known concept, the leading promoters being the USA and China, while in Europe, the Nordic countries and the UK have developed and used the concept more often. It was more difficult for Romania because it was only recognized in April 2018, when dedicated regulations were issued (Dima et al., 2019). Remote work was put into practice because of the real needs of private companies and their employees, but limited academic research has focused more on work-related legal issues (Demcenko, 2019). The vast majority of studies still need to be more consistent in measuring the effects of telework on employees or employers (Vega, 2015; Morganson, 2010). The European Union has registered many workers from home after the pandemic of Covid 19. Still, this field's research differs from the countries embracing this new working style. It is essential to highlight that since March 2020, telework has reached a tipping point. More and more companies, even public institutions, have introduced this working arrangement to keep their employees safe while ensuring the continued provision of critical services. However, given the extensive legislation and organizational differences between countries/companies regarding telework, the transition to telework has been more difficult for some than others. Many businesses, lacking the proper ICT infrastructures have yet to reorganize their business immediately. In several EU countries, over half of the employees working through telework have yet to gain experience. This has important implications for employment, business productivity, and workers' well-being, at least in the short and medium term.

Figure 1.

Teleworking before the pandemic vs. teleworking during the pandemic in Europe



(Source: www.ilo.org/Remote work and the right to disconnect in Europe, January 2021)

The theoretical framework of Teleworking

In the specialty literature, some authors (Wojcak et al., 2016) showed that new ways of organizing leadership work activities have emerged, while others (Onken-Menke et al., 2018) showed that telework could increase attractiveness. The impact of telework on the environment or the economic environment has been studied by several authors (Nilles, 1991; Vega et al., 2015). Particular interest has been paid to the relationship between telework and

the environment by analyzing the impact of traffic jams and pollution from cars used in commuting (Jaff & Hamsa, 2018).

Since the early 1980s, once the telework concept was used (Joice, 2000), a controversy over terminology has been continuous. Terms such as teleworking, telecommuting, or flexible place have been confusingly used on a large scale. There needed to be a better understanding regarding (1) what these terms mean and (2) the differences between these concepts. In 2000, Joice asserted that telework is *"a working arrangement in which an employee regularly works at an alternative place, such as the employee's house, a telework center (Telecenter), or another place"* (Joice, 2000).

Research in telework has been underdeveloped, as the European Union's reports state. Still, the developed countries of the European Union have implemented this way of organizing work in advance, creating a model for the underdeveloped (European Commission, 2020). However, behind this concept are many problems, both conceptual and legislative. Some authors (Dima, et al., 2019) affirm that remote work will be much more accepted and used in the coming years. In this context, we wonder if there is enough research to lead and identify any advantages and disadvantages of teleworking.

We used bibliometric analysis to identify the poles in teleworking research. As Radu et al., 2021 affirm, bibliometrics indicators analyze the patterns in the publication and communication of documents. Therefore, this analysis allows us to assess scientific publications' impact or influence on quality or performance using a bibliometric indicator (Moed, 2009). The chosen indicators will enable us to analyze types of publications, quotes, and sources of information, including articles, journals, authors, institutions, and countries, using a Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statements line of investigation and the WOS database. We used VOS viewer software to map the results and analyze the research structure (Van Eck, 2013, 2014).

Research Methodology

Bibliometric research quantitatively analyzes published literature, usually based on citation analysis. It involves using statistical methods to measure and evaluate the quantity and quality of scientific output, the impact of researchers, and the characteristics of scientific collaboration. The analysis is typically based on data gathered from bibliographic databases, such as Web of Science, Scopus, or Google Scholar. Bibliometric research can be used to answer a variety of research questions, such as:

- Which journals or authors have the highest publications or citations in a particular field?
- What are the trends in research topics, and how have they evolved?
- Which country is the pole of teleworking research, and find the reasons why?
- What are the characteristics of highly cited papers or researchers?
- How does research output vary across different countries or institutions?

