

# **Systematic Literature Review on the Work from Home Concept**

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## **Abstract**

With the rise of Covid-19, employees in many countries have been advised to stay at home and perform their duties online rather than working on-site. This research aims to identify the working from home (WFH) concept, including its definition and related statistics, its positive and negative aspects, its relations with productivity, and future research directions. Hence, a systematic literature review has been conducted to cover the most recent literature related to the topic. Some interesting statistics were extracted from literature and presented in this paper showing the feasibility and the importance of this concept. Moreover, it covered the WFH pros and cons and summarized them in a table. In addition, many suggestions were provided to improve these aspects. Performance and productivity have also been highlighted since they are vital for the success of any organization. Furthermore, a list of future research directions was summarized in the paper, which may guide authors for future research by focusing on the mentioned knowledge gaps to take this research further.

## **Keywords**

Working from Home, Productivity, Pros and Cons, Covid-19.

## **1. Introduction**

Although the phenomenon of remote work was established decades ago, it seems that this topic is only really gaining importance nowadays. With the appearance of the Covid-19 pandemic, people in many countries were advised to stay at home and reduce social contact. Consequently, many countries now encourage their employees to work from home, especially with the help of advanced communications and technology, which have brought changes to every aspect of work and social life. The possibility of working remotely can reduce the risk of exposure to the disease and the economic shocks associated with government actions to combat the Covid-19 pandemic (Alipour et al. 2020). One of the initial remote work definitions given by Olson (1983) is that it refers to “organizational work that is performed outside the normal organizational confines of space and time” (Olson 1983, p. 182). One of the significant benefits of remote work is that it can allow the employees to work at their preferred times instead of having fixed office hours.

The research aims to identify the Working from Home (WFH) concept, its pros and cons, its relations with productivity, and future research direction. To do so, in this research, a systematic literature review will be conducted using five stages process used by Cooper and Hedges (1994). Such a process uses a formal procedure to formulate the problem, collect data, evaluate and analyze the collected data, and present the results in a suitable manner. The paper covered 20 years of research efforts related to the work from home topic, but its focus is on highlighting the most recent efforts, where the year 2020 formed 46% of total selected publications. The literature review covered in this paper shows that WFH is one of the hot topics which highlights the current situation of the world direction toward the WFH concept and lists the future directions and previous research gaps, for other researchers to continue in this field. The current paper can be a base for many other future studies in this era. Furthermore, some suggestions are covered in public presentation and discussion sections to improve the application of the WFH concept, which organizations might use to gain success in this area.

The paper structure consists of six main sections. After the introduction, the research goal, objectives, and questions were discussed in the second section. The research methodology was presented in the third section. A systematic literature review approach was used to analyze the literature in the fourth section. The results and discussion were presented in the fifth section. At the end of the paper, the conclusions were summarized in the sixth section.

## **2. Research Goal, Objectives, and Questions**

This research aims to identify the WFH concept, its positive and negative aspects, its relations with productivity, and future research direction.

The aim mentioned above can be accomplished by achieving the objectives listed below:

- Identify the concept of WFH in the literature.
- Discover the positive and negative aspects of WFH from the literature.
- Identify the relationship between productivity and the WFH concept from literature.
- List out the future research directions related to the WFH.

To fulfill the research objectives given above and guide the systematic literature review process, this research will attempt to answer the following questions:

Q1: What is the concept of WFH in the literature?

Q2: What are the positive and negative aspects of WFH?

Q3: How is productivity related to the WFH concept?

Q4: What are the future research directions related to the WFH?

## **3. Research Methodology**

The Research methodology is shown in Figure(1). A systematic literature review methodology is used in this research. To conduct a systematic literature review, as per Cooper and Hedges (1994), the following five processes are used (Cooper and Hedges 1994):

***Problem formulation:*** This stage tries to identify the problem being addressed based on current gaps in the literature and clarifies the main contribution of this research.

***Data collection:*** This stage tries to gather literature that is related to the research questions by selecting the database that is used, search words, search terms, etc.

***Data evaluation:*** In this stage, the identified literature has to be checked if it is relevant to the research idea and the research questions by reading the title, the abstract, or/and the entire report. Moreover, each paper's contribution will be summarized and presented.

***Analysis and interpretation:*** This section will present the analysis of the papers selected and reviewed during the previous stages to extract the results that can help to answer the research questions.

***Public presentation:*** In this stage, the review results will be presented.

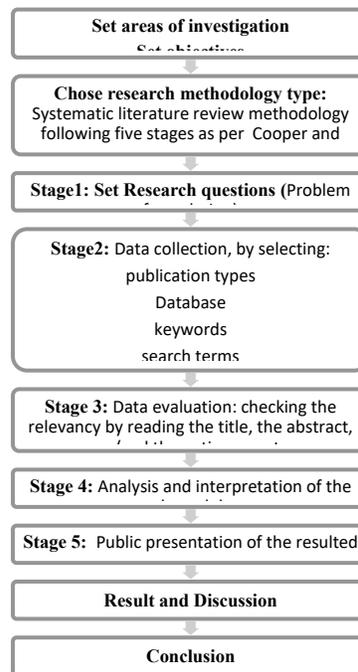


Figure 1. Research Methodology

## 4. Systematic Literature Review

### 4.1 Problem formulation

Referring to the introduction section, the problem is identified briefly, and the contribution to knowledge is clarified.

