

Ferreira, Rafael; Pereira, Ruben; Bianchi, Isaías Scalabrin; da Silva, Miguel Mira

## Article

# Decision factors for remote work adoption: Advantages, disadvantages, driving forces and challenges

Journal of Open Innovation: Technology, Market, and Complexity

## Provided in Cooperation with:

Society of Open Innovation: Technology, Market, and Complexity (SOItmC)

*Suggested Citation:* Ferreira, Rafael; Pereira, Ruben; Bianchi, Isaías Scalabrin; da Silva, Miguel Mira (2021) : Decision factors for remote work adoption: Advantages, disadvantages, driving forces and challenges, Journal of Open Innovation: Technology, Market, and Complexity, ISSN 2199-8531, MDPI, Basel, Vol. 7, Iss. 1, pp. 1-24,  
<https://doi.org/10.3390/joitmc7010070>

This Version is available at:

<https://hdl.handle.net/10419/241655>

## Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

## Terms of use:

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by/4.0/>



Article

# Decision Factors for Remote Work Adoption: Advantages, Disadvantages, Driving Forces and Challenges

Rafael Ferreira <sup>1</sup>, Ruben Pereira <sup>1</sup>, Isaías Scalabrin Bianchi <sup>2,\*</sup> and Miguel Mira da Silva <sup>3</sup>

<sup>1</sup> Department of Information Science and Technology, Instituto Universitário de Lisboa (ISCTE-IUL), 1649-02 Lisbon, Portugal; rcfrs@iscte-iul.pt (R.F.); ruben.filipe.pereira@iscte-iul.pt (R.P.)

<sup>2</sup> Higher School of Economics and Business, Al-Farabi Kazakh National University, Almaty 050040, Kazakhstan

<sup>3</sup> Instituto Superior Técnico, University of Lisbon, 1049-001 Lisbon, Portugal; mms@tecnico.ulisboa.pt

\* Correspondence: isaias.bianchi@kaznu.kz

**Abstract:** Facing one of the most challenging pandemics for organizational modus operandi (COVID-19), organizations are struggling for operational and strategic support. The adoption of remote work (RW) is increasing. For economic reasons, competitive advantage, or even as a pandemic response (business continuity plan), RW is a domain worth further investigation. However, the literature lacks insight regarding RW adoption. A design science research methodology was adopted, including a systematic literature review to elicit RW advantages, disadvantages, challenges and driving forces, as well as their relation. To evaluate and demonstrate findings, 129 qualitative interviews were performed with RW professionals. In the end, 57 decision factors were elicited, and 16 relations were validated. The authors concluded that cost-reduction and flexibility to promote work–life balance is the most positive outputs, while communication and technical problems, as well as management issues, are what most concerns professionals. Moreover, positive relations are more recognized among professionals over negative ones.



**Citation:** Ferreira, R.; Pereira, R.; Bianchi, I.S.; da Silva, M.M. Decision Factors for Remote Work Adoption: Advantages, Disadvantages, Driving Forces and Challenges. *J. Open Innov. Technol. Mark. Complex.* **2021**, *7*, 70. <https://doi.org/10.3390/joitmc7010070>

Received: 31 December 2020

Accepted: 12 February 2021

Published: 21 February 2021

**Publisher's Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Keywords:** remote work; decision factors; systematic literature review; design science research; interviews; advantages; disadvantages; driving forces; challenges

## 1. Introduction

Organizations are in continuous evolution [1] and hire people en masse every day and everywhere in a constant search for the best workforce for necessary jobs [2]. Due to globalization, distributed work and distributed teams are unavoidable [3]. The literature points out that due to higher rates of employment compared to that of recruitment [4], big organizations struggle to allocate all their employees in physical spaces [5].

Previous research indicates the possibility of having to downsize and cut costs in order to increase flexibility and create customer-oriented solutions [6] with the goal of staying ahead of the competition. Others highlight the proposition of reducing costs for increasing economical outcomes with the aim of keeping a positive economic balance [7] or just plain and simple challenges in finding financial savings solutions [8]. To summarize, with globalization, organizational growth brings challenges such as not having enough seats for employees in physical office space.

In order to fight these challenges and become more competitive, organizations strive to find new ways of becoming more flexible [9], more rentable [10,11] and more financially profitable [12,13]. Technology has been pointed at as a pivotal enabler [14] to support massive virtual collaboration [15] that has demonstrated potential for both advancing sciences and to turn the drawbacks of virtuality into strategic advantages while also supporting rigorous scientific outcomes [16]. Therefore, organizations have begun to search for new paradigms and solutions such as remote work (RW) [17], which allows them to be geographically free [18]. Driving forces such as globalization [3], the informatization of industries [14], or government legislative support [19] have also stimulated RW adoption.

Moreover, based on the current context of the COVID-19 pandemic, at this time, nearly every organization must rely on remote teams to sustain business activity [20]; it is estimated that almost 60% of people are presently in RW due to the coronavirus [21,22].

Prior literature points out that RW could shape organizations' daily work and contribute to defining the modern workplace [23]. However, more recent studies [24,25] point to RW as a complex domain, in exponential evolution, and one in which it is important to synthesize its decision factors to assist decision-makers before RW adoption.

As such, this investigation aims to explore, synthesize and elicit the following RW concept key aspects: advantages, driving forces; challenges; and disadvantages. To pursue our goal, the following research questions (RQ) were designed: RQ1: What are the advantages, disadvantages, driving forces and challenges of RW adoption? RQ2: How do the RW decision factors influence each other positively and negatively? RQ2 aims to explore the correlation between advantages/disadvantages/driving forces/challenges.

The findings of this research are expected to be useful for decision-makers who may know the main advantages/disadvantages/driving forces/challenges, and which may be first, promoted, implemented or avoided. Moreover, the outputs of the present theories on how factors influence each other may then be further explored by academics.

The document has the following structure: Section 2 presents the literature review. Section 3 describes the followed research methodology and the construction of the proposal. Section 4 details the evaluation and improvements of our proposal. Section 5 concludes the study by describing the main findings and defining future work.

## 2. Literature Review

Several studies exist in literature regarding RW from a variety of qualitative [12], quantitative [6] or mixed [19] investigations. Most tend to research and report findings on a single vector of analysis. For instance, advantages, disadvantages, driving forces, challenges, solutions, ethical issues, strategies, or best practices. However, none attempted to either investigate how vectors relate or influence each other nor to synthesize previous findings on a single vector. This is demonstrated in Table 1. These findings strengthen our research goal.

## 3. Research Methodology

The adopted research methodology was the design science research (DSR), including both a systematic literature review (SLR) to elicit the initial artifact and individual semi-structured interviews to evaluate and tune the artifact. Given the amount of literature on the topic and the lack of consensus regarding some related concepts, the SLR is a proper methodology to start the investigation [26].

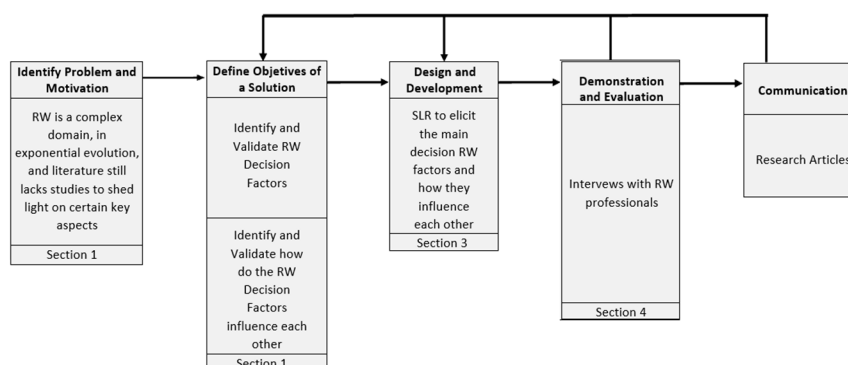
The DSR was chosen since this research aims at solving practical problems by creating and evaluating IT artifacts intended to solve organizational issues [27,28]. On the other hand, SLR is useful to synthesize a considerable amount of literature. The COVID-19 pandemic urged.

**Table 1.** Report on the findings in the literature.

Reference	Decision Factors	Findings
[6]	Benefits/advantages Challenges	Outlined structural and relational factors that may be associated with employee adjustment to virtual work. These include employees’ work independence, the clarity of evaluation criteria, the level of interpersonal trust and organizational connectedness.
[18]	Benefits/advantages Driving forces Strategies	This empirical study reports a set of advantages (e.g., reduce employee stress resulting from commuting and balancing home and work–life, offers an additional way of intensifying work), driving forces (e.g., societal and economical forces such as competition in markets, developments in technology) and management strategies (e.g., develop and use workplace strategies and policies that align places, people, and technologies and that are able to manage change).
[12]	Strategies Best practices	The study reports a set of strategies (e.g., establishing personal social support infrastructure, personal connections) and some best practices (e.g., expose tacit activities to raise awareness, plan for a healthy work and life balance).
[19]	Benefits/advantages	The evidence presented suggests that RW is, on the whole, advantageous to employers and employees. It also suggests, while we may not be witnessing a full-bodied revolution, the detachment of work from a place is an undeniably important aspect of the changing nature of work in the twenty-first century.
[23]	Benefits/advantages Ethic	The study suggests that RW is not necessarily detrimental to productivity and may have the capacity to improve it (work–life balance, effective work, and gender equity are key components of quality of working life), and therefore important for ethical organizational practice. Many of the remaining questions on remote working are about the specific circumstances that may lead to it being experienced as flexible, productive, and gender-equitable.
[29]	Benefits/advantages	The study suggests that RW has benefits for knowledge workers. Their research differs from previous works in that they examined and found that innovation was associated with more job complexity and learning in global RW. Despite the potential for diverse perspectives in global teams to generate more innovation, this potential is often unrealized.
[30]]	Benefits/advantages	The study reports a set of benefits from the application of a specific framework. The benefits reported are “faster project conduct”, “increased project control”, “alignment and shared goals”, “stronger focus on work than politics,” and “improved work motivation”.
[31]	Challenges Disadvantages Strategies	This study reports challenges and disadvantages for different RW types. It concludes that a higher level of work virtuality leads to a lower level of work satisfaction, mainly due to inappropriate management techniques and problems related to information and technology-mediated communication. The results also suggest that work satisfaction of higher and medium-level virtuality workers could be increased by appropriate ICT, by compensating the related costs, via improved organization of work processes and through greater time/place flexibility.
[32]	Benefits/advantages Challenges Strategies	This study concludes that: managing work processes in virtual settings has lasting benefits; relational interactions take time to develop in virtual settings and embracing the technology proved to be a key success factor. Plus, it also suggests that it is important, for effective communication, to use collaborative technologies in an inclusive way.

