



The future of hybrid work in Italy: A survey-based Socio-Technical-System analysis



Klaudijo Klaser^{a,*}, Roberta Cuel^b, Paolo Casari^a

^a Università degli Studi di Trento, Dipartimento di Ingegneria e Scienza dell'Informazione, via Sommarive 9, 38123, Trento, Italy

^b Università degli Studi di Trento, Dipartimento di Economia e Management, via Inama 5, 38122, Trento, Italy

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ABSTRACT

The urgent lockdowns introduced by many countries at the beginning of 2020 to contain the rapid diffusion of the COVID-19 pandemic overturned many paradigms, significantly affecting workers' daily routines. Since regulations, policies, habits, and practices have changed, it is legitimate to wonder what will happen, in the long run, to the high percentage of employees who used to work remotely. We analyzed flexibility in time, place, and contract, to examine the complex constellation of hybrid work arrangements through its essential and commonly understood elements (flexibility types) and their interconnections, distinguishing between workers usually based in the office and those based off-site. Adopting the Socio-Technical-System (STS) framework, the paper investigates whether and to what extent companies have changed their structures by designing new functions, roles, and services, such as a head of agile work, work-life balance policies, and psychological support services. We empirically analyze the hybrid work phenomenon through a micro-survey of indirect questions involving approximately 600 Italian respondents. Italy is an interesting analysis domain because radical changes have been introduced because of the COVID-19 pandemic. The paper presents three main theoretical advancements. First, the study advances the research on flexibility in terms of space, time, and contracts, finding different types of interdependencies with on-site and off-site working. Second, the study extends the theories on the STS framework to flexible work, identifying whether and to what extent interdependencies occur among its main components: the social structure, people, technology, and tasks of hybrid work. The STS framework has also been used to explain the evolution of organizational priorities during the pandemic phases, revealing a relationship between the new role of "head of remote/hybrid workforce" and place flexibility. Third, the paper proves micro-surveys effectiveness with indirect questions in investigating socioeconomic and organizational phenomena. From a practical point of view, the collected data show that Italian organizations need to prepare to deal with the new work scenario because new recommendations should be given to human resource departments about managing hybrid work.

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Introduction

The rapid spread of the COVID-19 pandemic overturned many paradigms of the labor market in a short period. Various work activities were forcibly stopped, and country restrictions heavily affected task routines. For instance, approximately 63% of Italian firms with at least three employees requested access to the Italian wages guarantee fund (CIG-COVID) between March and May 2020. More than six million employees benefitted from this welfare instrument between March and September 2020 (ISTAT, 2021). Remote work has been massively adopted since the toughest lockdown in Italy (March–June 2020). Almost four million Italian workers suddenly found themselves engaged in some form of remote working to contain the spread

of the pandemic and avoid excessive levels of unemployment (Alipour, 2021; Angelici & Profeta, 2020; Belzunegui-Eraso & Erro-Garcés, 2020; Depaolo & Giorgi, 2021; Eurofound, 2020; Mark et al., 2022; Giuzio & Rizzica, 2021; Hatayama et al., 2020).

In Europe, the percentage of people regularly working remotely leaped from 5% in 2019 to 12.3% in 2020 (Eurostat, 2021)¹. Remote work, a practice often marginally implemented, suddenly became a constrained alternative involving a large portion of the European workforce (Leonardi, 2021). However, in Europe, the situation was very heterogeneous across countries (Fig. 1). Two paradigmatic cases can be cited as examples: Finland and Bulgaria. Data from the

¹ At the European level in the private sector, we observe a significant gap in the percentage increases between employees and self-employed individuals: the share of employees who worked remotely increased from 3.2% in 2019 to 10.8% in 2020, while the share of the self-employed increased less, from 19.4% in 2019 to 22.0% in 2020.

* Corresponding author.

E-mail address: klaudijo.klaser@unitn.it (K. Klaser).

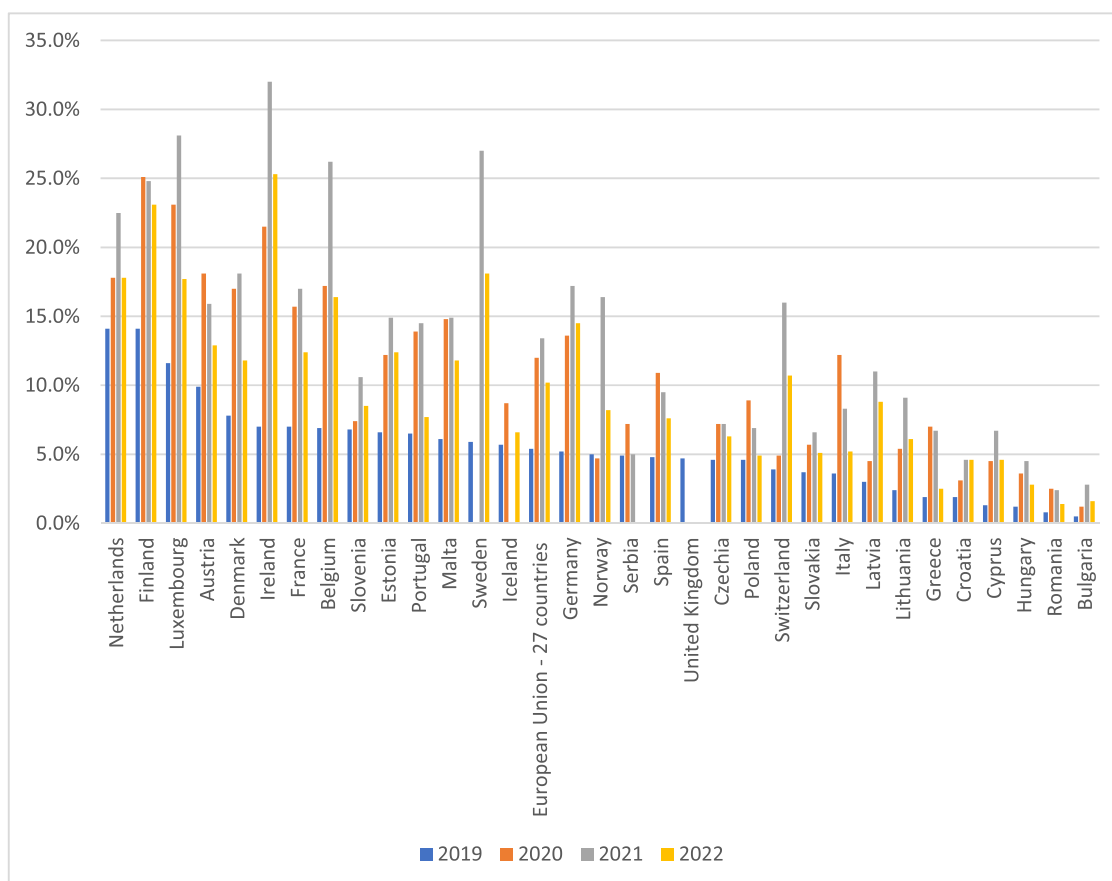


Fig. 1. Employed persons working from home as a percentage of total employment. Source: Our elaboration on data from Eurostat [fsa_ehomp]. Data are missing for the UK for 2020, 2021, and 2022; Sweden for 2020; Iceland for 2021; and Serbia for 2022.

European Statistical Office show Finland had the highest percentage of people working from home in 2020 (25.1%). At the other extreme, Bulgaria had the lowest rate, with only 1.2% of people working remotely. Compared to 2019, the increase was 11 percentage points for the former but only 0.7 percentage points for the latter (Eurostat, 2021). In the Netherlands, remote work was not a novelty: 17.8% of employees worked from home in 2020, a moderate increase compared to previous years (14%). The opposite happened in Ireland, which registered the most significant increase: from 7.0% in 2019 to 21.5% in 2020, an increase of 14.5 percentage points in a few months.

The highlighted differences between 2019 and 2022, illustrated in Fig. 1, depend on various factors, including the readiness of the information and communications technology (ICT) infrastructure, the workers' competencies in digitalization (DESI, 2021), the national measures implemented to contain contagions, and the national laws and incentives related to the implementation of agile and remote work. These numbers show the various degrees of adaptation of the workforce and organizations to external shocks achieved by modifying competencies, practices, routines, roles, and organizational models.

