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The impact of telework on organisational performance, behaviour, and culture: evidence from business services industry based on employees' perceptions

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ABSTRACT

The future of work is being redesigned by the world's largest telework experiment as a consequence of the global pandemic. The research objective was to analyse and debate actual organisational needs in terms of telework and its implications for organisational performance, behaviour, and culture within the context of digital technology. This article challenges the results of previous research on factors related to telework and its outcomes, contributing to the literature through an advanced analysis of employees' perceptions, for the Business Services industry. Quantitative research is conducted based on a questionnaire. The research hypotheses were tested through Kruskal–Wallis test, Spearman's correlations, and linear regression, complemented by robustness tests. Findings indicate that the business professionals with pre-pandemic telework experience assigned a higher importance to all organisational dimensions, as compared with the employees having pandemic telework experience, only. The results also show significant relationships between telework and the organisational dimensions, with positive impact for factors contributing to achieving goals while teleworking. The results are mixed in the case of negative factors affecting telework, with a positive impact on organisational performance, and a negative impact on organisational behaviour. Significant changes were found when the digital technology dimension was considered.

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1. Introduction

Challenges raised by the COVID-19 pandemic in the business environment pose a significant strategy shift in terms of telework adoption and implementation. Even before 2020, both government and European Union (EU) bodies had promoted

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telework due to its benefits for corporations and employees (Athanasiadou & Theriou, 2021; Liu & Su, 2021). The second article of European Framework Agreement on Telework states that 'Telework is a form of organising and/or performing work, using information technology, in the context of an employment contract/relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis'. Based on a systematic literature review on telework, Athanasiadou and Theriou (2021) emphasise the lack of a generally accepted definition of the concept, and the scarcity of academic research on the topic. To conceptualise telework, the authors found two criteria, the most agreed in the literature: the remote work location and use of digital technology.

Changes that have taken place in recent years have triggered unprecedented shifts in professional lives and thus, new working practices have emerged. Managing a virtual workforce requires a cultural change in terms of corporate trust and employee responsibility (Lewis, 2020).

Previous studies indicate a lack of research on co-workers' communication during telework (Muller & Niessen, 2019), their influence on potential outcomes (Windeler et al., 2017), or how telework is related to job satisfaction and performance goals (Adamovic, 2022). Companies that have experienced telework are considering migrating to an entirely virtual work model, with specific challenges on efficiency, innovative thinking and creativity (Farcane et al., 2022). However, it is advisable that only specific sectors such as outsourcing, customer service, marketing or IT adopt this working approach (Alexander et al., 2020). Avdiu and Nayyar (2020) revealed that the difficulty generated by telework and the importance of face-to-face interactions diverge in some industries, thus underscoring the need to conduct industry-based research.

The objective of this research was to provide insights into the impact of telework practices on organisational dimensions from employees' perspectives in the business services industry.

Researchers focussed on the advantages and disadvantages of different telework practices (Raišienė et al., 2020) to establish new remote management trends. Even if telework was analysed from different organisational perspectives, organisational behaviour could be the main factor that may influence the development of this work model in a sustainable way. Organisational behaviour has been examined through the lenses of job satisfaction level, vocational preferences, or organisational engagement (Beauregard et al., 2019; Karacsony, 2021). Research needs to focus on debating whether telework is meant to be just a temporary solution to the business challenges posed by the global health crisis and the social distancing rules, or whether it may become a sustainable work model.

Kuruzovich et al. (2021) examined the influence of the extensive use of digital technology on organisational dimensions while teleworking, and found a negative impact on employees' job satisfaction, social interactions, organisational commitment, and job performance. However, the quality of digital technology may play a moderating role. Business strategies need to be rethought and companies must analyse the implications of new digital technologies on the employee-employer dynamics. As a result, it is essential to investigate the concept of telework and its implications for both workforce and workplace.

The complexity of telework practices entails a multi-dimensional approach through which the objective of this research is extended to investigate organisational implications. Analysing employees' perceptions regarding organisational performance, behaviour and culture in relation with digital technologies' use may provide a thorough understanding of the workplace transformation and valuable insights to remote management. Kruskal–Wallis test, correlation analysis and regression analysis are applied on primary data collected through a questionnaire. The results address possible differences amid various clusters of respondents and the existing relationships between telework and organisational variables.

First, this article contributes to the development of research on employees' perceptions of telework practices. Second, the study draws on the approach of digital technology use while teleworking. A final contribution provides evidence for managers to acknowledge that employees have different beliefs regarding telework.

To address the research objective, this article is structured as follows. Section 2 includes the literature review and hypotheses development. Section 3 outlines the research methodology to determine the impact of telework on the organisational dimensions. Section 4 underlines the results and discussions. Section 5 presents the conclusions.

2. Literature review and hypotheses development

In recent years, companies needed to embrace many unprecedented changes to adapt to the new business environment over the pandemic period. They had to take different actions related to their organisational dimensions, underlying technologies or operations infrastructure to make a compulsory transition to the digital workspace. Fresh evidence suggests that transformational change within the pandemic context specifically targets the companies' organisational strategy in terms of workplace innovation, digital technology, and safety (De Lucas Ancillo et al., 2021). The post-pandemic world of work comes with a lot of uncertainty thus it is mandatory for companies to develop visionary change management strategies to cope with any future challenge that might impact the workspace.