RW adoption, but there is no novelty in the actual concept. Therefore, an SLR is an interesting and useful methodology to ground this research proposal by eliciting and synthesizing the main RW studies to date.

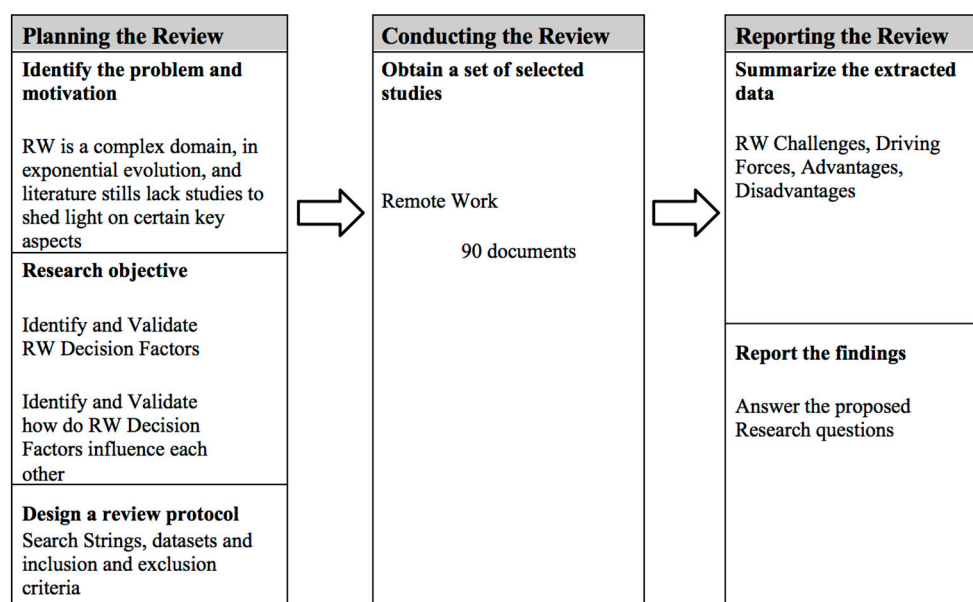
According to [27], the DSR consists of six activities (i.e., steps). Figure 1 presents the applied techniques and activities in each DSRM step, as well as where the SLR and the semi-structured interviews were used. Given the nature of this investigation, the demonstration and evaluation phases were joined.



**Figure 1.** Diagram of the performed design science research (DSR) methodology.

In order to design and develop the artifact, we performed an SLR to find out a set of remote work advantages, disadvantages, challenges and driving forces, as well as remote work concept relations.

An SLR aims to address a problem and answer research questions [33,34] by formulating a general statement or an overarching conceptualization, commenting on, evaluating, extending, or developing theory from existing literature [35]. This research follows Kitchenham's Procedures for SLR [36], complemented by [37], as described in Figure 2.



**Figure 2.** Diagram of the performed SLR methodology for remote work (RW) decision factors.

We searched in major databases, such as ACM, IEEE, Springer and Google Scholar between September and October 2020. The following research string was used: (remote OR virtual) AND work. The authors have purposefully chosen to reach a broad set of articles

about RW. Virtual work is a concept many times referred to in the literature as similar to RW and therefore was also included.

The documents were screened using five filters (Table 2): documents published during or after the year 2000, keywords present in the title, keywords present in the abstract, with the fourth filter being used for inclusion and exclusion criteria (Table 3). These consisted of an applied context filter manually customized by the author, exhaustively analyzing abstracts, introductions and conclusions to check if the document would fit in the research scope and address remote and virtual work concepts. Last, but not least, the fifth filter was a manual screening to exclude out of scope investigations.

**Table 2.** Filtration process applied during the systematic literature review (SLR) methodology.

Database	Keywords	Filter 1	Filter 2	Filter 3	Filter 4	Filter 5
ACM	virtual work	6771	6216	117	38	6
	remote work	108,171	95,909	50	15	7
IEEEEXPLORE	virtual work	20,433	2109	56	9	12
	remote work	16,613	14,988	52	23	5
SpringerLink	virtual work	11,205	8277	72	72	4
	remote work	1003	864	9	9	3
Google Scholar	virtual work	145,000	51,800	806	806	41
	remote work	12,400	10,100	179	179	12
Total		321,596	190,263	1341	1151	90

**Table 3.** Inclusion and exclusion criteria were applied in the performed SLR methodology.

Inclusion Criteria	Exclusion Criteria
Written in English, Portuguese or Spanish	Documents and books not available electronically
Documents that address specifically remote and virtual work	Documents not relevant for research
Documents publication year after 2000	Documents were duplicates or not in context
	Documents publication year before 2000

### 3.1. Remote Work Decision Factors (RQ1)

After a thorough analysis of selected literature, to strengthen insights on RQ1, the RW decision factors were identified: advantages (Table 4), challenges (Table 5), disadvantages (Table 6), and driving forces (Table 7).

### 3.2. How Does RW Key Concepts Relate (RQ2)

We studied how the positive concepts (advantages and driving forces) relate to negative concepts (disadvantages and challenges). Our findings are modeled in Figure 3. Some of the listed advantages can only be achieved if some disadvantages/challenges are mitigated. For instance, a worker who feels isolated (D1) or with a lack of balance between professional and family life (D2) will not be able to increase its productivity (A1) and feel greater fulfillment with its job (A4) [12]. Plus, it will be hard to enhance teamwork performance (A8) while avoiding communication issues (D6 and C1) [31].

**Table 4.** RW advantages elicited from the performed SLR.

ID	Advantage	References	Total
A1	Increased productivity and morale	[3,6,10,12,19,23,29,30,32,38–52]	25
A2	Reduced overall costs	[5,6,11,12,18,19,23,29–31,39,43,50,53–58]	19
A3	Work–life balance	[5,6,10,12,23,29,30,42,55,58–63]	15
A4	Increased job satisfaction and reduced burnout	[2,4,11,19,23,31,43,44,55,58,63,64]	12
A5	Enhanced positive associations between perceived task significance and global workers experienced meaningfulness	[2,17,29,30,39,62,63,65]	8
A6	Enhanced worker autonomy	[6,18,19,38,42,59,61,64]	8
A7	Leveraged remote expertise, establish competitive advantage in a dynamic market	[2,24,29,39,47,62,63]	7
A8	Enhanced teamwork performance	[10,12,17,19,45,51]	6
A9	Increased availability	[6,18,41,47,57,60]	6
A10	Solved problems without the traditional requirements associated with collocation	[10,17,19,29,32,45]	6
A11	Stimulated interaction with people from different backgrounds, which led to more learning opportunities	[2,29,30,47,65]	5
A12	Easier to disengage from work since work is done outside of the office	[18,52,66]	3
A13	Workers less likely to avoid work if given the opportunity to work remotely or from home	[18,38,52]	3
A14	Task performance equal or better than in the office	[3,54]	2
A15	Fewer distractions and therefore we can make more efficient use of our time	[5,46]	2
A16	Accelerated growth	[57,67]	2

**Table 5.** RW Challenges elicited from the performed SLR.

ID	Challenges	References	Total
C1	Communication challenges	[15,24,30–32,45,46,48,51–53,57,58,60,63,65,68–70]	19
C2	Management challenges	[1,6,12,15,18,23,24,31,32,39,43,45,48,53,57,60,61,71]	18
C3	Transparency challenges	[4,6,10,12,17–19,29,39,45,52,53,55,60,63,66,72]	17
C4	Technological challenges	[12,13,15,18,30–32,46,52,58,60,65,67]	13
C5	Challenges in maintaining team cohesion	[1,3,10,12,24,29–32,43,45,53,72]	13
C6	Training challenges	[10,23,38,51,53,60,63,73]	8
C7	Impersonal environment	[10,15,18,24,29,32,52,63]	8
C8	Convincing team members to use ICT effectively	[18,38,51,53,57,58,68]	7
C9	Willingness of members to expend effort	[4,18,39,53,63,74]	6
C10	Knowledge fragmentation	[6,17,29,32,53,64]	6
C11	Performance challenges	[15,23,32,44,60,75]	6
C12	Security challenges	[7,15,18,42,46]	5
C13	Balance between formal and informal communication and documentation	[15,18,53,64,72]	5
C14	Lack of attendance	[43,46,53]	3



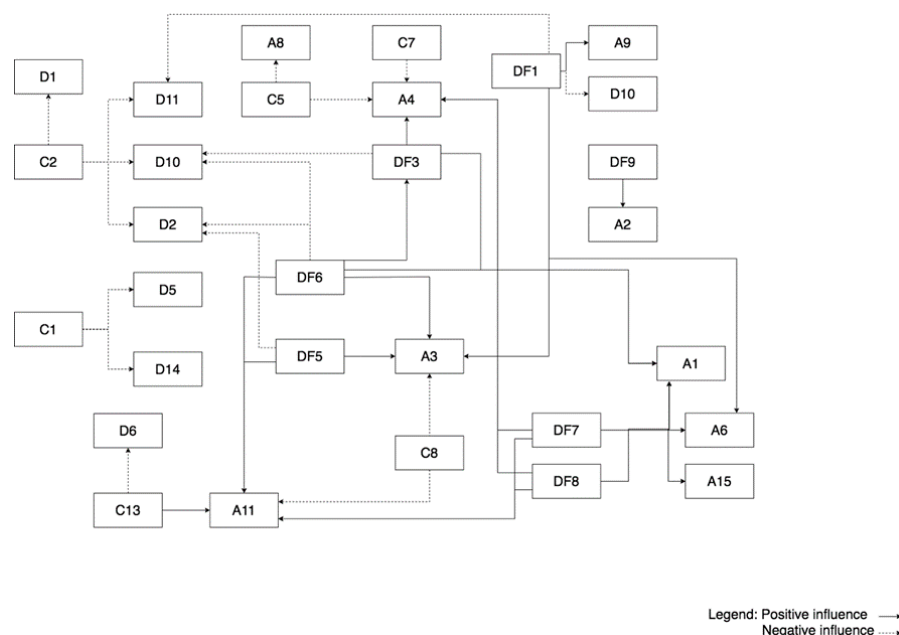
**Table 6.** RW disadvantages elicited from the performed SLR.

