



Review article

Telework: systematic literature review and future research agenda

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ABSTRACT

Given the work and life conditions imposed by the 'new normal' Covid-19 era, a massive shift towards telework is expected and will likely continue long after the pandemic. Despite the resurgent interest in telework as an important aspect of ensuring business continuity, the literature base remains fragmented and variable. This study presents a taxonomical classification of literature on teleworking along with a comprehensive bibliography and future research agenda. To this aim, a systematic literature review methodology was adopted drawing on an evidence base of 40 articles published in high-ranking journals during the years 2000–2020. Findings capture key developments and synthesize existing areas of research focus. Important insights and gaps in the existing research are also pinpointed. The study may stimulate future research, represent a reference point for scholars interested in telework and at the same time provide an added advantage to managers for understanding crucial dimensions thereof.

1. Introduction

Since the outbreak of the Covid-19 pandemic, in 2020, working life -among other aspects of life-has undergone major changes worldwide. Flexible work arrangements, such as teleworking, are not newly introduced. Their adoption was gradually driven by a working life in transition characterized by multiple factors such as demographic changes in the workforce, employees' preferences, ICTs development coupled with the reduction of related costs and increased availability, a tendency towards outsourcing activities, changes in employment types, less commuting time and pollution, work-life balance issues, economic pressures in the business environment and unpredictable changes resulting from global competition (Lim and Teo, 2000; Kerrin and Hone, 2001; Taskin and Bridoux, 2010).

Moreover, given the new work and life conditions imposed by the Covid-19 pandemic, a massive shift towards telework is expected (European Commission, 2020; ILO, 2020; OECD, 2020). According to early estimates, almost 40% of those who are currently working in the EU started to telework in a full-time mode as a result of the pandemic (Eurofound, 2020). Until 2019, both government and EU bodies had invested in the promotion of telework due to its benefits to the organisation and the employees (Kerrin and Hone, 2001; Peters et al., 2004). In the new era which began with the outbreak of Covid-19, when social distancing is considered an indispensable measure to combat the negative effects of the virus, the role of teleworking -'tele' meaning 'far'- is

hailed as critically important in preserving jobs and production (European Commission, 2020; OECD, 2020). Moreover, office workers in the USA would like to work from home more often even when Covid-19 is not a threat anymore (PwC, 2020).

The term 'telework' was originally coined in 1973 by Jack Nilles who defined telework as an activity which "includes all work-related substitutions of telecommunications and related information technologies for travel" (Collins, 2005, p. 115). Telework constituted a 'hot' topic for researchers, policy makers and practitioners during the 1970s when digital networks and computers were widely introduced in business and work (Vilhelmson and Thulin, 2016). At the same time, in the light of the oil crisis in the mid-1970s, flexibility entailed by telework seemed to be beneficial for both organizations and individuals (Haddon and Brynin, 2005; Mann and Holdsworth, 2003). According to Nilles, if one in seven urban commuters dropped out, there would have been no need for the USA to import oil (Mann and Holdsworth, 2003).

During the 1970s and 1980s, telework was perceived as the work arrangement of the future (Illegems et al., 2001; Iscan and Naktiyok, 2005). However, despite optimistic predictions, the diffusion of telework, mostly as an occasional work pattern, had proven slow until 2019, when the Covid-19 outbreak took place (European Commission, 2020; Illegems et al., 2001; Iscan and Naktiyok, 2005).

Amid the second wave of coronavirus in Europe, organizations are requested to implement a system of remote work covering more than 50% of their personnel. Popular press brims with articles related to

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different aspects of a teleworker's life. The academic field of telework will also blossom due to the pandemic. However, despite the large number of studies regarding telework adoption, research has been done in a fragmented way. For example, according to [Martínez-Sánchez et al. \(2007\)](#) most studies on telework were conducted in Anglo-Saxon countries. Hence, certain culture-specific attributes of teleworking have been underrepresented thereby leading to more biased results. Additionally, researchers quite frequently exclude specific worker types, such as occasional teleworkers, self-employed teleworkers or non-knowledge-workers, from their survey sample usually due to the fact that they are not deemed actual teleworkers by them ([Baruch, 2000](#); [Sullivan, 2003](#); [Wilks and Billsberry, 2007](#)).

Before the pandemic, during the past ten years, the use of telework varied substantially across sectors, companies, occupations and countries ([European Commission, 2020](#); [OECD, 2020](#)). Those disparities suggest a wide scope for policies which could contribute to the spread of telework ([OECD, 2020](#)) but also a weak ability to evenly scale up telework which could possibly lead to increasing inequalities across the global North and South, countries, organizations and employees.

The dramatic changes in every aspect of everyday life imposed by the pandemic do not allow for any mistakes or delays regarding telework implementation. Challenges related to telework adoption and implementation should be acknowledged and dealt with as telework is bound to become the main work arrangement and remain as such even when the pandemic is over. The positive outcomes should also be stressed to render telework more appealing to workers who were used to lead a more sociable working life. On the other hand, less positive outcomes should be identified. Subsequently, several measures could be applied to offset any potential negative impact of telework.

Telework is not a novel concept but research on this academic field has not been exhaustive. Moreover, telework needs to be adopted largely and mandatorily -as opposed to partially and optionally-under emergency conditions in the public health sector. Thus, systematically acknowledging and developing dedicated telework research will help us better navigate the context of this fragmented research base. Within this context, a critical assessment of study components, such as methodologies, underlying research themes and participant details will lay the groundwork for a roadmap to guide future investigations.

Starting from these premises, this paper explores the concept of 'telework' initially by discussing the main issues regarding the definition of 'telework' and 'teleworker'. Based on the aforementioned rationale, this study adopts a systematic approach led by the following research questions:

- RQ1: What is the extent and coverage of articles on telework?
- RQ2: Which methods are used in research regarding telework and what is the unit of analysis and the geographical and industry scope in each case?
- RQ3: What are the main research themes studied?
- RQ4: Based on what we know thus far, what are some new future research directions?

2. Defining 'telework'

A massive shift towards telework is expected in the Covid-19 and post Covid-19 era. In order to properly investigate the research questions developed in this study and to address issues which will generally affect the diffusion of telework in the long term, it is imperative to understand what 'telework' is.

In telework research, there is no universally accepted definition of the term 'telework' ([Martínez-Sánchez et al., 2007](#)). There seems to be an important, albeit not total, agreement regarding the criteria applied in order to define 'telework'. However, there has been no consensus on the emphasis given by researchers on different aspects of telework ([Wilks and Billsberry, 2007](#)). A remote work location and the use of ICTs constitute two of the most agreed upon criteria while affiliation to an

employer and the time threshold to telework have puzzled researchers leading some of them to exclude self-employed and occasional teleworkers from their teleworker samples ([Haddon and Brynin, 2005](#); [Hilbrecht et al., 2008](#); [Peters et al., 2004](#)).

'Telework' and a host of other terms, such as 'homeworking', 'telehomeworking', 'telecommuting', 'remote working', 'virtual work', 'electronic homeworking' and 'distributed work' have been used interchangeably ([Golden and Eddleston, 2018](#); [Haddon and Brynin, 2005](#); [Illegems and Verbeke, 2004](#); [Lautsch et al., 2009](#); [Nunes, 2005](#)). The terms 'e-Work' and 'home-anchored work' have also been suggested as an alternative to 'telework' ([Nunes, 2005](#); [Whittle and Mueller, 2009](#)).

Different types of telework have also been discussed and scholars usually agree on three main categories: home-based work or homeworking, group-based teleworking including satellite-office and neighborhood office centers and mobile telework or otherwise called nomadic ([Nunes, 2005](#); [Pérez et al., 2002](#); [Taskin and Devos, 2005](#); [Wilson and Greenhil, 2004](#); [Morganson et al., 2010](#)). Some argue that there are more types of telework such as independent telework and networking or flexible teleworking systems ([Nunes, 2005](#); [Taskin and Devos, 2005](#)). Based on this telework typology, scholars distinguish certain categories of teleworkers, generally accepted in research ([Peters et al., 2004](#)). Nevertheless, more focused groups of teleworkers are also delineated. Such an example is mentioned by [Wilson and Greenhil \(2004\)](#) who utilize Ovortup's (1992) classification of teleworkers in substitutors, self-employed and supplementers.

In sum, telework is not a homogeneous entity. Rather, researchers refer to a telework continuum and a consequent spectrum of telework practices ([Wilks and Billsberry, 2007](#)). Any pre-determined intensity or time threshold does not contribute to solving the problem of defining telework ([Haddon and Brynin, 2005](#)). In order to offset the lack of a universally accepted telework definition, some researchers used project-specific definitions. [Sullivan \(2003\)](#) argues against past studies that such definitions are not only inevitable but can also prove beneficial for the refinement of future definitions and can contribute to the creation of future sampling strategies. Moreover, it is suggested that the nature and history of telework as a social construction is reflected in the different interests of researchers and the various discourses regarding telework ([Haddon and Brynin, 2005](#)).

3. Methodology

The systematic literature review method was used in this study. The main purpose of this literature review is twofold. Initially, it aims to explicitly summarize the extant research pattern regarding telework. Second, it seeks to identify the main research gaps in the literature and to suggest a future research agenda. This method is particularly useful because it provides a systematic, explicit and comprehensive collection of existing knowledge as well as knowledge gaps on a flexible form of work, known as 'telework' or 'telecommuting', and its potential impact on employees and organizations which adopt such practices as well as on society at large ([Nguyen et al., 2018](#)).

Systematic literature reviews are becoming increasingly common within management research ([Phillips et al., 2014](#)). They combine cross-referencing between journals and researchers, thorough searches of research databases and applying inclusion/exclusion criteria thereby resulting in theoretically sound research which is also methodologically rigorous and provides scholars and practitioners with a reliable basis to formulate decisions and act accordingly ([Phillips et al., 2014](#)). An overview of the study's methodology is given in [Figure 1](#).