Much of the current literature on organisational change pays particular attention to telework as a work model that needs to address the entire scope of social interconnections inherent in the workplace, not only the digital infrastructure and technological capabilities (European Commission and Joint Research Centre (EC-JCR),) 2020a; Selimovic et al., 2021). Kniffin et al. (2021) reported that organisational changes mainly occurred at work practices level and employees' behaviour when determining telework implications for the future of work. Moreover, the debate about professional life changes has gained fresh prominence with researchers arguing that telework has an impact on tasks content, teamwork, job autonomy as well as supervisory methods (EC-JCR, 2020a).

Previous studies investigating telework aspects have focussed on analysing a single dimension (Baker et al., 2007). Due to the complexity of the concept this is a multi-dimensional research focussed on telework and its organisational implications. To respond to the research objective, this study analysed and debated on the actual

perceptions of employees from the business services industry. The intensity of the factors preventing or contributing to the achievement of employees' goals during telework was discussed in terms of association and impact on three organisational dimensions (performance, behaviour, and culture). A fourth dimension is analysed to understand the influence of digital technology in the relationship between telework and organisational values.

Employees' perceptions and attitudes towards work were analysed in prior research by considering key factors related to the role of information technology in work patterns and supervision (Kelliher & Anderson, 2008; Klopotek, 2017). Studies from this field emphasised positive factors related to work goals achievement (Baruch, 2000; Nakrosiene et al., 2019) as well as important drawbacks of job performance in a virtual environment (Vander Elst et al., 2017). Over the past decade, most research has emphasised the impact of telework on key research areas of organisational performance (Carroll & Conboy, 2020; Waters, 2016). The organisational behaviour has been measured through the lens of job satisfaction level, career preferences, or organisational commitment (Beauregard et al., 2019). One of the biggest challenges related to telework is associated with organisational culture (Ramdhani et al., 2017), because it represents the most difficult organisational element that may be transferred in a digital environment. Consequently, research covered key challenges of working and managing remotely as well as advantages and disadvantages of such practices (Raišienė et al., 2020). Jointly, these studies outline a critical need for further research to consider the differences in employees' perceptions due to their work-related profile. Thus, a first research hypothesis is developed.

RH1. The business services employees' perceptions on various organisational dimensions as performance, behaviour, culture, or digital technology are influenced by organisational position, work experience and telework experience.

Researchers analysed a wide range of organisational aspects related to telework, as a key business shift and a major change in professional lives due to several positive or negative factors related to work goals achievement (Carroll & Conboy, 2020; Dittes et al., 2019; Nakrosiene et al., 2019; Savic, 2020). A recent study focussing on the main characteristics and outcomes of telework, concluded that the main *positive factors related to work goals achievement* were found to improved time management skills, managerial trust and the chance to care for family (Nakrosiene et al., 2019). Exploring the experiences of employees who practiced work from home, Waters (2016) noted that positive factors are related to reduced interruptions from co-workers, which led to an increased level of attention and focus on the work tasks. This was also supported by previous research that reported a significant level of employees' concentration due to flexibility and self-control over the work tasks, a lower employees' stress (Kelliher & Anderson, 2008), ensuring a beneficial effect on the employee's work-life balance.

Studies have also approached telework by exploring the *negative factors related to work goals achievement*. Managing workforce remotely may bring several challenges within the corporate environment (Beauregard et al., 2019). Grant et al. (2013) identified a growing effort and time put in by employees, due to constant access to technology. Muchmore, e-workers' social interactions with their colleagues or managers are impaired by the decrease of face-to-face interactions. They may generate negative

effects on employees (Gajendran & Harrison, 2007), concentration difficulties (Vander Elst et al., 2017) or deprived well-being (Charalampous et al., 2019). Therefore, management should ensure trust-based relationships with their employees to guarantee successful outcomes such as job performance, job satisfaction, and digital corporate culture.

Organisational performance has been mainly studied to establish if there is a connection between telework and a higher business efficiency (Alghaithi, 2020; Dittes et al., 2019). Beauregard et al. (2019) reported that employees may be more productive while teleworking as they are less interrupted, manage more efficiently their time and experience a higher autonomy over their daily work activities. Job satisfaction is an essential factor of *organisational behaviour*, to be investigated within telework research, as it may be associated with a better work-life balance (Beauregard et al., 2019). Furthermore, the social phenomenon of professional isolation encountered during teleworking may also have consequences on employee behaviour due to limited social interactions, fewer ways of learning from co-workers or mentoring sessions received (Charalampous et al., 2019). *Organisational culture* is one of the most important tools businesses may use to foster successful collaboration within a digital environment. Developing effective organisational communication, employees may benefit from information and knowledge exchange with their peers and leadership (Alghaithi, 2020).

By valuing the results and ideas synthesised from the literature, the second research hypothesis is addressed to analyse and debate on the positive and negative factors related to work goals achievement and the implications for organisational performance, behaviour, and culture.

RH2. There is a significant impact of the intensity of positive/negative telework factors on the organisational dimensions.