### 4.2 Data collection

In this stage, the Google scholar database was selected as the online database for the search. This database allows to search across a wide variety of disciplines and sources. Next, the relevant keywords were selected for the search. In this case, the following keywords were used "Working from Home", "Productivity and WFH", "Pros and Cons of WFH", and "Covid-19 and WFH". The search for these keywords was focused mainly on the title, abstract, and keyword. See Table(1).

Table 1. Data collection

| Database       | Search words   | Searching in                     | Search terms  |
|----------------|--|----------------------------------|---|
| Google Scholar | "Working from Home",<br>"Productivity and WFH",<br>"Pros and Cons of WFH",<br>and "Covid-19 and WFH" | Title or Abstract or<br>keywords | <ul style="list-style-type: none"> <li>● Limited to the past 20 years.</li> <li>● Academic journal articles and conference papers.</li> <li>● English language publications.</li> </ul> |

The literature search was limited to relevant publications using the following terms:

- The literature review is limited mainly to 20 years, from 2002 till 2021.
- In order to obtain high-quality results, mainly academic journal articles were selected, in addition to some published reports.
- Only publications published in the English language were selected in this literature review.

### 4.3 Data Evaluation

The following sections contain reviews of literature related to WFH, its pros and cons, its relation to productivity, and identifies limitations and research gaps that can be used for research in the future. See Table(2).

Table 2. Summary of Literature Review

| No | Author                           | country     | year | topic   | title   | Journal/conference   | Citation<br>(date of search: 08 <sup>th</sup> & 09 <sup>th</sup> . April.2022) |
|----|----------------------------------|-------------|------|---|---|--|--|
| 1  | Olson                            | USA         | 1983 | Definition of WFH   | Remote office work: changing work patterns in space and time  | communications of the ACM (journal of the Association for Computing Machinery (ACM))   | 365  |
| 2  | Ellison                          | USA         | 1999 | Definition of WFH   | Social impacts: New perspectives on telework.   | Social science computer review   | 237  |
| 3  | Madsen                           | USA         | 2011 | Definition of WFH   | The Benefits, Challenges, and Implications of Teleworking: A Literature Review  | Culture & Religion Review Journal  | 93   |
| 4  | Belzunegui-Eraso and Erro-Garcés | Spain       | 2020 | WFH   | Teleworking in the Context of the Covid-19 Crisis   | Sustainability   | 455  |
| 5  | Reshma et al.                    | India       | 2015 | Definition of WFH   | An empirical study on Working from Home: A popular e-business model   | International Journal of Advance and Innovative Research   | 37   |
| 6  | Thomas et al.                    | New Zealand | 2021 | Survey about WFH  | Working from home policy and practice review: A Research Note   | Waka Kotahi NZ Transport Agency  | -  |
| 7  | Van der Lippe and Lippenyi       | Netherlands | 2019 | Survey about WFH + positive and negative aspects + productivity | Co-workers working from home and individual and team performance  | New Technology, Work and Employment  | 138  |
| 8  | Alipour et al.                   | Germany     | 2020 | WFH statistics  | Germany's Capacities to Work from Home  | Center for Economic Studies and ifo Institute (CESifo)   | 110  |
| 9  | Dingel and Neiman                | USA         | 2020 | WFH statistics  | How Many Jobs Can be Done at Home?  | Journal of Public Economics  | 1513   |
| 10 | Del Rio-Chanona et al.           | USA         | 2020 | WFH statistics  | Supply and demand shocks in the COVID-19 pandemic: An industry and occupation perspective                               | Oxford Review of Economic Policy   | 406  |
| 11 | Mas and Pallais                  | USA         | 2020 | WFH jobs  | Alternative Work Arrangements   | Annual Review of Economics   | 102  |
| 12 | Brynjolfsson et al.              | USA         | 2020 | Real-time measure of WFH  | COVID-19 and Remote Work: An Early Look at U.S. Data  | National Bureau of Economic Research   | 653  |
| 13 | Bick and Blandin                 | USA         | 2020 | WFH statistics  | Real-Time Labor Market Estimates During the 2020 Coronavirus Outbreak   | Available at SSRN  | 130  |
| 14 | Bailey and Kurland               | USA         | 2002 | positive and negative aspects                                   | A Review of Telework Research: Findings, New Directions, and Lessons for the Study of Modern Work                       | Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior | 1698   |
| 15 | Kossek and Thompson              | USA         | 2016 | positive and negative aspects                                   | Workplace Flexibility: Integrating Employer and Employee Perspectives to Close the Research Practice Implementation Gap | The Oxford Handbook of Work and Family   | 80   |
| 16 | White et al.                     | U.K.        | 2003 | positive and negative aspects                                   | High-performance' Management Practices, Working Hours and Work-life Balance   | British Journal of Industrial Relations  | 828  |
| 17 | Vega et al.                      | USA         | 2014 | positive and negative aspects + productivity                    | A Within-person Examination of the Effects of Telework  | Journal of Business and Psychology   | 211  |
| 18 | Morgan                           | UK          | 2004 | positive and negative aspects                                   | Teleworking: An Assessment of the Benefits and Challenges   | European Business Review   | 160  |
| 19 | Wang et al.                      | China       | 2020 | positive and negative aspects                                   | Four-Month Changes in Air Quality during and after the COVID-19 Lockdown in Six Megacities in China                     | Environmental Science & Technology Letters   | 61   |
| 20 | Mishra and Kulshrestha           | India       | 2021 | positive and negative aspects                                   | A Brief Review on Changes in Air Pollution Scenario over South Asia during COVID-19 Lockdown                            | Aerosol and Air Quality Research   | 7  |
| 21 | Metya et al.                     | India       | 2020 | positive and negative aspects                                   | COVID-19 lockdowns improve air quality in the south-east Asian  | Aerosol and Air Quality Research   | 34   |