Bibliometric analysis can provide insights into the research landscape and can be used to evaluate the performance of individuals, institutions, or countries. However, it should be noted that bibliometric indicators are not without limitations and should be used with caution, as they can be influenced by factors such as self-citation, citation practices, and variations in citation patterns across fields (Mukherjee, 2022).

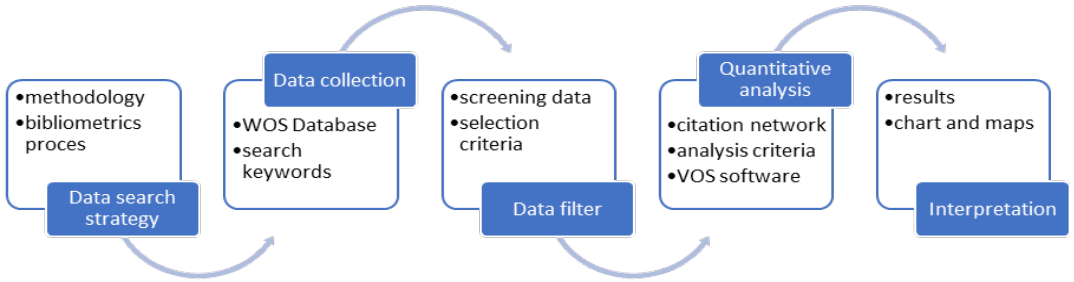
To conduct the research, we used the PRISMA method developed on five levels

(Moher et al., 2015)(Radu et al., 2021): 1) data search strategy, (2) data collection, (3) data examination and data filtering, (4) quantitative analysis and (5) interpretation. The importance of bibliometric research is given by the metrics based on graphical representations and statistical tables used to present the current state and development potential for future research. For data collection, filtering models were applied to present the works, authors, organizations, countries, and journals in the field. The main elements comprising the network of citations and co-appearances were analyzed.

The investigation method for conducting the research follows the PRISMA Statements methodology structured in five steps: 1) data search strategy, (2) data collection, (3) data screening and data filtering, (4) quantitative analysis, and (5) interpretation (fig. 1)

Figure 2

Flow diagram of database search using PRISMA



(Source: Radu et. al, 2021)

Bibliometric research includes a set of measurements based on graphical representations and statistical tables that present the current state and development potential for future research. For data collection, filtering models were applied to present the works, authors, organizations, countries, and journals in the field. The main elements that form the network of citations and co-appearances were analyzed.

To begin with, we explain why we chose to conduct this research only inside the WoS database. Web of Science covers over 12,000 high-impact journals, including some of the world's most prestigious scientific and technical publications. It also includes coverage of open-access journals, books, conference proceedings, and content from patent databases and other sources. The database is updated regularly, with new articles added daily.

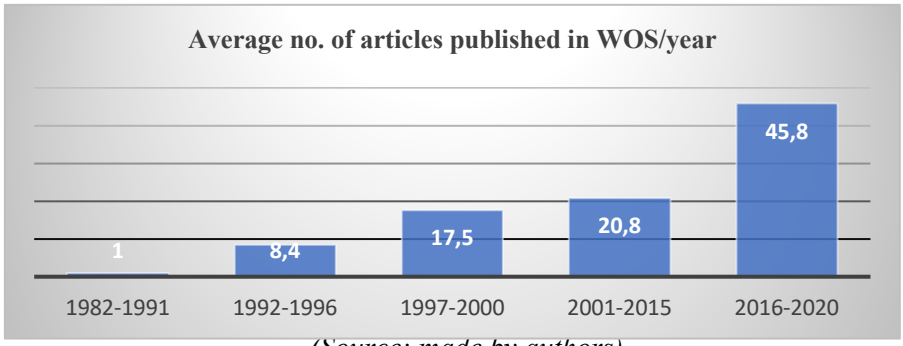
Web of Science provides powerful search capabilities, allowing users to search by author, topic, journal, and more. It also offers various features for citation analysis, such as citation reports, h-index calculation, and co-citation analysis, which can help researchers assess their work's impact and track others' influence. Overall, Web of Science is a valuable tool for researchers, scholars, and students seeking reliable and comprehensive scientific information (Pranckute, 2021).