3.1. Data collection

In order to carry out this literature review we used secondary data sourced from Scopus database, a source which has been recommended and applied by numerous researchers in their systematic literature review analyses ([Lauretta and Ferreira, 2018](#)). First, the research

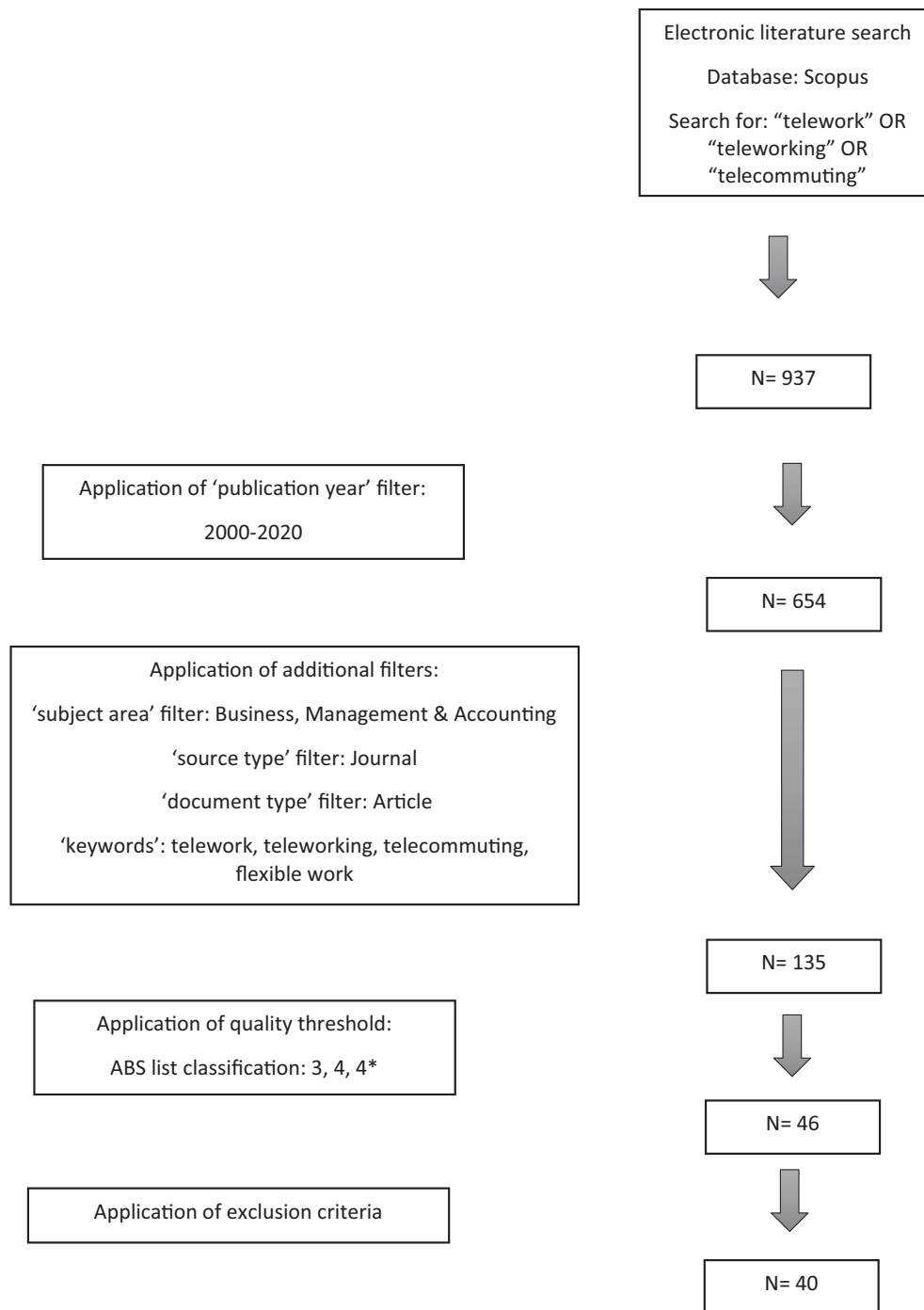


Figure 1. Literature review analysis methodology.

foundations were defined and the search terms were identified. The definition of the search terms constitutes a significant stage of the overall process of a systematic literature review (Tranfield et al., 2003).

During the initial phase that is the planning process, the research questions reflecting the main objectives of our study were formulated. Three terms related to telework were included in the article title. For this study, three words were identified as the search terms, namely 'telework', 'teleworking' and 'telecommuting'. The search was firstly conducted without the presence of any restrictions or limitations in terms of keywords. The result of the initial search was 937 documents.

Furthermore, certain filters were applied so that results reflect the primary focus of the study. Consequently, the search focused on 'telework' or 'teleworking' or 'telecommuting' appearing in documents

published between 2000 and 2020. The number of documents dropped to 654. Additionally, the type of source and document were specified as Journal and Article, respectively, and the subject area as Business, Management and Accounting. A list of keywords, namely 'telework', 'teleworking', 'telecommuting' and 'flexible work' was also compiled to further filter results. Following the application of the filters, 135 studies were obtained. The search formula as used in Scopus database is available in the Appendix.

3.2. Data inclusion

Subsequently, a quality threshold was applied and publications were only included in the analysis if the journal in which they were published

was classified as category 3, 4 or 4* in the ABS Academic Journal Guide. The application of quality standards resulted in 89 articles being excluded. The remaining 46 articles were reviewed and analyzed by title and abstract. In certain cases, when abstracts provided less information than necessary, a more thorough examination of the article took place leading to its final inclusion or exclusion.

Inclusion criteria were established to ensure that the reviewed articles reflect the main purpose of this study and its component research questions. Such criteria comprise i) articles on teleworking employees, ii) article title, document type, source type, keywords and publication year as specified in Figure 2, iii) empirical and conceptual papers and iv) papers in 3,4 or 4* journals as determined by the Academic Journal Guide (2018) of the Association of Business Schools.

Following this, 6 studies were excluded according to three criteria as shown in Table 1. First, two articles were excluded because they focused on non-teleworkers in organizations where telework is an option for employees or in organizations where the manager is the one who teleworks. One more article was not included in the body of literature studied in this paper as it examined the impact of several team characteristics on supervisors' attitudes towards teleworking. Last, three articles which weakly explored questions related to the purpose of this study were also ruled out. In particular, those articles presented results regarding i) the European social dialogue on telework through 'soft' law, ii) the differences in resource investment between teleworking and non-teleworking firms and iii) patterns of usage of communication technologies and computers by teleworkers based on their background. Finally, a total of 40 studies were systematically reviewed.

4. Findings

4.1. Q1: Extent and coverage of articles

All papers were analyzed and codified and data extracted are presented in Table 2, Figure 2 and Table 3. Table 2 presents a summary of the research method used in each study, the main research objectives and most important findings. Articles in Table 2 are referred to by the name of author/-s and publication year. In addition, Figure 2 provides an overview of the trajectory of telework research during the last 20 years while Table 3 shows the number of articles per publication source and classification thereof according to the ABS list.

Table 1. Criteria for paper exclusion.

Exclusion criterion	Subcategories	Number of articles excluded
Focus on non-teleworkers		2
Managers' attitudes towards telework as shaped by team characteristics		1
Non-employee-related telework aspects	Law issues	1
	Financial issues	1
	Technology issues	1
	Technology issues	1

What stands out in Figure 2 is that most of the studies reviewed were published during the first half of the 20-year period under research. In detail, twenty-six articles were published between 2000 and 2009 when only fourteen were published in the 2010–2020 period. A possible explanation could be that the slow increase in telework during the 2010–2019 decade led to a decreased interest in research regarding telework and other flexible work practices.

As Table 3 shows, the publication sources belong to four different areas, namely Business/Business Ethics/Social Sciences, Leadership and Management, Technology and Innovation, and Gender. The main outlet for telework studies were journals in the Technology and Innovation research strand implying a strong relationship between telework and technology. Interestingly, papers from 'New Technology, Work and Employment' account for 35% of the total number of articles while those published in academic sources in both the Technology and the Business domains correspond to half of the articles studied in this paper.

The predetermined quality threshold led to sources classified as category 3, 4 or 4* in the ABS Academic Journal Guide. The vast majority (70%) of the articles reviewed were found in journals of category 3 when 27,5% of the papers are published in category 4 and only 2,5% in category 4* sources. A possible explanation for the lack of very high-quality research on telework could point to its limited usage and non-prominence in the pre Covid-19 era. However, the sharp rise in telework after the outbreak of coronavirus leads to the need for more high-quality research on the topic.

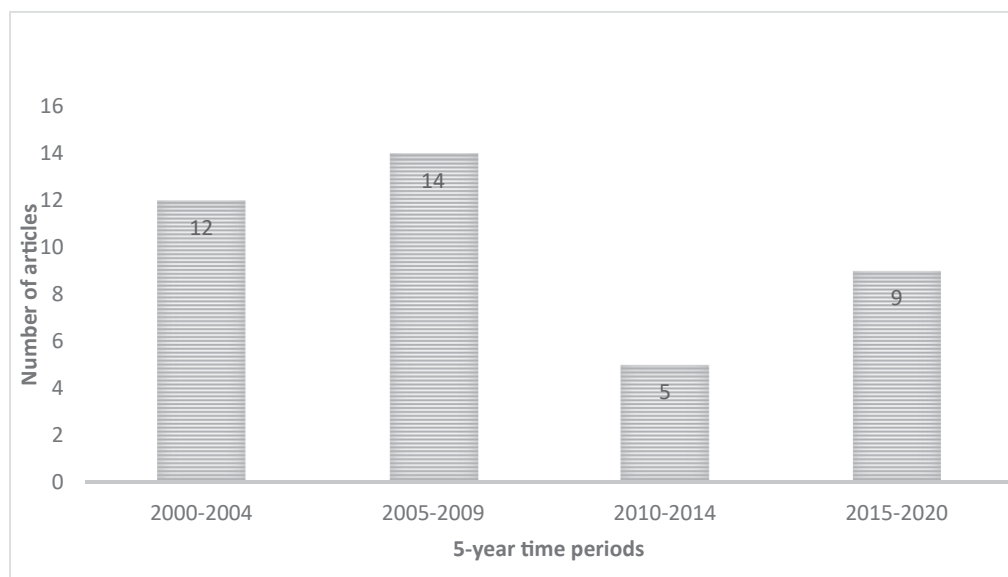


Figure 2. Trajectory of telework research during the last twenty years, based on reviewed studies (ABS list classification: 3–4*).

Table 2. Articles analyzed based on name of author/-s, method, research questions and findings.