|    |                            |            |      |  | Regions, as seen by the remote sensing satellites   |  |     |
|----|----------------------------|------------|------|--|---|--|-----|
| 22 | Global Workplace Analytics | -          | 2020 | positive and negative aspects                | Work-at-Home After COVID-19 – Our Forecast  | Global Workplace Analytics   | 39  |
| 23 | Gopal                      | India      | 2020 | positive and negative aspects                | 9 Financial Benefits of Retaining the Work-from-Anywhere Distributed Workforce Model                              | Tata Consultancy Services  | 2   |
| 24 | Knights and McCabe         | UK         | 2003 | positive and negative aspects                | Governing through Teamwork: Reconstituting Subjectivity in a Call Centre  | Journal of Management Studies  | 276 |
| 25 | Crandall and Gao           | UK         | 2005 | positive and negative aspects + productivity | An Update on Telecommuting: Review and Prospects for Emerging Issues  | SAM advanced management journal  | 143 |
| 26 | Cooper and Kurland         | USA        | 2002 | positive and negative aspects                | Telecommuting, Professional Isolation, and Employee Development in Public and Private Organizations               | Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior | 758 |
| 27 | Kłopotek                   | Poland     | 2017 | positive and negative aspects                | The advantages and disadvantages of remote working from the perspective of young employees                        | Organization & Management Scientific Quarterly   | 28  |
| 28 | Allen et al.               | USA        | 2015 | Productivity                                 | How effective is telecommuting? Assessing the status of our scientific findings                                   | Psychological Science in the Public Interest   | 944 |
| 29 | Baker et al.               | Australia  | 2007 | Productivity                                 | Satisfaction and Perceived Productivity when Professionals Work from Home   | Research and Practice in Human Resource Management   | 107 |
| 30 | Ganguly et al.             | Bangladesh | 2020 | Productivity                                 | Impact on the Productivity of Remotely Working IT Professionals of Bangladesh during the Coronavirus Disease 2019 | arXiv:2008.11636   | 2   |
| 31 | Bao et al.                 | China      | 2020 | Productivity                                 | How does Working from Home Affect Developer Productivity? A Case Study of Baidu During the COVID-19 Pandemic      | arXiv:2005.13167   | 67  |

#### 4.3.1 WFH

Although the phenomenon of remote work was initiated in the 1980s, it seems that this topic is only really gaining importance nowadays. As per Olson (1983), remote work refers to "organizational work that is performed outside the normal organizational confines of space and time" (Olson 1983, p. 182). Remote work has many synonyms, such as telework, telecommuting, work at home, or home-work. Teleworking is defined as a kind of remote work whose main characteristic is the use of technology (Madsen 2011) and also as "any form of substitution of information technologies for work-related travel" (Ellison 1999, p. 341).

One action taken by most governments worldwide to stop the spread of the Covid-19 pandemic is the recommendation to enterprises to introduce and encourage WFH (Belzunegui-Eraso and Erro-Garcés 2020). WFH can be defined as doing organizational work outside the working area provided by an employer (Reshma et al. 2015).

A survey done by Gartner for 229 Human Resource (HR) leaders stated that around 88 percent of organizations encouraged employees to WFH during Covid-19. 30 percent of the senior management surveyed stated that employees worked from home at least part of the time before the pandemic. However, the analysis also revealed that post-pandemic, 41 percent of employees are expected to work at least part of the time remotely (Thomas et al. 2021). As per Kłopotek (2017), this form of work should be seen as one of the many mechanisms developed to meet the demands of a modern working environment (Kłopotek 2017).

A study by Alipour et al. (2020) set out to measure the feasibility of WFH among German employees using survey and administrative data. Their analysis breaks down the data by occupation, region, industry, and employee characteristics. They also identified the work activities and job features that are most closely correlated with the feasibility of WFH. It was found that it is possible for around 56 percent of the overall German workforce (Alipour et al. 2020). This result is higher than a result revealed by Dingel and Neiman (2020) and Del Rio-Chanona et al. (2020), which calculated the WFH possibility in the U.S. economy to be around 37 percent and 43 percent, respectively. Some differences might be due to using different techniques to measure; for example, the last two studies are done based on plausibility judgments, while Alipour et al.'s (2020) study is done based on employees' assessment of the feasibility of performing their jobs from home.

See Table(3).

Table 3. Capacity to WFH by sector (Alipour et al. 2020) 2020).