Starting from this heterogeneous context, especially in the aftermath of the global COVID-19 pandemic, there is a need to understand whether and to what extent organizations are preparing for the future scenario of work, where remote working will not be a forced option but will be fruitfully adopted. In recent years, many researchers have studied new forms of work from different perspectives, such as digitalization and workplace automation (Bamel et al., 2022; Bresciani et al., 2021; Scully-Russ & Torraco, 2020) and the characteristics and practices of jobs (Adekoya et al., 2022; Chatterjee et al., 2023; Heredia et al., 2022; Hill et al., 2008; Malhotra, 2021; Santana & Cobo, 2020).

After passing the peak of the pandemic crisis, remote work will not be remembered as a temporary phenomenon since it will remain an attractive practice. It is also important to remark that in addition to many beneficial aspects of remote working, some opaque areas need to be adequately addressed (Grant & Russel, 2020), especially when working remotely is an imposed experience (Franken et al., 2021; Van Zoonen et al., 2021). These areas include, among others:

- the effective management of virtual working environments (Contreras et al., 2020; Kniffin et al., 2021), communication (Marlow et al., 2017), and coordination of virtual teams (Ajzen & Taskin, 2021; Hoch & Kozłowski, 2014);
- the hypervigilance for notifications and always-on status, which leads to the inability to disconnect, workaholism, and technostress (Spagnoli et al., 2020);
- difficulties in reconciling job tasks with the private sphere or household duties, especially if schools are closed (Yamamura & Tsutsui, 2021);
- career development and gender equality (Chung & Van der Lippe, 2020);
- sedentary life and social isolation (Kniffin et al., 2021); and
- increasing intergenerational and economic inequalities (Palomino et al., 2020).

For these reasons, organizations have invested in ICTs, designed and implemented new processes and tasks, promoted learning programs to improve knowledge and competencies to deal with novel communication and coordination routines, and recently introduced new organizational roles to manage hybrid work effectively (Aroles et al., 2021).

The study attempts to ground organizational research by observing real-life phenomena relevant to society (Walsh et al., 2003). We adopted the process research approach (Langley, 1999) to understand the effects of the COVID-19 pandemic on the new nature of work. We analyzed how hybrid work evolves and why in this way, using data to understand events, activities, and choices.

Adopting the Socio-Technical-System (STS) framework, the paper investigates the different types of flexibility in working practices and the impact of new organizational functions, roles, and services on remote and hybrid work in Italy. Italy was chosen as the analysis domain because it was among the countries with the most severe lockdown restrictions, with one of the lower percentages of remote working in 2019 (3.6%) and the highest increase (+8.6 percentage points), up to 12.2% in 2020 (Crescenzi et al., 2022; Jerbashian & Vilalta-Buñi, 2022).

Within the Socio-Technical-System framework, we present a study based on a micro-survey that explores the interdependence between the different types of flexibility in working practices and new organizational functions, roles, and services in remote and hybrid work.

This research contributes to literature and theory by investigating these questions from multiple perspectives. The STS framework was used to explain the evolution of organizational priorities during the pandemic, and various phases of hybrid work adoption were identified. The framework is also enriched by analyzing remote and hybrid work.

The analysis was conducted through a micro-survey with indirect questions that involved approximately 600 Italian respondents. We demonstrate that the method of micro-survey method based on indirect questions provides reliable data enriching the set of methods that can be used in social science and organizational studies to analyze specific socioeconomic issues. Moreover, the study demonstrates that space, time, and contracts are three constitutive elements of flexibility and are positively related to on-site and off-site work. These should be considered in developing ad hoc regulations, policies, and work agreements.

The paper is organized as follows. Section 2 presents the literature review on remote, flexible, and hybrid work and describes the Socio-Technical-System framework and the evolutionary approach of STS in the hybrid work domain. Section 3 identifies the research gaps and describes the micro-survey method and the analysis sample. Section 4 presents the results, proves the validity of the micro-survey with indirect questions, offers valuable insights on improving the STS framework applied to hybrid work, and provides some recommendations to practitioners. The last section summarizes the main theoretical contributions, the conclusions, the study's limitations, and recommendations for future work.

Theoretical background

Hybrid work and flexible work arrangements

Although practitioners and researchers use the term “remote work” in a broad and inclusive sense, a clarification of the concept is required to understand better the semantic differences of flexibility time, space, and contracts, including the differences between the organizational and worker perspectives (Hill et al., 2008). Work flexibility has been defined as “the ability of workers to make choices influencing when, where, and for how long they engage in work-related tasks” (Hill et al. 2008, p. 157).

Several studies propose conceptual frameworks that highlight the substantial differences between teleworking, flexible working, smart working, agile working, and hybrid work (Baptista et al., 2020; Butera, 2020; Bednar & Welch, 2020; Decastri et al., 2020; Ghislieri et al., 2021; Grant, 2020; Hill et al., 2008; Porter & Van Den Hooff, 2020; Rymkevich, 2018; Torre & Sarti, 2019; Sullivan, 2003; Yu et al., 2019).

As Cuel, Ravarini & Varriale (2020, 2021) describe, various definitions may explain the new trends in work:

- Remote working refers to the ability of employees to work outside the company, usually at home, in a coworking area, in parks, or any other place from which they connect with the legacy systems of the organization, coordinate with colleagues, and perform tasks (flexibility in space).
- Flexible working implies broader flexibility in locations and time. It may include remote, part-time, or project-based work, namely flexibility in space and time.
- Agile working refers to the practices of work optimization, stressing efficiency, agility, coordination, and productivity. Work and performance are usually individualized and structured in tasks that are continuously measured and ameliorated (Porter & Van Den Hooff, 2020) (flexibility in space, time, and task/contract).
- Smart working refers to a “flexible working system” that addresses the efficiency and effectiveness of activities through any combination of flexibility, autonomy, agile collaboration, coordination, and optimization of work tools (Baptista et al., 2020; Morea et al., 2023).

Recently, researchers and practitioners are overcoming the problem of categorizing work flexibility by introducing hybrid work as a new concept that synthesizes most of the characteristics of the above definitions (Bloom et al., 2022; Gratton, 2022). It has been defined as “the combination of working in the office and working from home. The idea is to break an employee’s working week into tasks, distinguishing between tasks that are typically best [done] in person, like meetings, training events, or mentoring on office days, and those that are best [done] individually, like reading, writing, or coding on home days” (Torre, 2022; p. 5).

Since the terms mentioned are widely used as synonyms in the managerial lexicon and recent research findings—boosted by the pandemic—have added new perspectives to these definitions, we avoided inelastic definitions by analyzing only different types of flexibility (Fig. 2). We measured flexibility in time, place, and contract, also distinguishing between workers usually based in the office and off-site workers (Appendix 1). The aim was to better measure the complex constellation of hybrid work arrangements through its essential and commonly understood elements (flexibility types) and their interconnections.

The Socio-Technical-System framework

STS, introduced by Trist & Bamforth (1951), is a framework that seeks to understand the relationship between a system’s social and technical dimensions and how they interact and shape each other.

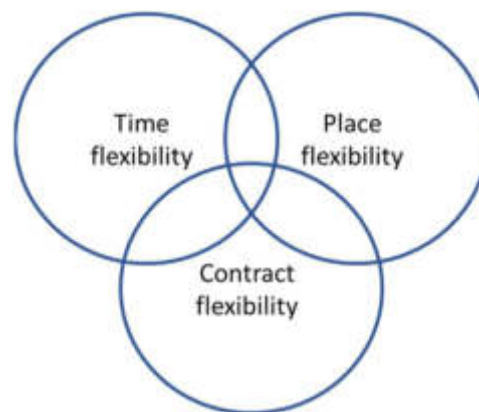


Fig. 2. Time, place, and contract flexibilities.