Author/-s, publication year	Research methodology	Research questions	Findings/Key contributions
Golden and Eddleston, 2018	Quantitative research Survey-based	<ul style="list-style-type: none"> Does teleworking impact career success? 	<ul style="list-style-type: none"> The extent of teleworking, rather than teleworking per se, negatively affects promotions and salary growth. The greatest career benefits were attained by occasional teleworkers. The role of the work context: What is stigmatizing in one context is not stigmatizing in another.
Delanoëje et al. (2019)	Quantitative research Daily diary- and survey-based	<ul style="list-style-type: none"> How does a teleworking day affect daily work-to-home and home-to-work conflict? 	<ul style="list-style-type: none"> Lower work-to-home conflict but higher home-to-work conflict on teleworking days. For employees with a home protection preference, there was more work-to-home conflict on teleworking days.
Müller and Niessen (2019)	Quantitative research Survey-based	<ul style="list-style-type: none"> What is the relationship between working location and self-leading behavior and how does self-leading behavior relate to work satisfaction? Does autonomy constitute a mediator in this relationship? 	<ul style="list-style-type: none"> On home days, part-time teleworkers reported higher self-leading behavior. The association between the working location and self-leading behavior was mediated by autonomy. On home days, part-time teleworkers were more satisfied with their job.
Chung and van der Horst (2018)	Quantitative research Survey-based	<ul style="list-style-type: none"> Does flexitime and teleworking help women maintain their careers after childbirth? 	<ul style="list-style-type: none"> Flexitime and teleworking can help women sustain their employment status after childbirth. Use of telework may increase the likelihood of staying in employment for first-time mothers. Flexibility needs to be enacted in order to make a difference. The work environment and occupational position may also be conducive for women to maintain their working hours.
Windeler et al. (2017)	Quantitative research Survey-based	<ul style="list-style-type: none"> How efficient is a part-time telework (PTT) practice in alleviating work exhaustion associated with social interaction? How do different social job characteristics relate to work exhaustion? 	<ul style="list-style-type: none"> PTT offered a recovery opportunity by attenuating the relationship between interpersonal interaction and work exhaustion. After PTT (not before), work exhaustion increased as external interaction increased. Work exhaustion decreased as interaction quality increased and it increased as interaction quantity increased. PTT attenuated this relationship.
Vilhelmson and Thulin (2016)	Qualitative research Interview-based	<ul style="list-style-type: none"> How can the rapid increase in telework be understood? Who and where are the flexible workers? 	<ul style="list-style-type: none"> Telework expansion can be explained by a working life in transition. Factors which influence this expansion: ICTs, work tasks and contracts in knowledge-based sectors, managers' control and trust and individual and household work life balance issues.
Sewell and Taskin (2015)	Qualitative research Case study	<ul style="list-style-type: none"> How does ICT used in telework provide employees with more autonomy while placing new constraints on them in terms of the way they conduct themselves in settings that used to be beyond the reach of managerial control? 	<ul style="list-style-type: none"> A new hybrid form of work which is likely to become more common in the future: employees are neither exclusively tied to traditional working arrangements nor exclusively home-anchored. Technical and professional teleworkers develop broadly similar strategies of spatiotemporal scaling to deal with the tension of autonomy vs control involved in telework.
Anderson et al. (2014)	Quantitative research Survey-based	<ul style="list-style-type: none"> What is the relationship between telework and affective well-being? Could openness to experience, rumination, sensation seeking and social connectedness outside work act as cross-level moderators? 	<ul style="list-style-type: none"> On teleworking days, employees experienced more job-related positive affective well-being and less job-related negative affective well-being. Openness to experience, rumination and social connectedness outside work could act as moderators.
Beham et al. (2015)	Quantitative research Experiment	<ul style="list-style-type: none"> What is the impact of person-related, task-related and organisational context factors on managerial telework allowance decisions? 	<ul style="list-style-type: none"> Employee sex, the quality of the employee-supervisor relationship, self-management skills, task interdependence, family-supportive organisational culture and formal policies influence managerial telework allowance decisions.
Neirotti et al. (2013)	Quantitative research Survey-based	<ul style="list-style-type: none"> Which firms are more inclined to adopt telework? 	<ul style="list-style-type: none"> Rise in the adoption of mobile work rather than home-based forms of telework. Firms which have adopted information systems and knowledge management were more inclined to telework adoption. Telework adoption was more common among firms in a growing and geographically dispersed market and within the context of higher levels of human capital and lower capital intensity.
Dutcher (2012)	Quantitative research Experiment	<ul style="list-style-type: none"> What are the effects of teleworking in productivity in two distinct tasks: the dull and the creative ones? 	<ul style="list-style-type: none"> The environment affects productivity in an intuitive manner. Telecommuting environmental effects could have positive implications on productivity of creative tasks and negative implications on productivity of dull tasks.
Taskin and Bridoux (2010)	Theoretical model-based	<ul style="list-style-type: none"> Could telework endanger an organization's knowledge base and competitive advantage by threatening knowledge transfer between teleworkers and non-teleworkers? 	<ul style="list-style-type: none"> Teleworking may negatively affect certain cognitive and relational components depending on frequency, location of telework and perception.
Morganson et al. (2010)	Quantitative research Survey-based	<ul style="list-style-type: none"> What are the differences in work-life balance support, job satisfaction and workplace inclusion when comparing tele-work locations with traditional work arrangements? 	<ul style="list-style-type: none"> Main office and home-based workers had similar, high levels of work-life balance support and job satisfaction.

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Table 2 (continued)

Author/s, publication year	Research methodology	Research questions	Findings/Key contributions
			<ul style="list-style-type: none"> Main office workers had higher levels of work-life balance support than satellite and client-based workers. Main office workers reported higher the highest levels of inclusion. Employees' flexibility in choosing their work locations is related to positive outcomes.
Virick et al. (2010)	Quantitative research Survey-based	<ul style="list-style-type: none"> Is there a moderating role of performance outcome orientation and worker type in the curvilinear relationship between the extent of teleworking and job and life satisfaction? 	<ul style="list-style-type: none"> Performance outcome orientation moderates the curvilinear relationship between the extent of telework and job satisfaction. Worker type, defined by work enjoyment and work drive, moderates the curvilinear relationship between the extent of telework and life satisfaction.
Mayo et al. (2009)	Qualitative research Interview-based	<ul style="list-style-type: none"> What makes a firm likely to adopt teleworking? 	<ul style="list-style-type: none"> Teleworking was correlated with small organisational size, variable compensation and a high proportion of international employees. A contingent rewards leadership style acts like a moderator for the effects of firm age and internalization on the adoption of telework.
Whittle and Mueller (2009)	Qualitative research Ethnography	<ul style="list-style-type: none"> Comparing the utopian vision of telework for the benefit of clients with the workers' reality of isolation, disaffection, disconnection and cynicism in the absence of clients. 	<ul style="list-style-type: none"> There is a gap between what is presented as flexible work arrangements and what it really is when clients are not present. An ideal image of telework is promoted by actors with vested interest or a certain agenda. Clients have a one-sided view of the telework realities.
Lautsch et al. (2009)	Mixed research Interview-based	<ul style="list-style-type: none"> What are the effective managerial approaches regarding telecommuting implementation? What are the paradoxes a manager has to deal with in a flexible working environment? 	<ul style="list-style-type: none"> Supervisors close contact with teleworkers is needed but only to emphasize information sharing rather than to monitor work schedules. Teleworkers who were approached in an information sharing manner tended to have lower work-family conflict, increased performance and to help co-workers. Managers should encourage work/family separation for teleworkers. Non-telecommuters' workload and work-family conflict may increase.
Hilbrecht et al. (2008)	Qualitative research Interview-based	<ul style="list-style-type: none"> How do married female teleworkers with school-aged children experience time flexibility and its relationship to work-life balance. 	<ul style="list-style-type: none"> Optimal time management led to positive perceptions of teleworking. Caregiving pervasiveness often created tension. Teleworking and motherhood resulted in limited personal leisure. Teleworking was viewed as a useful tool for combining those dual roles and women did not question how fair it was for them to have both roles.
Martínez-Sánchez et al., 2007	Quantitative research Survey-based	<ul style="list-style-type: none"> How is telework related to employee development and firm performance? 	<ul style="list-style-type: none"> HR development practices are positively associated with the intensity of telework adoption. HR development practices moderate the relationship between telework and firm performance. Their implementation is necessary in order to enhance the otherwise marginal contribution of telework at organizational level (when compared to other workplace flexible practices).
Wilks and Billsberry (2007)	Qualitative research Interview-based	<ul style="list-style-type: none"> Has teleworking lost much of its value in today's working world? Would the term 'home-anchored worker' replace the term 'teleworker'? 	<ul style="list-style-type: none"> It is difficult to confirm who may be defined as a 'teleworker' using the range of definitions and characteristics in recent literature. Teleworkers are not a single group. The term 'home-anchored worker' should replace the term 'teleworker' so that research can examine related issues such as work-life balance.
Golden (2006)	Quantitative research Survey-based	<ul style="list-style-type: none"> What is the impact of telework on organization commitment and turnover intentions and what is the role of work exhaustion? What are the mechanisms through which telework operates? 	<ul style="list-style-type: none"> The degree of telework is positively related to organizational commitment and negatively related to turnover intentions. Work exhaustion mediates the relationships between teleworking and commitment (partial mediation) and teleworking and turnover intentions (full mediation).
Kossek et al. (2006)	Mixed research Survey- and interview-based	<ul style="list-style-type: none"> How do professionals use telework? How do they perceive psychological job control? What boundary management strategies are used to separate work and family roles? 	<ul style="list-style-type: none"> Employees who perceived greater psychological job control had lower turnover intentions, depression and family-work conflict. Formal use of telework was positively related to higher supervisor performance ratings but not related to positive well-being and less work-family conflict for professionals who already had had some informal job autonomy.
Taskin and Devos (2005)	Qualitative research Not available	<ul style="list-style-type: none"> How does telework contribute to the process of individualization and the paradoxes it addresses to management, namely individual-collective dilemma and autonomy-control paradox? 	<ul style="list-style-type: none"> Telework appears as practice which meets employers' and employees' demands (individualization) but it also fragments collectivity, exposes individuals to social risk and produces exclusion.

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Table 2 (continued)