|   | WFH Capacity (%) |
|---|------------------|
| 1 Crop and animal production, hunting and related service activities            | 37.15            |
| 2 Forestry and logging  | 39.10            |
| 3 Fishing and aquaculture   | 37.61            |
| 5 Mining of coal and lignite  | 39.38            |
| 6 Extraction of crude petroleum and natural gas                                 | 53.13            |
| 7 Mining of metal ores  | 39.27            |
| 8 Other mining and quarrying  | 39.01            |
| 9 Mining support service activities   | 46.06            |
| 10 Manufacture of food products   | 41.83            |
| 11 Manufacture of beverages   | 49.41            |
| 12 Manufacture of tobacco products  | 54.56            |
| 13 Manufacture of textiles  | 57.91            |
| 14 Manufacture of wearing apparel   | 65.42            |
| 15 Manufacture of leather and related products                                  | 57.80            |
| 16 Manufacture of wood and of products of wood and cork, except furniture       | 42.82            |
| 17 Manufacture of paper and paper products                                      | 58.59            |
| 18 Printing and reproduction of recorded media                                  | 63.42            |
| 19 Manufacture of coke and refined petroleum products                           | 61.24            |
| 20 Manufacture of chemicals and chemical products                               | 60.79            |
| 21 Manufacture of basic pharmaceutical products and pharmaceutical preparations | 62.59            |
| 22 Manufacture of rubber and plastic products                                   | 48.28            |
| 23 Manufacture of other non-metallic mineral products                           | 43.61            |
| 24 Manufacture of basic metals  | 43.36            |
| 25 Manufacture of fabricated metal products, except machinery and equipment     | 43.33            |
| 26 Manufacture of computer, electronic and optical products                     | 64.73            |
| 27 Manufacture of electrical equipment  | 61.29            |
| 28 Manufacture of machinery and equipment n.e.c.                                | 55.36            |
| 29 Manufacture of motor vehicles, trailers and semi-trailers                    | 55.12            |
| 30 Manufacture of other transport equipment                                     | 57.57            |
| 31 Manufacture of furniture   | 45.58            |
| 32 Other manufacturing  | 54.29            |
| 33 Repair and installation of machinery and equipment                           | 55.64            |
| 35 Electricity, gas, steam and air conditioning supply                          | 68.43            |
| 36 Water collection, treatment and supply                                       | 58.83            |
| 37 Sewerage   | 50.21            |

Furthermore, Alipour et al. (2020) showed that although there were slight differences between men and women, there is, in fact, a higher WFH capacity for women and employees (mainly women) with small children in the house, as per Figure(2). This might be because women with small children are more likely to be affected by increased stress levels due to the necessity to conduct their work while taking care of their children, especially if their partners do not have the possibility of WFH (Alipour et al. 2020).

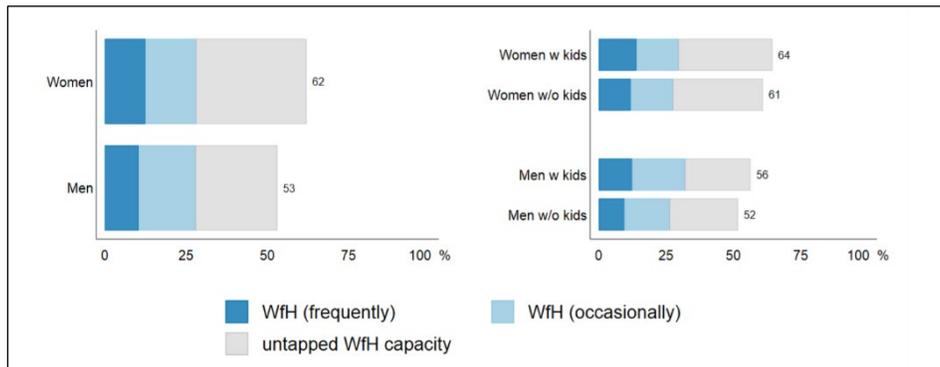


Figure 2. Capacity to WFH by gender and domestic childcare duties (Alipour et al. 2020).

Concerning the characteristics significantly and positively associated with the feasibility of WFH, the Alipour et al. (2020) study found that the top three jobs are "developing, researching, constructing", "using computers, the internet, or e-mail processing", and "working in a seated position". On the other hand, the three most negative features were "working standing up", "nursing, caring, healing", and "transporting, storing, shipping," as shown in Figure(3) (Alipour et al. 2020). Furthermore, Dingel and Neiman (2020) have also listed the number of jobs that can be done at home based on industry, such as; most jobs in educational services, finance, and professional and scientific services (Dingel and Neiman, 2020). Similarly, Mas and Pallais (2020) have found that plenty of jobs, including those in "computing and mathematics" and "business and financial operations", can do most of their WFH (Mas and Pallais, 2020).

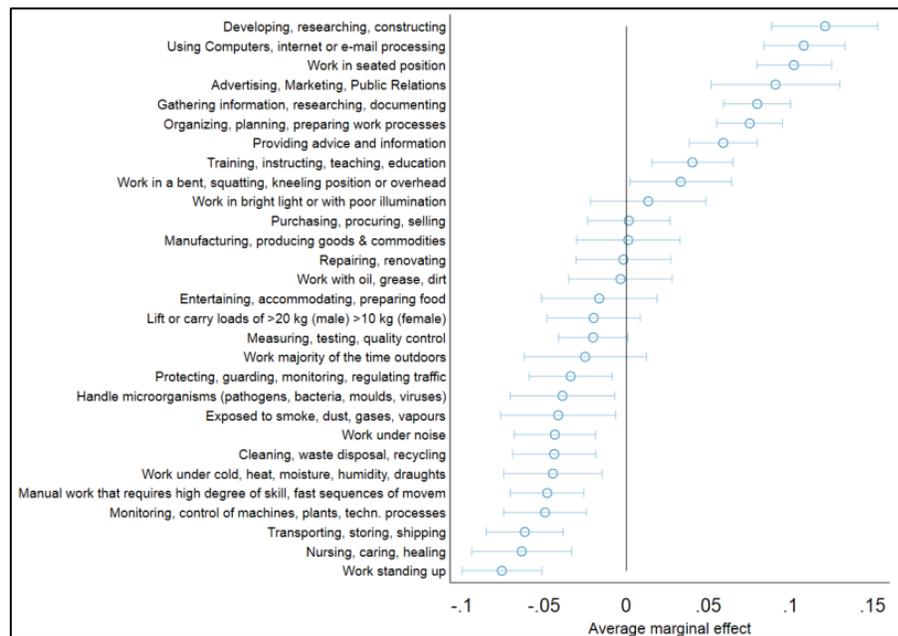


Figure 3. Tasks and capacity to WFH, employee-level (Alipour et al. 2020).