As the employee experience has been changed in the digital workspace, both employees and managers need to learn how to collaborate using new technologies (Nakhod et al., 2020) and to develop new skills in terms of digital literacy (Selimovic et al., 2021). Therefore, companies need to develop efficient *digital technology* to support a telework model. The virtual work involves more than just providing the required technology, rather it is based on the competence and adaptability of the people using it. Thus, reducing organisational harm and protecting key stakeholders are the main goals of companies that want an efficient virtual work model (Ipsen et al., 2021; Madero Gomez et al., 2020). However, the use of digital technology may lead to immoderate usage behaviours which could be considered as a negative influence on organisational behaviour (Dittes et al., 2019). From a practical point of view, companies may encounter challenges when the organisational culture has to fully transition into the digital workspace, using new technologies to replace face-to-face interactions or team meetings.

The impact of telework may be associated with how efficiently employees conduct their activities in a virtual environment, behavioural changes due to lack of in-person interaction, new approaches for collaboration as well as digital infrastructure requirements. Therefore, the influence of digital technology is studied by addressing the third research hypothesis.

RH3. The impact of the intensity of positive/negative telework factors on the organisational dimensions is intensified by digital technology complexity.

Companies need to use and develop leadership as a practice, rather than a function, to tackle today's challenging situation (Kotter et al., 2021). To facilitate flexible work arrangements, companies need to embrace the changes brought on by the COVID-19 outbreak and the accelerated level of technological advancements through a hybrid work model approach, reorganisation of the physical space within offices, and better management of employees' needs (De Lucas Ancillo et al., 2021).

3. Methodology

3.1. Data collection

This research examines the employees' perceptions on teleworking in the context of the business services industry, mainly defined by process-oriented activities. A study, which focussed on the variations in telework adoption in different industries and jobs, showed that knowledge-intensive sectors are better prepared for telework on a wide scale (EC-JCR, 2020b). Due to the global health crisis, there have been certain changes in how business services organisations operate. As the standard approach of services delivery implied physical contact as a requirement to conduct efficient operations, now companies were challenged to transform their services model. Thus, they had the opportunity to remodel their approach demonstrating that organisational performance is not dependent on workforce location (Deloitte, 2021). As previous studies illustrated a highly preparedness for telework of the business services industry, it may add value to the research findings by presenting useful guidance for both employees and managers in terms of business practices in a virtual environment.

Primary data were collected based on a questionnaire and analysed using quantitative research methods to establish the validity of the hypotheses. The questionnaire presented in Figure 1 was developed through several phases: questionnaire design, participant selection, distribution channel identification, and response rate management. It includes seven different sections. *The first section* covers respondents' profile data such as gender, nationality, generation, organisational position, industry, telework experience, and work experience to allow researchers to generalise the findings. *The second section* contains a list of factors that prevent employees from achieving their work goals while teleworking, followed by *the third section* concerning the factors that contribute to employees' ability to achieve the work goals. *The fourth section* refers to organisational performance aspects as frequency of work evaluation, performance criteria and the impact of telework on employees' job performance. *The fifth section* covers organisational behaviour aspects measuring job satisfaction and professional isolation status. *The sixth section* measures the impact of telework on key aspects of organisational culture: organisational communication, networking, training and development and rewards and recognition. *The final section* of the questionnaire measures the extent to which employees use distinct digital tools to collaborate in the virtual environment.

The questionnaire was first pretested through five structured interviews with managers having middle and upper management organisational positions in the business

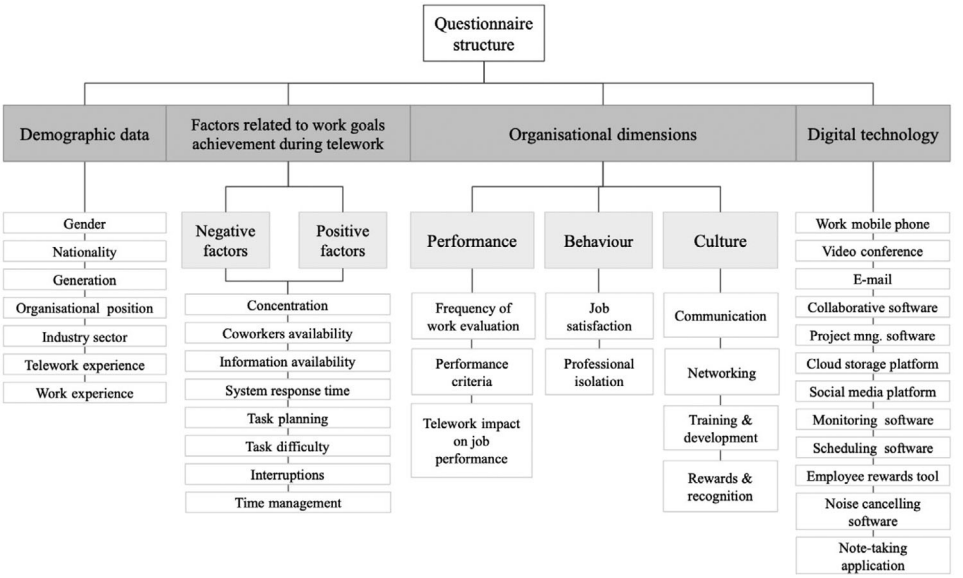

Figure 1. The conceptual model based on the questionnaire's structure.
Source: Authors' conceptual model based on the questionnaire.

services industry. Then, it was disseminated to their peers and additionally shared via LinkedIn professional networking platform. The respondents were chosen based on the research requirement that they had telework experience. The data was collected between November 2020 and February 2021. Out of a total of 300 questionnaires sent, 242 responses were received, leading to a response rate of 80.67%. Most of the questionnaire answers were received from participants aged between 25 and 39 years (75.2%), predominantly in middle management (48.3%) or entry level positions (34.7%). The top nationalities of the respondents are Romanian (47.5%), Indian (8.7%), American, British, Filipinos, Germans (7.4% each), and Italian (7%).