Web of Science is a bibliographic database owned by Clarivate Analytics, formerly part of Thomson Reuters. It provides access to a vast collection of scientific literature, including journal articles, conference proceedings, and book chapters, from various disciplines. The database is widely used for bibliometric analysis and citation tracking and is considered one of the most comprehensive and authoritative sources of scholarly information. We analyzed 589 articles published in WoS between 1975 - 2021. As shown in

Figure 2, until 1975, we can speak of poor research in virtual work teams research. The growth of work in virtual groups has arisen with the advent of the Internet and its global usage. However, publishing articles increasingly analyze the problems the virtual work team manager or member encounters during work. A huge increase is evident and highly seen every year, especially from 2001 to 2021, when the number of articles per year doubled.

Figure 3

Diagram of no. of articles published between 1982 to 2021 in WOS per year

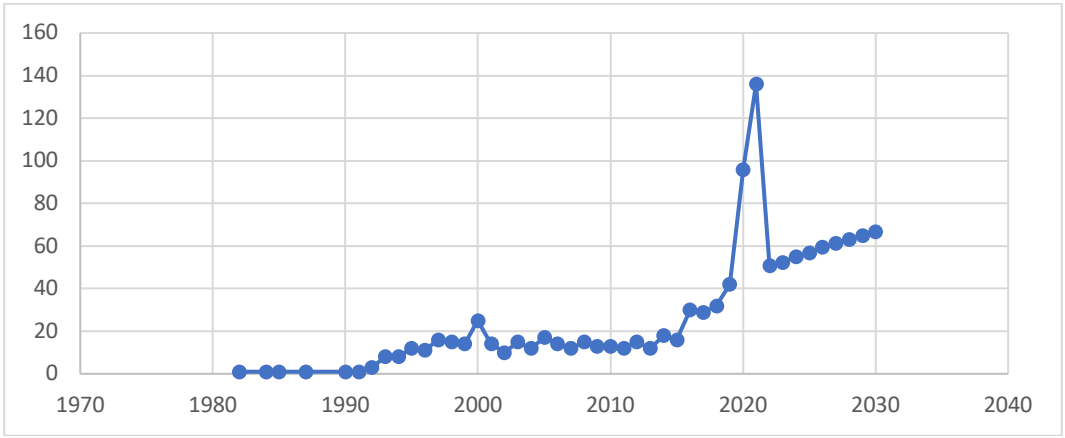


(Source: made by authors)

We forecasted the number of articles published from now on Wos with the help of Excel function forecasting. etc. We might see a steady ascension, but the forecasting is not foreseeing crises. Based on this trend, the number of articles published in the teleworking research area will likely grow in the coming years. As remote work becomes more prevalent and companies and employees continue to adjust to this new way of working, there will be a growing need for research to help understand the benefits, challenges, and best practices of teleworking. However, the number of articles published in this area is difficult to predict as it depends on various factors, such as funding availability, researcher interest, and societal trends.