As per Lippe and Lippényi (2019), the number of firms supporting WFH has increased dramatically due to improved communication technology used in human cooperation. Brynjolfsson et al. (2020) used online surveys to produce real-time measures of WFH for the United States during the first week of April 2020. They reported that around half the individuals surveyed were WFH. Another online survey done by Bick and Blandin (2020) stated that more than 60 percent of their respondents' working hours were performed at home.

#### 4.3.2 Positive and Negative Aspects of WFH

As mentioned in previous sections, due to the Covid-19 pandemic, WFH has become a common practice in many organizations in many countries. The literature shows that WFH has both positive and negative outcomes. The positive results include a better work-life balance and reduced costs for the organization (Van der Lippe and Lippenyi 2019). Another positive aspect is that WFH provides some employees more opportunities to focus on their given tasks. In addition to that, researchers have shown that WFH is related to fewer interruptions (Bailey and Kurland 2002) and results in less physical monitoring of employees. This let them know how, under what conditions, and when to complete their allocated tasks (Kossek and Thompson 2016), it improves employee flexibility over work demands (White et al. 2003). Also, more autonomy in work choices most probably leads to more productivity (Vega et al. 2014). Finally, employees might be more willing to put in additional effort to reward their employer (Morgan 2004).

One of the most important benefits which can be gained from applying WFH is its positive effect on the environment and air pollution. A study done by Wang et al. in 2020 showed that Chinese megacities observed a 53% reduction in NO<sub>2</sub> levels during lockdown due to traffic emission changes (Wang et al. 2020). In the same way, other studies showed that up to a 50% reduction in NO<sub>2</sub> levels has been observed in the air over the capital cities of Iraq, Spain, Brazil, New Zealand, Italy, the United States, and Argentina (Mishra and Kulshrestha 2021). The Air Quality Index (AQI) has also shown significant improvement as compared to the pre-lockdown phase; for example, Delhi which is one of the most polluted megacities in the world, observed a huge reduction of 41% in AQI in the last week of March 2020, compared to the same period in 2019, mainly due to the restrictions on transportation and industrial activities introduced during the lockdown period (Metya et al. 2020).

According to a survey done by Global Workplace Analytics in 2020, WFH can reduce the financial cost for organizations by reducing overhead costs, which leads to savings of around \$11,000 (Global Workplace Analytics 2020) per year for each person who works half of the time from home. It can also reduce healthcare costs by improving employees' mental and physical well-being. Moreover, WFH can reduce employees' travel costs for training and

meeting purposes by using remote facilities for communication and video calls. These statistics show that WFH is one of the critical topics nowadays (Gopal 2020) for enterprises.

Besides the positive aspects, there are also some negative aspects, including, for example, difficulties in sharing knowledge (Van der Lippe and Lippényi 2019). WFH also leads to reduced control by the supervisors, and reduced monitoring might lead to greater work avoidance by the employee. Another disadvantage is that teamwork might become an issue (Knights and McCabe 2003) because it might create uncertainties and resistance in employees. Moreover, social isolation might also result from WFH (Crandall and Gao 2005), reducing interpersonal networking and communication skills and, thus, a less cohesive organizational culture. Being away from the office might also increase employees' fear of limiting their opportunities for promotion and rewards (Cooper and Kurland 2002).

Advantages and disadvantages of remote working were also mentioned by Kłopotek (2017), where the most significant advantages reported by respondents were flexible working hours (80% of the respondents) as well as saving travel time for commuting (56% of the respondents). On the other hand, the two disadvantages were the difficulty of separating home life from professional life (68% of respondents) and social isolation (48% of respondents) (Kłopotek 2017). A study by Lippe and Lippényi (2019) examined the effect of co-workers' WFH on individual and team performance. In their survey, data was collected from nine European countries, 259 establishments, 869 teams, and 11,011 employees. This study indicated that although WFH might be useful for some workers, it also has negative impacts; for example, co-workers WFH affects employee and team performance.

#### **4.3.3 Productivity during WFH**

Many researchers have focused on the effect of WFH on employee performance (Van der Lippe and Lippényi 2019). These studies have mixed results; while some studies stated that a better performance resulted from WFH (Vega et al. 2014; Allen et al. 2015), others indicated that WFH leads to social isolation, which inhibits knowledge sharing (Crandall and Gao 2005), which may lead to less performance.

A study done by Baker et al. (2007) examined the effect of four factors on WFH outcomes for experienced WFH employees. This study was carried out in 20 Australian organizations using questionnaires evaluating organizational, job, individual, and household factors and satisfaction and perceived productivity. The study results revealed that organizational and job-related factors affect WFH employees' satisfaction and perceived productivity more than work styles and household factors (Baker et al., 2007). Limitations observed within the Baker et al. (2007) study can be listed as follows:

- Future studies can be carried out by selecting more variables to evaluate the productivity of employees who WFH and those who work in an office.
- Further research can be done to identify the potential role of WFH in enabling more males to care for their children while engaging in full-time employment.
- Further studies can be done to examine the use of WFH arrangements for those with eldercare responsibilities.