ID	Disadvantages	References	Total
D1	Feeling isolated and out of touch/Lack of physical interaction problems	[5,7,11,12,29–32,43,45,46,50,52,57,62,65,76–78]	19
D2	Balance of work, family and personal life problems	[6,7,17–19,23,30,39,43,44,55,58,64,65,72,77]	16
D3	Increased workload	[1,6,11,12,18,23,55,61,64,65,77,79]	12
D4	Stress load	[1,6,12,19,23,29,31,44,55,64,65,80]	12
D5	Technology dependency problems	[30,31,50,52,58,61,65,70,81,82]	10
D6	Communication problems	[12,30–32,39,51,60,61,63,79]	10
D7	Time management problems	[12,30–32,44,50,55,70,71]	9
D8	Knowledge sharing problems	[6,7,31,32,42,50,64,76]	8
D9	Infrastructure problems	[12,15,18,52,70,81,82]	7
D10	Conflict and coordination problems	[1,31,32,39,45,50]	6
D11	Inclination to level harsher judgments against each other	[6,45,55,64,83]	5
D12	Interruptions	[12,18,23,50,74]	5
D13	Problems with time to perform tasks	[64,73]	2
D14	Lack of monitoring	[18,61]	2
D15	Fail to take charge and performing initializing actions	[51]	1
D16	Precariousness problems	[77]	1
D17	Leading complexity	[18]	1

**Table 7.** RW driving forces elicited from the performed SLR.

ID	Driving Forces	References	Total
DF1	Technology	[2,6,7,14,18,30,44,51,55,56,58,60,67,69,71,73,77,79,83,84]	20
DF2	Collaboration improvement	[2,4,6,17,18,29,30,39,42,53,56,57,64,65,69,73,81,83]	18
DF3	Organizational and individual strategic thoughts	[3,6,7,10,12,17,18,23,39,59,61,70,71,73,82]	15
DF4	Cultural and societal forces	[3,6,7,19,29,51,56,57,65,70–72,81]	13
DF5	Flexibility	[2,6,8,10,13,18,19,23,29,32,71,82]	12
DF6	Technical competence and commitment	[6,30–32,39,41,43,56,57,69,82,83]	12
DF7	Managing mobility and critical business interdependencies	[6,18,44,51,52,56,58,69,79,81,85]	11
DF8	Economic benefits	[6,7,18,23,38,55,67,83]	8
DF9	Added value	[2,17,18,48,79,84]	6
DF10	Government support	[8,19]	2





**Figure 3.** Model detailing how RW decision factors influence each other.

On the other hand, positive driving forces may incentivize RW implementation. However, this will probably be ineffective without serious consideration of associated challenges. For instance, technical competence (DF6) and a flexibility mindset (DF5) are useful, but they will not help if technological challenges (C4) [32] or infrastructure problems (D9) emerge.

When workers demonstrate more job satisfaction (A4) coupled with the enhancement of team performance (A8), it is natural to note more productivity and morale (A1), so long as communication challenges (C1) are avoided [19].

In case of being surrounded by cultural and societal (DF4) (external factors) unfavorable forces, and if the whole organization, from management to the common workers, either are not technically competent and/or do not have the necessary commitment (DF6) (internal factors) [6], then it is almost impossible to expect an increase of productivity (A1). In these cases, disadvantages may easily rise.

Since it is easier for remote workers to disengage from work (A12), it might lead to a lack of attendance (C14) [66]; for example, a worker can miss certain meetings if he does not see people “getting up” to go to the meeting room or if he falls asleep due to being alone “at work”. We consider this human nature, but when one is at the office, these types of problems would hardly happen. Additionally, said situations could lead to another disadvantage for the worker, such as issues in the Balance of work, family and personal life (D2) [19]. The problem of falling asleep is normally due to the fact of a person not sleeping well, which is clearly a personal problem interacting with the worker’s job.

Promoting availability (A9) and remote expertise (A7) may lead to an increase in productivity (A1) while avoiding geographic location (A10) [18] issues. However, all this may crumble if companies and workers do not resist management problems (C2).

By using different backchannels, workers may face challenges in balancing between formal and informal communication and documentation (C13), which may lead to Communication problems (D6) [69]. On the other hand, this can also stimulate interaction with people from different backgrounds, which leads to more learning opportunities (A11).

A virtualization environment (C1) forces organizations to equip workers with the necessary communication tools. This increases technological dependencies (D5) [18]. Thus, organizations may choose to invest in monitoring systems to avoid a lack of control (D14).

When improperly handled, management challenges (C2) may reduce professional and social interaction between the employees (D1) or between management (D10), which reduces workers' rights and connections to the organization (D11) and perturbs the balance between work and life (D2) [32].

Organizational and individual commitment (DF3), as well as competence (DF6), revealed that remote workers have fewer role-coordination problems (D10) [64] and can exhibit both higher job satisfaction (A4) and even greater commitment to the organization (A1) [19].

When receiving less career support than Non-remote workers (C2) and feel an impersonal environment at an organization (C7) [32], employees may experience more work-family conflicts (D2), influencing their turnover intentions, role stressors and job satisfaction (A4) [29].

It is critical for remote workers to be available to learn new competencies (DF6) and embrace flexibility (DF5) since the constant "moving around" increases the number of new people they meet (A11), leads to more learning opportunities, and increases the requirement for new social skills, bringing greater flexibility (A3) [72]. If remote workers do not use ICT effectively (C8), all the above-mentioned advantages will not be experienced [51].

Those who focus on the quality of teamwork (C5) while maintaining team cohesion make an important impact not only on performance (A8) but also on job satisfaction (A4) in remote teams [51]. Plus, organizations may be better able to respond to customers' needs (DF9) by saving on the costs of office space (A2) [58].

Yet, mobile technologies (DF1) can have a positive impact on workers by increasing their independence (A6) [6] and flexibility (A3) [30] as well as potentiating more real-time information about their jobs (A9). However, on the other hand, it may negatively impact their work quality and relationships with others, given that workers need to adapt to new technologies and features to be learned. If these new skills are not acquired by remote workers, they can experience conflict and coordination problems (D10) due to misuse of the technology.

Therefore, workers who are not willing to change or are skeptical in terms of doing RW will ultimately lead to constraints and performance breaks (C11). Other challenges and possible disadvantages can also be catalyzed. For instance, RW employees can have problems of misunderstandings of judgment (D11) due to the virtual nature of communications, either from the voice tone or due to the signal cuts during teleconferences. If the worker is already against RW, then this type of situation can lead to the rupture of relationships between employees and even the relation between the worker and the organization itself [30].

Willing to cut costs (DF8) by reducing the number of fixed office places, organizations can better manage mobility and critical business interdependencies (DF7) since their workforce is globally distributed. This may increase both worker interaction with strangers, different places to work (A11) [5] and time for reflection (A15). By being remote workers, employee self-regulation and control may increase as a result of the enhancement in their own autonomy (A6), always having to manage their own pace, which ultimately brings productivity (A1) and happiness (A4) when they onboard for more flexibility from the beginning (DF5) [46].

The literature points that the influence of RW flexibility (DF5) for both the organization and the workers can be positive, more flexible (A3) [10] for the organization, and negative in terms of Balance of work, family and personal life problems (D2) for the employee [82].

If workers cannot properly balance their work, family and personal problems (D2) and/or deal with an increased workload (D3), it may lead to time management problems (D7) [73] influencing productivity (D13) [19].

#### 4. Demonstration and Evaluation

Qualitative research interviews allow the researcher to ask questions on varying issues, focusing on the interviewee's activities and practical examples of how to do things [86].

Moreover, it is possible to monitor the order in which the questions are answered, avoiding bias [87]. Particularly, they enable the interviewee to discuss the subject matter without being too attached to the formulated inquiry [88], ensuring researchers that their hypotheses or assumptions will be broadly covered by the conversation [89].

To demonstrate the proposed artifacts (Tables 4–7 and Figure 4), 129 qualitative interviews were performed with RW professionals. The first set of interviews was held to elicit more knowledge on the RW decision factors with real-life worker perceptions and to validate advantages, disadvantages, driving forces and challenges (RQ1). The second set had the objective of validating, according to real-life experience, how each RW decision factor influences the other (RQ2).

Interviews are the most well-known method to collect data in qualitative research and can be used in all kinds of philosophy paradigms, whether positivist, interpretive or critical [90]. According to Myers [90], the interview allows gathering valuable data from people in different roles and situations. Thus, interviews can be an appropriate method to develop and evaluate an artifact. Moreover, interviews can be used to demonstrate the applicability and validity of an artifact in practice [91]. To turn the interviews more efficiently, the questionnaires were designed according to Myers' recommendations.

The interviews were all performed remotely (given the current state of pandemic (COVID-19)), using tools such as Skype, Microsoft Teams, Jitsi Meet and Circuit for web calls, as well as WhatsApp and mobile voice calls for mobile communications. The length of the interviews ranged from 60 to 120 min. A word document transcript was created for each interview and was shared with the participants, yielding a total of 104 pages of text.

In this research, the interviews were divided into two sets. The first set with 109 interviews aimed to tune and validate the elicited list of decision factors (RQ1). The second set aimed to tune and validate the dependence model (RQ2).

Regarding the number of interviews necessary in qualitative research, Myers [90] argues that there is no specific number. It depends on the research question. We followed the recommendations by [92], who argues that twenty interviews are a significant amount for this type of research. Even if it is a convenient sampling, a mix of different participants according to gender, type of organization, culture, role, education was selected to reduce contextual bias [93]. Appendix A shows more details regarding the profile of interviewees.