Author/-s, publication year	Research methodology	Research questions	Findings/Key contributions
			<ul style="list-style-type: none"> Human Resources Management: a new institution of individualization in a world where regulation functions are transferred to individuals.
Collins (2005)	Mixed research Case study	<ul style="list-style-type: none"> Are teleworkers more productive than non-teleworkers? Does the financial investment required to support teleworking have a positive financial payback? Are teleworkers more satisfied with their work-life balance than non-teleworkers? Is there a latent demand for teleworking among the workforce that is not satisfied? Is there any evidence that teleworking will increase long-term shareholder value? 	<ul style="list-style-type: none"> Teleworkers were more productive than office-based workers. Productivity is not related to gender or hours worked. Despite the increase in productivity, the financial case was neutral. Teleworkers reported higher levels of satisfaction with their work-life balance. Availability and perception of choice also contribute to increased satisfaction. 'Us and them' feeling emerged between office-based and homeworkers. A reciprocal feeling of resentment from office-based workers to the perceived advantages of teleworkers emerged.
Nunes (2005)	Mixed research Literature review, Survey- and Legislation-based	<ul style="list-style-type: none"> What are the enablers and the constraints which may influence the implementation of telework? What are the common characteristics of potential teleworkers? 	<ul style="list-style-type: none"> Informal telework is taking place because of the gradual increase of the use of ICTs among companies and households. In order to encourage the diffusion of telework, the State should promote informative actions and training actions for (potential) teleworkers and to establish a network of local telecentres.
Golden and Veiga (2005)	Quantitative research Survey-based	<ul style="list-style-type: none"> What is the impact of the extent of telework on job satisfaction? 	<ul style="list-style-type: none"> There is a curvilinear relationship between the extent of teleworking and job satisfaction. Job satisfaction is found to plateau at more extensive levels of teleworking. Task interdependence and job discretion mediate this relationship. Work-scheduling latitude did not play a moderating role.
Haddon and Brynin (2005)	Quantitative research Survey-based	<ul style="list-style-type: none"> What is the character of telework and which are the characteristics of teleworkers? 	<ul style="list-style-type: none"> Telework is not a homogeneous entity. It comprises different elements of technology and location. In forming a telework definition, it seems more appropriate not to determine a threshold of intensity. Telework seems to be reflecting traditional occupational practices instead of a major technological shift.
Iscan and Naktiyok (2005)	Quantitative research Survey-based	<ul style="list-style-type: none"> Which is the effect of demographic characteristics, household attitudes, support factors and perceived advantages and disadvantages of telework to individuals, organisations and society on individuals' attitudes towards teleworking? 	<ul style="list-style-type: none"> Women, married employees, employees who have children less than five years old, employees whose house is big enough, employees whose house is relatively farther to the workplace and those who perceive more advantages from telework to themselves, to the organisation or to the society have a more favourable attitude towards teleworking. Employees who perceive more disadvantages from teleworking to themselves or the organisation have a less favourable attitude towards telework. Co-worker support and technological-bill support positively affect employees' attitudes towards telework.
Wilson and Greenhil (2004)	Literature review	<ul style="list-style-type: none"> What are the potential implications of a risk society on identities due to alterations in work practices? 	<ul style="list-style-type: none"> The renegotiation of the home-work boundary entailed by flexibility via telework brings into play the gendered identities and roles attached to the different spheres of life.
Illegems and Verbeke (2004)	Qualitative research Integrative approach	<ul style="list-style-type: none"> A resource-based analysis of telework impacts on large organisations. 	<ul style="list-style-type: none"> Telework alters the organisation's competences. Employees' views are driven by the perceptions of absence or presence of appropriate broader HRM practices for telework. Telework is a credible by-product of sophisticated HRM in knowledge-based organisations and requires preparation and training. A pilot project approach may be a reasonable first step in the direction of fully adopting telework.
Peters et al. (2004)	Quantitative research Survey-based	<ul style="list-style-type: none"> How are employees' opportunities, preferences and practices in telecommuting adoption analysed? 	<ul style="list-style-type: none"> Opportunity mostly depended on organisational and job characteristics. Preference was dependent on all explanatory clusters (organisational, job, household and individual characteristics). Practice was especially dependent on job and individual characteristics.
Mann and Holdsworth (2003)	Mixed research Survey- and interview-based	<ul style="list-style-type: none"> What is the psychological impact of telework when compared to office-based work? 	<ul style="list-style-type: none"> Negative emotional impact of teleworking, particularly in terms of loneliness, worry, guilt and irritability. Teleworkers experience significantly more mental health symptoms of stress than office-based workers and slightly more physical health symptoms.
Sullivan (2003)	Qualitative research Definition-based analysis	<ul style="list-style-type: none"> The multiple definitions of teleworking. 	<ul style="list-style-type: none"> Lack of a single definition for telework ICT use distinguishes tele-homework from homework. Need for a variety of project-specific definitions
Simpson et al., (2003)	Qualitative research Case study	<ul style="list-style-type: none"> Which are the effects of infrastructure and isolation on rural telework and what is the potential of telework for rural communities? 	<ul style="list-style-type: none"> One's physical location as a worker and one's location as a rural worker can potentially impact on how one experience telework. A broader understanding of teleworking is necessary in order to encompass the experience and reality of rural workers.

(continued on next page)

Table 2 (continued)

Author/-s, publication year	Research methodology	Research questions	Findings/Key contributions
Pérez et al., 2002	Quantitative research Survey-based	<ul style="list-style-type: none"> Which are the perception differences of telework benefits and barriers in industrial and service companies? 	<ul style="list-style-type: none"> Firm size, employee involvement in task design, the degree of innovation, export intensity, employees' training, the company's age, the gender of the HR manager, telework feasibility and telework diffusion influence the perceptions of benefits of and barriers to telework.
Sullivan and Lewis (2001)	Qualitative research Interview-based	<ul style="list-style-type: none"> How can teleworking enhance work-life balance while perpetuating traditional work and family roles? 	<ul style="list-style-type: none"> Telework may be family-friendly as it enables women to combine family and work but it not necessarily gender equitable in its operations and effects. However, women do not consider telework exploitative. Working at home also affects the lives of co-residents and sometimes leads to family conflict.
Kerrin and Hone (2001)	Quantitative research Cognitive mapping technique	<ul style="list-style-type: none"> Does the concept of telework attract well-qualified individuals to an organisation? 	<ul style="list-style-type: none"> Telework will not necessarily be attractive to all potential employees. The lack of interaction is considered a significant disadvantage of telework mostly by student job-seekers but also by non-student job seekers.
Illegems et al. (2001)	Quantitative research Survey-based	<ul style="list-style-type: none"> Which are the potential drivers and constraints for companies regarding the implementation of telework in a business environment? 	<ul style="list-style-type: none"> Operating in a knowledge-based sector, being located in a congested area, a high level of electronic communication, output-oriented co-ordination and a non-routine decision making are some of the main drivers of telework adoption. Lack of awareness of 'telework', direct supervision as the main control mechanism, sequential information flow and local commuting are the key constraint to telework adoption.
Lim and Teo (2000)	Quantitative research Survey-based	<ul style="list-style-type: none"> What are the effects of demographic characteristics, work-related attitudes, support factors and perceived advantages and disadvantages on individuals' attitudes towards teleworking? 	<ul style="list-style-type: none"> Marital status, job insecurity, perceived advantages and disadvantages to individuals or organisations and organisational commitment influence individuals' perceptions of telework.
Baruch (2000)	Qualitative research Interview-based	<ul style="list-style-type: none"> Which are benefits and pitfalls perceived by professionals and managers? 	<ul style="list-style-type: none"> Needs related to the telework interface, the job, the individual and the organisation should be covered to reach an effective telework implementation.

Table 3. Number of articles per ABS Academic Journal Guide Source and ABS Classification.

Publication source	ABS academic journal guide	Number of studies
Business, business ethics & social sciences		
Journal of Business Ethics	3	1
Journal of Vocational Behavior	4	3
Human Relations	4	4
Journal of Organizational Behavior	4	2
Organization Studies	4	1
European Journal of Work and Organizational Psychology	3	1
Journal of Economic Behavior and Organization	3	1
Gender		
Gender, Work and Organization	3	2
Leadership and management		
Journal of Management	4*	1
Information and Management	3	1
Journal of Managerial Psychology	3	2
Long Range Planning	3	1
International Journal of Human Resource Management	3	2
Human Resource Management	4	1
Technology and innovation		
New Technology, Work and Employment	3	14
Technological Forecasting and Social Change	3	1
Technovation	3	1
Journal of Information Technology	3	1

Table 4. Research design and methodology adopted in the reviewed articles.

Research design	
Qualitative	12 (30%)
Quantitative	21 (52,5%)
Mixed	5 (12,5%)
Other	2 (5%)
Study methodology	
Case study	3
Experiment	2
Literature review	2
Survey	22
Interviews	9
Other	6

4.2. RQ2: What methods were used?

The overall strategy selected by each author or group of authors in order to logically and coherently integrate different study components is explored in this unit. As shown in Table 4, more than half of the papers adopted a quantitative research design while 30% of the articles are developed based on a qualitative method. A few authors chose to use both types. The dominant techniques for collecting data are surveys and interviews.

The major entities analyzed in the studies, also known as the units of analysis, are employees and managers. Table 5 illustrates what the unit of analysis is in all studies under review. Professional-level employees and (female) employees with children are the primary unit of analysis. Managers, especially HR managers, also constitute a common unit of analysis. In certain articles, both employees and managers are examined

Table 5. Level of analysis, number of participants and data analysis techniques per study.

Article	Level of analysis & participants	Data analysis techniques
Golden and Eddleston, 2018	Professional employees in a company, both telecommuters and non-telecommuters Corporate-provided promotion and salary growth data N = 405	Means, standard deviations, correlations, hierarchical regression analysis
Delanoëje et al. (2019)	Employees with parental responsibility, both teleworkers and non-teleworkers N = 81	Multilevel moderated mediation analysis
Müller and Niessen (2019)	Employees who work at least 20 h a week and work from home at least 2 days per month N = 195	Multilevel mediation analysis, hierarchical linear multilevel regression analyses
Chung and van der Horst (2018)	Female employees with at least one child Excluding self-employed and those in non-paid employment N = 523	Series of logistic regression analyses
Windeler et al. (2017)	Study 1: moderate- to high-performing employees at various hierarchical levels with a range of job titles who had been with the organization for longer than 6 months, $n_1 = 51$ Study 2: larger and more diverse sample, full-time employees, $n_2 = 58$ N = 109	Partial Least Square Structural Equation Modelling
Vilhelmson and Thulin (2016)	People in paid employment including self-employed and employers 2005–2006: $n_1 = 27.000$ 2011–2012: $n_2 = 24.000$ N = 51.000	Time series of the incidence of teleworking, bivariate comparisons of factors affecting the decision to telework, binary logistic regression, weighting procedures
Sewell and Taskin (2015)	The HR director, project leader and the management team of the two business units involved in the project, teleworkers and managers. Phase 1: $n_1 = 4$ Phase 2: $n_2 = 17$ Phase 3: $n_3 = 14$ N = 35	Qualitative analysis/Two levels of coding: descriptive and conceptualizing, development of themes and categories
Anderson et al. (2014)	Employees who teleworked at least once per pay period with an average telework experience of 3 years N = 102	Random coefficient modeling (RCM), Full Information Maximum Likelihood (FIML) estimation, moderators entered as level-2 variables in the main effects models
Beham et al. (2015)	Managers of companies with at least 20 employees N = 208	Correlations, hierarchical linear regressions
Neirotti et al. (2013)	People responsible for the management of a firm's information systems N = 1.134	Descriptive statistics, regressions
Dutcher (2012)	Students at Florida State University N = 125	Regressions, means and t-tests
Taskin and Bridoux (2010)	Literature sources N= (-)	Theoretical model
Morganson et al. (2010)	Mostly technical staff with some managers and support personnel N = 578	Multiple regression analyses, confirmatory factor analysis
Virick et al. (2010)	Exempt employees N = 85	Means, standard deviations, bivariate correlations, hierarchical moderated regression analyses
Mayo et al. (2009)	CEOs of firms with more than 50 employees N = 122	Means, standard deviation, correlations, logistic regression analyses, OLS regression analysis
Whittle and Mueller (2009)	Management consultants employed by a large firm N = 10	Ethnographic approach/Content analysis (rereading data, searching for contradictions, copying data into a separate file)
Lautsch et al. (2009)	Dyads of supervisors and subordinates, both telecommuters and non-telecommuters $N = (90 \times 2) = 180$	Means, standard deviation, inter-correlations, standard multiple regression
Hilbrecht et al. (2008)	Mothers employed in professional positions N = 18	Qualitative analysis/Content analysis (coding, constant comparative method, themes development)
Martínez-Sánchez et al., 2007	CEOs and HR managers N = 312	Hierarchical regression
Wilks and Billsberry (2007)	Self-employed teleworkers N = 8	Qualitative analysis/Content analysis
Golden (2006)	Professional-level teleworkers N = 393	Means, standard deviations, correlations, factor analysis, hierarchical regression
Kossek et al. (2006)	Professional employees in two firms with telework policies N = 245	Means, standard deviations, inter-correlations ordinary least squares regressions
Taskin and Devos (2005)	Literature sources N= (-)	Framework analysis
Collins (2005)	Employees, both teleworkers and non-teleworkers, comparison of costs of teleworkers and office-based workers, productivity,	One-sample t-test, cost-benefit analysis, qualitative analysis