A study by Ganguly et al. (2020) aimed to determine whether WFH can be continued even after the pandemic is over. After a deep investigation, 24 factors related to employee productivity were identified and categorized into eight sections: team dynamics, company dynamics, team collaboration, access to resources, work environment, emotional well-being, proximity to the Covid-19 virus, and others. A survey was designed to understand the changes in each of those factors during WFH and relate that to productivity. It was distributed to IT professionals in Bangladesh. The results showed that access to resources, workspace-related issues, and the emotional well-being of the employees had been hampered the most during WFH (Ganguly et al. 2020). Some of the limitations observed in the Ganguly et al. (2020) study can be listed as follows:

- Future research can include a detailed analysis of productivity, its correlation with the 24 aspects mentioned above, and their correlation with each other.
- Further studies could also provide answers to some further questions. E.g.; why WFH affects the mental well-being of the employees, how to deal with the work-space related issues and ensure a suitable work environment in remote work, how to ensure better hardware access in WFH, and how to better manage work-life and personal life to get the best out of WFH.

A study done by Bao et al. (2020) measures the difference in developer productivity between WFH and working on-site by several metrics based on developers' daily activities. It also investigates the factors affecting developer productivity when WFH, such as programming language, project type, project size, etc. The study was done on I.T. companies in China. They collected 1,103 records from developers WFH during the Covid-19 pandemic. The results indicated that WFH has both positive and negative impacts on developer productivity in terms of various project characteristics, including programming language and project type/age/size (Bao et al. 2020). Limitations observed within the Bao et al. (2020) study can be listed as follows:

The study could be extended using more data from more developers and companies.

A machine-learning model can be developed to predict developer productivity based on developers' daily activities.

#### 4.4 Analysis and interpretation

The selected publications were distributed between 2002 and 2021, 20 years. It is noticed that during 2020 the publications increased suddenly, with 46% of total selected publications, which indicates that the topic became very hot in that period. This is mainly due to the spread of the Covid-19 pandemic and the world's direction toward remote working, see Figure(4).

In the same way, the importance of the WFH research topic can be seen from the number of the citations. Figure(5) shows the number of citations done for the selected publications. The papers published in 2020 have the highest number of citations with 3574 citations as of 09th April 2022. This is probably due to the large number of related articles selected during that year, and it also indicates that the topic was of interest to many researchers. The total number of citations for the 29 selected articles is 9082, which shows the importance of this topic nowadays.

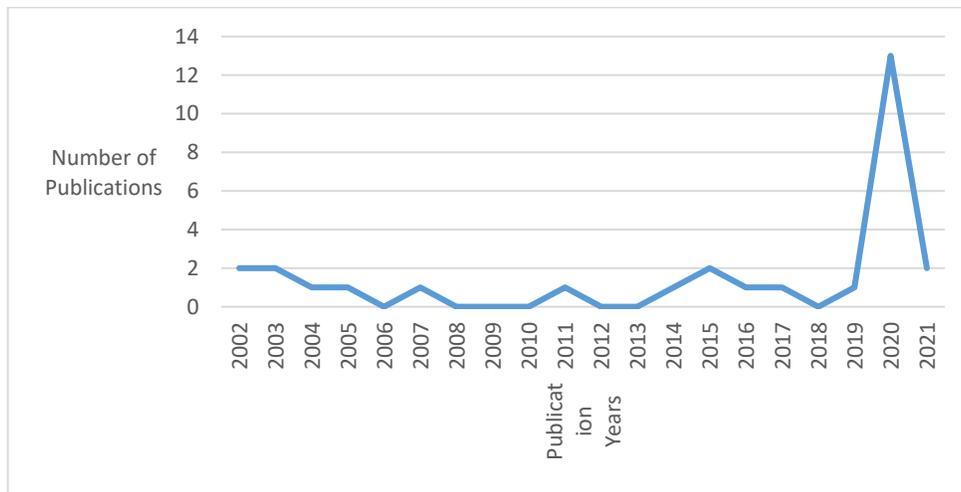


Figure 4. Publications distribution over the years

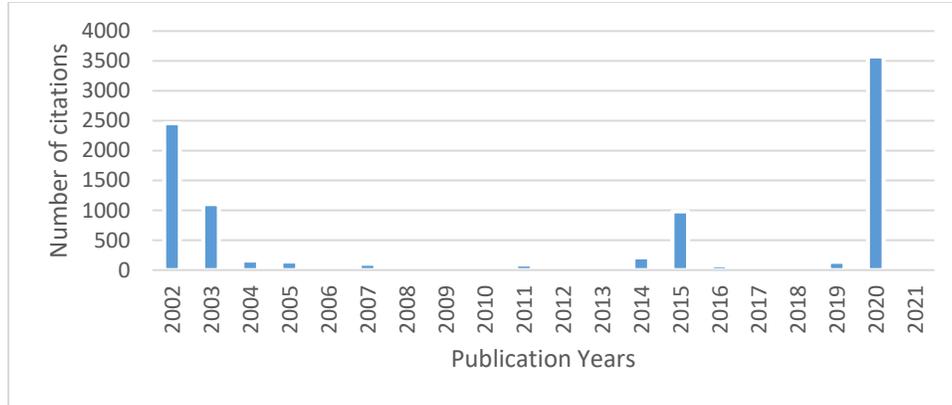


Figure 5. Number of citations of the selected publications (till 09th April. 2022)

Figure(6) presents the publications distribution by authors' countries. It is clearly shown that USA authors published the majority of the articles with 39%, this was followed by 14% for each of India and the U.K., and 7% were from China. While the rest of the articles, 28% were published by authors from different countries, with around 4% for each, i.e., Australia, Poland, Netherlands, New Zealand, Bangladesh, Germany, and Spain. The above statement shows that the most prominent countries with large populations were interested in this topic.