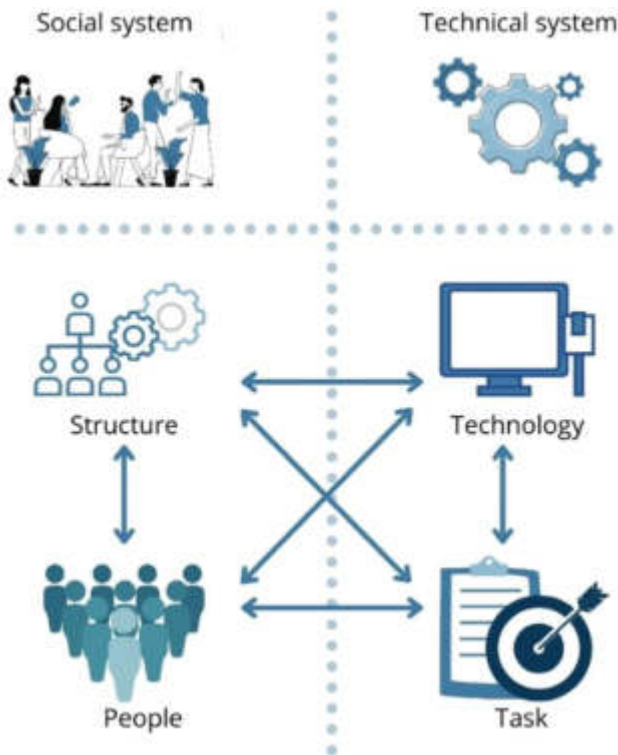


Fig. 3. Socio-Technical-System framework. Source: Figure retrieved from Cuel et al. (2022).

The basic assumption is that the continuous interaction between social and technical factors creates the conditions for successful organizational performance. Optimizing only one aspect tends to increase unpredictable results and the risk of failure (Trist, 1981). In the STS framework, the technical components, such as hardware and software, are designed, developed, and maintained to serve human needs and goals. However, technical components' design, use, and evolution are also influenced by social features, such as user preferences, organizational structures, and power relationships. Mumford (2006) states that adopting technological tools is not just a technical issue but a business organization issue since it concerns changes in processes, tasks, behaviors, and organizational settings. This framework has been used in various fields, such as organizational studies, information systems, and human-computer interaction, to study the interplay between technology and human needs. In other words, the principles of STS represent a compass to interpret the transformation of organizations (Pasmore et al., 2019).

Fig. 3 shows a typical representation of an STS (Bostrom & Heinen, 1977; Cherns, 1976; Yurtseven & Buchanan, 2013). The technical subsystem includes organizational variables interacting in business processes (activities and tasks), converting inputs to outputs, and technological variables, i.e., technologies, means, and tools. The social subsystem includes human variables related to the characteristics of the people who operate in the organizational system (attitudes, motivation, competencies) and social variables (the organizational structure and roles).

The STS for hybrid work: An evolutionary approach

Flexible work arrangements are powerfully shaped by technology that, on different levels of implementation, transforms the traditional workspace into the so-called digital workspace (Dąbrowska et al., 2022; Dery et al., 2017; Esli et al., 2022). Hybrid work constitutes one of the most representative organizational changes driven by technology because of the continuous interaction between workers and

machines. Iannotta et al. (2020) identified three main dimensions of impacts derived from flexible work arrangements:

1. Changing behaviors: people in any organizational setting must radically change their observable, visible, verbal, and nonverbal behaviors into more digital skills, empowerment and autonomy, outcome-focused approaches, and flexible time and space to work, trust, and collaborate.
2. Creating shared meanings in change management processes: agile workers, especially leaders, must activate a sense-making means, sharing implications related to the new way to work.
3. Integrating physical and technology-mediated interactions: digital technologies impact work relationships, especially in more flexible work activities, collaboration, and knowledge sharing among employees.

Moreover, in the current social and technical disruption (possibly made even harsher by the pandemic), three fundamental pillars can be identified (Rapaccini et al., 2020):

- The technological dimension refers to digital technologies that enable employees to perform job-related tasks remotely.
- The social dimension concerns human resource management practices and workers' organizational behaviors.
- The physical dimension is related to the layout and ergonomics of the environment where the work effectively takes place.

Considering these changes, the STS framework represents an ideally suited compass to interpret the digital workspace transformation, boosted by the pandemic context (Pasmore et al., 2019; Purser & Pasmore, 1993). Following the studies of Bélanger et al. (2013), Bentley et al. (2016), and Bednar & Welch (2020), we use the STS framework to analyze hybrid work since it represents an excellent base for interpreting flexible work arrangements as decomposable along both technical and social dimensions, across several layers: communication processes, workflow management, knowledge and competence co-creation, work-life balance, job autonomy, workers empowerment (Dossena & Mochi, 2020). The STS model combines the following:

- 1) The technical subsystem. Jobs have become increasingly virtualized and digitalized. Technology has become a key element in supporting flexible coordination processes, multiple communication channels, complex decision-making processes, and managing documents, product/service catalogs, news repositories, banks of ideas, blogs, wikis, forums, etc. At the task/process level, an interesting study conducted by Autor & Price (2003), Autor et al. (2003), and extended by Autor and Price (2013) investigated how advances in technologies (e.g., artificial intelligence, the Internet of Things, quantum computing) affect the division of labor between workers and machines, the set of tasks that workers perform, and ultimately, the human-machine interconnection.
- 2) The social subsystem includes human variables related to individual features such as competencies, qualifications, attitudes, motivation, and personality. Studies have been conducted on behaviors and competencies knowledge workers need to deal with non-linear and creative thinking. The social subsystem also includes the structure of interpersonal relationships that people create and formalize through the organizational structure, such as new policies, culture, and roles.

Based on the previous studies about adopting hybrid work during the COVID-19 pandemic (Cuel et al., 2022), we adopted the STS framework from an evolutionary perspective. As explained by Kaplan (2000) and Nikolich (2009), the STS framework can be used to analyze the evolution of technology adoption. Therefore, we use it to study

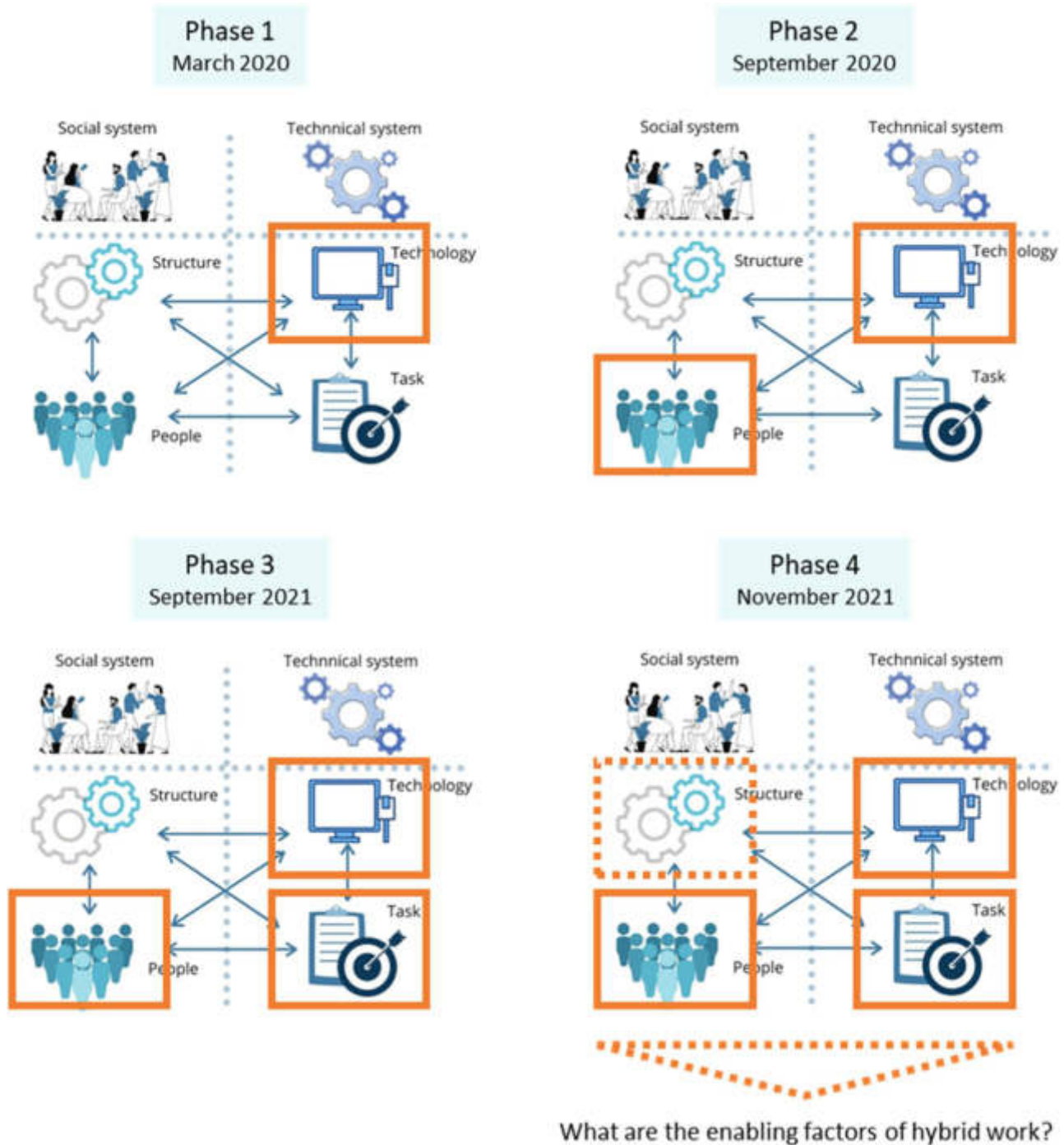


Fig. 4. An STS representation on the adoption of hybrid work during the lockdowns. Source: Figure adapted from Cuel et al. (2022).