#### 4.1. Tuning RW Decision Factors (RQ1)

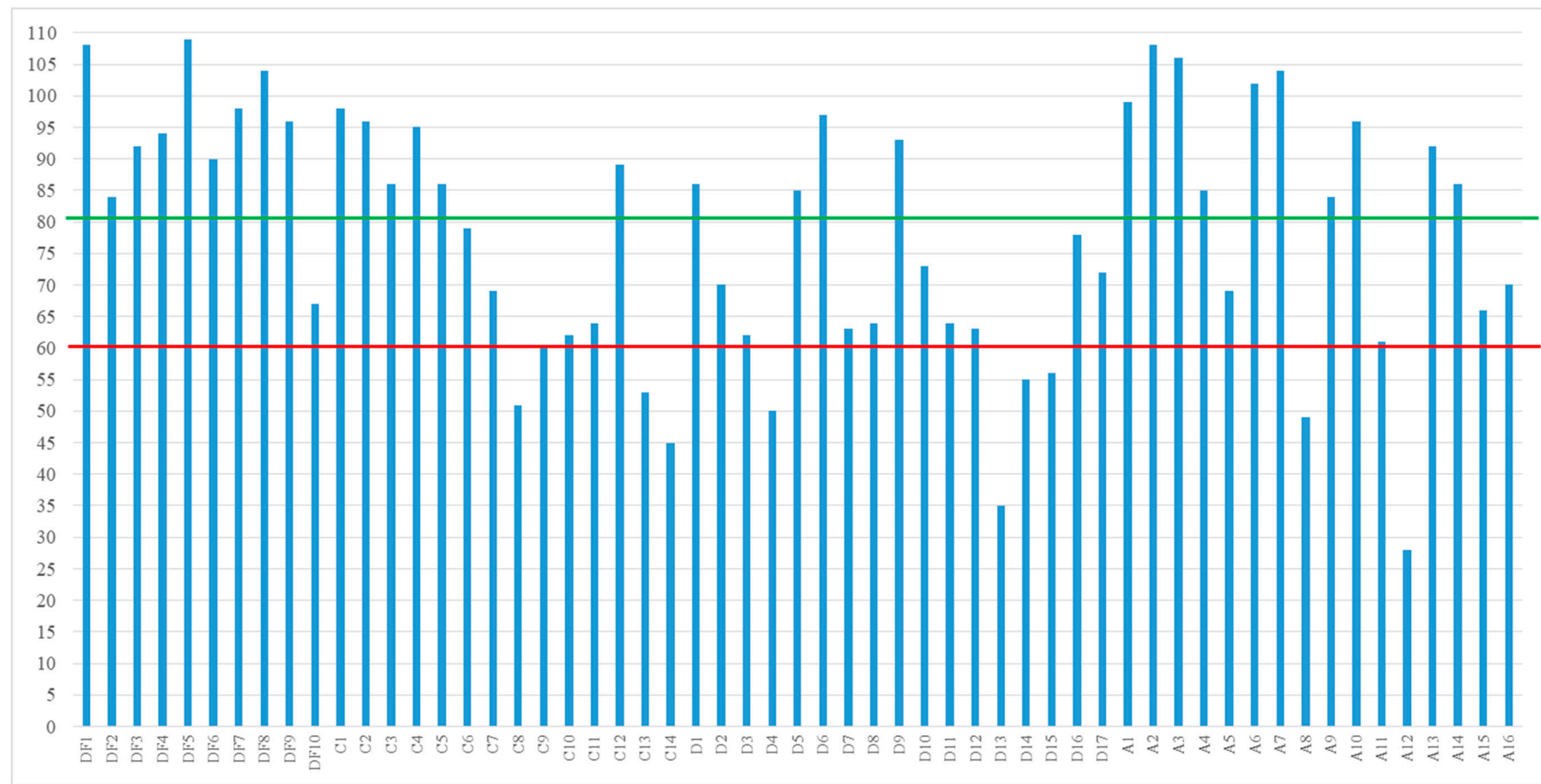
The 109 interviews (32 female and 77 male) were conducted between March and August 2020, while the other 20 were performed from August to September 2020. The average age of the interviewees was 31 years old, and each interview took on average one hour and twenty minutes.

To answer RQ1, interviewees were asked to validate findings from the literature. If they agreed, the interviewer would mark it with 1. When they disagreed, an explanation was provided. Figure 4 presents the count of positive (number 1) answers for each decision factor.

In Figure 4, we can see several topics with a value above the green line, meaning that the topic is confirmed by the opinion of the interviewees with a 75% (81 interviewees) validation rate. At the same time, the ones below the red line mean that less than 55% of the sample (60 interviewees) agree with the literature opinion. Values between the red and green (between 55% and 75%) lines are assumed as ambiguous and should be further investigated in the future.

Table 8 presents the top 5 of each RW decision factor for both literature and interviews. In the beginning, to promote further insights, the authors did not show the SLR list of RW decision factors. Hence, they could freely express and describe their experiences. Then, the list was presented, and interviewees were questioned again.

The authors chose to analyze the factors that were below the red line, to provide further insights on the topics that were against the literature.



**Figure 4.** RW decision factors validated based on interviewees' feedback.

According to interviewees, for C8, it is indifferent where a person is working as this challenge happens both in RW but also in the office. It always depends on the scope of the organization; for some types of work, law firms, for example, RW, is not a good fit. It also depends on the employees' generation, as newer generations tend to be more IT-friendly.

When asking the interviewees why they did not validate C13, the most common answers were that they only use official channels; some stated that these mixtures already happen in the office where at any point in time informal communications are made; some even said that the use of official channels might be awkward in the beginning, taking time people to get used to them. If these exchanges are well defined by the organization and depending on its culture, then it will not be a problem.

For C14, the interviewees showed that attendance actually became better with RW because overall most people increased in their availability. Employees also tend to have more respect for the time slots and frames defined in order to not waste their own and their colleagues' time. There is an understanding that RW does not stop being work only because one is not at the office; naturally, it depends on the character of the employee to have the proper responsibility to not miss appointments.

In line with the interviews, D4 was not validated because, according to the interviewees, this disadvantage will depend on workers' own emotional management. For most employees, the stress levels did not grow in RW: actually, they did not even feel more than the in-office usual, with some even feeling less stress as a result of the reduction in lost time and patience that occurs during work commutes (the only occasion where this could happen would be in a pandemic-like state).

D7 is seen to depend on the personality and personal management of the worker. According to the interviews, time management is or should be the same as in the office, with some interviewees going as far as saying that it was the opposite; that it could be considered as an advantage given that everyone can manage their time at their own pace.

A similar impression was observed in D13 because, according to interviews, this is something that also happens in the office if there are constraints and ill intentions from colleagues. This disadvantage is easily mitigated with the existing collaborative tools available nowadays because "we are all one click away from each other".

The last disadvantage D13 can actually be considered an advantage to workers because they have fewer distractions in RW. Since the number of hours is the same in RW or in the office, the work must be done regardless.

When talking about A8, the interviewees said that we should have improvements at a personal and individual level. However, it can also lead to communication problems. According to most of the sample, it is not an advantage and can even be considered a disadvantage because now they end up wasting more time.

Finally, we have A12, which according to interviews, is more difficult to achieve. In RW, workers are more available than they would be in the office. Having to set up their workstations in their living rooms, being close to the computer, anytime they receive a notification, it is checked regardless of the hour of the day. This may lead to problems in disentangling personal life from working life. Ultimately, there are workers who have bigger disengaging capacities and some who need to commute in order to completely turn off from work.

To provide a complete view of all findings, we decided to cross the information collected from literature with the information collected from interviews. In Table 8, one can see the top five selections in literature and interviewees. On one side, we have the opinions found in the SLR, while on the other, we have two insights brought forward from the interviews performed.

After the author compiled the data in Table 8, we can see that there is only one common advantage, besides work-life balance, between the ones found in literature and those reported by interviewees: cost reduction. The reasons pointed by interviewees are on "physical spaces (offices, hubs, etc.)"; workers "spend less money on their commute to work"; and according to some interviewees, "also on their food" expense.

**Table 8.** Top 5 RW decision factors from both literature and interviews.

	<b>Top 5 Literature</b>	<b>n°/%</b>	<b>Top 5 Interviews: Before Informed</b>	<b>n°/%</b>	<b>Top 5 Interviews: After Informed</b>	<b>n°/%</b>
Advantages	Increased productivity and morale	25 (27%)	Work–life balance	24 (22%)	Reduced overall costs	108 (99%)
	Reduced overall costs	19 (21%)	Time management	18 (17%)	Work–life balance	106 (97%)
	Work–life balance	15 (16%)	Reduced overall costs	16 (15%)	Leverage remote expertise and establish competitive advantage	104 (95%)
	Job satisfaction and reduced burnout	12 (13%)	Fewer distractions/workers focus	15 (13%)	Enhance worker autonomy	102 (93%)
	Enhance worker autonomy	8 (8%)	Flexibility	8 (7%)	Increased productivity and morale	99 (90%)
Disadvantages	Feeling isolated/lack of physical interaction	19 (21%)	Feeling isolated/lack of physical interaction	37 (34%)	Communication problems	97 (88%)
	Balance of work, family, and personal life problems	16 (17%)	Balance of work, family, and personal life problems	16 (15%)	Infrastructure problems	93 (85%)
	Increased workload	12 (13%)	Communication problems	15 (14%)	Feeling isolated/lack of physical interaction	86 (78%)
	Stress load	12 (13%)	Needed discipline	13 (12%)	Technology dependency problems	85 (77%)
	Communication problems	10 (11%)	Too much availability	8 (7%)	Precariousness problems	78 (71%)
Driving Forces	Technology	20 (22%)	Reduced overall costs	25 (22%)	Flexibility	109 (100%)
	Collaboration improvement	18 (20%)	Benefits (motivation, comfort, satisfaction, trust, etc.)	22 (20%)	Technology	108 (99%)
	Organizational and individual strategic thoughts	15 (16%)	Work–life balance	21 (19%)	Economic benefits	104 (95%)
	Cultural and societal forces	13 (14%)	Flexibility	21 (19%)	Managing mobility and critical business interdependencies	98 (89%)
	Flexibility	12 (3%)	Health threats (pandemic COVID-19)	12 (11%)	Added value	96 (88%)
challenges	Communication challenges	19 (21%)	Needed discipline	19 (17%)	Communication challenges	98 (89%)
	Management challenges	18 (20%)	Communication challenges	18 (16%)	Management challenges	96 (88%)
	Transparency challenges	17 (18%)	Technological challenges	16 (14%)	Technological challenges	95 (87%)
	Technological challenges	13 (14%)	Management challenges	14 (12%)	Security challenges	89 (81%)
	Challenges in maintaining team cohesion	13 (14%)	Challenges in finding the best tools and methodologies for RW	8 (7%)	Challenges in maintaining team cohesion	86 (78%)



For interviewees, the best advantage of RW is the work–life balance. It allows them to better “plan their own time”, and it makes it possible to “balance their personal and professional life”. For instance, aspects such as a doctor’s appointment, receiving parcels at home, or assisting older relatives, become much easier to execute in an RW environment. Some workers have also reported that the opportunity to watch their kids growing up “without neglecting your work” is the greatest advantage. Improved time management was also pointed at as a benefit. Workers exhibit many differences and have their preferences (e.g., some prefer to work in the morning, others at late hours). This may affect worker performance. In an interviewee’s words: “Since we are responsible for our own work and the way we use our time, then we can choose the best way to work and the best way to achieve the best results”.

Interviewees were also asked for disadvantages. Table 8 lists the top 5 disadvantages in the interviewees’ opinion.

While for advantages professionals and the literature agree in 3 of the top 5 (work–life balance, cost-reduction and productivity), with regards to disadvantages, there are only two commonalities. These are the lack of interaction and the balance of work, family, and personal life, which can clearly be a big part of the distractions affecting worker performance at home.

Professionals also pointed to “communication” as an important issue. In our view-point, it is normal that this disadvantage pops up from professionals instead of the literature since the former experience it firsthand in practice. This is very interesting to note since we are living in the digital era where the evolution of available collaborative tools is supposedly advanced to the point where we should not have any kind of communicational problems. This can happen due to several reasons as the “lack of experience with the tools”, “network and connectivity issues that can freeze webcams,” and the possibility of “cuts in the audio”, leading to misunderstandings or, in the worst-case scenario, to no communication at all.

The increase in workload identified in the literature was not reported by the interviewees. In fact, most of the interviewees argued that they were “doing the same workload as in the office”.