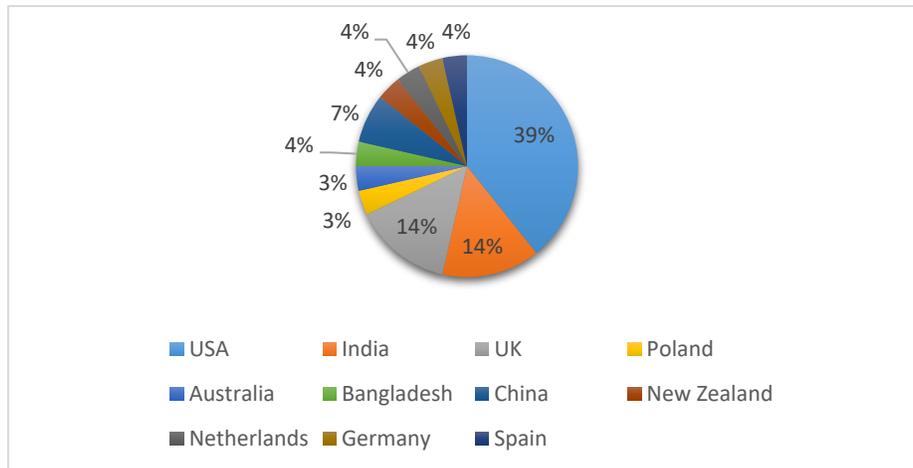


Figure 6. Publications distributed by authors' country

Many definitions were given in the literature, starting with Olson (1983), who defined remote work as “organizational work that is performed outside the normal organizational confines of space and time”, similarly other definitions were given. As an action to stop the spread of the Covid-19 pandemic, many organizations directed their employees toward WFH as a precaution. According to researchers, WFH can meet the demand of a modern working environment (Kłopotek 2017). It is expected that around 41 percent of employees may work remotely after the pandemic (Thomas et al. 2021). Moreover, some researchers measured the feasibility of WFH among employees in some countries; e.g., Alipour et al. (2020) found that around 56 percent of the overall German employees can WFH. In the same way, studies by Dingel and Neiman (2020) and Del Rio-Chanona et al. (2020) revealed that around 37 percent and 43 percent of the U.S. workforce can WFH, respectively. These numbers indicate that WFH can apply to a considerable

number of employees. Regarding the tasks that can be performed from home, researchers found that the top jobs are related to researching and development, using computers, marketing, planning, training, financial associated jobs, etc. In contrast, the jobs with the slightest possibility to perform from home are the jobs that require one to be available such as; nursing, transporting, manual work, etc.

Moreover, as per the data evaluation section, all the pros and cons mentioned in the reviewed articles are summarized in Table(4). It is indicated that the WFH concept has both positive and negative aspects. It has economic benefits such as reducing organizational costs related to travel, services, etc., environmental benefits by reducing pollution caused by vehicles, hence improving the air quality. In addition to other benefits such as; better work-life balance, it improves employee flexibility over work demands, enhances their performance by focusing more on the assigned tasks, etc. On the other hand, there are some negative aspects; the most important ones are difficulties in sharing knowledge and teamwork, social isolation.

Table 4. Positive and Negative Aspects of WFH

| Sr. | Reference  | Pros   | Cons   |
|-----|--|--|--|
| 1   | (Van der Lippe and Lippenyi, 2019), (Crandall and Gao, 2005)                           | Better work-life balance   | Difficulties in sharing knowledge.   |
| 2   | (Bailey and Kurland, 2002)   | Fewer interruptions and more focus   |  |
| 3   | (Kossek and Thompson, 2016)  | Less physical monitoring of employees.   |  |
| 4   | (White et al., 2003), (Kłopotek, 2017)   | Flexible working hours.  |  |
| 5   | (Vega et al. 2014), (Allen et al., 2015)   | More productivity and better performance.  |  |
| 6   | (Morgan, 2004)   | Employees more willing to put in additional effort.  |  |
| 7   | (Wang, et al., 2020), (Mishra and Kulshrestha, 2021), (Metya et al., 2020)             | Positive effect on the environment and air pollution (reduction in NO2 levels and improved Air Quality Index).   |  |
| 8   | (Global Workplace Analytics, 2020), (Gopal, 2020), (Van der Lippe and Lippenyi, 2019). | Reduce the financial cost for organizations by reducing overhead costs, reducing healthcare costs, improving employees' mental and physical well-being, and reducing travel costs. |  |
| 9   | (Knights and McCabe, 2003)   |  | Difficulty in team-work.   |
| 10  | (Crandall and Gao, 2005), (Kłopotek, 2017)   |  | Social isolation, reduction in communication skills, and less cohesive organizational culture.     |
| 11  | (Cooper and Kurland, 2002)   |  | Employees' fear of less promotion and rewards.   |
| 12  | (Kłopotek, 2017)   | Saving travel time.  | The difficulty of separating home life from professional life.                                     |
| 13  | (Van der Lippe and Lippenyi, 2019)   |  | Adversely affect team performance  |
| 14  | (Ganguly et al., 2020)   |  | Less access to resources, workspace-related issues, and the emotional well-being of the employees. |

In addition to the information mentioned about productivity in the pros and cons section, different articles revealed different results related to the effect of WFH on productivity. Some of them stated that it has a positive impact on productivity by studying the impact of some of the related factors on productivity. Whereas other researchers indicated that it affects negatively, stating that social isolation that may cause by the WFH may lead to difficulty in knowledge sharing, less access to resources, workspace-related issues, and emotional well-being. Hence may result in less performance and productivity of work done.