the adoption of hybrid work during the COVID-19 crisis. Fig. 4 illustrates the phases of hybrid work adoption in organizations during the pandemic:

- Phase 1 started in March 2020, as organizations massively adopted remote working to respond to lockdowns. The main concern was the adoption of new technologies and tools (hardware and software) that could enable employees to perform job-related tasks remotely.
- Phase 2 started in September 2020, when remote work was already in place. Workers and organizations faced new problems to solve, such as a lack of competencies in managing work remotely, communicating online, managing time, measuring results, dealing with work–life balance, the right to disconnect,

and workers' isolation. During this period, a shift of attention from technology to people occurred.

- Phase 3 started approximately one year later, in September 2021. Remote working had been substantially accepted and adopted by workers, becoming hybrid working. Still, tasks and processes needed to be changed, improved, and innovated to exploit all the advancements of hybrid work and digital workplaces.
- Phase 4 started in November 2021 and is this study investigation phase. This phase is still ongoing and refers to the structure of the organizations as the social subsystem that deals with new technological adoptions, workers' competencies, and tasks and processes design.

Our research investigates whether and to what extent companies have changed the structure dealing with hybrid work, such as developing new policies and designing new organizational roles. The second part of the research investigates if and to what extent Italian organizations that have introduced new functions, roles, and services—e.g., head of remote work, head of agile work, hybrid work managers—have influenced flexibility at work.

Research questions, the method, and the sample of analysis

Research questions

As the literature review explains, we investigated the interdependence between the different types of flexibility in working practices and new organizational functions, roles, and services in remote and hybrid work.

Adopting the STS framework, we investigated Phase 4 of hybrid work adoption (Fig. 4): whether and to what extent companies have changed their structure by designing new functions, roles, and services such as introducing the role of head of agile work, work–life balance policies, and psychological support services.

We analyzed flexibility in time, place, and contract to better measure the complex constellation of hybrid work arrangements through its essential and commonly understood elements (flexibility types) and their interconnections, distinguishing between workers usually based in the office and off-site workers. We investigated whether and to what extent Italian organizations that have introduced the function of head of remote work, work–life balance policies, and psychological support services have influenced the various forms of flexibility at work. We also sought to validate the use of micro-surveys with indirect questions to effectively study socioeconomic phenomena and dynamics within organizations.

Methods of analysis

“Every new communication medium creates a new way of conducting surveys and opinion polls.” This is how Greenwood et al. (1987; p. 13) recognized the potential benefits of surveying people using their devices. According to the authors, electronic surveys are generally more interactive, cheaper, and quicker in recording responses than traditional paper or phone surveys. Electronic surveys are customizable through skip-logic and branching questions so that “a respondent’s initial response can be used to generate subsequent questions” (Greenwood et al., 1987; p. 14). Furthermore, electronic surveys can automatically check for incomplete or invalid responses and clarify how to respond correctly (for example, suggesting typing a number in digits rather than letters). Whereas, in the 1980s, the most severe drawback of an electronic survey was that many people did not have access to a personal terminal, with mobile phone technology now pervasive in our lives, everybody is now potentially reachable by an online survey, even during a pandemic (Baquero et al., 2021).

Taking advantage of the many virtues of electronic surveys mentioned above and adopted to successfully monitor the evolution of the COVID-19 contagion (Baquero et al., 2021), we sought to understand the development of hybrid work and organizations after the pandemic. During the pandemic, online surveys were considered a valid method of investigation in several fields, from exploring digitalization in the future of work (Bamel et al., 2022) and studying green innovation practices (Khanet al., 2022) to measuring organizational agility in responding to the COVID-19 crisis (Al-Omouh et al., 2020).

Thus, together with five questions on demographic variables concerning the respondent (e.g., age, gender, education, people to care for), we constructed 11 questions that could intercept the evolution of agile working within organizations (see Appendix 1 for the extended list of questions). The main feature of the micro-survey

developed for this study is indirect questioning in the form of “How many of the people do you know that...?” (Baquero et al., 2021).

In traditional questionnaires, sensitive or direct questions related to personal matters (e.g., salary issues, working atmosphere) might induce a significant bias in responses that cannot be prevented even by guaranteeing anonymity (Krause & Wahl, 2022, Rosenfeld et al., 2016). In contrast, indirect questions increase the interviewees’ confidence and facilitate the collection of reliable information, allowing the researcher to accurately evaluate the phenomenon under investigation. Furthermore, through indirect questions such as those formulated above, it is possible to artificially multiply the sample size because, through the eyes of one respondent, the researcher observes the characteristics of many other subjects.

We used LimeSurvey, an open-source survey application, to set up the questionnaire. The questionnaire was posted on Prolific, a UK platform for online surveys (Palan & Schitter, 2018), with more than 200,000 enrolled users. Since Italian organizations were the target, respondents were filtered by country of residence and working status, including part-time and full-time workers. This left us with a potential pool of approximately 1,200 respondents. Lastly, consistent with general praxis in online surveys, a question serving as an attention check was introduced to validate the participants’ answers (Appendix 1).

Sample of analysis

According to the Italian Office for National Statistics, in 2019, less than 5% of the Italian labor force was primarily working remotely. In the second quarter of 2020, 19.4% of the labor force was interested in working remotely. During the same period, remote work was adopted by 18.6% of private-sector employees and 21.9% of self-employed people (compared to 1.6% and 14.7%, respectively, in the second quarter of 2019). More than 30% of public-sector workers experienced some form of remote working, with the proportion reaching 60% in specific fields, such as teaching and education (Giuozio & Rizzica, 2021; ISTAT, 2021).

Italy was chosen as the analysis domain because it was among the countries with the most severe lockdown restrictions, with one of the lower percentages of remote working in 2019 (3.6%) and the most significant increase (+8.60 percent points) to 12.2% in 2020 (Jerbashian & Vilalta-Buñi, 2022).

The analysis was conducted through a micro-survey with indirect questions that involved approximately 600 respondents.

Results of data analysis

In Section 4.1, we validate the data on two levels: the representativeness of the micro-survey sample and the effectiveness and efficiency of the indirect questioning method.

Section 4.2 analyzes the complex constellation of hybrid work arrangements, flexibility in time, place, and contract, and distinguishing between workers usually based in the office or off-site, will be analyzed.

Section 4.3 discusses whether and to what extent organizational functions, roles, and services are adopted in Italian organizations and may sustain hybrid work.

Finally, Section 4.4 presents the STS analysis results for hybrid work, showing how structural changes, such as designating a head of remote work, instituting work–life balance policies, and providing psychological support services, influence the various forms of flexibility at work.

Data representativeness and validity

In the survey, we asked respondents working in Italy to declare their working region in Italy (578 observations). To validate the

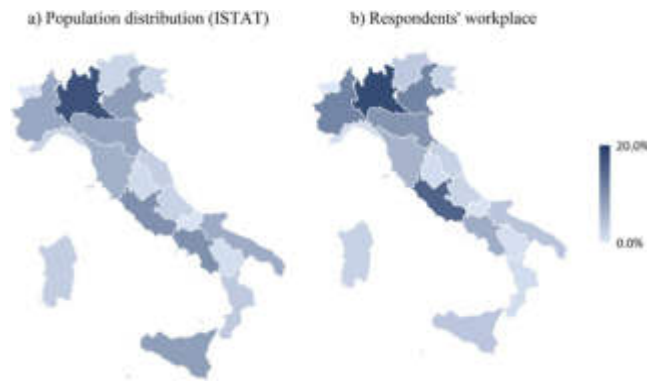


Fig. 5. Distribution of the Italian population aged 18–65 per region.

representativeness of the micro-survey, these data were compared with official statistics on the percentage distribution of the Italian population by region. No statistically significant difference (t-test, p -value = 0.92034) was found between the two distributions. Fig. 5 shows how the two distributions squarely coincide, apart from a few slight differences. There was an overrepresentation in the Lazio, Piemonte, and Veneto regions (Fig. 3b). In the cases of Calabria, Campania, Puglia, and Sicily, our survey had a slight underrepresentation (see Table 3 in Appendix 3 for details of the percentage gaps).