Figure 4

Forecast diagram of articles published in the teleworking research area

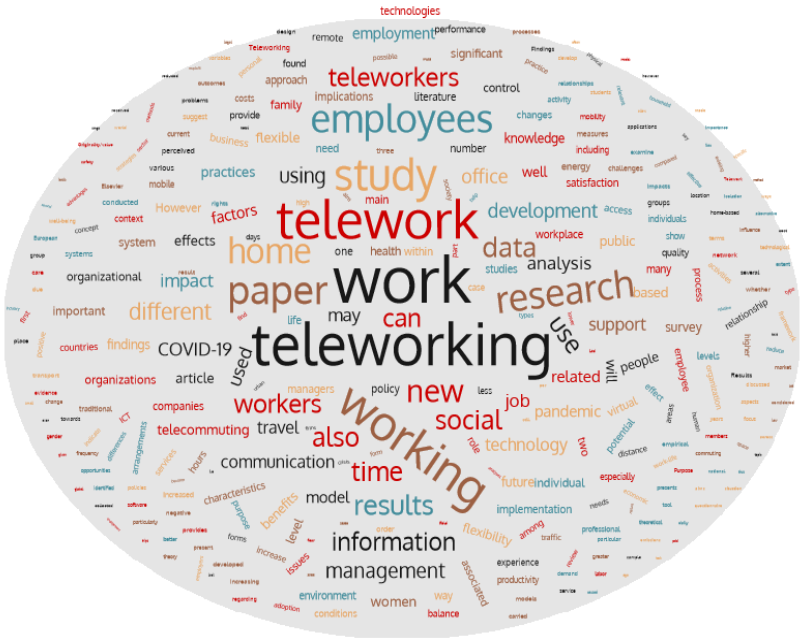


(Source: made by authors)

We analyzed 589 articles published in WoS between 1975 and 2021. Most articles analyzed have teleworking (755 times) as the keyword, while others focus more on working (399 times), Covid (151 times), also remote work, telecommuting, virtual office, work from home, digital nomadism, distributed workforce, flexible work arrangements, mobile workforce, online collaboration, and cloud-based communication

Figure 5

Most frequent words used in analyzed articles published in the teleworking research area



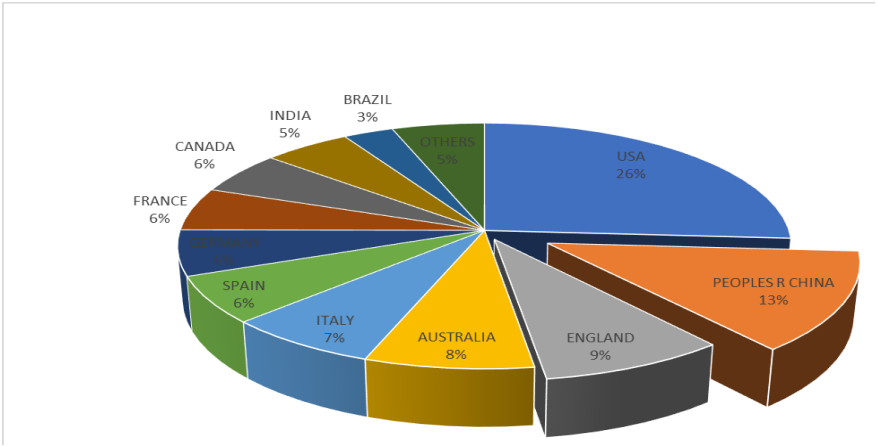
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Qualitative Analysis

Our investigation is based on the primary literature analysis and mostly articles indexed in critical bibliographic databases. We chose WoS because it has the oldest and the most essential articles in the field of research. Li et al. state that Scopus is a more extensive database, but WoS assures sufficient quality literature to investigate the field's trends. To create a representative database for investigation, we set up the following advanced search profile in WoS: (TS= (telework OR teleworking OR remote working)) AND LANGUAGE: (English) AND DOCUMENT TYPES: (Article). Timespan: All years. Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC. **Results: 21.833 records.** We found 152 Countries/Regions value(s) outside display options, and 147 papers (0.673%) do not contain data in the analyzed field.

