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## Article

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## Article

# Remote Work in Peru during the COVID-19 Pandemic

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**Abstract:** The objective of this research is to investigate the characteristics of remote work in Peru during the COVID-19 pandemic. In addition, the study will allow exploring the advantages, disadvantages, challenges and opportunities that Peruvian remote workers face during this crisis scenario. This was a basic-type, descriptive-level study employing a quantitative approach and a non-experimental design. The sample consisted of 275 workers from two companies located in Metropolitan Lima, and the data were collected in the year 2021. A questionnaire with 30 questions was proposed for data collection; it was validated by three experts, and its reliability was  $\alpha = 0.85$ . The findings of the remote work variable place it at a medium level with 40.73%; in the flexibility dimension, the medium level prevailed with 42.55%; the autonomy dimension exhibited a high level with 41.09%; and the productivity dimension exhibited a medium level with 43.64%. In the technology dimension, the low level prevailed with 36.36%, while the psychosocial risks dimension exhibited a medium level with 33.18%. In conclusion, the characterization of remote work in Peru during the COVID-19 pandemic allowed us to establish the most relevant aspects that affected workers who migrated to this form of work.

**Keywords:** remote work; flexibility; autonomy; productivity; technology; psychosocial risks



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## 1. Introduction

As a result of the declaration of the COVID-19 virus as a pandemic by the World Health Organization (World Health Organization (WHO) 2020), a series of important economic changes were generated worldwide. Among the most notable effects is the temporary closure of companies, causing the collapse of economic activity, a measure adopted by governments with the aim of counteracting the spread of the virus. However, entrepreneurs had to be resilient, innovative and strategic (Messabia et al. 2022). Despite this, many companies implemented the remote work modality to continue operations after the drastic measures against the development of all economic activities (Kooli 2022).

For Chuco Aguilar et al. (2020) in the field of COVID-19, remote work was the main strategy to continue the work of companies, in turn representing a challenge for workers, due to work pressure and uncertainty in the labor market. Under the pandemic environment, the adverse effects on the labor market are clear, such as decreased hours, reduced salaries, layoffs, suspension of contracts, decreased access to compensation and job opportunities, closure measures, confinement, distancing, increased informality and extension of working hours (Herrera et al. 2021).

From a general context, the consequences of the COVID-19 pandemic had permanent effects on companies. Since remote work was typically the exception to the rules for many companies, employers could increasingly embrace it, considering that the experience obtained during the health crisis may have influenced the perception of remote work. If workers can equally meet work-at-home goals, many incredulous employers would change their minds on the matter (Bamieh and Ziegler 2022).

In some cases, the experiences of workers who migrated to work remotely at home almost immediately, as a consequence of the health crisis, are still being recorded. From the business side, employers had to find new ways to ensure that productivity was not affected by this change. Consequently, the flexibility of working at home was the new way to continue working (Matli 2020).

The demands of remote work in conditions of social isolation involve different aspects that can affect people's work performance. Remote workers must face staying at home together with other family members, where high levels of uncertainty about work, health and the economy are generated, which can cause high levels of work stress (Sandoval-Reyes et al. 2021). In addition, the inconveniences that the coronavirus has generated for workers continue to deteriorate their psychological well-being (Baburajan 2021).

According to Sidhom (2021), as a result of the pandemic and the new sanitary measures, a high level of concern was generated in people related to the risk of COVID-19 infection. Other possible causes of stress were related to the fear of a possible loss of economic income due to the restrictions on the operation of companies and workplaces.

According to Iwashita (2021), the institutional and cultural environment of countries can make remote work difficult or hindered, caused by mismanagement between remote work and human resources management. This is especially the case in Asian countries, where employment and short-term results are a priority. Likewise, it can occur in cultures that prefer collective management, the differentiation between the working and managerial classes, as well as having the least possible uncertainty.

Within this framework, Althoff Lukas et al. (2022) point out that, if the experience in the USA during the pandemic can be a guide, the transition to remote work will be more harmful in the most densely populated cities. When workplace proximity considerations are less important to residence decision making, such cities tend to shrink their workforce. Another important aspect is the impact of the transition in relation to the qualification level of the workers.