The questionnaire has been designed as a digital tool to facilitate access to employees from different regions and to entail prompt response delivery and direct survey results conversion into a database (Andrews et al., 2003).

This method allowed researchers to collect a set of data from a sample group from which may be further developed to population-wide generalisations. An additional benefit of conducting web-based questionnaire investigation in a virtual community is the ability to reach out to particular populations. Thus, it creates the opportunity to investigate behaviour patterns from a large number of participants who share particular interests, perspectives and values regarding a specific activity (Wright, 2005). The sampling and response rates are two of the most prevalent challenges that occur when using this method. Thus, specific actions have been taken to overcome them. As the response rate percentage is one factor in establishing the validity of research findings (Fulton, 2018), follow-up notifications as well as personalised cover letters to the questionnaires were sent. Direct messages were used to contact the target population, allowing the response rate to be measured.

Table 1. Variables used for testing the hypotheses.

Questions addressed	Variables	Measurement
Organisational Dimensions (ODIM)	*Dependent*	
Organisational Performance		
Job performance: What are the important criteria by which your performance is evaluated?	OP_CRT	Score 0–5 (based on a list of five criteria: Rate of output; Meeting deadlines; Expertise; Absenteeism; and Others)
Organisational Behaviour		
Job satisfaction: The overall quality of teamwork (How would you rate the overall quality of work done in your work group?)	OBJS_Q	5 Likert scale
Organisational Culture		
The impact of telework on organisational communication (What is the impact of remote work on the following aspects of corporate culture?)	OC_C	5 Likert scale
Telework Practices	*Independent*	
Telework_Positive factors intensity (What factors contributed to your ability to achieve your goals while tele working?)	TW_PFI	Score 0–9 (the number of chosen factors in the list: Co-workers available when needed, Information available when needed, Overestimation of needed time, Task less difficult than anticipated, Good concentration, Good system response time, Good planning, No interruptions from co-workers, and Others)
Telework_Negative factors intensity (What factors prevented you from achieving your goals while teleworking?)	TW_NFI	Score 0–11 (the number of chosen factors in the list: Lack of concentration, Interruptions from family-members/roommates, Task more difficult than anticipated, Unplanned tasks, Co-workers unavailable when needed, Information unavailable when needed, Problems with system hardware/software, Poor response system time, Underestimation of needed time, Inefficient planning, and Others)
Digital Technology	*Influence*	
Digital technology complexity (What type of digital technologies do you use when teleworking?)	DTECH	Score 0–14 (based on 14 possible characteristics: Dedicated telephone line; Video conferencing / group-calling application; E-mail; Whiteboard collaborative software; Team collaboration software; Project management software; Cloud storage platforms; Employee monitoring software / team time tracking application; Scheduling software for telework teams; Noise cancelling application; Note-taking application; Employee rewards tool; Social media platforms; and Others)

(*continued*)

Table 1. Continued.

Questions addressed	Variables	Measurement
Respondent Profile	*Control*	
Organisational position	ORG_POS	Five-level scale (1-Entry-level; 2-Middle management; 3-Upper management; 4-Executive; and 5-Other)
Telework experience	TWEXP	Two-level scale (1-less than 11 months, and 2-more than 11 months)
Work experience	WEXP	Three-level scale (1-less than 2 years, 2-between 2 and 5 years, and 3-more than 5 years)

Note. For the variables OP_CRT, TW_PFI, TW_NFI, and DTECH the score is measured by the number of characteristics chosen by each respondent. A list with possible factors for each variable was provided in the questionnaire.
Source: Authors' research.

3.2. Research variables

Extracting from the primary data collected through the questionnaire, the variables included in this study are presented in Table 1 and are classified as follows: (i) dependent variables: organisational performance (OP_CRT); organisational behaviour (OBJS_Q); organisational culture (OC_C); (ii) independent variables: telework_positive factor intensity (TW_PFI); telework_negative factor intensity (TW_NFI); (iii) the influence variable: digital technology complexity (DTECH); and (iv) control variables: organisational position (ORG_POS), telework experience (TWEXP), and work experience (WEXP).

3.3. Statistical tests and regression models

To test the research hypotheses, various statistical tests were applied. The data collected for the variables were first analysed. The descriptive statistics and frequency analysis (Appendix A) were used. Moreover, no significant outliers exist based on Stem-and-Leaf Plot. To ensure the validity of data, bootstrapping analysis of descriptive statistics was performed. The results show a bias value close to zero and a mean between the lower and upper limits of confidence interval for each research variable. Respondents' answers were considered case-wise in various tests applied to verify the research hypotheses.

To analyse the differences in the perceptions of positive and negative telework factors and organisational dimensions by different groups of respondents (RH1), Kruskal–Wallis test was used for various work-related characteristics of the respondents.