(continued on next page)

Table 5 (continued)

Article	Level of analysis & participants	Data analysis techniques
	sickness-absence-employee retention, the balanced scorecard N = 238 (& secondary data)	
Nunes (2005)	Empirical findings of surveys among enterprises Secondary data	Synthesis of empirical findings
Golden and Veiga (2005)	Professional-level telecommuters N = 321	Means, standard deviations, correlations, internal consistencies, exploratory factor analysis, hierarchical regression analysis
Haddon and Brynin (2005)	Telework data from 5 countries and literature sources Secondary data	Framework analysis
Iscan and Naktiyok (2005)	Professional employees N = 664	Means, standard deviations, correlations, regression analysis
Wilson and Greenhil (2004)	Literature sources Secondary data	Framework analysis
Illegems and Verbeke (2004)	Survey 1: HR managers in firms with more than 90 employees and with physical presence in the capital city of the country under research, n ₁ = 83 Survey 2: Employees at firms with an equal number of those who had already implemented telework and those who had clearly expressed disinterest in adopting the practice, n ₂ = 261 N = 344	Resource-based analysis
Peters et al. (2004)	Employees using a personal computer at the workplace N = 849	Logistic regression analysis
Mann and Holdsworth (2003)	Full-time journalists, teleworkers and office-workers Study 1: n ₁ = 12 Study 2: n ₂ = 62 N = 74	Study 1: Qualitative/Content analysis Study 2: independent t-tests, one-tailed t-test, 2 × 2 between subjects ANOVA
Sullivan (2003)	Literature sources N = (-)	Framework analysis
Simpson et al. (2003)	Documentary material relevant to telework experiences in two case studies Telework participants in the two case studies, their colleagues and clients of the services they provide N = (-)	Qualitative/Content analysis
Pérez et al., 2002	HR managers N = 157	Factor analysis, contingency analysis
Sullivan and Lewis (2001)	Home-based teleworkers and their co-residents N = 28	Content analysis
Kerrin and Hone (2001)	Final year undergraduate and postgraduate students and non-student job seekers N = 60	MDS routine known as ALSCAL
Illegems et al. (2001)	HR managers in firms with more than 90 employees and with physical presence in the capital city of the country under research N = 83	Framework analysis, correlations
Lim and Teo (2000)	Professional-level employees N = 285	Means, standard deviations, correlations, hierarchical regression analysis
Baruch (2000)	Home-based teleworkers N = 62	Qualitative/Content analysis, correlations

in order to explore both subjectively and objectively any employee-related issue. Studies also consider university students, job seekers, teleworkers' colleagues, customers and co-residents albeit less frequently.

Furthermore, Table 5 provides details about the number of participants and data analysis techniques for the studies under review. Sample size ranges from 8 (Wilks and Billsberry, 2007) to 1.134 individuals (Neirotti et al., 2013) for primary data while secondary data collected even reached 51.000 entries (Vilhelmson and Thulin, 2016). Additionally, a variety of techniques were employed for data analysis.

The next table classifies each study based on its geographical and industry scope. Close inspection of Table 6 shows that the study samples come from several industries, however, samples from telecommunications and technology-related sectors are more popular in telework research. This is consistent with the findings reported in Table 3 according to which most of the articles studied in this paper were published in technology-focused sources. Results lead to two possible explanations: either there is a causal relationship between those two findings or telework is largely associated by scholars with technology.

As shown in Table 7, studies in this review investigate telework in several countries. Studies were conducted mainly in European countries

(55%) and the USA (17,5%). Only one paper constituted a cross-country study. A possible explanation for that could be the fact that telework is highly context dependent intensified by the lack of a generally accepted telework definition.

4.3. RQ3: What are the main research themes studied?

The third research question concerning the main research themes led to a table with three different kinds of themes based on whether they are employee-, organization- or manager-related. According to Table 8, during the 2000–2020 period, research on telework focused on employees by investigating potential career impacts, work-life balance issues, opportunities and preference of telework, job satisfaction as a result of telework and the importance of self-control. Further, studies measured the productivity, competitive advantage and general performance of organizations which had adopted telework.

Other organization-level telework-related topics, such as employee commitment towards the organization as well as turnover rates and human resources management practices, were explored. Additionally, authors analyzed what is referred to as 'the telework paradoxes' that

Table 6. Geographical and business scope of articles.

Article	Main country of research	Industry sector
Golden and Eddleston, 2018	USA	Technology services
Delanoëije et al. (2019)	Belgium	Several different sectors
Müller and Niessen (2019)	-	Several different sectors
Chung and van der Horst (2018)	UK	Not mentioned
Windeler et al. (2017)	USA	(Study1) Financial services company (Study 2) A variety of industries
Vilhelmson and Thulin (2016)	Sweden	Not mentioned
Sewell and Taskin (2015)	Belgium	Biopharmaceutical company
Anderson et al. (2014)	USA	Government agency
Beham et al. (2015)	Germany	Several different sectors
Neirotti et al. (2013)	Italy	Manufacturing industries, material service and informational service industries
Dutcher (2012)	USA	University (students)
Taskin and Bridoux (2010)	-	N/A
Morganson et al. (2010)	USA	Engineering and technology research organization
Virick et al. (2010)	USA	Telecommunications company
Mayo et al. (2009)	Spain	Several different sectors
Whittle and Mueller (2009)	(Europe)	Technology firm
Lautsch et al. (2009)	-	Information and financial services organizations
Hilbrecht et al. (2008)	Canada	Financial corporation
Martínez-Sánchez et al., 2007	Spain	Telecommunications, software and consulting companies
Wilks and Billsberry (2007)	-	Several different sectors
Golden (2006)	-	Internet solutions company
Kossek et al. (2006)	USA	Information and financial services organizations
Taskin and Devos (2005)	-	N/A
Collins (2005)	UK	Insurance organization
Nunes (2005)	Portugal	Several different sectors
Golden and Veiga (2005)	-	Not mentioned
Haddon and Brynin (2005)	UK, Bulgaria, Germany, Israel, Italy and Norway	Not mentioned
Iscan and Naktiyok (2005)	Turkey	Internet companies
Wilson and Greenhil (2004)	-	N/A
Illegems and Verbeke (2004)	Belgium	Several different sectors
Peters et al. (2004)	Netherlands	Several different sectors
Mann and Holdsworth (2003)	UK	Newspapers
Sullivan (2003)	-	N/A
Simpson et al. (2003)	Australia	Government telework trial and internet training project
Pérez et al., 2002	Spain	Several different sectors
Sullivan and Lewis (2001)	UK	Several different sectors
Kerrin and Hone (2001)	-	University (students)

Table 6 (continued)

Article	Main country of research	Industry sector
Illegems et al. (2001)	Belgium	Several different sectors
Lim and Teo (2000)	Singapore	IT firms
Baruch (2000)	UK	Several different sectors

Table 7. Number of articles per country of research.

Country	No. of studies
USA	7
Belgium	4
UK	6
Sweden	1
Germany	2
Italy	2
Spain	3
Canada	1
Portugal	1
Norway	1
Netherlands	1
Australia	1
Singapore	1
Bulgaria	1
Israel	1
Turkey	1
Not available	9

Table 8. Main research themes.

Employee	Organization	Manager
Career impacts	Likelihood to adopt telework	Autonomy vs control
Work-life balance	Productivity	Individual vs collective
Gender	Performance	Approaches to telework
Attitudes/Preferences/ Opportunities	Competitive advantage	Telework allowance decisions
Self-control	Organisation commitment	Benefits and pitfalls
Job satisfaction	Turnover	
Loneliness	HRM practices	
Affective well-being	Enablers and constraints	
Benefits and pitfalls	Benefits and pitfalls	
Equipment	Infrastructure/ Equipment	

managers have to deal with, namely ‘individual vs collective’ and ‘autonomy vs control’, managerial approaches towards telework and decisions on allowing telework. Last, employee and manager perceptions regarding advantages and disadvantages as well as potential enablers and constraints of telework within the workplace were considered. Table 8 presents the main research themes categorized by whether they correspond to the employees, managers or the organization.

In this study, the main research themes found in the reviewed articles were divided into two categories, telework challenges and outcomes. The main reason behind this approach is because addressing both challenges and outcomes related to telework in the extant literature will be conducive to overcoming the former and improving the latter. As a result, a review of telework outcomes, such as the inclusion in the workforce of

certain groups, job satisfaction, work-life balance, career impacts, productivity and performance as well as interpersonal interaction and social isolation, will be conducted followed by a discussion on challenges which rise in a telework work environment, such as the autonomy versus control paradox and the relationships between teleworkers and non-teleworkers.

4.3.1. Telework outcomes

4.3.1.1. The inclusion of certain groups. Telework has been portrayed as “a new job organisation paradigm for companies working in the new Economy” (Pérez et al., 2002, p. 775). On the other hand, it has been claimed that telework does not constitute a major shift in organizational practices as it reflects traditional occupational practices (Haddon and Brynin, 2005). It lies, therefore, in a more thorough analysis to establish how telework impacts different aspects of the business world.

Telework is linked to the inclusion of certain groups in employment. Baruch (2000) supports that teleworking could possibly fit individuals in critical periods of their lifetime. Married individuals with young children and, especially, female employees can benefit from a flexible working practice, such as telework (Baruch, 2000; Chung and van der Horst, 2018; Hilbrecht et al., 2008; Iscan and Naktiyok, 2005; Sullivan and Lewis, 2001; Vilhelmson and Thulin, 2016). Chung and van der Horst (2018) found that flexitime and telework helped women sustain their employment status in the time after the birth of their children.