In general, most of the effects of the pandemic are perceived a priori as negative; certainly, they are for many people. However, there are positive effects such as the implementation of telemedicine or remote patient care by doctors and specialists, which has been promoted in many countries, particularly in Uruguay. This ultimately represents a benefit for public health and for society (Reyes Caorsi 2020).

In addition to this, the health crisis made it evident that a large number of patients could be cared for remotely by specialized personnel, without compromising their health or the quality of care; that the logistics required to implement it are minimal; and that this modality was well received by clinicians and patients (Bashshur et al. 2020).

In the same way, Mostafa (2021) explores the perception of remote work after the COVID-19 quarantine, its effect on psychological well-being and the incorporation into the working life of workers in Egypt. In this sense, the author confirmed that remote work is perceived positively by workers as improving their psychological and occupational well-being.

Data on remote work performance in Latin America are scattered and unclear. According to a study by the International Labor Organization (ILO 2020), worldwide, 17% of employed people perform tasks that allow them to adopt remote work and live in countries that have the necessary infrastructure for this purpose. Within this range, 6% are located in Sub-Saharan Africa and 30% in Northern, Western and Southern Europe. In Latin America and the Caribbean, this figure is in the order of 23%. Similarly, the Economic Commission for Latin America and the Caribbean (ECLAC 2021) estimates that in Latin America and the Caribbean, 21.3% of people can work remotely.

On the other hand, the ILO (2021) points out that remote work had a significant increase in the countries that were most affected by the health crisis and where this modality was already carried out before the pandemic. Their estimates indicate that, by the second quarter of 2020, around 23 million people became remote workers in Latin America and the Caribbean.

Within this perspective, [ECLAC \(2021\)](#) indicates that one of the work changes favored by digitization is remote work, which has generally been driven by its versatility in the work context and also by its contribution to a better link between work and family development, the clearance of urban traffic and the subsequent reduction in pollution. In this sense, [Kooli \(2022\)](#) points out that remote work stands out as a strategy that minimizes the impact of confinement measures and allows companies and institutions to continue with economic activities. Consequently, remote work during the COVID-19 health crisis stands out as a strategy that mitigates the incidence of confinement measures and allows the continuity of economic activities in companies and institutions.

In this sense, in Peru, a large number of companies stood out for adopting this strategy, supported by different government measures, considering that the country already had laws regarding teleworking before the pandemic. In the Law that Regulates Teleworking No. 30036, promulgated by the [Congress of the Republic \(2013\)](#), it is described as a modality for the development of tasks characterized by the use of information and communication technologies (ICT), in public and private organizations, without the physical presence of the worker in the workplace.

In addition to this, with the appearance of the COVID-19 pandemic, the Peruvian government adopted emergency measures to reduce infections and the impact on the health system caused by the disease. In this sense, the [Presidency of the Republic of Peru \(2020\)](#) implemented Emergency Decree No. 026-2020, which defines remote work as “the provision of services subordinated to the physical presence of the worker at his home or place home isolation, using any means or mechanism that makes it possible to carry out work outside the workplace” (p. 10). Likewise, the [Ministry of Labor and Employment Promotion \(2020\)](#) prepared the Guide for the Application of Remote Work, with the objective of establishing the regulations that would allow employers and workers in the private sector to implement this modality.

In other words, according to Peruvian law, the acceptance of the workers is needed to implement teleworking, and their tasks are subordinates; they demand the use of ICT and do not require a physical presence in the workplace. It can also be adopted by public and private companies, unlike remote work, which is not chosen by the worker. Its implementation occurs due to the appearance of the COVID-19 pandemic, with the aim of preventing the spread of the virus. In this case, the worker’s work is carried out in a place of home isolation that must be known by the employer ([Sánchez Anticona 2021](#); [Uribe Kajat et al. 2021](#)).

It is certainly necessary to regulate this modality of work, as well as to study its characteristics, advantages and disadvantages, in order to promote the generation of this type of employment, but within an environment of safety and well-being of workers and employers. The foregoing must be considered because the health crisis has deepened the heterogeneity of the forms of work, and among them, the implementation of remote work has increased. In short, these new challenges will make it possible to achieve sustained and inclusive economic development and productive and decent employment for the entire population ([ECLAC 2021](#)).

Therefore, the present study aims to explore the characteristics of remote work in Peru during the COVID-19 pandemic. The study will also help us to explore the advantages, disadvantages, challenges and opportunities faced by Peruvian remote workers in the context of the health crisis.