Given the consistency between the two distributions, we consider the data collected to represent the Italian situation regarding geographical distribution. From a demographic perspective, the gender distribution of the respondents is consistent with the statistics concerning the general Italian population, with an almost equal split of women (44%) and men (55%). Among the respondents, 64% identified themselves as employees, 74% said they worked for organizations in the private sector, and 45% said they worked for organizations with 50 or fewer employees.

However, young people were overrepresented in the survey. On average, the participants in our survey were 29 years old ($s.d.$ = 8.6), with 78% aged 35 or younger. At the national level, approximately 15% of the population is between 18 and 35 years old. This bias is likely due to a self-selection mechanism of the Prolific platform: younger people are likely to be more enthusiastic users of this type of online service.

Even with this overrepresentation of young workers, our main results are based on indirect data, which are more inclusive and do not depend on the individual features of the respondents. We followed a well-established statistical method to demonstrate the validity of the indirect questions survey (Baquero et al., 2021), collecting some indirect answers linked to the pandemic context. For this purpose, the micro-survey included the following two questions:

- 1) To the best of your knowledge, how many of the people you know in your organization are currently positive for coronavirus?
- 2) To the best of your knowledge, how many of the people you know in your organization got vaccinated with at least the first dose anti COVID-19?

After clearing outliers from the dataset (e.g., respondents that declared a higher number of vaccinated colleagues than the total number of people they stated they knew in their working network), we used the remaining data (510 observations) to build a post-stratified average and confidence interval according to the procedure adopted in Ojo et al. (2020). We summarize the procedure in Appendix 2.

We found the following results by comparing the estimates from the Prolific survey with official COVID-19 infection statistics for Italy for the weeks of the study. We estimated the proportion of active COVID-19 cases in Italy to be $1.81\% \pm 0.02\%$, against an official

estimate of 0.27%. We calculated the ratio of vaccinated people in Italy to be $93.27\% \pm 0.03\%$, against an official estimate of approximately 89%.

We comment on the second proportion first. We observe that the estimate of the percentage of vaccinated people is very close to that indicated by the official statistics, especially considering the limited size of our sample. The slightly higher value may be related to vaccinated people being found more often in work environments. Through vaccinations, workers obtained the so-called “reinforced” green pass in Italy and could accede to otherwise restricted work and daily life settings more easily. Indeed, Italy was among the countries with the most stringent restrictive measures during the emergency phase (Jerbashian & Vilalta-Buffi, 2022).

In contrast, our estimate of the percentage of active COVID-19 cases is approximately seven times higher than that indicated by official reports. This is probably a consequence of the official COVID-19 monitoring system’s inability to track all active cases despite widespread population testing. This explanation seems even more plausible if we consider that in the weeks of the survey, the average number of daily cases in Italy increased from approximately 10,000 patients to 60,000. A similar discrepancy in the contagion data also emerged from the data collected in the context of coronasurveys.org, a project that estimated active COVID-19 cases in Spain based on micro-surveys with indirect reporting (Baquero et al., 2021).

In conclusion, given the significant overlap between the survey numbers and the official Italian statistics—both at the individual and direct level and through the indirect questions—we consider our sample representative and our method of collecting data on organizational variables validated.

Working time, place, and contract flexibility

Interestingly, approximately 8% (48) of the respondents working in Italy declared that the operational office of their organization was located abroad. Unfortunately, we do not have comparable data before the pandemic started, but this is a strong indicator of how, with technological support, some jobs and corresponding labor markets now have a more global reach and distribution than in the past. The globalization of labor markets offers several advantages that attract international personnel who work remotely with a better work–life balance. For instance, more remote employees are becoming digital nomads. However, the globalization of labor markets might also produce some detrimental consequences for low-skilled workers, as with the automatization of tasks (Autor et al., 2020).

Looking at the remaining sample representing the organizations in Italy (533 observations, 73% of which work in the private sector), we note that the respondents indicated that almost 4 out of 10 operational offices are located either in Lazio or Lombardy. This high percentage is likely explained by the presence in those regions of Rome and Milan, respectively, where most public administrations and financial institutions have their headquarters.

Looking at the various types of flexibility (Table 1) and keeping in mind that the different forms of flexibility are not exclusive per se, four main empirical regularities can be elicited from our data:

- One-fourth of the people working from the office and one-fifth working off-site have no job flexibility. From the complementary values, we can deduce that the off-site workers have, in general, more access to flexible working arrangements (79%) compared to workers usually based in an office (only 68%).
- Place or time flexibility is more common for office workers (36.7% and 44.3%, respectively) than off-site workers (27.0% and 31.5%, respectively).
- Combining the first two points, we obtain the third indication. The flexibility of time and place is strongly interdependent for off-site workers, whereas the two types of flexibility are unconnected for

Table 1
Worker flexibility within the organizations.

Form of flexibility	From the office				Off-site/Distributed/On the field			
	place	time	contract	no forms of flexibility	place	time	contract	no forms of flexibility
place	36.7%	22.1%	5.7%		27.0%	19.3	5.5%	
time		44.3%	6.9%			31.5%	6.6%	
contract			10.2%				9.0%	
no forms of flexibility				27.7%				20.9%

Interpretation: On the table's diagonals, we report the percentages of the different types of flexibility (which might overlap with other forms of flexibility). In the remaining cells, we report the intersections between the different types of flexibility.

those working from an office. This means that among the workers in the latter group, approximately 15% of workers are flexible in terms of place but not in terms of time, and 22% are flexible in terms of time but not in terms of place. Both these percentages decrease to approximately 10% for dislocated workers.

- The flexibility of contracts seems to concern a minority of workers —approximately 10% of office and off-site workers. Moreover, flexible workers in terms of the agreement are flexible regarding place or time dimensions.

In the micro-survey (Appendix 1, Questions 8 and 9), we collected data about the same topics with indirect questions. In other words, instead of asking which flexibility type the respondents benefit from, we asked how many of the colleagues they know within their organizations experienced these types of flexibility.

The averages of the indirect data squarely coincide with the data presented in the diagonals of Table 1. In particular:

- From the office: 34.2% of workers are flexible in terms of place, 38.0% are flexible in terms of time, 9.8% are flexible in terms of the contract, and 28.1% have no form of flexibility.
- Off-site/dislocated/on the field: 22.1% of workers are flexible in terms of place, 22.4% are flexible in terms of time, 6.9% are flexible in terms of the contract, and 14.8% have no flexibility.

As Fig. 6 shows, the correlation between off-site place flexibility (OSFP) and off-site time flexibility (OSFT) is positive ($\rho = 0.50$,

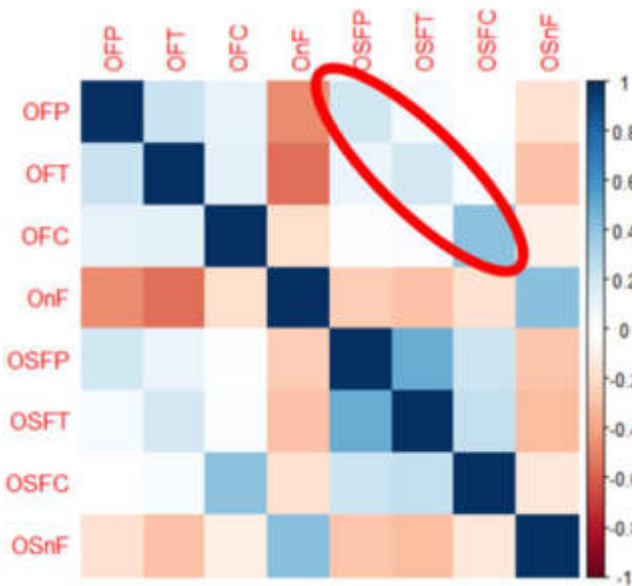


Fig. 6. Correlation between flexibility dimensions. Legend: OFF = place flexibility from the office; OFT = time flexibility from the office; OFC = contract flexibility from the office; OnF = no flexibility from the office; OSFP = place flexibility off-site/on the field; OSFT = time flexibility off-site/on the field; OSFC = contract flexibility off-site/on the field; OSnF = no flexibility off-site/on the field.

p -value < 0.001) and is twice as strong as the correlation between office place flexibility (OFFP) and office time flexibility (OFT) ($\rho = 0.22$, p -value < 0.001). Contract flexibility is positively and significantly correlated to place and time flexibility on both levels, office (approximately $\rho = 0.10$) and off-site (approximately $\rho = 0.20$). Considering each type of flexibility, office and off-site flexibility are positively and significantly correlated (indicated by the red ellipse in Fig. 6).