#### 4.2. Tuning RW Decision Factors Relation (RQ2)

A total of 20 (16 males and 4 females) individuals were interviewed. To be accepted as a participant, one needed to have at least 2 years of professional experience and some RW exposure. The sample ranged from 23 to 51 years in age. Both technical and management roles were included. Some participants also had children. Technological experience ranged from one year and two months to 20 years; RW experience ranged from six months to nine years. Finally, the length of the interviews ranged from 60 to 120 min.

The interviews were conducted through several collaborative tools such as Microsoft Teams, Circuit, Skype or using more direct and informal forms of communications such as mobile phones to make calls and use WhatsApp. All interviews were transcribed.

Table 9 details the answers from the interviewees, and Figure 5 shows the final representation of relations in RW key decision factors based on interviewees’ opinions.

In general, interviewee opinions are aligned with literature. Therefore, a critical analysis is provided below on the 10 less consensual relations. From those 10, 9 are negative influences, and only one is a positive one. This indicates that professionals are not so convinced of the negative relations literature sets out.

Regarding (DF1-D10), participants did not reach a consensus on whether technology helps tasks and people organization. The explanation may be on how managers use technology and which technology is chosen. There are several technologies presently available for this purpose. If people are willing to change, and if managers are aware of the best technologies, this should not be an issue.



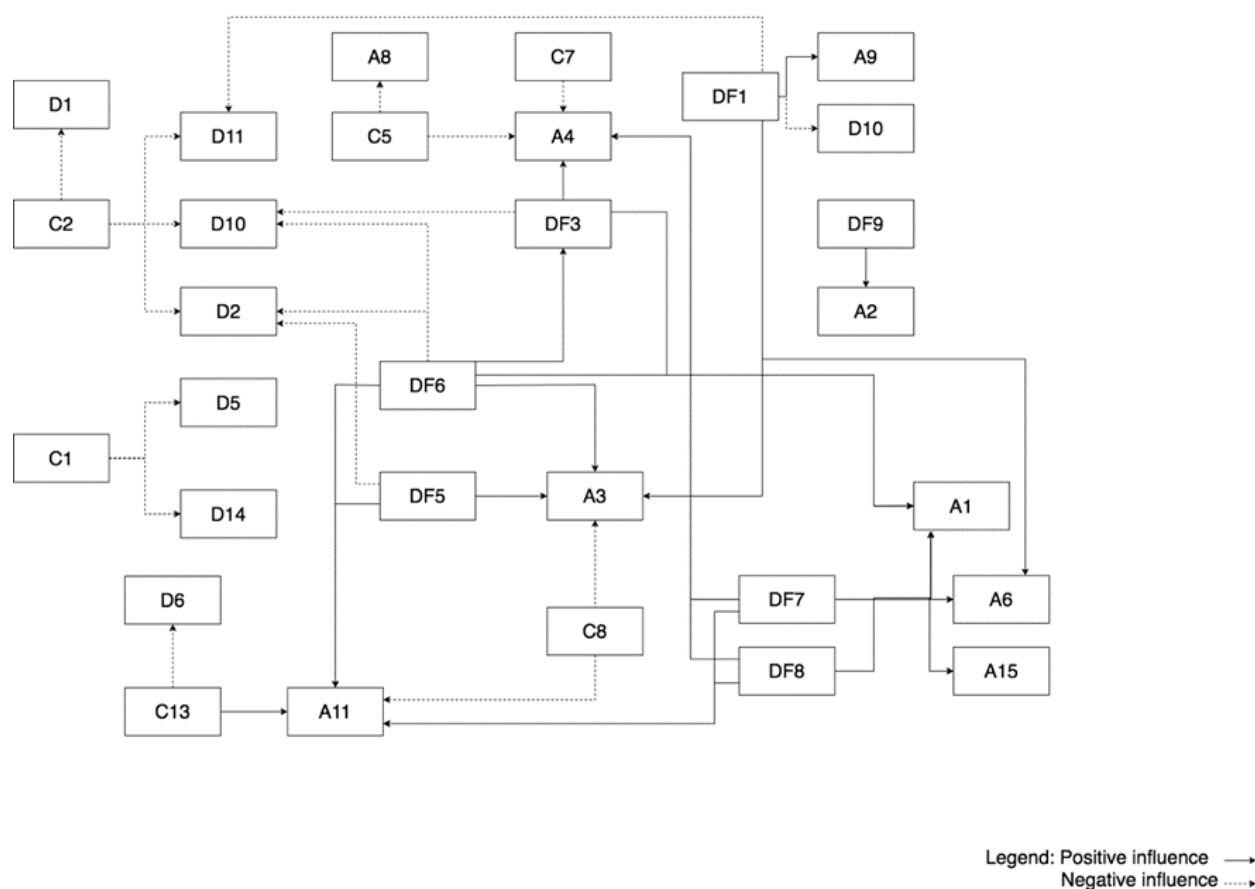
Table 9. RW decision factors relation validation based on interviewees' feedback.

ID	Relation	SLR	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19	X20	Interviewees Answers (%)			
																							✓	-	X	
1	DF1↔A3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100	0	0
2	DF5↔A3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100	0	0
3	DF7↔A4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100	0	0
4	DF9↔A2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	100	0	0
5	DF3↔A1	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	95	5	0
6	DF6↔A11	✓	✓	✓	-	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	90	5	5
7	DF6↔A3	✓	-	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	90	5	5
8	DF7↔A6	✓	✓	-	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	90	5	5
9	DF1↔A9	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	85	10	5
10	DF7↔A11	✓	-	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	85	10	5
11	DF6↔DF3	✓	✓	X	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	85	5	10
12	DF8↔A1	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓	✓	85	10	5
13	DF1↔A6	✓	✓	-	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	85	15	0
14	DF8↔A4	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	X	✓	-	✓	✓	✓	✓	✓	80	15	5
15	DF3↔A4	✓	✓	-	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓	80	20	0
16	C7↔A4	X	-	X	X	X	X	✓	X	-	X	✓	X	X	X	X	X	X	X	X	X	-	X	10	15	75
17	DF6↔A1	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	-	✓	X	-	✓	✓	✓	✓	✓	70	20	10
18	C13↔A11	✓	✓	✓	✓	X	✓	✓	✓	-	-	✓	-	✓	✓	✓	✓	✓	✓	-	-	X	✓	65	25	10
19	DF7↔A15	✓	✓	-	-	✓	X	✓	✓	✓	-	✓	-	✓	✓	✓	✓	✓	X	X	✓	✓	✓	65	20	15
20	DF5↔A11	✓	-	✓	-	✓	-	✓	-	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	X	X	✓	✓	65	20	15
21	C2↔D1	X	X	X	X	✓	X	✓	X	X	X	✓	X	X	✓	-	X	✓	X	✓	X	X	X	30	5	65
22	C1↔D5	X	X	X	X	-	X	X	X	-	✓	✓	X	X	X	X	X	-	X	✓	✓	X	X	20	15	65
23	C2↔D10	X	X	X	-	X	X	X	X	✓	X	X	X	✓	✓	X	X	X	-	✓	✓	-	X	25	15	60

Table 9. Cont.

ID	Relation	SLR	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19	X20	Interviewees Answers (%)		
																							✓	-	X
24	C2↔D11	X	X	X	-	✓	X	X	X	-	X	X	X	X	✓	X	X	✓	-	✓	✓	X	25	15	60
25	DF5↔D2	X	X	X	X	X	✓	✓	X	✓	✓	X	X	X	✓	✓	-	-	X	X	X	X	30	10	60
26	C13↔D6	X	X	-	X	✓	✓	X	✓	X	X	X	X	✓	✓	✓	X	✓	-	X	-	X	35	15	50
27	C8↔A3	X	✓	✓	X	X	✓	X	X	✓	X	✓	X	✓	✓	✓	X	X	X	✓	✓	X	50	0	50
28	C5↔A4	X	X	X	✓	✓	X	✓	✓	-	X	✓	X	✓	✓	✓	X	X	X	✓	X	X	45	5	50
29	C1↔D14	X	-	X	X	✓	X	X	X	-	✓	-	✓	X	✓	X	-	-	X	✓	-	X	25	30	45
30	DF8↔A11	✓	✓	✓	X	X	✓	-	✓	X	-	✓	-	✓	✓	-	-	-	-	-	✓	✓	45	40	15
31	DF1↔D11	X	X	X	-	✓	X	✓	X	✓	✓	✓	X	✓	X	-	X	-	✓	✓	-	X	35	20	45
32	C2↔D2	X	X	X	-	-	X	✓	X	✓	X	✓	X	✓	✓	-	-	-	X	✓	✓	-	35	30	35
33	DF1↔D10	X	✓	X	✓	✓	X	✓	-	✓	X	✓	-	✓	✓	-	✓	X	✓	✓	X	X	55	15	30
34	C5↔A8	X	-	-	✓	✓	X	✓	X	✓	X	✓	X	✓	✓	✓	X	✓	✓	✓	✓	✓	65	10	25
35	DF6↔D2	X	✓	X	✓	-	✓	X	X	-	✓	✓	✓	✓	-	X	✓	-	X	✓	✓	✓	55	20	25
36	DF6↔D10	X	✓	X	✓	✓	X	✓	-	✓	✓	✓	X	✓	✓	✓	X	-	✓	✓	✓	-	65	15	20
37	DF3↔D10	X	✓	X	✓	✓	X	✓	-	✓	✓	-	✓	✓	✓	X	✓	✓	-	X	-	-	55	25	20
38	C8↔A11	X	✓	✓	-	✓	✓	✓	✓	✓	X	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	X	80	5	15

Label: ✓—influences positively; —no influence; X—influences negatively.



**Figure 5.** Tuned decision factors relation based on interviewees' feedback.

About (DF1-D11), interviewees pointed out that technology may affect the quality of communication and, therefore, may promote harsher judgments of others. It is important for managers to oversee the inclusion of new members and sustain a team spirit. Some interviewees also argue that certain soft skills become even more important depending on the channel being used (written, spoken), given that communication is made in a virtual way. Consequently, there is room for misunderstandings to arise due to, for example, voice tones being perceived in a negative way or even the way people address each other. What used to be easy to understand by looking at the speakers' body language becomes swayed by the own opinion of the person on the receiving end.

Regarding (DF3-D10), most interviewees reported having experienced fewer conflicts than in the office, while others argued that it depends on the workers themselves. Reasons for this are based on worker mentality. Full RW is not a vacation, so it requires a sharp sense of responsibility and organization.

Looking at (DF6-D2), interviewees have mixed feelings. Collected information indicates that if there are focus and competence, one ends up doing it faster, while otherwise, it may promote a negative outcome. It was also reported that more than technical skills, the worker mindset is the central issue. While some argue that it is difficult to control external (family) factors, others argue that it is critical to have and to define a specific space where one can be, somehow, isolated.