Figure 6

Distribution of articles published by country worldwide

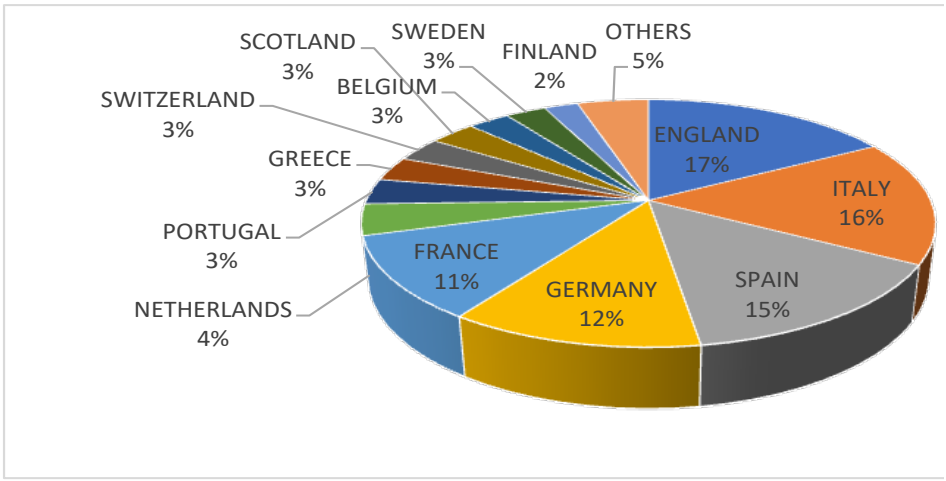


(Source: made by authors)

We excluded all articles outside Europe and resulting – in 5,406 records. We have analyzed articles in Wos – 5.406. The search was made for articles published in WoS, in English, between 1980-2020. The figure shows the division by country, where Romania has only 1.37% (74 articles).

Figure 7

Distribution of articles published by European countries

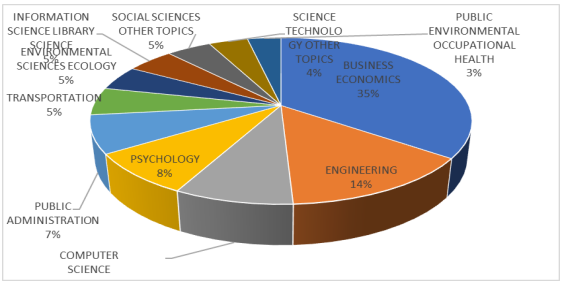


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We excluded all research from other fields like Physics, Mathematics, Air spatial, and others that could be more comprehensive for our analysis. Instead, we kept the following: public environmental, occupational health, public administration, computer science, etc.

Figure 8

Distribution of articles published in European countries by fields of research

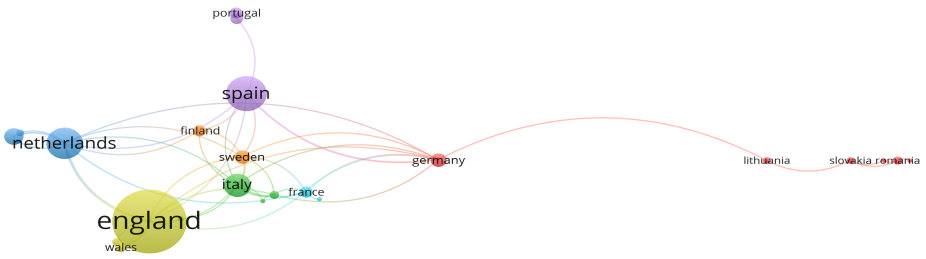


(Source: made by authors)

English authors are researching teleworking because it offers many potential benefits, such as increased flexibility, improved work-life balance, reduced commuting time and costs, and access to a broader talent pool. As such, organizations may be interested in understanding how to implement teleworking effectively to reap these benefits. The COVID-19 pandemic has accelerated the adoption of teleworking in Romania and worldwide. Many companies have had to quickly adapt to this new way of working to keep their employees safe and comply with government regulations. As seen in Figure 8., Romanian authors could be more active in publishing articles, but there was a considerable increase after the pandemic finished. Even though there is no specific legislation governing teleworking, the Labor Code allows for teleworking, and employers and employees can agree on the terms and conditions in their employment contracts. The employment contract should include details such as the working hours, the place of work, the responsibilities of the employee, and the equipment provided by the employer. In general, teleworking offers several benefits to both employers and employees. For employers, teleworking can reduce office costs, increase productivity, and improve employee satisfaction. For employees, teleworking can provide more flexibility, save time and money on commuting, and increase work-life balance. It is important to note that teleworking is only suitable for some jobs or industries. Some jobs, such as healthcare, hospitality, and retail, require physical presence or face-to-face interaction. Employers should assess whether teleworking is appropriate for their business and their employees. Teleworking research is a growing trend in Romania and is likely to continue even after the pandemic.