Home-related problems appear to be a responsibility of women and ‘feminine’ time is considered domestic and polychronic as opposed to the ‘masculine’ industrial time (Hilbrecht et al., 2008; Iscan and Naktiyok, 2005). Despite the fact that men’s participation in the domestic field has slowly increased, family commitments still remain more marginal for men (Sullivan and Lewis, 2001). As a result, women view telework as an opportunity to combine work and family (Chung and van der Horst, 2018; Hilbrecht et al., 2008; Iscan and Naktiyok, 2005). In spite of the fact that telework seems to reproduce traditional and not gender-equitable roles -as women have less time devoted to themselves and an unequal domestic burden-this remains unrecognized by most women who perceive it as the price they pay for their dual role (Hilbrecht et al., 2008; Sullivan and Lewis, 2001; Wilson and Greenhil, 2004).

It has been reported that another group of people who could benefit from telework is the people recovering from an accident or the disabled (Baruch, 2000; Nunes, 2005). Nunes (2005) notes that telework offers an opportunity for people with disabilities in Portugal to be integrated in the labor market. Several temporal and spatial characteristics of the traditional workplace act like a constraint to the participation of those groups in employment, either temporarily or permanently (Nunes, 2005). Nevertheless, Peters et al. (2004) observed that partly disabled employees were not offered the opportunity to telework more often than other employees. Moreover, they did not prefer to do so and they practically did not telework more often than others (Peters et al., 2004).

On the other side, telework has been ‘accused’ of excluding certain worker groups such as those with no technical skills, the low level educated and those residing in rural areas (Nunes, 2005; Peters et al., 2004; Vilhelmson and Thulin, 2016). However, Sullivan (2003) contends that for people living in rural areas telework is not just an option but rather the only option for employment.

4.3.1.2. Job satisfaction. Job satisfaction reflects the quality of the relationship between the employee and the organisation and is inextricably linked to one of the most important telework effects, namely the benefits of attracting, motivating and retaining the human capital resource-base of the organisation (Illegems and Verbeke, 2004). Job satisfaction needs to be understood on two levels. First, it is derived from the job itself (intrinsic satisfaction) but also from the conditional effects which result from differences in the activities embedded in the job (extrinsic satisfaction) (Golden and Veiga, 2005; Illegems and Verbeke, 2004).

Morganson et al. (2010) report equally high levels of job satisfaction between main office and home-based workers while most researchers agree on increased job satisfaction for teleworkers especially under specific circumstances (Baruch, 2000; Golden and Veiga, 2005; Illegems and Verbeke, 2004; Martinez-Sanchez et al., 2007; Müller and Niessen, 2019; Simpson et al., 2003; Virick et al., 2010). A curvilinear relationship has been detected by both Virick et al. (2010) and Golden and Veiga (2005) between the extent of telework and job satisfaction moderated by performance outcome orientation as well as task interdependence and job discretion, respectively. Both studies imply the existence of a critical threshold in the time devoted to telework beyond which benefits to job satisfaction cease to accrue.

4.3.1.3. Work-life balance. Telework is generally associated with high levels of work-life balance (Chung and van der Horst, 2018; Collins, 2005; Hibrecht et al., 2008; Kossek et al., 2006; Lautsch et al., 2009; Mann and Holdsworth, 2003; Sullivan and Lewis, 2001). In contrast, Whittle and Mueller (2009, p. 140) disagree with what they call a “one-sided view of the realities of telework” by questioning the idea that purchasing an internet connection or a laptop can automatically result in benefits such as work-life balance.

The results of this literature review show that telework can indeed be linked to increased work-life balance under certain conditions. Chung and van der Horst (2018) cite Piszczek and Berg’s (2014) view according to which it is the institutional setting of each country -which influences who has access to flexible work arrangements-that shapes how telework will affect work-life balance. Strong boundaries between the family and the work domain are also associated with better work-life balance and increased well-being facilitated by flexibility (Chung and van der Horst, 2018; Kossek et al., 2006; Lautsch et al., 2009). Additionally, greater psychological job control and a sharing-information supervision approach lead to lower family-work conflict (Kossek et al., 2006; Lautsch et al., 2009).

On the other hand, Delanoëje et al. (2019) maintain that, on teleworking days, workers experience less work-to-home conflict but more home-to-work conflict and that those with a strong home protection preference report more conflict resulting from interruption from work. Last, Sullivan and Lewis (2001) assert that working at home can be a source of family conflict as it also affects the lives of co-residents.

4.3.1.4. Career impacts. Mann and Holdsworth (2003) and Illegems et al. (2001) both acknowledge telework as an impediment of career progression. Kerrin and Hone (2001) reveal the fear of employees that telework may reduce their chances for career advancement while Mann and Holdsworth (2003) report that women who telework are not even perceived as working by others.

Telework is related to negative career outcomes because of the perceived lack of dedication to one’s career and the flexibility stigma that is “the devaluation of employees who use flexible work practices ... because they are seen as deviating from the work devotion schema that places work at the center of one’s life” (Golden and Eddleston, 2018). In fact, Golden and Eddleston, 2018 found similar results for teleworkers and non-teleworkers in terms of promotions. Although, they detected a negative relationship between telework and salary growth. In their study, they conclude that it is not teleworking per se but its extent which is negatively associated with promotions and salary growth and that occasional teleworkers enjoyed greater career benefits.

Golden and Eddleston, 2018 point to three moderators, namely supplemental work, an effective impression management strategy and the appropriate work context. In particular, when supplemental work is high, employees who telework more will receive more promotions and greater salary growth than when supplemental work is low. In terms of the work context, in organizations where teleworking normativeness is high, employees who telework more will receive more promotions -but not greater salary growth-than when they work in a less telework normative

environment. Finally, face-to-face contact with the supervisor is considered an effective impression management strategy which leads to greater salary growth for extensive teleworkers when it is high.

4.3.1.5. Productivity and firm performance. Improved productivity and firm performance are two of the important advantages of telework (Baruch, 2000; Illegems et al., 2001; Mann and Holdsworth, 2003; Nunes, 2005). Lautsch et al. (2009) claim that it is how telework is implemented that determines whether it will have a positive impact on performance. Martínez-Sánchez et al. (2007) and Illegems and Verbeke (2004) highlight the importance of human resources (HR) development practices as a moderator in the relationship between telework and firm performance. Both studies assess such practices as necessary in order to enhance what otherwise would be a marginal contribution of teleworking to the organization.

Access to HR practices can increase an individual's self-efficacy and the organization's broader productivity efficiency (Illegems and Verbeke, 2004; Martínez-Sánchez et al., 2007). Moreover, HR development reinforces the positive effect of teleworking on the company's flexibility besides its financial and innovation performance (Martínez-Sánchez et al., 2007; Pérez et al., 2002).

Another interesting contribution is made by Dutcher (2012) who distinguishes between the productivity of creative and dull tasks within the telework context. Dutcher (2012) proves that teleworking environmental effects may positively affect productivity of creative tasks but negatively impact productivity of dull tasks. Kossek et al. (2006) recognize the link between a formal use of telework policies and higher performance but cannot prove whether formal telework policies lead to increased performance or if the direction of the very relationship is reversed. Perez et al.'s (2002) paper is the only one which negatively relates telework to productivity and that is only when the teleworker has a dual role including raising children.

4.3.1.6. Interpersonal interaction and social isolation. Interpersonal interaction is defined by Humphrey et al. (2007) as "the extent to which a job provides opportunities to interact and engage with others" (Windeler et al., 2017, p. 978). On the one hand, it is argued that telework and the 'despatialisation' relative to its practice may negatively impact social and professional interaction thereby leading to a sense of social isolation (Illegems and Verbeke, 2004; Morganson et al., 2010; Taskin and Devos, 2005; Whittle and Mueller, 2009). In addition to isolation, telework is linked to a concern regarding the potential exclusion, both social and professional, of teleworkers but also to loneliness, and disconnection which are, in turn, associated with negative emotions (Mann and Holdsworth, 2003; Sewell and Taskin, 2015; Whittle and Mueller, 2009). Baruch (2000), therefore, proposes that an individual with high need for social life is not fit for telework.

On the other hand, Wilks and Billsberry (2007) argue that it depends on the characteristics of each individual whether isolation will be viewed as a drawback. Illegems and Verbeke (2004) also suggest that the appropriate HR management practices can provide a benevolent work environment so that interpersonal interaction is not negatively affected. After all, social interaction is not unanimously judged as positive or negative. Windeler et al. (2017) and Wilson and Greenhil (2004) maintain that social interaction places more emotional demands which are unwelcomed by employees. The former discovers a growing recognition of the costs linked to social interaction, such as increased work exhaustion, while highlighting the important role of the quality and quantity of interaction. Part-time telework - but not full-time telework-is found to alleviate the negative effects of interaction quantity as it acts like a mini-break. Simpson et al. (2003), also refer to isolation as a highly subjective experience depending on the nature of the role, the personal experiences of the teleworker and their attitude towards technology. For example, isolation of rural workers was reduced rather than caused by telework.

4.3.2. Telework challenges

4.3.2.1. Autonomy vs control. One of the major challenges that researchers and practitioners of telework have to deal with is the 'autonomy vs control' paradox or otherwise referred to as the 'flexibility paradox' which implies some flexibility and autonomy in spatial and temporal terms but the organization must simultaneously establish procedures in order to ensure that it continues to work efficiently and develop employees (Martínez-Sánchez et al., 2007; Sewell and Taskin, 2015; Taskin and Devos, 2005).

The teleworking environment and, most importantly, the relative autonomy over where and when one works has been praised by employees who need to combine their work with the timetables of their children (Sullivan and Lewis, 2001). In addition, according to Daniels et al. (2001) international employees who telework tend to enjoy higher levels of autonomy owing to the emotional and physical distance from the home-office (Mayo et al., 2009).

Anderson et al. (2014) argue that working in a teleworking environment leads to positive emotions due to the perceived autonomy, control and flexibility. Such higher levels of autonomy and the entailed transfer of responsibility, however, present the risk of an intensification of the mental burden for teleworkers (Taskin and Devos, 2005). Within this context, self-leading strategies, meaning those strategies which enable individuals to successfully accomplish tasks even when they are unpleasant, are deemed a necessary resource but are also demanding themselves (Müller and Niessen, 2019; Taskin and Devos, 2005).

Conversely, self-management strategies are associated with managerial telework allowance decisions (Beham et al., 2015). One possible explanation is that these strategies are required in trust management (Taskin and Devos, 2005). The distanciation negatively affects the trust relationship between teleworkers and supervisors due to lack of face-to-face contact (Sewell and Taskin, 2015; Taskin and Bridoux, 2010).

On one side, teleworking allowance might be viewed as proof of trust from the supervisor towards the employee thereby leading the latter to an attempt to reciprocate by disciplining themselves or by showing appreciation and loyalty (Morganson et al., 2010; Wilson and Greenhil, 2004). Coordination based on mutual trust is considered the solution to the lack of face-to-face contact and direct supervision yet managers are often reluctant to abandon full control over the working process and adopt new control habits (Golden and Veiga, 2005; Perez et al., 2002; Illegems et al., 2001).