Surprisingly, as Fig. 7 summarizes, employees working from the office benefit much more than off-site workers in terms of time, space, and contract flexibility. We observe that place or time flexibility is more likely among office-based workers than off-site workers. Based on a comparison with Fig. 2, we argue that flexibility in time and place is strongly interconnected (Fig. 6). In this sense, consider surveyors as a typical example: they can move where (between different buildings and sites and the office) and when (according to her priorities) they need to, with no location or time constraints. This implies a close relationship between the two types of flexibility. The opposite holds for office-based workers, who can benefit from the two kinds of flexibility separately regarding working location or schedule.

However, we identified no significant difference in contract flexibility between the two groups. Nevertheless, we consider it essential to distinguish the flexibility arrangements (any combination of the three types of flexibility) between these two macro-groups of workers, as the recent literature shows (Pamidimukkala & Kermanshachi, 2021), because of the possible different policy implications. This might depend on the types of jobs workers or contract employees have. It may be that off-site work is organized according to traditional contractual rules. In contrast, resident employees' working conditions have radically changed because of the pandemic.

Therefore, practitioners should consider the combination of components of flexible work arrangements in managing and regulating the complex constellation of hybrid work arrangements and agreements.

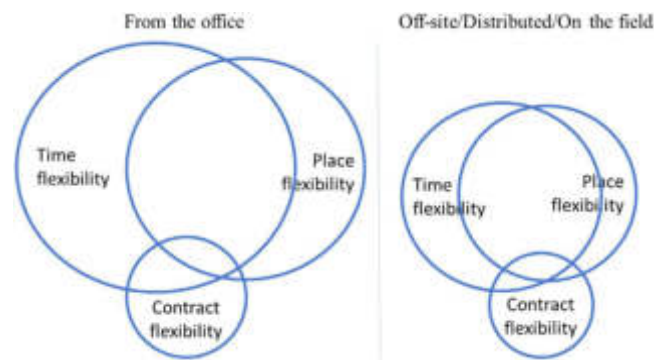


Fig. 7. Responses on time, place, and contract flexibilities.

Table 2
Responses on organizational structure.

	Yes	No	I do not know
Head of agile work	37%	45%	18%
Work–life balance	19%	62%	19%
Psychological support service	23%	63%	14%

Roles, policies, and services for hybrid work management

A parallel objective of this research study was to understand how Italian organizations are preparing the ground for the post-pandemic scenario (Fig. 4, Phase 4) such as introducing the new role of head of agile work, hiring experts in charge of work–life balance, or employing professionals in charge of psychological support. To address this objective, 44 observations corresponding to individual companies’ workers were excluded from the data. This further filter left us with 489 valid observations.

Based on the analysis of the collected data, we can highlight three findings, summarized in Table 2. Approximately 34% of the Italian organizations involved still need to introduce the mentioned roles. Half of the Italian organizations (53%) have introduced at least one of the three mentioned elements. Only 6% of the sample indicated that all three dimensions exist within their organizations. It is worth highlighting that this percentage almost coincides with the share of organizations familiar with flexible work arrangements even before the pandemic began.

Looking more closely at Table 2, we can make further observations. Almost 40% of the subjects stated that a manager or an office in charge of promoting, improving, and managing hybrid and remote work, in the long run, is now present within their organization. However, only approximately 20% of the organizations have a manager or office promoting work–life balance or psychological support services. According to the correlation analysis (Fig. 8a), there is a positive and significant correlation between the presence of a head of remote work and work–life balance policies, the presence of a head of remote work and the presence of psychological support services, and

work–life balance policies and psychological support services. In other words, they tend to co-exist.

Analyzing the sectors in which workers are involved (Fig. 8a), there is a negative and significant correlation between the private sector and the presence of a head of remote work ($\rho = -0.11$, p-value < 0.04) and psychological support services ($\rho = -0.30$, p-value < 0.01). Private companies seem inclined to invest more in work–life balance policies and programs instead of coordinating hybrid work or supporting remote workers with psychological support. Most importantly, and as expected, there is a positive and significant correlation between the size of an organization and the presence of new roles, policies, and services.

No significant correlations were found between having a head of remote work, work–life balance policies, or psychological support service with the different types of flexibility considered (Fig. 8b). The only exception is a significant correlation between having a head of remote work and place flexibility for both on-site place flexibility (OPF) ($\rho = 0.18$, p-value < 0.01) and off-site place flexibility ($\rho = 0.11$, p-value < 0.05). The relationship between having a head of remote work and place flexibility is also demonstrated by a simple probit model that describes the probability of having on-site/off-site place flexibility in the presence of a head of remote work (Appendix 3, Tables 4 and 5).

STS for hybrid work according to the Italian sample of analysis

Fig. 4 shows how the STS framework extended to hybrid work (Bélanger et al. 2013, Bentley et al. 2016, Bednar and Welch 2020) can be used evolutionarily to identify four chronological phases. Each phase describes the sociotechnical changes resulting from adopting remote, flexible, agile, and smart working during and after the lockdowns.

The analysis focused on Phase 4, which underlines organizational and structural changes needed to transform remote work into the new normal (hybrid work). This phase addresses the attention to organizational factors, such as new roles, policies, and services, that

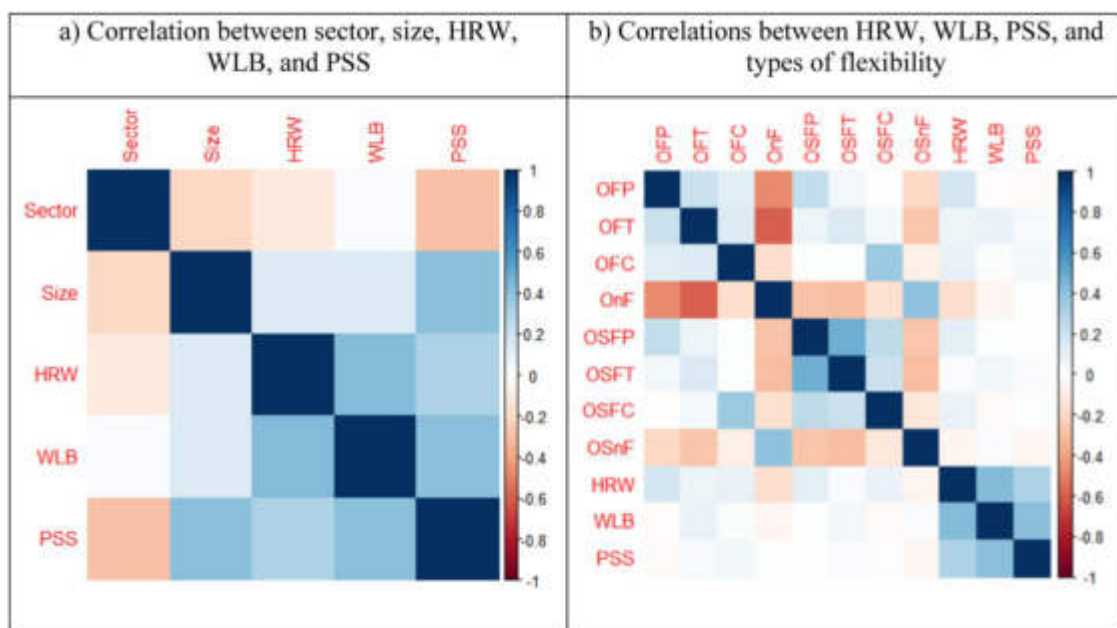


Fig. 8. Correlation analysis. Legend: OPF = place flexibility from the office; OFT = time flexibility from the office; OFC = contract flexibility from the office; OnF = no flexibility from the office; OSFP = place flexibility off-site/on the field; OSFT = time flexibility off-site/on the field; OSFC = contract flexibility off-site/on the field; OSnF = no flexibility off-site/on the field; Sector = company’s sector (0 = public, 1 = private); Size = company size (0 = less than 50 employees, 1 = more than 50 employees); HRW = Head of agile/remote work (0 = no, 1 = yes); WLB = Work–life balance (0 = no, 1 = yes); PSS = Psychological support service (0 = no, 1 = yes).

should be structurally introduced to facilitate the adoption of hybrid work in the long run.