In this sense, a review of the literature related to remote work and its consequent application during the health crisis was carried out and is presented in Section 2. Section 3 presents the methodology used in the development of the research. Section 4 presents the results, which are discussed in Section 5. The conclusions are presented in Section 6.

## 2. Literature Review

### 2.1. Origins of Remote Work

The concept of remote work is attributed to NASA scientist Jack Nilles, who in 1973 worked remotely on a telecommunication system for NASA (MacRae and Sawatzky 2020). At that time, the first global oil crisis occurred, increasing transportation costs in such a way that in 1979, *The Washington Post* published the article “Working from home can save gasoline” by Frank Schiff. It is estimated that this article was what led to the first conference on remote work in 1980 (Oszlak 2020).

Although remote work is not a new organizational model, its widespread implementation by professional and managerial-level employees is one of its main drivers. The work-from-home model originated from the oil crisis of the 1970s, which together with technological advances led to increased interest in this modality among high-level workers (Nilles et al. 1974).

However, remote work at that time was an abstract idea and an almost impossible modality to adopt, since personal computers were very rare and remote work technology was in its infancy (Oszlak 2020). In this regard, Nilles (1997) states that jobs must be reconfigured so that workers can be autonomous from their location, or an information storage and communications system must be created as sophisticated as possible, to transmit information as if the workers were located in the office.

At the beginning of the century, remote work experienced significant growth, as reflected in the data from *Global Workplace Analytics* (2022), which indicate that 66% of workers in the USA work remotely part-time. Additionally, 68% of Americans today prefer to work fully remotely. On the other hand, in the years after 2015, remote work modalities have increased by 140%, that is, 10 times more than all forms of work. Regarding the opinion of workers, 86% think that it relieves stress.

Definitely, the number of people who have migrated to work remotely due to the COVID-19 pandemic has increased at a dizzying rate, causing a revolution in this modality. Without considering that the agreements to make the execution of digital works more flexible have been constant, the increase in the adoption of remote work is occurring on an unforeseen scale (Popovici and Popovici and Popovici 2020). In this sense, de Araújo and Lua (2021) point out that the pandemic generated double pressure on workers: on the one hand, there was an increase in requirements; on the other hand, the possibilities of escaping the tensions were limited by the restrictions of social contact.

### 2.2. Remote Work Concept

Remote work is an arrangement where work activities are carried out giving the worker the flexibility to execute them in places far from their offices or regular facilities. In this modality, the workers do not have personal contact with their colleagues but can interact with them through technological means (Wang et al. 2021).

For de Araújo and Lua (2021), remote work is characterized by an agreement that establishes the performance of work outside the company’s facilities, standing out as a flexible modality of employment. In the same way, this type of work has been generalized under the name “home office”, since it is carried out remotely and sometimes at the worker’s home.

It is important to note that there are various elements that describe the level of adaptation of employees to remote work. Among them are satisfaction, commitment, productivity and the ability to achieve a balance between work and non-work demands. From a general scope, the structural factors are specified, referring to independence and work criteria. There are also relational factors, referring to interpersonal relationships and social isolation; finally, there are contextual factors such as changing the workplace and interrupting work activities (van Zoonen et al. 2021).

Another aspect of remote work to consider is that workers must get used to new technologies, discover ways to integrate their personal and work lives, and try to fulfill their tasks in the best possible way, considering that after COVID-19 and its social and



professional changes, society has faced serious challenges in the implementation of new ways of working (Varner and Schmidt 2022).

As a result of the implementation of remote work due to the COVID-19 pandemic, the fine line between work and life has disappeared. Work becoming synonymous with life and life synonymous with work, causing life–work integration (Sengupta and Al-Khalifa 2022).

### 2.3. Advantages and Disadvantages of Remote Work

The changes generated in organizations are always accompanied by advantages and disadvantages, especially when it comes to making the ways of working more flexible (Galanti et al. 2021). In the case of remote work, it is usually done as a planned alternative, which requires a stage of preparation and adaptation. This is with the aim of giving companies the advantage of managing the productivity of workers, guaranteeing them an adequate balance between personal and work life (Toscano and Zappalà 2020a).

However, the appearance of COVID-19 has forced most companies to implement this type of work unexpectedly and generally without consolidating the skills required for this purpose in workers (Vander Elst et al. 2020).