Snell (1992) proposes three different kinds of control systems based on behavior, input and output while research suggests that more objective types of control are more motivating (Virik et al., 2010). Iscan and Naktiyok (2005) claim that managers have difficulties in controlling and monitoring teleworkers. Vilhelmson and Thulin (2016), eleven years after Iscan and Naktiyok's study, argue that manager's control and other essential constraining factors to the adoption of telework eased as a result of the advanced internet-based systems for supervision.

Sewell and Taskin (2015) support that teleworkers are obliged to accept an intensified technocratic control system which undermines their autonomy. However, this supervision is not recognized by teleworkers as control but as a by-product of the new mode of working (Sewell and Taskin, 2015). Lautsch et al. (2009) and Illegems et al. (2001) propose a change in the models of supervision which will possibly pave the way for more positive outcomes for both the teleworkers and the organization. Instead of an increase in manager's controls -since presence and visibility cannot be checked in situ and de visu-supervisors are advised to apply an approach placing emphasis on sharing information rather than closely monitoring teleworkers' work schedules (Lautsch et al., 2009; Taskin and Bridoux, 2010). Once again, the role of HR development practices in the improvement of the trust relationship between the supervisor and the teleworker is underlined (Illegems and Verbeke, 2004; Martinez-Sanchez et al., 2007).

4.3.2.2. Teleworkers and non-teleworkers relationship. Telework has resulted in the creation of tension between those employees who telework and those who do not. Teleworkers express worries regarding workplace exclusion (Morganson et al., 2010; Sewell and Taskin, 2015). An 'us and them' feeling has emerged between teleworkers and non-teleworkers (Collins, 2005). Teleworkers fear that non-adopters of telework would doubt about teleworkers' commitment, trustworthiness and the extent of their contribution (Sewell and Taskin, 2015). In this context, the availability principle replaced the responsiveness principle. While the latter is seen as an important contributor to autonomy, Sewell and Taskin (2015) maintain that the former leads to a new norm of conduct which enhances technocratic managerial control by means of forming a peer-based social control system.

Following the impact of telework on the trust relationship between adopters and non-adopters of teleworking mediated by the lack of face-to-face contact, the transfer of knowledge between the two groups was also negatively affected (Taskin and Bridoux, 2010). In fact, the nature of the relationship between them was altered leading to more superficial connections and fears of inability to cooperate with each other while teleworkers simultaneously tried to place themselves into the workplace on the days they did not telework (Sewell and Taskin, 2015; Wilson and Greenhil, 2004). Taskin and Bridoux (2010) suggest that new routines

need to be developed to ensure better contact between the two groups as colleague support is considered beneficial to attitudes towards teleworking (Iscan and Naktiyok, 2005; Taskin and Bridoux, 2010).

An increasing complexity in managing mixed groups has been detected (Collins, 2005; Lautsch et al., 2009). Perceived advantages and disadvantages by both groups are to blame for the resentment between teleworkers and non-teleworkers (Collins, 2005; Iscan and Naktiyok, 2005). Managers are faced with five dilemmas in terms of monitoring the two groups, work schedule regulation, time allocated to each group, boundary control between work and family and reward system (Collins, 2005; Lautsch et al., 2009). Researchers consent to the adoption of the same approach towards teleworkers and non-teleworkers for more positive results (Collins, 2005; Lautsch et al., 2009).

4.4. RQ4: Based on what we know thus far, what are some new future research directions?

This unit will provide codified information on suggestions for future research as extracted from the reviewed papers. Table 9 presents an analysis of the future research suggestions per article while Table 10 summarizes these suggestions into the most prominent future research directions.

Table 9. Future research suggestions.

Author/-s, publication year	Future research suggestions
Golden and Eddleston, 2018	<ul style="list-style-type: none"> To identify contextual factors which could help teleworkers minimize the flexibility stigma and organisational factors which could normalize the use of teleworking More research on how the flexibility stigma varies within different work contexts and on the career consequences of extensive teleworking
Delanoëje et al. (2019)	<ul style="list-style-type: none"> To include different dimensions of teleworking: for example, whether teleworking is requested by the employee or the organisation or whether the employee has control over the use of telework More research on the specific characteristics of the role transitions: for example, whether they are self-initiated or other-initiated
Müller and Niessen (2019)	<ul style="list-style-type: none"> To investigate any possible predictors, outcomes and underlying mechanisms of self-leadership To examine other outcome variables, i.e. work engagement, which might be influenced by self-leadership To examine whether there are any possible moderators such as daily level self-control demands or task variety To factor in the role of co-workers relationships and differences in communication.
Chung and van der Horst (2018)	<ul style="list-style-type: none"> To investigate how context, i.e. the economic condition of the country where mothers live and work, influences the variables To look into how father's employment patterns and amount of time spent on childcare and domestic work are influenced by women's flexible work arrangements
Windeler et al. (2017)	<ul style="list-style-type: none"> To examine specific conditions under which social job characteristics are associated with work exhaustion and loss of resources More research on interaction quantity in order to understand how the frequency, intensity, duration and timing of interactions influence potential outcomes More research on interaction quality in terms of availability and adequacy of support To explore whether PTT arrangements are resources themselves or just foster the creation/loss of resources
Vilhelmson and Thulin (2016)	<ul style="list-style-type: none"> Research on the forms of management and control which favor the acceptance of telework More research on the spread on telework into more traditional services and telework being less associated with job insecurity
Sewell and Taskin (2015)	<ul style="list-style-type: none"> More longitudinal case studies during the introduction of telework that use notions such as distantiation, scale and territoriality to understand the complexities of the new form of work
Anderson et al. (2014)	<ul style="list-style-type: none"> More research into different aspects of openness, rumination and connectedness outside work, such as the amount and content of ruminative thoughts To examine more possible moderators such as boredom proneness To examine the role of teleworking intensity and explore the generalizability of the results among teleworkers with a variety of intensity arrangements
Beham et al. (2015)	<ul style="list-style-type: none"> To include more variables such as employee flexibility, proactive personality, communication skills, managers' equity sensitivity To use a multi-item measure To conduct cross-cultural studies in culturally diverse samples
Neirotti et al. (2013)	<ul style="list-style-type: none"> To investigate the circumstances under which firms introduced telework and the way they guided its evolution To examine the role of issues related to labor contracts, control systems and knowledge management approaches for telecommuters as well as of individual traits of teleworkers such as gender, educational attainments and distance of their home from their firm location
Dutcher (2012)	<ul style="list-style-type: none"> To examine the relationship between telework and team-oriented outcomes which include more complex interpersonal interactions To explore and vary the amount of risk taken on by the employee and the manager
Taskin and Bridoux (2010)	<ul style="list-style-type: none"> Focus research on individuals in order to study knowledge phenomena such as behaviors people adopt when they are involved in knowledge transfer processes To adopt a re-socialization perspective in order to analyze how teleworkers develop social knowledge and relationships in the new workplaces
Morganson et al. (2010)	<ul style="list-style-type: none"> More research on how telework is related to job satisfaction To measure the importance of worker flexibility, autonomy and inclusion on job satisfaction and determine employees' perceptions of their status To examine how different kind of teleworkers experience various leadership and performance goals, control and communication practices
Virick et al. (2010)	<ul style="list-style-type: none"> To replicate the survey in a larger sample To examine the construct of worker type and its applications and to ascertain consensus among researchers. To examine the generalizability of the current study results

(continued on next page)

Table 9 (continued)

Author/-s, publication year	Future research suggestions
Mayo et al. (2009)	<ul style="list-style-type: none"> • More thorough analysis of whether cultural distance, language and/or international diversification mediate the relationship between international employees' influence and telework adoption • To explore the influence of the multiple forms of variable compensation based on leadership style, different types of incentives, the nature of tasks • To conduct longitudinal research in order to examine how the fit between telework and its context impact other dependent variables such as employee turnover, labor costs, size of applicant pool, productivity figures performance appraisal, both subjective and subjective
Whittle and Mueller (2009)	<ul style="list-style-type: none"> • To investigate the power relations which might be reproduced in environments with flexible arrangements • To expose any interests/benefits behind representations of flexibility in order to create space for different forms of technology-enabled flexibility
Lautsch et al. (2009)	<ul style="list-style-type: none"> • Research on how supervisors could involve teleworkers and non-teleworkers to support the implementation of flexible work • To replicate the survey in order to identify all implementation issues
Hilbrecht et al. (2008)	<ul style="list-style-type: none"> • To replicate the survey on mothers with pre-school children or mothers with non-standard work schedules, compressed work weeks or are self-employed • Research on how different temporal spheres of life influence one another such as the effect of technology on the acceleration of social rhythms
Martínez-Sánchez et al., 2007	<ul style="list-style-type: none"> • A follow-up study of employees' perception of the variables in the study is needed to reveal possible contradictions between what policies managers claim to exist and what policies employees perceive to exist
Wilks and Billsberry (2007)	<ul style="list-style-type: none"> • To replicate the survey on not only self-employed teleworkers
Golden (2006)	<ul style="list-style-type: none"> • To investigate whether and how the mental and emotional stockpiling enabled by new forms of work impact the emotional and physical well-being of workers • More research on an employee's environmental circumstances and personality differences which impact a teleworker's resource depletion • To pursue balanced samples • Research on how technology influences the impact of telework
Kossek et al. (2006)	<ul style="list-style-type: none"> • To distinguish between descriptive use of telework and psychological experiences of flexibility • To distinguish between the types of jobs held by individuals using flexibility and their occupational norms • To differentiate between the direction of work-family conflict affected by policy use and how using the policy/practice affects work and family outcomes
Taskin and Devos (2005)	<ul style="list-style-type: none"> • No future research suggestions
Collins (2005)	<ul style="list-style-type: none"> • To distinguish new-economy flexible working from old-economy flexible working
Nunes (2005)	<ul style="list-style-type: none"> • No future research suggestions
Golden and Veiga (2005)	<ul style="list-style-type: none"> • Additional tests of job context factors such as job discretion should be conducted to fully understand the dynamics of their role in the telework-job satisfaction relationship • To examine an organisation where performance comparisons are more easily made such as a large sales organisation
Haddon and Brynin (2005)	<ul style="list-style-type: none"> • No future research suggestions
Iscan and Naktiyok (2005)	<ul style="list-style-type: none"> • To investigate the generalizability of the results, especially among other professional groups or non-professionals in other industries • To take into consideration the potential impact of more factors such as support from the family and the union
Wilson and Greenhil (2004)	<ul style="list-style-type: none"> • No future research suggestions
Illegems and Verbeke (2004)	<ul style="list-style-type: none"> • To compare the effects of alternative HRM tools, in terms of broad, resource-based impacts
Mann and Holdsworth (2003)	<ul style="list-style-type: none"> • To measure the range of emotions more accurately • To conduct a longitudinal study to investigate whether emotions and stress change over time • To investigate more accurately the emotional impact of telework on males and their mental and physical health • To widen the participation pool to other professions
Sullivan (2003)	<ul style="list-style-type: none"> • No future research suggestions
Simpson et al. (2003)	<ul style="list-style-type: none"> • To further examine the concept of isolation within the heterogeneous context of teleworkers • Rurality and the diversity of rural people and places should be acknowledged and integrated into future studies
Pérez et al., 2002	<ul style="list-style-type: none"> • No future research suggestions
Sullivan and Lewis (2001)	<ul style="list-style-type: none"> • To explore the ways in which homeworking challenges conceptualizations of masculinity • To extend theoretical models of gender • To study how the nature of work and employment contract (if any) affect household members
Kerrin and Hone (2001)	<ul style="list-style-type: none"> • To establish whether part-time telework would be attractive for student job-seekers • To investigate whether having a child or being male/female has an impact on how attractive telework is for job-seekers
Illegems et al. (2001)	<ul style="list-style-type: none"> • No future research suggestions
Lim and Teo (2000)	<ul style="list-style-type: none"> • To extend research in other professional or non-professional groups
Baruch (2000)	<ul style="list-style-type: none"> • To study the emotional aspect of teleworking • To look into the measurability of qualities perceived as important for telework such as self-discipline • To develop a framework for selecting teleworkers • To conduct cross-sectional and cross-cultural comparative studies

Given the different modes of teleworking along with its implications on the employees, the manager and the organisation as a whole, Table 10 offers a snapshot of the key domains and areas of focus of future research directions.