#### 4.5 Public Presentation

In this section, a summary of the literature review is provided, showing that it answered research questions. Therefore, based on the review done in the previous section, the answers to the research questions will be as follows:

Q1: What is the concept of WFH in the literature?

This paper reviewed more than 30 related articles in the data evaluation with largest number of articles and citations in the year 2020. This indicates that the topic is important and attracts many researchers; where most of them are published by authors from the USA, followed by India, the U.K., and China, which are part of the most populated countries. As per literature, the WFH concept was initiated in the 1980s. It can be defined as the work/tasks that can be done from home with the minimum basic requirements. Or, the WFH can be defined as work performed outside the organization's facilities using the available communication technologies as a response to a specific crisis or as a part of organization's strategic plan to change the current business model. The percentages mentioned in the literature as covered in the previous section give a clear indication of the possibility of applying this concept among employees; however, this percentage might change based on many factors such as; industry, the nature of the job, the culture, etc. Literature also showed some statistics related to jobs and tasks that can be done from home and those that cannot or have less possibility. However, even in the jobs with less possibility of applying the WFH concept, it needs to be studied more to find out or improve a framework to get the best out of applying WFH for these jobs.

Q2: What are the positive and negative aspects of WFH?

Referring to the review, researchers mentioned that WFH has positive and negative aspects. However, for organizations to apply it among their employees, it is suggested that they take these negative aspects and difficulties into consideration to use it successfully. For example, to improve knowledge sharing among their employees, they might initiate a kind of shared server and direct them to upload all the necessary information as a reference for others. They may also conduct a kind of online or face-to-face gathering every month to keep them away from isolation and improve their communication skills. In addition, they may provide them with the essential required resources, and their management may encourage them by rewarding them when possible.

Regarding the positive aspects that employees may have;

- more flexible working hours without sticking into a specific time,
- may lead to improve their creativity and productivity in their assigned tasks,
- getting fewer interruptions by others may allow them to put more effort and concentrate more on their job,
- they may get a better work-life balance by organizing their time between the work and the family in a way that will serve both.

Moreover, WFH improves the environment and air quality by reducing the use of vehicles, hence less harmful emissions. It also helps enhance the organizations' financial costs, as discussed earlier.

Q3: How is productivity related to the WFH concept?

The effect of WFH on employees' performance and work productivity was covered in the literature with different results. Hence, further research can continue in-depth to study the impact of other factors on productivity during WFH by providing more analysis. These factors might be related to access to resources, work environment, type of jobs, development of a machine-learning model to predict productivity based on daily activities, etc.

Q4: What are the future research directions related to the WFH?

Many research gaps were identified from the literature, which can be used as a future research direction. Some of these gaps are; to provide a more detailed analysis of productivity by selecting more variables to evaluate the productivity of employees who WFH and who work in an office, measure the effect of WFH on the mental well-being of the employees and how to improve it, study the effect of the work-environment during WFH on employees' performance which might include the space available and any interruptions by the family that may affect their performance, find out the way to manage work-life and personal life to get the best out of WFH, find out the effect of multicultural organizations in applying WFH, etc.

## **5. Results and Discussion**

This research aims to identify the WFH concept, its positive and negative aspects, its relations with productivity, and future research direction in the literature. Hence, research questions were derived, a systematic literature review was conducted, and research questions were answered based on the literature review results. The review has given a clear definition of the concept of WFH; it highlighted vital statistics available in the literature, where most of the selected articles were done in the year 2020, which shows that this topic is hot nowadays, especially with the world's current situation of the Covid-19 pandemic. The study also covered the positive and negative aspects of WFH from various articles, summarized in Table(4). It is noticed clearly that it has both pros and cons. Its positive aspects are more than the negative aspects; however, this needs to be measured further in a more detailed analysis for a specific type of job.

To answer the third research question, literature related to productivity was reviewed and analyzed to show that different results were revealed from these researches. Some of them stated that they have a positive relationship, while others said the opposite. This is mainly due to the different population of the study and the industry that the study covers. Future research directions extracted from reviewed literature were mentioned in previous sections, showing some of the gaps in the literature, where they can be addressed in future studies to extract the best from applying the WFH concept in organizations.

## **6. Conclusion**

Due to the appearance of the Covid-19 pandemic, this study was done to cover a significant current concern, which is WFH for employees. This paper was prepared to highlight previous work related to the WFH concept, its pros and cons, its relation to productivity, and future research area, using a systematic literature review following five stages process. It was noticed that most of the related articles were published in 2020 with a high number of citations. This study will be able to highlight to the researchers the importance of this topic, and it is planned to move forward with this research to cover the knowledge gap observed in literature by studying more factors affecting the successful implementation of WFH, which may help the relevant enterprises to know the possibility of applying WFH in their organizations, which may help in setting their strategic plans for the future of the organizations.

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