Figure 9

Type of analysis Co-authorship/ Unit of analysis Countries



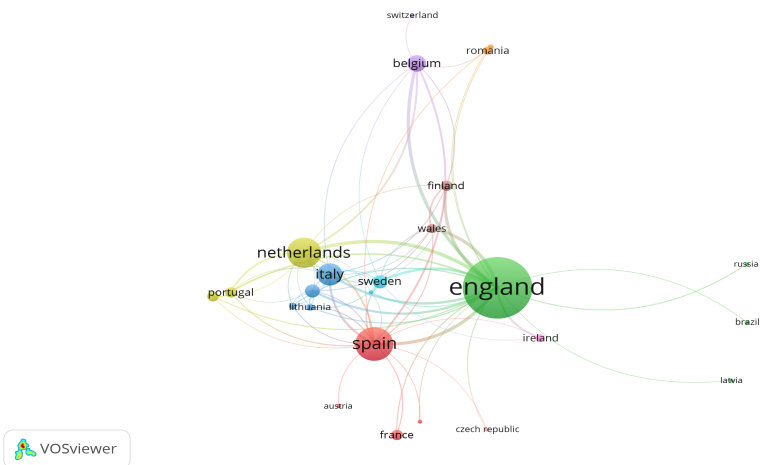
(Source: made by authors in VOSviewer)

Recent research on teleworking in Spain increased exponentially due to various factors like:

- Adoption of teleworking: According to a survey conducted by the Spanish government in 2020, the percentage of Spanish workers who worked from home during the pandemic increased from 4.8% to 34.8%. However, the number of workers who telework regularly is still relatively low compared to other countries.
- Productivity: A study published in the International Applied Economic Analysis in 2022 (Caparrós Ruiz, 2022) found that teleworking in Spain was positively associated with job satisfaction and work-life balance but negatively associated with social support and team cohesion. The study also found that teleworkers tended to work longer hours and experienced higher stress levels than non-teleworkers.
- Gender gap: Another study published in Sustainability in 2020 (Belzunegui-Eraso & Erro-Garcés, 2020) found that women in Spain were less likely to telework than men, and the gender gap in teleworking was even wider among workers with children. The study suggested that this may be due to traditional gender roles and childcare and domestic work expectations.
- Employer attitudes: A survey conducted by the Spanish Confederation of Employers and Industries (CEOE) in 2021 (www.ceoe.es, 2021) found that 56% of Spanish companies planned to maintain teleworking arrangements after the pandemic, while 26% were still undecided. However, the survey also found that many companies were concerned about the impact of teleworking on productivity and team cohesion.

Figure 10

Type of analysis Citation – Countries



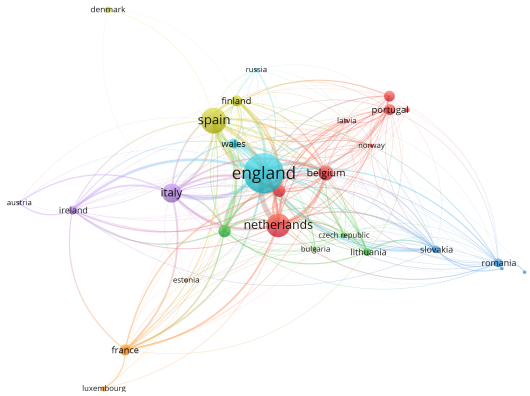
(Source: made by authors in VOSviewer)

English authors, like authors from other countries, are researching more on teleworking because teleworking, also known as remote work, has become increasingly popular in recent years. This is partly due to technological advances that make it easier to work from anywhere, as well as changes in work culture and the desire for greater flexibility.