According to Table 2, only 37% of Italian organizations are designing a specific role or service to promote, improve, and manage structural changes for hybrid work. Traditionally, this role supports the technological transition in organizations and tasks innovation. Consequently, the new role is strongly connected to the STS framework's technical sphere, particularly concerning technology and tasks. A lower percentage (approximately 20%) of the organizations currently organize either an office promoting workers' work–life balance or psychological support services. These services belong to the social structure of the STS framework, affecting the social sphere of the STS framework, particularly people. Finally, only a minority (6%) of organizations present all three mentioned dimensions together, demonstrating they are prepared to internalize and structuralize hybrid work in the long run. Although few organizations have radically changed their structures, we should verify how these elements impact the other STS areas: technology, tasks, and people.

Recalling the correlation shown in Fig. 8b, the only structural element affecting place flexibility is the presence of a head of remote work for on-site and off-site workers (Appendix 3, Table 4, and Table 5). Consequently, a head of remote work is the structural factor that becomes a substantial determinant in adopting hybrid work arrangements (Tokarchuk et al., 2021).

Discussion and conclusions

Hybrid work, also called remote, flexible, agile, and smart work, defines the same phenomena from different perspectives in which workers benefit from several types of flexibility. Because of the COVID-19 contagion, strict measures forced companies to adopt work flexibility, at least in space and time. After the peak of the pandemic crisis and the related restrictions, these various types of flexibility will probably be maintained, keeping hybrid work arrangements as attractive and adopted practice.

Within the process research approach (Langley, 1999), this study adopted the Socio-Technical System (STS) framework to investigate how Italian organizations are prepared for internalizing hybrid work practices in the long run. A micro-survey with indirect questions was used for this purpose.

Theoretical findings

In the paper, the following theoretical findings have been presented.

First, we highlighted the necessity of studying hybrid work arrangements with respect to their constitutive elements: the types of flexibility in terms of space, time, and contracts. We also investigated how office-based and off-site workers adopted these types of flexibility (time, space, and contract). Moreover, the flexibility of time and place is strongly interdependent for off-site workers, whereas the two types of flexibility are unconnected for those working from an office. The correlation analysis showed that time and place flexibility mainly affect on-site workers and, unexpectedly, affect off-site workers less. Contract flexibility affects fewer Italian workers because contract agreements with a high degree of autonomy have yet to receive great diffusion.

Second, we contributed to improving the STS approach by extending it to flexible work. From this point of view, the contribution was twofold. First, we decomposed the model to explain the evolution of organizational priorities during the pandemic phases. Various phases have been identified by analyzing the pandemic through the STS lens. In the first phase of the pandemic, which “annulled remote working as a personal choice” (Adekoya, 2022; p. 1411), workers passively accepted the necessity of working remotely (Franken et al., 2021), which was mechanically supported by the technological

endowment provided by their organizations. In this phase, organizations were focused on guaranteeing essential tools by providing technologies, connections, and other primary means to ensure business survival (Cuel et al., 2022). In the subsequent phases, human and organizational aspects became more relevant, resulting in a more substantial need to solve individual and social issues to address new learning needs (people in Phase 2) and reorganize tasks and processes (Phase 3). The emphasis in Phase 4 was on the organizational and structural changes needed to transform remote work into the new normal (hybrid work). We have improved the previous model by defining a unique sequence of events in the evolutionary analysis of STS. We identified three elements that improved the structure of one of the STS framework components in Phase 4: we considered the new role of head of remote work, the work–life balance policy, and psychological support services. We also validated the interdependencies between these three elements with other STS framework areas, such as technology, tasks, and people. In particular, we demonstrated that the evolutionary approach of STS works in analyzing the phenomenon of hybrid working. Most importantly, we revealed a relationship between having a head of remote work and place flexibility: having on-site/off-site place flexibility usually requires the presence of a head of remote work.

The third theoretical contribution of our research is related to methodology. We introduced the method of micro-surveying based on indirect questions to enrich the set of methods that can be used in social science and organizational studies to analyze specific socio-economic issues. Operating as a baseline for some official data on the distribution of the Italian population and adopting some advanced statistical techniques, we have demonstrated that short questionnaires with indirect questions provide reliable data for studying organizations from the inside. It is also important to remark that the role of the micro-survey in this study was twofold: on the one hand, we used it to test the indirect questions technique (official data on contagions and vaccinations together with various types of flexibility); on the other hand, we used it to explore, through direct questions, the structure of Italian organizations in the pandemic context according to the Socio-Technical-System model extended to the domain of hybrid work. This affordable, flexible, and quick way to investigate organizational variables may complement more traditional and detailed types of analysis, such as qualitative studies based on interviews (Kraus et al., 2020).

Practical findings

The following practical findings were obtained and contributed to advancing best practices that organizations and policymakers may consider in developing ad hoc regulations, policies, and agreements.

Dealing with more complex and advanced forms of work flexibility requires the presence of a manager or an office in charge of promoting, improving, and managing hybrid work. Indeed, a high degree of personalization will be required in the future, and hybrid work arrangements will have to be tailored according to specific individual and organizational needs (Grant & Russel, 2020; Vyas, 2022). A one-size-fits-all approach will not be possible anymore. In Phase 4, a multi-level sociotechnical transformation of organizations will occur following the boosted digital transformation that resulted from the pandemic (Dąbrowska et al., 2022), so that hybrid will be managed and not experienced, as it happened during the pandemic. Considering the differentiated demands of single workers and the consequent need for personalization (Adekoya et al., 2022; Diab-Bahman & Al-Enzi, 2020), organizations must internalize the pervasiveness of heterogeneous preferences in terms of types of flexibility combinations (Aksoy et al., 2022). This framework might also imply a higher degree of involvement of workers in shaping organizations to fill the gaps between what workers demand and what organizations plan (Askoy et al., 2022). Hybrid work must be differentiated and tailored because

of individual needs and organizational settings. Only in this way can it become a widespread practice. However, this requires an overarching reasoning that complements organizational subsystem elements (Bélanger et al., 2013) through new structures, such as a head of hybrid work and officers or organizational units promoting work–life balance and psychological support services. The STS perspective on hybrid work arrangements is also insightful for dealing with the possible side effects of the different shades of hybrid work (Menshikova, 2020). Grant & Russel (2020) summarize multiple socio-technical dimensions of hybrid workers' well-being. Organizational support becomes, therefore, essential to mitigating the side effects linked to the different shades of hybrid work so that both workers and organizations can fully enjoy the benefits of new working arrangements (Bentley et al., 2016). Top managers should rearrange the structures of their organizations, acknowledging this holistic approach (Chatterjee et al., 2022), and consider the psychological impact that hybrid work can have on their employees (Shipman et al., 2021). The STS framework and the data we collected allow us to provide organizations and policymakers with clear guidelines for approaching Phase 4.

Taking full advantage of the different hybrid work arrangements implies going beyond an information and communications technology office or a human resources department. Neither technological endowments and support nor process and task rearrangements are adequate *per se* to increase workers' performance and well-being in the long run (Williams, 2019). Instead, technology (at the center of Phase 1) must be part of an integrated system, which includes digital skills (Phase 2), processes and tasks (Phase 3), and the whole organization (Phase 4). This will prepare organizations to deal with hybrid work arrangements (Cuel et al., 2020).

Limitations and future work

The main limitation of our study is that we have no comparable data from the pre-pandemic period. However, we can gain some understanding of the pre-pandemic structure of Italian organizations if we consider that the percentage of workers that experimented with flexible work arrangements before the pandemic (5%) coincides with the share of organizations in our survey (6%) that introduced the three elements that, so far, we consider fundamental to make the adoption of hybrid work sustainable.