The relation between studied variables was addressed through non-parametric correlations, accompanied by regression analysis to identify the possible impact of telework on the three organisational dimensions (ODIM) considered in this research (RH2 and RH3). Two main models were run based on Ordinary Least Squares regression (OLS), validated by robustness tests based on 1000 bootstrap samples. The first model provides insights on the impact of telework practices on three organisational dimensions (performance, behaviour, and culture), while the second one extends the analysis by including digital technology.

Within the two main models, the variable ODIM is replaced subsequently by the organisational dimension variables referring to performance, behaviour, and culture.

The base estimated regression model is:

$$ODIM = a_0 + a_1TW\_PFI + a_2TW\_NFI + a_3ORG\_POS + a_4TWEXP + a_5WEXP + \varepsilon \quad \text{(Model 1)}$$

The regression analysis is then extended with the influence variable (DTECH):

$$ODIM = b_0 + b_1TW\_PFI + b_2TW\_NFI + b_3DTECH + b_4ORG\_POS + b_5TWEXP + b_6WEXP + \varepsilon \quad \text{(Model 2)}$$

The regression's variables are presented in Table 1, and ε is random error term.

The base model *(Model 1)* regresses each of the organisational dimensions with the two independent variables (Table 1), considered to measure the intensity of positive and negative factors identified by the respondents to contribute to or to prevent, respectively, the achievement of their professional goals (RH2).

For the impact of telework factors on organisational performance, the model is

$$OP\_CRT = a_0 + \ a_1TW\_PFI + a_2TW\_NFI + a_3ORG\_POS + a_4TWEXP + a_5WEXP + \varepsilon \quad \text{(Model 1.1)}$$

For the impact of telework factors on organisational behaviour, the model is

$$OBJS\_Q = a_0 + a_1TW\_PFI + a_2TW\_NFI + a_3ORG\_POS + a_4TWEXP + a_5WEXP + \varepsilon \quad \text{(Model 1.2)}$$

For the impact of telework factors on organisational culture, the model is

$$OC\_C = a_0 + a_1TW\_PFI + a_2TW\_NFI + a_3ORG\_POS + a_4TWEXP + a_5WEXP + \varepsilon \quad \text{(Model 1.3)}$$

The extended model *(Model 2)* includes the digital technology complexity variable in the analysis. This model was designed to test whether the impact of the intensity of positive or negative telework factors on organisational performance, behaviour, and culture was strengthened by digital technology complexity (RH3).

For the impact of telework factors on organisational performance when digital technology complexity is considered, the model is

$$OP\_CRT = b_0 + b_1TW\_PFI + b_2TW\_NFI + b_3DTECH + b_4ORG\_POS + b_5TWEXP + b_6WEXP + \varepsilon \quad \text{(Model 2.1)}$$

For the impact of telework factors on organisational behaviour when digital technology complexity is considered, the model is

$$OBJS\_Q = b_0 + b_1TW\_PFI + b_2TW\_NFI + b_3DTECH + b_4ORG\_POS + b_5TWEXP + b_6WEXP + \varepsilon$$

(Model 2.2)

For the impact of telework factors on organisational culture when digital technology complexity is considered, the model is

$$OC\_C = b_0 + b_1TW\_PFI + b_2TW\_NFI + b_3DTECH + b_4ORG\_POS + b_5TWEXP + b_6WEXP + \varepsilon$$

(Model 2.3)

4. Results and discussion

4.1. Influence of employees' profile relative to their perceptions on various organisational dimensions

To respond to the RH1, differences in business professionals' perceptions on various organisational dimensions were examined, in terms of organisational position, work experience and telework experience using the Kruskal–Wallis test.

Telework implications on organisational dimensions among different *organisational positions* are presented in Table 2, Panel A. The Kruskal–Wallis test showed that compared to the entry level, the executive business professionals identified more complex performance criteria to be evaluated during telework ($p = 0.025$), assigned more importance to the organisational communication ($p = 0.057$), and used more tools of digital technology ($p = 0.063$). Furthermore, the differences related to the intensity of positive and negative factors affecting the telework are not significant among the organisational positions' levels.

Analysing telework implications on organisational dimensions related to *telework experience* (Table 2, Panel B), the Kruskal–Wallis test showed that the business professionals already having a telework experience before the pandemic period assigned more importance to the overall quality of teamwork ($p = 0.000$) and to the organisational communication ($p = 0.000$), using more tools of digital technology ($p = 0.000$). Moreover, they identified a higher intensity of both positive ($p = 0.000$) and negative ($p = 0.042$) factors influencing the goals' achievement.

Considering telework implications on organisational dimensions related to the business professionals' *working experience* (Table 2, Panel C), the Kruskal–Wallis test showed that the more experienced employees assigned more importance to the overall quality of teamwork ($p = 0.013$) and to the organisational communication ($p = 0.007$), using more tools of digital technology ($p = 0.005$). They also perceived a higher intensity of positive factors ($p = 0.009$) influencing the achievement of their goals.

In terms of telework practices, companies could consider the tools that may influence work productivity. As Kruskal–Wallis test results indicate, experienced business professionals perceive the digital workplace as an opportunity to enhance work performance through digital technology. Companies, aiming to establish more agile work

Table 2. Differences in business professionals' perceptions regarding telework.

Panel A. Organisational position.