There are several reasons why authors are researching teleworking. One reason is that teleworking can significantly benefit employees and employers. For employees, teleworking can reduce commuting time and costs, improve work-life balance, and increase job satisfaction. For employers, teleworking can increase productivity, reduce overhead costs, and improve employee retention. However, teleworking also presents challenges, such as the need for clear communication and collaboration between remote workers and their colleagues and the potential for isolation and burnout among remote workers.

Figure 11

Type of analysis Bibliographic coupling/Unit of analysis Countries

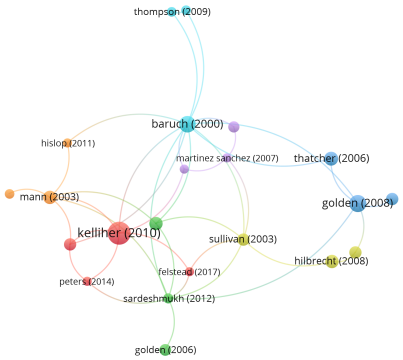


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Figure 11. the analysis by bibliographic coupling by countries shows an expected relation between England – Netherlands – Spain, and Belgium again as poles of teleworking research. Meanwhile, Romania, Luxembourg, Austria, Denmark, and Russia are outside of this research poles.

Figure 12

Articles with over 50 citations

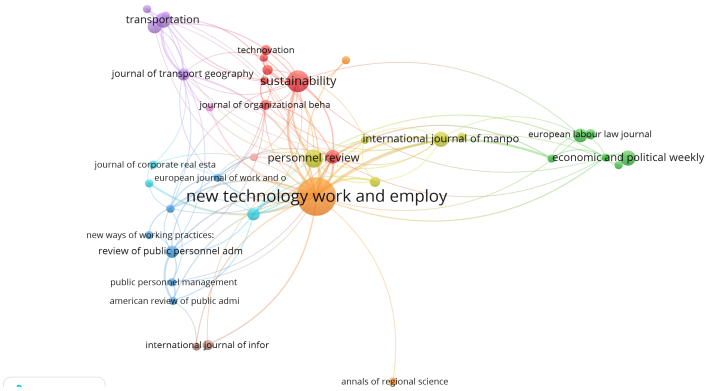


(Source: made by authors in VOSviewer)

English authors are likely researching teleworking to better understand these benefits and challenges and explore ways to make teleworking more effective and sustainable. They may be studying the impact of teleworking on employee well-being, productivity, and job performance, as well as examining strategies for managing remote teams and promoting effective communication and collaboration in a virtual environment.

Figure 13

Poles of Journal Citations

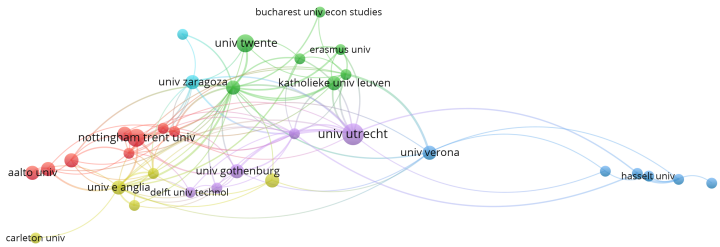


(Source: made by authors in VOSviewer)

In Figure 13, the journal poles regarding the citation are „New Technology Work and Employ" and MDPI journal as „Sustainability". The rest is less centered in the circle of the most cited journals.