On (DF6-D10), some interviewees argued that since people are not face-to-face, problems may always happen regardless of commitment. Others said that commitment is critical to overcoming such problems. Plus, if all workers commit, conflicts and problems of coordination will decrease. Organizations may not only assure home conditions but also

on how to manage workers remotely. For instance, the inclusion of junior trainees would require different approaches.

Regarding (DF8 + A11), some participants emphasized that they did not see any negative effect between the two and that economic benefits do not affect learning opportunities. However, others argued that premiums are critical to offering compensation when expenses comparably increase against those expected with life in the office. For some participants, this is an opportunity for companies to reward their employees in an economical way. Considering that the employee enables himself to work from another country or in another time zone, then the company should give him more money at the end of the month (a common practice nowadays in big consulting businesses).

Looking at (C1-D14), opinions differ. Although we are in RW, technologies help monitor more than usual. Management can see updates on servers and the interactions in groups; this is a type of reduced monitoring, but it exists. The relation also must do with management failures because if one needs to talk to A or B, one schedule with A and B a time slot for it. The problem of not being able to reach someone gets resolved this way, using technologies for such purposes, like Microsoft Teams and Outlook. Other participants even go further and say that if someone has these challenges because the boss is bad, then they would need to apply more strict monitoring and training in management topics. For some interviewees, this is a neutral topic, depending on how things are managed, but in general, a positive one; things may not be what they seem, as a person could have just missed an update. However, on the negative side, there are present-day applications used by some employees that automate mouse movements, preventing a persons' status from going to *away* mode.

About (C2-D2), people with no children or living alone argued that this usually would never be an issue but understand such a possibility in different contexts. Hence, arguments were made that this is all about different management styles from both managers and general workers. In terms of upper management, this has a negative impact since when working remotely, it is more difficult to have access to people and understand their specific situations. Regarding workers, it is very difficult to preview all possible family contexts, hence this being a huge challenge to manage. In contrast, those who can properly manage work and family can benefit from remote working.

Regarding (C5-A8), some reported that keeping team cohesion is challenging given the distance and isolation beyond daily meetings. On the other hand, others reported that the RW has a positive impact on team cohesion and performance; in a particular case, there is a mature team that reported a considerable increase in both variables.

Last, but not least, (C8-A11). Here, interviewees argued that proper knowledge of existing communication channels leads to new opportunities to interact with more people. This may be an advantage and contribute to personal fulfillment. However, some argued that the lack of knowledge on how to use such channels makes this interaction more difficult and time-consuming to explain. Therefore, teaching people how to use these tools is critical.

Ultimately, four relations (DF1 + A3)(DF5 + A3)(DF7 + A4)(DF9 + A2) are validated by both literature and professionals. To tune our model, we have used a threshold to define the relationship as valid. The relations with results above or equal to 75% were confirmed; those between 70 and 30% require more research, and those below 30% rejected. The relations were narrowed down from 30 to 16 (Figure 5).

Only one out of the 16 confirmed relations is a negative one. All the others are positive. These results may hint at the overall opinion that RW, at the moment, tends to be perceived as a more positive than negative practice.

## 5. Conclusions and Recommendations

Facing one of the most impacting pandemics (COVID-19) in organization modus operandi, this research aimed to enrich the theoretical and practical understanding of RW advantages, disadvantages, driving forces and challenges, as well as how they relate to each

other. An SLR was performed to elicit the main RW decision factors and how they relate. Then, 129 interviews were performed with RW practitioners. The former 109 interviewees helped to narrow down the true decision factors experienced in the real world, while the other 20 interviews helped to tune how the decision factors influence each other.

When compared with prior literature, this investigation is pioneering in relating different decision factors. It enables organizations to be more aware of what to expect and how to prepare for RW. Furthermore, while current literature mostly focuses on adding new insights about each decision factor, this investigation synthesizes the main literature findings.

### 5.1. Conclusions

Organizations may ensure that workers have the right technology (organizational or personally owned) before adopting RW. Those who aim to increase their internal flexibility or worker mobility may look to RW as an interesting solution. Likewise, RW is a proper strategy for organizations aiming to reduce costs, as it will allow them to hire in cheaper geographies while employees save travel expenses. Finally, RW is also seen as a great way for workers to better organize their day to accomplish both work and personal affairs, which may increase worker motivation and productivity.

Nonetheless, RW also presents some management concerns. Organizations may struggle to control technology issues as often times part of what is used is not under their control (workers' home infrastructure). This may lead to communicational issues, which may occur as a result of poor communication quality or an absence of visual contact that would allow the reading of body language. Managers also struggle to identify and tackle various types of problems as RW is not suitable for every worker; it is up to management to define and oversee the RW capabilities and performance of each worker, possibly considering a hybrid model. Additionally, given a reduction in contact, team cohesion is harder to maintain in RW. Finally, since companies do not control workers' Internet providers or electricity infrastructure, there are risks that can compromise internal projects.

Overall, our findings point that RW promotes much more positive relations rather than negative ones. Technology has a positive influence on the work-life balance, bringing greater mobility for workers to carry out their activities whenever and wherever they need to. Likewise, flexibility also has a positive influence on the work-life balance, enabling workers to manage their own schedule more efficiently, which in turn has a positive influence on job satisfaction. Convincing workers and creating an organizational culture of RW advantages avoid resistance and increases both productivity and morale. Overall, an organizational vision focused on adding value may promote cost reduction as a result of RW adoption.

### 5.2. Recommendations

Based on our findings, we strongly recommend organizations:

- to invest in ways to increase control over the technology that will be used when adopting RW. This should be done considering workers' infrastructure and facilities issues;
- to implement practices to promote team cohesion. For example, always keeping the video on, having regular meetings, among others;
- to apply team management strategies to control team health and productivity;
- to create an RW culture and sensitize workers for RW adoption;
- to investigate the most suitable tools and methodologies to use for each organizational context;
- to reinforce measurement tools that verify how well workers can manage and integrate their personal and work-life.

### 5.3. Limitations and Future Work

Regarding the limitations of this study, it was not possible to cover all RW topics given that it is a methodology involving various categories and not only computer engineering.

RW has a big impact on worker relations, life, way of addressing colleagues, and work; as such, our study was limited to the topics found in the literature.

Although we can find older research documents, they may not be completely up to date. This is prone to happen due to the tremendously high pace of technological development. Moreover, the involvement of more RW practitioners would have increased the validity of the results.

Further research should be carried out on the decision factors and relations where some doubt remained. Other contingency factors (industry, culture, size, etc.), as advised by [94], must be further investigated since they may influence the results obtained in this study.

Additionally, this exact same study could be conducted in a non-pandemic context as the one lived during the year 2020 (COVID-19). As some workers are doing RW by force, not by choice, this may have influenced some answers.

Moreover, the authors advise further investigation on management and governance practices for RW (i.e., remote project management), preferably considering agile methodologies like SCRUM [95]. Plus, another research path may rely on the exploration of the usefulness of RW in small and medium enterprises and which competitive advantage it may bring to them. Finally, it could be very interesting to further explore and understand which types of jobs/roles and organizational cultures would better suit the RW model.

**Author Contributions:** R.P. designed and coordinated the investigation. R.F. performed the interviews. Collected data were analyzed by R.F., and I.S.B. M.M.d.S. and R.P. wrote the full document. All authors have read and agreed to the published version of the manuscript.

**Funding:** This work has been partially supported by Portuguese National funds through FITEC - Programa Interface, with reference CIT “INOVO - INESC INOVAÇÃO - Financiamento Base”.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A

**Table A1.** Profile of Interviewees.

Subject	Gender	Age	Nationality	Company	Role	Years with Technology	RW Years of Experience
X1	Masculine	27	PT	Company A	Penetration tester	9Y	9Y
X2	Masculine	26	PT	Company B	Tech consultant	2Y6M	6 M
X3	Masculine	24	PT	Company C	Financial and marketing officer	2Y9M	6 M
X4	Feminine	33	BR	University A	Head of the removal and training support Division of the people training coordination	8Y	6 M
X5	Masculine	24	PT	Company D	Full-stack developer	2Y3M	9 M
X6	Masculine	34	BR	University A	Coordinator and teacher of distance learning	16Y	6 M
X7	Masculine	23	PT	Company E	Computer technician	2Y1M	6 M
X8	Masculine	51	PT	Company F	Team leader of development teams	20Y	5Y
X9	Masculine	27	PT	Company G	IT consultant	5Y2M	6 M
X10	Feminine	25	PT	Company H	Developer	2Y6M	6 M
X11	Masculine	24	PT	Company I	Financial Analyst	4Y	1Y8M
X12	Masculine	27	PT	Company J	Salesforce developer	4Y	2Y
X13	Masculine	25	PT	Company L	Software developer	4Y	2Y1M
X14	Masculine	24	PT	Company M	SAP consultant	3Y2M	3Y2M
X15	Feminine	26	PT	Company A	Communication manager	6Y	8 M
X16	Masculine	36	BR	University A	Coordinator and teacher of distance learning	16Y	6 M
X17	Masculine	26	PT	Company N	Developer backend	5Y2M	1Y8M
X18	Masculine	34	PT	Company O	Team leader of development teams	12Y	1Y
X19	Feminine	24	PT	Company A	Developer specialist administrator	3Y	2Y
X20	Masculine	24	PT	Company P	Due diligence officer	1Y2M	6 M

## References

1. Mihailova, G. Management challenges arising from the use of virtual work. *Balt. J. Manag.* **2009**, *4*, 80–93. [\[CrossRef\]](#)
2. Cascio, W.F. How Technology Facilitates Virtual Work Arrangements. In *Advances in Human Performance and Cognitive Engineering Research*; Emerald Group Publishing: Bingley, UK, 2003.
3. Ehsan, N.; Mirza, E.; Ahmad, M. Impact of computer-mediated communication on virtual teams' performance: An empirical study. In Proceedings of the International Symposium on Information Technology, Kuala Lumpur, Malaysia, 26–28 August 2008. [\[CrossRef\]](#)