	Mean rank					Kruskal–Wallis test		
Grouping variable: ORG_POS	Entry-level	Middle management	Upper management	Executive	Other	Chi-Square	df	Sig.
N = 238	83	115	20	7	13			
TW_PFI	118.55	118.89	133.25	131.86	103.15	1.881	4	0.758
TW_NFI	115.88	125.32	123.8	100.64	94.69	3.608	4	0.462
OP_CRT	104.92	127.1	146	128.21	99.85	11.121*	4	0.025
OBJS_Q	122.11	116.41	118.48	149.86	115.38	2.401	4	0.662
OC_C	119.31	125.25	116.65	123.5	72.08	9.173*	4	0.057
DTECH	110.33	122.88	138.35	168.21	92.92	8.928*	4	0.063

Panel B. Telework experience

	Mean rank		Kruskal–Wallis test		
Grouping variable: TWEXP	Pandemic period	Both pandemic and non-pandemic period	Chi-Square	df	Asymp. Sig.
N = 240	170	70			
TW_PFI	110.45	144.91	12.905**	1	0.000
TW_NFI	114.87	134.18	4.145*	1	0.042
OP_CRT	122.61	115.37	0.647	1	0.421
OBJS_Q	105.89	155.97	34.887**	1	0.000
OC_C	113.85	136.64	27.128**	1	0.000
DTECH	110.45	144.91	19.542**	1	0.000

Panel C. Work experience.

	Mean rank			Kruskal–Wallis test		
Grouping variable: WEXP	Less than 2 years	Between 2 and 5 years	More than 5 years	Chi-Square	df	Asymp. Sig.
N = 240	36	162	42			
TW_PFI	96.65	119.76	143.81	9.504**	2	0.009
TW_NFI	110.28	124.91	112.24	2.194	2	0.334
OP_CRT	115.46	120.55	124.63	0.406	2	0.816
OBJS_Q	96.51	121.81	136.01	8.725*	2	0.013
OC_C	91.17	124.60	129.81	10.038**	2	0.007
DTECH	88.94	123.14	137.36	10.422**	2	0.005

Note. The variables listed are defined in Table 1.
*Significance at the 0.05 level.
**Significance at the 0.01 level.
Source: SPSS output summarized by authors.

Table 3. Spearman correlation matrix.

Variables	TW_PFI	TW_NFI	OP_CRT	OBJS_Q	OC_C	DTECH	ORG_POS	TWEXP	WEXP
TW_PFI	1								
TW_NFI	0.152*	1							
OP_CRT	0.139*	0.142*	1						
OBJS_Q	0.256**	−0.009	−0.107	1					
OC_C	0.331**	0.126*	−0.026	0.494**	1				
DTECH	0.291**	0.240**	0.132*	0.293**	0.347**	1			
ORG_POS	0.022	−0.005	0.146*	−0.002	−0.053	0.103	1		
TWEXP	0.235**	0.131*	−0.052	0.384**	0.339**	0.289**	0.004	1	
WEXP	0.199**	0.001	0.041	0.184**	0.172**	0.196**	0.287**	0.228**	1

Notes: The variables listed are defined in Table 1.
*Significance at the 0.05 level;.
**Significance at the 0.01 level.
Source: SPSS output summarized by authors.

environments, need to allow us access to the right technology tools for learning, networking, collaboration, as well as performance management.

4.2. Relationship between telework factors and organisational dimensions

To address possible relationship between the telework positive factor intensity, negative factor intensity, and organisational dimensions as perceived by employees (RH2 and RH3), non-parametric correlations (Spearman—ρ coefficient) were applied. The correlation matrix (Table 3) indicates a positive, significant association between the intensity of the telework factors and most of the organisational dimensions (RH2), extended with digital technology (RH3).

The telework factors both contributing to (TW_PFI) and preventing (TW_NFI) the achievement of employees' goals, were significantly correlated with organisational performance ($\rho = 0.139$; $\rho = 0.142$), culture ($\rho = 0.331$; $\rho = 0.126$), and digital technology complexity ($\rho = 0.291$; $\rho = 0.240$). Regarding organisational behaviour, the association was significant, only for the factors that contribute to achieving employees' goals while teleworking ($\rho = 0.256$). Moreover, a stronger correlation was found for the positive factors than for the negative ones, perceived as influencing the respondents' professional goals.

Based on these results, companies may assess the most valued work aspects perceived by their employees. Thus, the changing workforce needs could be addressed by considering an increasing number of factors identified by employees as affecting their goals while teleworking: co-workers and information availability, balanced tasks, less interruptions, system response time and planning patterns.

4.3. Impact of telework factors on organisational dimensions

To test the RH2, the impact of telework positive/negative factor intensity on organisational performance, behaviour, and culture was examined *(Model 1)* by controlling for work-related characteristics of the respondents. Extending the regression analysis within the digital technology context (*Model 2*), RH3 was approached.

In both cases, the results imply valid models based on F-stat ANOVA, with increased values for the F-Stat ANOVA test, R-squared, adjusted R-squared, and

Table 4. Regression and robustness analysis results.

Panel A. Regression analysis results.