First, with respect to social issues, research needs to focus on how telework impacts a teleworker's life. Social interactions of teleworkers themselves and with their non-teleworking colleagues or their co-residents/partners, should be investigated. Apart from the quantity of interaction, quality also plays an important role as it results in positive or negative effects in terms of work engagement, job satisfaction, emotional and physical well-being. The co-existence of at least two teleworkers in the same house and consequent issues of availability of space and equipment as well as childcare issues need to be further explored.

Since the outbreak of the Covid-19 pandemic in early 2020, telework has been featured as the solution to a viable future of the business world. In light of the recent developments in the public health domain, it is suggested that future work should deepen the analysis of telework in different contexts and add more telework dimensions. Differences in the economies or technological development of the countries where organisations operate may account for disparities in the adoption and implementation of telework. Additionally, people living in less developed urban areas or even in rural areas would not have equal opportunities to acquire a higher-level job. In the new era, given the general telework diffusion, large and well-known organisations may be more open to hire talented individuals who reside much farther than the organisation's premises.

Table 10. Main future research directions.

Telework in different contexts	Different industry/Cross-industry study
	Different country/Cross-cultural
	Different professional group/different sample/larger sample
	Rural environment
	Different economic environment
Different telework dimensions	Telework as an option vs compulsory telework
	Telework intensity
	Perceived experience of control
More telework outcomes	Work engagement
	Job satisfaction
	Emotional and physical well-being
Social interaction	Relationship with co-workers
	Teleworkers and non-teleworkers cooperation
	Relationship with co-residents
	Interaction quality and quantity
	Different kind of experiences of communication practices
Enablers and constraints	Flexibility stigma
	HRM practices
	Leadership style
Possible moderators	Self-control
	Task variety
	Boredom proneness

Moreover, other telework dimensions could affect the way telework is viewed and practiced. The intensity of telework and several potential moderators, such as the variety of tasks performed via telework, and the shift of the implementation of telework from an optional mode to a compulsory one are some examples. Future research on these topics is deemed necessary.

Finally, another call for future research on telework recommends the examination of possible enablers and/or constraints. For example, HRM practices and different aspects of the leadership style, such as reward, are considered a critical factor determining the adoption and implementation of flexible work arrangements, such as telework (Illegems and Verbeke, 2004; Martínez-Sánchez et al., 2007; Mayo et al., 2009; Pérez et al., 2002). It is, therefore, important to study how HRM practices can contribute to the most effective way of telework management. Moreover, the development of e-HRM systems, which support the positive role of the HR department as an organisational agent in the relationship between the organisation and its employees (Bissola and Imperatori, 2013), could be investigated in a telework work environment.

The relationship between leadership style and employee outcomes in a teleworking context is also suggested as a subject that future research could address. Müller and Niessen (2019) investigated the relationship between self-leading behavior and working location as well as autonomy as a possible mediator. Mayo et al. (2009) also studied the association of contingent reward leadership style with a company's tendency to adopt telework. However, more research is deemed necessary in order to clarify the role of the leader and the effect of different leadership styles in the implementation of telework with emphasis on leadership as an enabler or a constraint and on the leader's support towards and control over teleworkers.

Telework has been extensively linked to Information and Communication Technologies (ICTs); however, the relationship between ICTs development and flexible work practices has not triggered an explicitly stated need for more research. Interestingly, most scholars view ICTs as an enabler or facilitator of telework (Sewell and Taskin, 2015; Vilhelmson and Thulin, 2016). Nevertheless, other researchers suggest that there is also a negative side in using technology at work (Ayyagari et al., 2011)

as well as in relationship between ICTs and telework. For instance, Collins (2005) refers to stress as an indirect result of ICT development via telework and Illegems and Verbeke (2004) mentions frustration as a possible outcome of ICT equipment failure. Last, Wilson and Greenhill (2004) elaborate on the impact of ICT on the construction of identity of female teleworkers.

Salazar-Concha et al. (2021) argue that the impact of ICTs on humans varies based on whether technology is used in a voluntary way or not. Since telework is becoming more of a necessity in the covid and post-covid era, more research on technology-related issues could shed light on more subtle aspects of telework. For instance, technostress, defined as the negative impact of technology on users, is an anticipated managerial concern within the contemporary workplace and an emerging research topic worldwide (Salazar-Concha et al., 2021). More elaborate investigation of technostress and other psychosocial effects of ICTs use in the new normal could advance insights into the teleworking experience.

5. Conclusion

This study constitutes a systematic literature review of the extant academic work on telework. Telework, undoubtedly, holds an important position in the current continuous strife for resilience and flexibility as the business world pursues its viability within one of the most difficult periods for all industries worldwide due to the impact of the Covid-19 pandemic. This study is an attempt to present the main points of interest within the telework literature during the last 20 years.

A total number of 40 articles on telework were reviewed. Data were codified and presented in detail following an analysis of the challenge regarding defining telework. Data extracted were classified according to four research questions concerning i) the extent and coverage of the articles, ii) methods used in telework research as well as the unit of analysis and both the geographical and industry scope of the articles, iii) the main research questions posed by authors and iv) new future research directions.

With regard to the limitations of the present study, the dataset used is comprehensive yet not exhaustive. As also mentioned in the methodology section, only leading journals documenting the perceptions of highly-esteemed scientific committees and editors have been included. Undoubtedly, important, high-value studies published in other academic journals have been omitted. Those lower-rated journals may even have greater international exposure and insight. Another limitation is the time-frame of the study which includes article published in the last 2 decades.

The definition of 'telework' has not been unanimously agreed upon resulting in the exclusion of several workers, such as occasional or self-employed teleworkers, from the research samples. Additionally, during the last twenty years, there has been a dramatic development of ICTs leading to different working and supervision conditions implying that disparities in the results could be attributed to technological advancement. Last but not least, the research papers reviewed addressed telework only as an optional work arrangement consequently limiting the applicability of the findings to the pre-Covid-19 era.

In terms of theoretical implications, this study offers a deeper reflection and broader reaching understanding of the extent and coverage of 'telework' articles as well as of the potential outcomes concerning telework so that future researchers can see how the mapping of the telework field has been done.

First, this paper has provided insight into the reasons behind the lack of a generally accepted definition for 'telework' and 'teleworker' while suggesting that project-specific definitions may be more appropriate in the field of telework research. Additionally, this paper may constitute a useful tool for academics who wish to study work arrangements in the covid and post-covid era as it offers a review of important aspects of the telework adoption and practice. Scholars who intend to investigate telework issues in the coming years can be informed about the methods,

data analysis techniques, research questions and methodologies used in previous research. In this way, future studies will be able to test and either confirm or reject findings of extant literature. Moreover, scholars could make use of alternative methods regarding the collection and analysis of data within telework research to contribute to the variety of literature on this subject.

From a theoretical perspective, our study extended our knowledge on the positive and negative consequences of telework on teleworkers but also on their co-workers and managers and organizations. In other words, telework may facilitate the inclusion of certain groups, such as married people with little children, especially women, into the labor force (Chung and van der Horst, 2018). Findings suggest that it also contributes to employees' job satisfaction (Müller and Niessen, 2019) although divergent results have also been reported (Morganson et al., 2010; Virick et al., 2010). Telework was also found to impact work-life balance depending on the institutional setting of the country where teleworkers operate (Chung and van der Horst (2018) and the boundaries between work and family (Lautsch et al., 2009).

Regarding employee productivity and career growth, it has been claimed that the way in and the extent to which telework is implemented, rather than telework per se, could lead to certain positive or negative results (Golden and Eddleston, 2018; Lautsch et al., 2009). Concerns have been raised with regard to social isolation of teleworkers. However, when isolation is viewed as a negative result of telework, HR practices could be used to reverse it (Illegems and Verbeke, 2004).

In the post-covid era, flexible work practices, such as telework, are expected to proliferate. Telework, which once failed to live up to the expectations of being the 'work arrangement of the future' is now providing the business world with the opportunity to overcome important issues of everyday life and resume a viable future. From a practice perspective, this paper could aid managers and practitioners, teleworkers and their co-workers by providing them with the necessary information about the positive effects of telework and ways to improve any negative aspects thereof.

First, this study could raise the awareness of managers regarding challenges stemming from the implementation of telework. Such challenges pertain to the necessary balance between employee autonomy and managerial control as well as the relationship between teleworkers and non-teleworkers. Autonomy over when and where one works contradicts the traditional control measures adopted by managers thereby requiring new methods of managerial control to be adopted and tested in the new, post-covid business environment (Taskin and Devos, 2005; Müller and Niessen, 2019). This paper also provides some general directions to managers who intend to strategically integrate flexible work practices by discussing whether, for whom and why the adoption of such practices impact employee outcomes.

Tensions in the relationship between teleworkers and non-teleworkers might also emerge (Sewell and Taskin, 2015). Both managers and employees -teleworking ones or not-should be prepared for the risks involved. Moreover, they can be informed of ways to overcome potential difficulties. For example, certain HR practices are suggested as helpful in the employee monitoring process while teleworking (Müller and Niessen, 2019). Additionally, teleworkers are usually concerned about their career growth (Golden and Eddleston, 2018). This paper summarizes the role of variance in the extent of telework in the relationship between telework and career growth so that each employee and each employer chooses or adjusts the most appropriate teleworking plan based on their need for professional growth and productivity.

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