Remote work can be an interesting alternative for organizations that seek to increase their internal flexibility or the mobility of workers. In addition, it is a convenient strategy for companies that seek to reduce costs, allowing them to hire in cheaper regions and allowing workers to save on transportation costs. In the same way, it is presented as an excellent way for workers to plan their day, combining work and work issues, which can improve their motivation and productivity (Ferreira et al. 2021).

Table 1 below shows the advantages and disadvantages of remote work for workers, for companies and for society.

**Table 1.** Advantages and disadvantages of remote work.

Entity	Advantages	Disadvantages
Worker	It improves the environment and personal life. Autonomy and responsibility. Flexible schedule. Reduced work stress. Lower costs. Balance between personal and work life. More time for health care. Improved productivity.	Low identification with the company. Elimination of work environment. Lack of interaction with peers. Social isolation. Lack of inspiration. Operating costs on behalf of the worker. Fewer career opportunities.
Company	It requires less physical space. Decrease in transportation costs, food, uniforms. Working for goals. Salary savings. Decrease in absenteeism. Increased productivity.	Decreased learning. Lower productivity. Possible loss of confidentiality. Exposure to cyber-attacks. Investment expenses and initial costs. Increase in technological investment.
Society	Pollution reduction. Reduction in urban congestion. Promotion of mobility. Increased jobs for people with disabilities. Promotion of family life.	Decrease in unionization. Increased individualism. Reduction in socialization spaces between colleagues. Decreased organizational culture. Inconvenient to control work environments. Attention to social security.

Information obtained from Cardozo and Bulcourn (2020).

Zhang et al. (2021), in their work on the analysis of feelings about forced remote work during the pandemic, through a survey on the social network Twitter, showed that the tweets referring to remote work were slightly positive in general. Additionally, the trade-offs perceived by the general public are especially important for people who have

no choice but to work remotely. In a similar study, [Hegde et al. \(2022\)](#) affirm that it is important for organizations to study these trends, with the aim of determining whether they should continue with this modality or reopen workspaces, of course analyzing the behavior of productivity and the level of satisfaction of the worker.

Within this framework, [Ipsen et al. \(2021\)](#) found in their study that the majority of people who worked remotely during the COVID-19 pandemic had a more positive than negative experience. Three factors stood out as the main advantages of remote work: balance between work and personal life, increased efficiency at work and improvement in work control. This study also determined the top three disadvantages: home office restrictions, job uncertainties, and inadequate or insufficient tools. All these factors make it possible to establish the necessary actions that organizations must implement to guarantee performance, as well as the well-being of their workers.

#### *2.4. Dimensions of the Remote Work Variable*

For the development of this study, the remote work variable was analyzed, as were the dimensions that describe it and allow it to be measured. Considering the definitions of remote work by the authors [Wang et al. \(2021\)](#), [de Araújo and Lua \(2021\)](#), [van Zoonen et al. \(2021\)](#), [Varner and Schmidt \(2022\)](#) and [Sengupta and Al-Khalifa \(2022\)](#), in this study, the following dimensions were established to help study and measure it: flexibility, autonomy, productivity, technology and psychosocial risks.

The flexibility of remote work can be considered as the adaptability that workers have, with respect to the location, time and way of carrying out their work activities ([Interfell Corp 2016](#)). It includes all the actions that an organization can execute to create favorable conditions that allow achieving a balance between the work and personal lives of its workers ([Ahlers 2016](#)).

Despite the advantages of having greater freedom and possibilities, in the context of the COVID-19 pandemic, many workers feel more pressure and are concerned about not being able to meet work demands under the remote work modality ([Donati et al. 2021](#)).

Autonomy at work includes the degree of freedom that workers have to manage aspects of their tasks and make decisions in this regard, allowing them to be more creative and productive ([Universidad IEU 2018](#)). However, allowing workers to control the planning of their workday is a controversial practice that can be complex, since they can go to the extreme of working less or working more. Despite this, according to previous studies, autonomy at work improves performance and productivity ([Beckmann 2016](#)).

For [Wang et al. \(2021\)](#), labor autonomy allows workers to decide when and how to do their work. Consequently, workers with too much work autonomy can more effectively balance the various responsibilities or goals in all aspects.