	Organisational performance		Organisational behaviour		Organisational culture	
	Model 1.1	Model 2.1	Model 1.2	Model 2.2	Model 1.3	Model 2.3
(Constant)	1.276	1.188	3.765	3.653	3.089	2.881
TW_PFI	0.070*	0.057	0.090***	0.071**	0.155***	0.120***
TW_NFI	0.109***	0.100***	−0.052*	−0.065**	0.037	0.013
DTECH		0.041*		0.055***		0.102***
ORG_POS	0.049	0.045	−0.008	−0.015	−0.099*	−0.112**
TWEXP	−0.202*	−0.234**	0.416***	0.373***	0.494***	0.414***
WEXP	0.030	0.014	0.065	0.045	0.117	0.080
F-Stat ANOVA	3.168***	3.209***	9.862***	10.062***	9.342***	10.695***
R Square	0.064	0.077	0.175	0.206	0.167	0.217
Adjusted R Square	0.044	0.053	0.157	0.186	0.149	0.196
Durbin-Watson	1.659	1.669	1.687	1.709	1.641	1.681

Panel B. Robustness analysis.

			BCa 95% Confidence Interval	
Models and independent variables	Bootstrap Coeff.	Bootstrap Bias	Lower	Upper
Model 1.1				
TW_PFI	0.070*	−0.001	0.000	0.140
TW_NFI	0.109***	−0.002	0.029	0.180
Model 2.1				
TW_PFI	0.057	0.002	−0.013	0.135
TW_NFI	0.100**	−0.005	0.014	0.172
DTECH	0.041*	0.001	−0.008	0.088
Model 1.2				
TW_PFI	0.090***	0.002	0.026	0.158
TW_NFI	−0.052*	0.000	−0.103	0.000
Model 2.2				
TW_PFI	0.071**	0.000	0.011	0.136
TW_NFI	−0.065**	−0.001	−0.127	−0.007
DTECH	0.055***	0.000	0.019	0.093
Model 1.3				
TW_PFI	0.155***	0.002	0.064	0.246
TW_NFI	0.037	−0.003	−0.076	0.136
Model 2.3				
TW_PFI	0.120***	−0.001	0.036	0.201
TW_NFI	0.013	0.003	−0.117	0.142
DTECH	0.102***	−0.001	0.045	0.151

Notes: The variables are defined in Table 1.
*Significance at the 0.10 level.
**Significance at the 0.05 level.
***Significance at the 0.01 level.
Source: SPSS output summarized by authors.

Durbin-Watson tests for the second model. Findings show that telework factors intensity may be considered by the companies as explaining 6.4% of organisational performance, 17.5% of organisational behaviour, and 16.7% of organisational culture (RH2). Moreover, the increased values obtained when DTECH variable is included in the model support companies' decisions to consider more complex digital technology (RH3).

Specifically, the results presented in Table 4 on organisational performance during telework suggest that the impact of positive factors, contributing to achieving employees' goals, is small and of low significance. In contrast, the more negative factors identified by employees, the more performance criteria need to be fulfilled (Model 1.1). The impact of both positive and negative factors declines after including the

digital technology variable in the regression equation, remaining significant only for the negative factors (Model 2.1).

For organisational behaviour, the first regression model indicates that employees who identified more positive factors perceived a significant increase in the quality of teamwork (Model 1.2). Meanwhile, employees who identified more negative factors perceived a significant decrease in the quality of teamwork. Extending the analysis with digital technologies used by employees while teleworking, the impact of negative factors is still negative but increasingly stronger, while the impact of positive factors is smaller and less significant (Model 2.2).

When analysing organisational culture, the positive factors explain the significant impact of telework on the increase in organisational communication (Model 1.3). However, the impact diminishes when digital technology complexity is included in the regression model, but it remains significant (Model 2.3). Moreover, negative factors do not affect organisational communication within businesses.

Controlling for employees' profiles provides evidence that only telework experience has a significant impact on all organisational dimensions (negative for performance, and positive for behaviour and culture). Organisational position is significant, with a negative impact, but only in relation to culture.

Robustness analysis based on 1,000 bootstrap samples was performed to validate the regression models. The same regression coefficients were obtained for all variables. Although the p-values were slightly larger or smaller, the level of significance was maintained for most of the cases. All variables identified as significant in the regression analysis remained significant after the robustness test. Therefore, the bootstrapping method provided further confidence and evidence that the impact of telework factors intensity on organisational performance and behaviour was significant (except negative factors intensity on organisational culture), but smaller when digital technology was considered.

In a telework environment, companies need to carefully address the digital complexity and how it impacts the organisational dimensions. Findings indicate that telework positive and negative factors identified by employees need to be addressed by companies when improving work practices. This work model may leverage digital technology to develop team collaboration within the workplace; however, it may also increase awareness on distinct workforce development concerns. As a consequence, companies need to offer adaptable solutions for effective telework practices.

4.4. Discussions

The results, as perceived by employees from the business services industry, indicate that the positive factors' intensity has a significant and positive impact on all organisational dimensions. The telework negative factors' intensity impact is significant and positive when organisational performance is considered, but negative and significant when organisational behaviour is regressed. This research supports the previous studies' findings that emphasise both positive (Baruch, 2000; Nakrosiene et al., 2019) and negative (Beauregard et al., 2019; Charalampous et al., 2019; Vander Elst et al., 2017) telework factors.

When the relationships are analysed in the context of digital technology complexity, the impact decreases for all three dimensions, and remains significant only for the organisational behaviour and culture. The results are in line with the findings of Baker et al. (2007) showing that the remote workers may experience serious drawbacks due to lack of technical support. Similar results highlight important drawbacks when it comes to job performance in a virtual environment (Vander Elst et al., 2017).