4. Timmerman, C.E.; Scott, C.R. Virtually working: Communicative and structural predictors of media use and key outcomes in virtual work teams. *Commun. Monogr.* **2006**, *73*, 108–136. [CrossRef]
5. Thompson, B.Y. The Digital Nomad Lifestyle: (Remote) Work/Leisure Balance, Privilege, and Constructed Community. *Int. J. Sociol. Leis.* **2018**, *2*, 27–42. [CrossRef]
6. Raghuram, S.; Garud, R.; Wiesenfeld, B.; Gupta, V. Factors contributing to virtual work adjustment. *J. Manag.* **2001**, *27*, 383–405. [CrossRef]
7. Andriessen, J.H.E.; Vartiainen, M. *Mobile Virtual Work: A New Paradigm?* Springer: Berlin/Heidelberg, Germany, 2006. [CrossRef]
8. Jones, K. Going Home: New Technolog’s Impact on Remot. *J. Manag.* **2001**, *27*, 383–405. [CrossRef]
9. Kelliher, C.; Anderson, D. Doing more with less? Flexible working practices and the intensification of work. *Hum. Relat.* **2009**, *63*, 83–106. [CrossRef]
10. Institution of Electrical Engineers. People in control. In Proceedings of the Second International Conference on Human Interfaces in Control Rooms, Cockpits and Command Centres, Manchester, UK, 19–21 June 2001; p. 345.
11. Sundin, K. *Virtual Teams: Work/Life Challenges—Keeping Remote Employees Engaged*; Cornell University Library: Ithaca, NY, USA, 2008; pp. 81–98.
12. Koehne, B.; Shih, P.C.; Olson, J.S. Remote and alone: Coping with being the remote member on the team. In Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW, Seattle, WA, USA, 11–15 February 2012; pp. 1257–1266. [CrossRef]
13. Yang, G.; Tomek, I. Team Lab: A collaborative environment for teamwork. In Proceedings of the 6th International Workshop on Groupware, CRIWG 2000, Madeira, Portugal, 18–20 October 2000; pp. 142–145. [CrossRef]
14. Wiggins, A. Crowdsourcing science: Organizing virtual participation in knowledge production. In Proceedings of the 16th ACM International Conference on Supporting Group Work, GROUP’10, Sanibel Island, FL, USA, 7–10 November 2010; pp. 337–338. [CrossRef]
15. Cohen, S. Adoption of Technologies for Virtual Work. In Proceedings of the 1999 ACM SIGCPR Conference on Computer Personnel Research, New Orleans, LA, USA, 8–10 April 1999; pp. 135–149. [CrossRef]
16. Wiggins, J.S. A collaborative case study. In *Paradigms of Personality Assessment*; Guilford Press: New York, NY, USA, 2003; pp. 209–211.
17. Schultze, U.; Orlikowski, W.J. Research Commentary —Virtual Worlds: A Performative Perspective on Globally Distributed, Immersive Work. *Inf. Syst. Res.* **2010**, *21*, 810–821. [CrossRef]
18. Vartiainen, M.A. Facilitating Mobile and Virtual Work. In *21st Century Management: A Reference Handbook*; SAGE Publications: Thousand Oaks, CA, USA, 2012; Volume II, pp. 348–360.
19. Felstead, A.; Henseke, G. Assessing the growth of remote working and its consequences for effort, well-being and work-life balance. *New Technol. Work. Employ.* **2017**, *32*, 195–212. [CrossRef]
20. George, G.; Lakhani, K.R.; Puranam, P. What has changed? The Impact of Covid Pandemic on the Technology and Innovation Management Research Agenda. *J. Manag. Stud.* **2020**, *57*, 1754–1758. [CrossRef]
21. Houghton, E. Coronavirus and the Workforce: Working from Home in the “New Normal”. Available online: <https://www.cipd.co.uk/news-views/changing-work-views/future-work/thought-pieces/coronavirus-working-home?> (accessed on 18 January 2021).
22. Herhold, K. *Working from Home During the Coronavirus Pandemic: The State of Remote Work*; Clutch: Washington, DC, USA, 2020.
23. Reilly, N.P.; Sirgy, M.J.; Gorman, C.A. Remote Working and Work-Life Balance. In *Work and Quality of Life: Ethical Practices in Organizations*; Springer: Berlin, Germany, 2012; pp. 1–507. [CrossRef]
24. Guinaliu, M.; Jordan, P. Building trust in the leader of virtual work teams. *Span. J. Mark. ESIC* **2016**, *20*, 58–70. [CrossRef]
25. Mohajan, H. The First Industrial Revolution: Creation of a New Global Human Era. *J. Soc. Sci. Humanit.* **2019**, *5*, 377–387.
26. Budgen, D.; Brereton, P. Performing Systematic Literature Reviews in Software Engineering David. *Bull. Soc. Bot. Fr.* **2006**, *82*, 189–196. [CrossRef]
27. Peffers, K.E.N.; Tuunanen, T.; Rothenberger, M.A.; Chatterjee, S. A Design Science Research Methodology for Information Systems Research. *J. Manag. Inf. Syst.* **2007**, *24*, 45–77. [CrossRef]
28. Hevner, A.R.; March, S.T.; Park, J.; Ram, S. Design Science in Information Systems Research. *MIS Q.* **2004**, *28*, 75. [CrossRef]
29. Nurmi, N.; Hinds, P.J. Job complexity and learning opportunities: A silver lining in the design of global virtual work. *J. Int. Bus. Stud.* **2016**, *47*, 631–654. [CrossRef]
30. Verburg, R.M.; Boschijtsema, P.M.; Vartiainen, M. Getting it done: Critical success factors for project managers in virtual work settings. *Int. J. Proj. Manag.* **2013**, *31*, 68–79. [CrossRef]
31. Mihailova, G.; Öun, K.; Türk, K. Virtual work usage and challenges in different service sector branches. *Balt. J. Manag.* **2011**, *6*, 342–356. [CrossRef]
32. Beise, C.M.; Carte, T.A.; Vician, C.; Chidambaram, L. A case study of project management practices in virtual settings. *ACM SIGMIS Database: Database Adv. Inf. Syst.* **2010**, *41*, 75–97. [CrossRef]
33. Vom Brocke, J.; Simons, A.; Niehaves, B.; Riemer, K.; Plattfaut, R.; Cleven, A. Reconstructing the giant: On the importance of rigour in documenting the literature search process. In Proceedings of the 17th European Conference on Information Systems (ECIS), Verona, Italy, 8 June 2009; pp. 2206–2217.



34. Johnson, B.T.; Low, R.E.; Lacroix, J.M. Systematic Reviews to Support Evidence-based Medicine (2nd edition) by Khalid Khan, Regina Kunz, Jos Kleijnen and Gerd Antes: A Review. *Res. Synth. Methods* **2013**, *4*, 102–108. [\[CrossRef\]](#)
35. Siddaway, A.P.; Wood, A.M.; Hedges, L.V. How to Do a Systematic Review: A Best Practice Guide for Conducting and Reporting Narrative Reviews, Meta-Analyses, and Meta-Syntheses. *Annu. Rev. Psychol.* **2019**, *70*, 747–770. [\[CrossRef\]](#)
36. Kitchenham, B. *Procedures for Performing Systematic Reviews*; Keele University: Keele, UK, 2004.
37. Webster, J.; Watson, R.T. Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Q.* **2002**, *26*, xiii–xxiii.
38. Jones, K.E., Jr. *Going Home: The Influence of Workforce Performance Management Systems on the Decision to Engage in Remote Work Environments*; ProQuest Dissertations Publishing: Ann Arbor, MI, USA, 2011; p. 188.
39. Mattarelli, E.; Tagliaventi, M.R. Work-Related Identities, Virtual Work Acceptance and the Development of Glocalized Work Practices in Globally Distributed Teams. *Ind. Innov.* **2010**, *17*, 415–443. [\[CrossRef\]](#)
40. Angelaccio, M.; D'Ambrogio, A. A Model transformation framework to boost productivity and creativity in collaborative working environments. In Proceedings of the 3rd International Conference on Collaborative Computing: Networking, Applications and Worksharing, CollaborateCom 2007, New York, NY, USA, 12–15 November 2007; pp. 464–472. [\[CrossRef\]](#)
41. Moradi, L.; Mohamed, I.; Yahya, Y. Relationship between E-training in virtual team and IT project performance with the mediation role of organizational commitment in E-tourism. In Proceedings of the 2017 6th International Conference on Electrical Engineering and Informatics ICEEI 2017, Langkawi, Malaysia, 25–27 November 2007. [\[CrossRef\]](#)
42. Wilson, J.R. Collaboration in mobile virtual work: A human factors view. In *Mobile Virtual Work: A New Paradigm?* Springer: Berlin/Heidelberg, Germany, 2006; pp. 129–151. [\[CrossRef\]](#)
43. Belanger, F.; Watson-Manheim, M.-B.; Jordan, D.H. Aligning IS Research & Practice. *Inf. Resour. Manag. J.* **2002**, *15*, 48–70. [\[CrossRef\]](#)
44. Richter, P.; Meyer, J.; Sommer, F. Well-being and stress in mobile and virtual work. In *Mobile Virtual Work: A New Paradigm?* Springer: Berlin/Heidelberg, Germany, 2006; pp. 231–252. [\[CrossRef\]](#)
45. Robert, L.P. A multi-level analysis of the impact of shared leadership in diverse virtual teams. In Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW, San Antonio TX, USA, 23–27 February 2013; pp. 363–374. [\[CrossRef\]](#)
46. Fields, D.; Miller, E. Case study: A virtual group at Telcordia. In Proceedings of the Academia/Industry Working Conference on Research Challenges 2000: Next Generation Enterprises: Virtual Organizations and Mobile/Pervasive Technologies, AIWORC 2000, Buffalo, NY, USA, 27–29 April 2000; pp. 9–14. [\[CrossRef\]](#)
47. Chungade, T.D.; Kharat, S. Employee performance assessment in virtual organization using domain-driven data mining and sentiment analysis. In Proceedings of the 2017 International Conference on Innovations in Information, Embedded and Communication Systems, ICIIECS 2017, Coimbatore, India, 17–18 March 2017; pp. 1–7. [\[CrossRef\]](#)
48. Calvo, A.J. *Where's the Remote? Face Time, Remote Work, and Implications for Performance Management*; Cornell HR Review. Cornell University Library: Ithaca, NY, USA, 2013.
49. Ayoko, O.B.; Konrad, A.M.; Boyle, M.V. Online work: Managing conflict and emotions for performance in virtual teams. *Eur. Manag. J.* **2012**, *30*, 156–174. [\[CrossRef\]](#)
50. Elshaiekh, N.E.M.; Hassan, Y.A.A.; Abdallah, A.A.A. The Impacts of Remote Working on Workers Performance. In Proceedings of the 2018 International Arab Conference on Information Technology, Werdanye, Lebanon, 28–30 November 2019; pp. 1–5. [\[CrossRef\]](#)
51. Wheelan, S.; Poole, M.; Zhang, H. Making knowledge work in virtual teams. In *The Handbook of Group Research and Practice*; SAGE Publications: Thousand Oaks, CA, USA, 2016; Volume 50, pp. 363–384. [\[CrossRef\]](#)
52. Verbarg, R.M.; Testa, S.; Hyrkkänen, U.; Johansson, N. Case descriptions of mobile virtual work in practice. In *Mobile Virtual Work: A New Paradigm?* Springer: Berlin/Heidelberg, Germany, 2006; pp. 267–288. [\[CrossRef\]](#)
53. Ibell, T. Virtual by design. *Struct. Eng.* **2016**, *94*, 88–89.
54. Nathan, M.; Topkara, M.; Lai, J.; Pan, S.; Wood, S.; Boston, J.; Terveen, L. In case you missed it: Benefits of attendee-shared annotations for non-attendees of remote meetings. In Proceedings of the ACM Conference on Computer Supported Cooperative Work, CSCW, Seattle, WA, USA, 11–15 February 2012; pp. 339–348. [\[CrossRef\]](#)
55. Raghuram, S.; Wiesenfeld, B. Work-nonwork conflict and job stress among virtual workers. *Hum. Resour. Manag.* **2004**, *43*, 259–277. [\[CrossRef\]](#)
56. Salazar, A.J.; Sawyer, S. *Handbook of Information Technology in Organizations and Electronic Markets*; World Scientific: Singapore, 2007. [\[CrossRef\]](#)
57. El-Sofany, H.F.; Alwadani, H.M.; Alwadani, A. Managing Virtual Team Work in IT Projects: Survey. *Int. J. Adv. Corp. Learn. (ijAC)* **2014**, *7*, 28–33. [\[CrossRef\]](#)
58. Vartiainen, M. Mobile virtual work-Concepts, outcomes and challenges. In *Mobile Virtual Work: A New Paradigm?* Springer: Berlin/Heidelberg, Germany, 2006; pp. 13–44. [\[CrossRef\]](#)
59. Golden, T.D. Avoiding depletion in virtual work: Telework and the intervening impact of work exhaustion on commitment and turnover intentions. *J. Vocat. Behav.* **2006**, *69*, 176–187. [\[CrossRef\]](#)
60. Walther, J.B.; Bunz, U.; Bazarova, N.N. The rules of virtual groups. In Proceedings of the Annual Hawaii International Conference on System Sciences, Big Island, HI, USA, 3–6 January 2005. [\[CrossRef\]](#)