A possible follow-up of the research might be the preparation of another micro-survey to obtain more targeted indications of all the practices, roles, and services that an organization may introduce as a social structure (Phase 4). This might include questions on the elements demanded from hybrid workers.

Another possibility is to double-check our results by targeting other samples. For instance, it would be interesting to compare the Italian data with data from countries such as Finland and the Netherlands, which are advanced in remote work adoption. Another analysis can be conducted by comparing our data with data from Mediterranean countries with similar labor market characteristics. The goals of such comparisons would be to understand the concept of flexibility across countries better and identify which organizational functions, roles, and services may affect hybrid work.

We also suggest validating the micro-survey with other mixed methods, such as a more in-depth quantitative survey design and qualitative investigations based on interviews that can grasp the experience of workers and managers in developing new roles and services after the pandemic.

Lastly, a possible extension of our study might focus on the evolution of local and global labor markets in the event of organizations structurally introducing hybrid work. The three types of flexibility analyzed in the paper might lead to globalization 2.0, in which workers work from anywhere, at the times they prefer, with different contractual roles. This can produce two parallel

effects having opposite consequences for local labor markets. On the one hand, it can enrich the economies of those regions with a higher quality of life for workers in those regions. On the other hand, it can create a vacuum within labor markets in some regions through two concurrent forces: the most skilled workers decide to work for companies abroad because of better wages, as did 8% of respondents in our survey, and at the same time, less skilled jobs are outsourced by organizations to developing countries because of the availability of a cheaper labor force.

Declaration of Competing Interest

None.

Appendix 1: micro-survey structure and questions

1. In which country do you work?
 Italy Outside of Italy
 - 1.1 (if 1 = Italy) In which region do you work?
 [Abruzzo, Basilicata, . . . , Valle d'Aosta, Veneto]
2. In which country is the operational office of your organization located?
 Italy Outside of Italy
 - 2.1 (if 2 = Italy) In which region is the operational office of your organization located?
 [Abruzzo, Basilicata, . . . , Valle d'Aosta, Veneto]
3. In which sector does the organization you work for mainly operate?
 Private Public
4. What is the size of the organization you work for?
 Individual company Up to 10 employees
 From 11 to 50 employees
 From 51 to 250 employees More than 250 employees
5. What day is today?
 Monday Tuesday Wednesday Thursday Friday
 Saturday
6. What is your role within the organization?
 General manager Middle manager Employee
 Workman Self-employed worker
7. What is your current work mode?

	With flexibility of place	With flexibility of time	With flexibility of contract	With no flexibility
From the office	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Off-site / Dislocated / In the field	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How many people do you know within your organization?
 [number field]
9. Among the people you know within your organization, how many of them work:

	With flexibility of place	With flexibility of time	With flexibility of contract	With no flexibility
From the office	[number field]	[number field]	[number field]	[number field]
Off-site / Dislocated / On the field	[number field]	[number field]	[number field]	[number field]

10. To the best of your knowledge, how many of the people you know in your organization are currently positive for coronavirus?
 [number field]
11. To the best of your knowledge, how many of the people you know in your organization got vaccinated with at least the first dose anti COVID-19?
 [number field]

12. Within your organization is there:
 A manager or an office in charge of promoting, improving, and managing agile and remote work in the long term?
 Yes No I don't know
 A manager or an office in charge of promoting the work–life balance?
 Yes No I don't know
 A psychological support service?
 Yes No I don't know
13. Gender
 Female Male Non-binary / Prefer not to answer
14. Age range
 18–25 26–35 36–45 46–55 56–65 66 or more
15. Education
 Compulsory school High school diploma
 University degree Master PhD
14. Number of dependent children
 0 1 2 3 4 or more
16. Number of elderly people (>75) in the household
 0 1 2 3 4 or more

Appendix 2: Computing estimates from indirect answers

Let us focus on Question (1) of Section 4.1. The procedure is the same for Question (2). Call k the number of regions of the country and n_i the number of answers received from respondents in region i . For each response, we consider two parameters: the *reach* r_i^j , i.e., the size of the respondent's network, and the *count* c_i^j resulting from the respondent's answer to the question, for $j \in \{1, \dots, n_i\}$.

We estimate the ratio of people infected with COVID-19 symptoms in region i as follows:

$$\hat{p}_i = \frac{\sum_{j=1}^{n_i} c_i^j}{\sum_{j=1}^{n_i} r_i^j}$$

From the ratios \hat{p}_i of the different regions, we compute an estimate of the proportion of infected people in the country, \hat{p} , as

$$\hat{p} = \sum_{i=1}^k \omega_i \hat{p}_i,$$

where $\omega_i = N_i/N$, N_i is the number of people in region i , and N is the number of people in the country. Since our study focused on people of working age, we consider N_i and N to include only people between 18 and 65 years. Finally, we compute the variance of the post-stratified average estimator above as follows:

$$V(\hat{p}) = \frac{1-f}{n} \sum_{i=1}^k \omega_i S_i^2 + \frac{1-f}{n^2} \sum_{i=1}^k (1-\omega_i) S_i^2,$$

where $n = \sum_{i=1}^k n_i$, $f = n/N$ and

$$S_i^2 = \sum_{j=1}^{n_i} \frac{(p_{ij} - \hat{p}_i)^2}{n_i - 1},$$

where $p_{ij} = \frac{c_i^j}{r_i^j}$. Finally, we set the 95% confidence interval for \hat{p} as follows:

$$\hat{p} \pm 1.96 \sqrt{V(\hat{p})}$$

Appendix 3: Tables

Table 3

Distribution of the Italian population aged 18–65 per region, official²¹ and survey (%).

Italian region name	Population distribution	Survey workplace	Survey office location
Abruzzo	2.2%	1.9%	1.9%
Basilicata	0.9%	0.9%	0.6%
Calabria	3.2%	1.0%	1.3%
Campania	9.7%	6.4%	5.8%
Emilia-Romagna	7.4%	9.2%	9.2%
Friuli-Venezia Giulia	2.0%	2.1%	2.3%
Lazio	9.8%	14.9%	17.6%
Liguria	2.4%	1.2%	1.3%
Lombardia	16.9%	17.8%	20.1%
Marche	2.5%	2.2%	2.3%
Molise	0.5%	0.5%	0.0%
Piemonte	7.0%	11.1%	11.1%
Puglia	6.7%	3.6%	3.2%
Sardegna	2.7%	2.2%	1.7%
Sicilia	8.2%	3.5%	2.3%
Toscana	6.1%	5.7%	4.5%
Trentino-Alto Adige	1.8%	3.1%	3.4%
Umbria	1.4%	1.0%	0.8%
Valle d'Aosta	0.2%	0.0%	0.0%
Veneto	8.2%	11.1%	10.5%

Source: ISTAT, Popolazione e famiglie, Popolazione, Popolazione residente al 1° gennaio 2021, Italia, Regioni, Province.

Table 4

Dependent variable of the probit model: on-site place flexibility (OPF).

Coefficients	Estimate	Standard error	Z Value	Pr(> z)
(Intercept)	-0.69300	0.23435	-2.957	0.00311**
HRW	0.65439	0.17104	3.826	0.00013***
WLB	-0.34321	0.21624	-1.587	0.11249
PSS	-0.05167	0.23208	-0.223	0.82382
Female	-0.15636	0.15573	-1.004	0.31537
Private sector	0.27364	0.19911	1.374	0.16934
Size	-0.12184	0.16704	-0.729	0.46576

Table 5

Dependent variable of the probit model: off-site place flexibility (OSFP).

Coefficients	Estimate	Standard error	Z Value	Pr(> z)
(Intercept)	-0.9743	0.2529	-3.853	0.000117***
HRW	0.4104	0.1802	2.277	0.022762*
WLB	-0.2162	0.2300	-0.940	0.347193
PSS	0.1420	0.2491	0.570	0.568596
Female	-0.0633	0.1662	-0.381	0.703250
Private sector	0.2507	0.2159	1.161	0.245567
Size	-0.2535	0.1811	-1.400	0.161428

² Percentages in the “Survey workplace” column are based on 578 observations, whereas those in the “Survey office location” column are based on 533 observations. The difference, representing approximately 8% of the sample, indicates people in Italy working for companies located outside the Italian borders.

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