Figure 14

Poles of citations by institutions



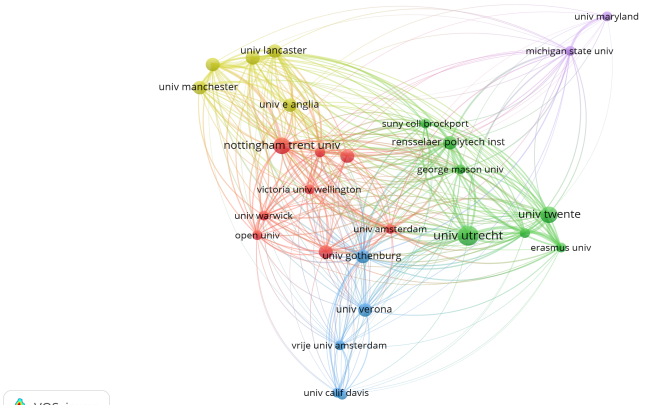
(Source: made by authors in VOSviewer)

Bibliographic coupling by institutions refers to the analysis of scientific publications to identify patterns of collaboration between different institutions. It involves examining the references cited in scholarly articles to determine the degree of overlap in citations between publications from different institutions. By analyzing bibliographic coupling, researchers can identify common research interests, collaborations, and knowledge exchange between institutions. Therefore, we can see in Figure 14 a network of institutions based on their shared citations like: University of Gottenberg, the University of Nottingham, of Utrecht.

Each institution is represented as a node in the network, and the links between nodes represent the presence of shared citations between their publications. By quantifying the strength of the links, researchers can assess the degree of collaboration between institutions.

Figure 15

Bibliographic coupling by institutions



(Source: made by authors in VOSviewer)

Discussions

Teleworking, or telecommuting or remote work, working from a location other than a traditional office, usually using digital technologies such as video conferencing, email, and cloud-based collaboration tools. Teleworking is becoming increasingly popular and for good reason. Here are some of the reasons why teleworking is essential: 1. Flexibility: Teleworking allows employees to work from anywhere, anytime, which can benefit those with caregiving responsibilities, disabilities, or other constraints. This flexibility can help reduce work-life conflicts and improve overall well-being; 2. Productivity: Teleworking can increase productivity by reducing commuting time, providing a quieter work environment, and allowing for more focused work time. Studies have shown that teleworkers are often more productive than office-based workers. 3. Cost savings: Teleworking can reduce costs for both employees and employers. Employees can save on transportation, food, and other work-related expenses, while employers can save on office space, equipment, and utilities. 4. Business continuity: Teleworking can help ensure that work can continue even during disruptions such as natural disasters, transportation strikes, or public health emergencies.

Overall, teleworking can bring many benefits to employees, employers, and society as a whole. As digital technologies evolve, teleworking will become even more common and essential.

Conclusion

Conducting a bibliometric analysis of teleworking research can take much work. However, starting from analyzing a bibliographic database such as the Web of Science to identify relevant articles can be a turning point in your research. We used bibliometric tools

and techniques to analyze the data, such as citation analysis, co-citation analysis, and bibliographic coupling. Here are some findings of our bibliometric study of teleworking research:

- Growth of research: Teleworking research has overgrown in recent years, with the number of publications increasing steadily since the 1990s. The COVID-19 pandemic also led to a surge in research on teleworking in 2020 and 2021.
- Dominant countries and institutions: The United States is the leading country in teleworking research output, followed by the United Kingdom and Canada. Some top institutions publishing on teleworking include Arizona State University, the University of Sussex, and the University of Surrey.
- Key authors and papers: Some of the most cited authors in teleworking research include Timothy Golden, Tammy D. Allen, and Mary C. Lacity. The most cited papers cover topics such as telework adoption, telework outcomes, and telework policies.
- Research themes: Key themes in teleworking research include the benefits and drawbacks of teleworking, the impact of teleworking on productivity and well-being, the role of technology in teleworking, and the challenges of managing teleworkers.
- Interdisciplinary connections: Teleworking research is highly interdisciplinary, with contributions from management, psychology, information systems, and geography.

Overall, a bibliometric analysis of teleworking research would provide insights into the state of the field, the key contributors, and the significant themes and trends. It could help researchers identify gaps in the literature and potential avenues for future research.

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