61. Bakewell, L.L.; Vasileiou, K.; Long, K.S.; Atkinson, M.; Rice, H.; Barreto, M.; Barnett, J.; Wilson, M.; Lawson, S.; Vines, J. Everything we do, everything we press: Data-driven remote performance management in a mobile workplace. In Proceedings of the Conference on Human Factors in Computing Systems, Montreal, QC, Canada, 21–26 April 2018; pp. 1–14. [\[CrossRef\]](#)
62. Lacey, S.; Cox, K. Guest Editorial. *Nurs. Adm. Q.* **2013**, *37*, 178. [\[CrossRef\]](#)
63. Carlson, J. Preparing Employees to Work in a Virtual Environment. Ph.D. Thesis, The College of St. Scholastica, Duluth, MN, USA, 2014.
64. Golden, T. Co-workers who telework and the impact on those in the office: Understanding the implications of virtual work for co-worker satisfaction and turnover intentions. *Hum. Relat.* **2007**, *60*, 1641–1667. [\[CrossRef\]](#)
65. Mahmood, M.A. *Advanced Topics in End User Computing*; University of Texas at El Paso: El Paso, TX, USA, 2005. [\[CrossRef\]](#)
66. Ford, D.; Milewicz, R.; Serebrenik, A. How Remote Work Can Foster a More Inclusive Environment for Transgender Developers. In Proceedings of the 2019 IEEE/ACM 2nd International Workshop on Gender Equality in Software Engineering, Montreal, QC, Canada, 27 May 2019; pp. 9–12. [\[CrossRef\]](#)
67. Nathan, A.J.; Scobell, A. *Offshoring and Working Conditions in Remote Work*; ILO: Geneva, Switzerland, 2012. [\[CrossRef\]](#)
68. Barthelmeß, P.; Kaiser, E.; Huang, X.; Demirdjian, D. Distributed pointing for multimodal collaboration over sketched diagrams. In Proceedings of the Seventh International Conference on Multimodal Interfaces, ICMI'05, Torento, Italy, 4–6 October 2005; pp. 10–17. [\[CrossRef\]](#)
69. Watson-Manheim, M.B.; Belanger, F. Exploring communication-based work processes in virtual work environments. In Proceedings of the Annual Hawaii International Conference on System Sciences, Big Island, HI, USA, 7–10 Jnauary 2002; pp. 3604–3613. [\[CrossRef\]](#)
70. Sivunen, A.; Nurmi, N.; Koroma, J. When a one-hour time difference is too much: Temporal boundaries in global virtual work. In Proceedings of the Annual Hawaii International Conference on System Sciences, Koloa, HI, USA, 5–8 January 2016; pp. 511–520. [\[CrossRef\]](#)
71. Golden, T.D.; Fromen, A. Does it matter where your manager works? Comparing managerial work mode (traditional, telework, virtual) across subordinate work experiences and outcomes. *Hum. Relat.* **2011**, *64*, 1451–1475. [\[CrossRef\]](#)
72. Strawn, P. Remote or Mobile Work as an Occasion for (Re)Structuring Professional and Personal Identities. *NAPA Bull.* **2008**, *30*, 89–101. [\[CrossRef\]](#)
73. Guedes-Gondim, S.M.; Puente-Palacio, K.; Borges-Andrade, J.E. Performance and learning in virtual work teams: Comparing brazilians and argentineans. *Rev. Psicol. Trabajo Organ.* **2011**, *27*, 31–41. [\[CrossRef\]](#)
74. Brown, P. Technology and Trust in Teams. In Proceedings of the Academia/Industry Working Conference on Research Challenges '00—Next Generation Enterprises: Virtual Organizations and Mobile/Pervasive Technologies, AIWORC'00, Buffalo, NY, USA, 27–29 April 2000. [\[CrossRef\]](#)
75. Fussell, S.R.; Setlock, L.D.; Parker, E.M.; Yang, J. Assessing the value of a cursor pointing device for remote collaboration on physical tasks. In Proceedings of the Conference on Human Factors in Computing Systems, Ft. Lauderdale, FL, USA, 5–10 April 2003; pp. 788–789. [\[CrossRef\]](#)
76. Merriman, K.K.; Schmidt, S.M.; Dunlap-Hinkler, D. Profiling Virtual Employees. *J. Leadersh. Organ. Stud.* **2007**, *14*, 6–15. [\[CrossRef\]](#)
77. Webster, J.; Randle, K. *Positioning Virtual Workers Within Space, Time, and Social Dynamics*; Springer: Berlin/Heidelberg, Germany, 2016. [\[CrossRef\]](#)
78. Livermore, C.R. Virtual Work in a Global Context. *J. Glob. Inf. Technol. Manag.* **2006**, *9*, 1–3. [\[CrossRef\]](#)
79. Martins, L.L.; Shalley, C.E. Creativity in Virtual Work. *Small Group Res.* **2011**, *42*, 536–561. [\[CrossRef\]](#)
80. Ahuja, M.; Chudoba, K.M.; George, J.F.; Kacmar, C.; McKnight, H. Overworked and isolated? Predicting the effect of work-family conflict, autonomy, and workload on organizational commitment and turnover of virtual workers. In Proceedings of the Annual Hawaii International Conference on System Sciences, Big Island, HI, USA, 7–10 January 2002; pp. 3586–3593. [\[CrossRef\]](#)
81. Hyrkknen, U.; Kojo, I.; Nenonen, S. The Virtual Reality of Work - How to Create a Workplace that Enhances Well-Being for a Mobile Employee. *Virtual Real. Environ.* **2012**, 193–204. [\[CrossRef\]](#)
82. Vartiainen, M.; Andriessen, E. Mobile virtual work: What have we learned? In *Mobile Virtual Work: A New Paradigm?* Springer: Berlin/Heidelberg, Germany, 2006; pp. 369–386. [\[CrossRef\]](#)
83. Conner, D.S. Social comparison in virtual work environments: An examination of contemporary referent selection. *J. Occup. Organ. Psychol.* **2003**, *76*, 133–147. [\[CrossRef\]](#)
84. Arling, P. Redefining and measuring virtual work in teams: An application of social network analysis. In Proceedings of the Annual Hawaii International Conference on System Sciences, Waikoloa, HI, USA, 3–6 June 2007; pp. 1–10. [\[CrossRef\]](#)
85. Goebels, G.; Lalioti, V.; Göbel, M. Design and evaluation of team work in distributed collaborative virtual environments. In Proceedings of the ACM Symposium on Virtual Reality Software and Technology, VRST. Part F1290, Osaka, Japan, 1–3 October 2003; pp. 231–238. [\[CrossRef\]](#)
86. Sayrs, L. *InterViews: An Introduction to Qualitative Research Interviewing* Steinar Kvale. Thousand Oaks, CA: Sage, 1996. 326 pp. *Am. J. Eval.* **1998**, *19*, 267–270. [\[CrossRef\]](#)
87. Liguori, S.M. Review. Reviewed Work: Research Methods in Social Relations by Claire Selltiz, Marie Jahoda, Morton Deutsch, Stuart W. Cook. *Am. Cathol. Sociol. Rev.* **1959**, *20*, 264–265. [\[CrossRef\]](#)

- 
88. Terán, J.M.Y. Entrevista de Salud Pública de México al Dr. Jaime Mier y Terán, Secretario de Salud de Tabasco. *Salud Pública de México* **2005**, *47*, 78–82. [[CrossRef](#)]
  89. Creswell, J.W.; Poth, C.N. *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*; SAGE Publications: Thousand Oaks, CA, USA, 2018.
  90. Myers, M.D. *Qualitative Research in Business and Management*; SAGE Publications Ltd.: Thousand Oaks, CA, USA, 2013.
  91. Venable, J.; Pries-Heje, J.; Baskerville, R. FEDS: A Framework for Evaluation in Design Science Research. *Eur. J. Inf. Syst.* **2016**, *25*, 77–89. [[CrossRef](#)]
  92. Marshall, B.; Cardon, P.; Poddar, A.; Fontenot, R. Does Sample Size Matter in Qualitative Research?: A Review of Qualitative Interviews in is Research. *J. Comput. Inf. Syst.* **2013**, *54*, 11–22. [[CrossRef](#)]
  93. Dubé, L.; Paré, G. Rigor in Information Systems Positivist Case Research: Current Practices, Trends, and Recommendations. *MIS Q.* **2003**, *27*, 597–636. [[CrossRef](#)]
  94. Pereira, R.; Almeida, R.; da Silva, M.M. How to Generalize an Information Technology Case Study. In Proceedings of the 8th Design Science Research in Information Systems and Technology (DESRIST), Helsinki, Finland, 11–12 June 2013. [[CrossRef](#)]
  95. Amorim, A.C.; Da Silva, M.M.; Pereira, R.; Gonçalves, M. Using agile methodologies for adopting COBIT. *Inf. Syst.* **2020**, *101496*, 101496. [[CrossRef](#)]