Another important contribution of this research is the extended analysis on the differences perceived by business services industry employees, from the perspective of various clusters (organisational position, work experience and telework experience). The results indicate that the employees in executive positions identified more complex performance criteria to be evaluated during remote work period, assigned a higher importance to the impact of the telework on the overall quality of group work and on the organisational communication, and used more digital technology tools. These findings support Carroll and Conboy (2020) suggestion of restructuring the working groups through innovative collaborative methods and new methods of performance measurement. Moreover, the employees already having a telework experience before the pandemic period assigned a higher importance to the overall quality of group work, and organisational communication, and used more tools of digital technology, as compared with those having the telework experience only during the pandemic period. Grant et al. (2013) also found that employees' emotional well-being was often associated with the establishment of relationships between workers, trust being a major aspect of telework practices efficiency.

These research results have important implications for determining current challenges in managing teleworkers. They also provide useful guidance for both employees and managers in terms of business practices in a virtual environment. First, the new work model requires greater focus on organisational behaviour due to professional isolation phenomena. Companies may need to consider appropriate solutions that might engage the workforce during telework such digital onboarding, training or coaching initiatives. Second, as the research results highlighted changes at the communication level. Companies need to be aware of this organisational dimension as a key driver of teleworking model efficiency. Thus, employees may become more engaged through distinct communication and feedback initiatives. Third, digital technology represents an important pillar for this work model. Therefore, companies may need to build a strong digital infrastructure that ensures work connectivity and maintains business continuity.

5. Conclusions

This research aims to measure employees' perceptions from business services industry on distinct dimensions that influence their work objectives as well as their adaptability to the new work environment. The results confirm that the positive factors affecting telework are significantly associated with and have a significant and positive impact on, organisational dimensions. Thus, employees who selected an increased number of factors contributing to the achievement of their goals while teleworking experienced higher job satisfaction and stronger communication with their peers, even if they had

more criteria to fulfil in terms of organisational performance. When analysed in the context of digital technology complexity, the impact decreases for all three dimensions and remains significant only for organisational behaviour and culture.

Nevertheless, the results are mixed in the case of negative factors affecting telework. Thus, the findings support a significant association of factors preventing the achievement of employees' goals while teleworking, with a positive impact on organisational performance, but a negative impact on organisational behaviour. The impact of negative factors perceived by employees as affecting telework, significantly decreases when complex digital technology is required.

The findings are in line with those of Muller and Niessen (2019), who showed that part-time teleworkers were more satisfied with their jobs. However, Adamovic (2022) stressed that job satisfaction depends on employees' beliefs about telework and organisational culture. Kuruzovich et al. (2021) revealed a negative impact of digital technology on organisational dimensions while teleworking, although Athanasiadou and Theriou (2021) identified a moderating role of digital technology. Avdiu and Nayyar (2020) emphasised the importance of telework, especially due to the vulnerability of jobs throughout the COVID-19 crisis.

These results contribute to the literature by offering corporations insight into employees' perspectives regarding the impact of telework on organisational dimensions. A limitation of this study may relate to having excluded the respondents' career opportunities while teleworking from the analysis. Therefore, with regards to generalisability considerations, this study may be replicated with a larger sample size to guide future research on distinct organisational aspects related to communication, career development, employee commitment or technology-based solutions designed for a better functionality of the telework model. Another limitation of this research may be related to the teleworking legislative framework analysis. Future studies may analyse telework model practices with regards to country-specific regulations' development.

Future research may be oriented towards disaggregating particular items of telework factors intensity using a canonical correlation analysis and identifying critical characteristics of telework. Qualitative research may highlight the advantages of training, for both individuals and organisations and the development of new initiatives in terms of telework.

The perspectives shall focus on finding evidence that telework relies on its alignment with the organisational culture, hybrid-work model, and new business opportunities to enhance organisational resilience in post-pandemic period through digital technology.

Disclosure statement

The authors report that there are no competing interests to declare.

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Appendix A. Data analysis

Panel A. Descriptive statistics.

	Min	Max	Mean	Std. Deviation	Skewness
OP_CRT	1	4	1.74	0.716	0.642
OBJS_Q	2	5	4.54	0.619	−1.109
OC_C	1	5	4.37	0.913	−1.461
TW_PFI	0	6	3.19	1.270	−0.084
TW_NFI	0	8	3.02	1.232	0.637
DTECH	0	12	5.80	2.170	0.125

Panel B. Frequency analysis.

ORG_POS	*Frequency*	*Valid Percent*	*Cumulative Percent*
N/A	3	1.2	1.2
Entry-level	84	34.7	36.0
Executive	7	2.9	38.8
Middle management	115	47.5	86.4
Upper management	20	8.3	100.0
Other	13	5.4	91.7
Total	*242*	*100.0*	

TWEXP	*Frequency*	*Valid Percent*	*Cumulative Percent*
N/A	1	0.4	0.4
Less than 11 months	171	70.7	71.1
More than 11 months	70	28.9	100.0
Total	*242*	*100.0*	

WEXP	*Frequency*	*Valid Percent*	*Cumulative Percent*
N/A	1	0.4	0.4
Between 2 and 5 years	163	67.4	67.8
Less than 2 years	36	14.9	82.6
More than 5 years	42	17.4	100.0
Total	*242*	*100.0*	

Note. All the variables are defined in Table 1.
Source: SPSS output summarized by authors.