During the health crisis, the autonomy provided by remote work has positive effects that can be seen or even accentuated in the context of the pandemic. Since remote work is an unforeseen condition, necessary due to the appearance of the pandemic, many workers had to face this situation and manage the autonomy generated with their colleagues ([Galanti et al. 2021](#)).

Productivity is a measure of activity that calculates the goods or services produced according to the resources used, where the resources can be tangible or intangible. This is estimated according to the time spent in the process ([Juez 2020](#)). Consequently, there are a number of factors that affect worker productivity; among them are job satisfaction, sense of belonging, job stress, motivation, autonomy, teamwork, interpersonal relationships, social interaction and resistance to change ([Ganga Contreras and Moyano 2018](#)).

One of the most critical aspects of work is productivity, especially in the remote work modality ([Toscano and Zappalà 2020b](#)). The future of remote work is based on the factors that determine the level of productivity and well-being of workers. In addition, in remote work, the level of productivity that a worker has is determined by the individual opinion that the worker has about remote work ([Howe and Menges 2022](#)).

According to [Jacks \(2021\)](#), the implementation of remote work in organizations generated an increase in labor productivity during the COVID-19 pandemic. However, it is important to delve into the impact that remote work had on organizational productivity, as well as on individual productivity.

Fear of COVID-19 is positively related to high levels of productivity and commitment. Workers who were more emotionally impacted also reported being more productive working from home. In this way, remote work can play a protective role for workers, since possible exposure to the virus and therefore contagion was avoided ([Galanti et al. 2021](#); [Giorgi et al. 2020](#); [Błaszczuk et al. 2022](#)).

In the same way, perceptions of lower productivity during the pandemic are related to the increase in the age of workers. This may be associated with the inconveniences that older workers may have with the use of digital tools and their lesser ability to adapt to these changes ([Galanti et al. 2021](#)).

Technology is fundamental in the implementation of remote work since technological infrastructure is needed to be able to do it. The use of virtual platforms, telecommunications and computing allows the worker to carry out their activities without having a physical presence in the company ([Paladines Morán et al. 2021](#)).

Undoubtedly, the advancement of technology has transformed labor relations and ways of working. Currently, there is a constant process of advancement and technological transformation that must be constantly analyzed ([López Ahumada 2021](#)).

In previous studies, it was determined that technology and the possibility of working outside the usual facilities are directly related. Work activities that use ICT have led to the generation of flexible forms of work, such as remote work ([Vargas Espín 2020](#)).

Indeed, the fact that workers are in constant connection with organizations, based on remote connection technological tools, provides great autonomy in time management, as well as the possibility of more flexible execution ([López Ahumada 2021](#)). However, the use of technologies can attenuate the social isolation suffered by workers during the pandemic, compared to the interaction they experience in normal conditions, such as in workplaces or places for carrying out activities of daily living ([Galanti et al. 2021](#)).

Psychosocial risks at work are generated by the interactions that the worker has when performing their tasks in a specific environment, influenced by the strategies, norms, culture and organizational climate, including the requirements of the worker, their level of satisfaction, and their social and personal life outside the company ([International Labor Organization \(ILO\) 1984](#)).

These psychosocial risks affect worker performance, health and job satisfaction. Among these stand out the overload of work, long work hours, lack of clarity in the jobs, policies contrary to participation in decision making, deterioration of relations between members and changes not adequately explained. Therefore, the effects on the worker are reflected in problems at the cognitive, emotional and self-image levels, as well as changes in attitudes ([Flores Polanco 2021](#)).

According to [Carvajal Villamizar et al. \(2021\)](#), the workplace can be any environment where people can work. Promoting health in the workplace involves both workers and employers and other actors in society interested in adopting jointly agreed initiatives to guarantee the health and well-being of the workforce. Therefore, proper management and control of the risks faced by workers can reduce health problems.

Before the pandemic, many people had not previously worked remotely, regardless of their willingness to adopt this alternative and the conditions offered by employers. This situation could generate conflicts between private life and work activity, negatively affecting workers' mental health. However, the forced confinement during the pandemic can also give them the opportunity to improve their family relationships ([Izdebski and Mazur 2021](#)).

At the beginning of the pandemic, people feared the spread of the disease and its impact on health. Among the most common manifestations they suffered were malaise, depression, anxiety and stress. On the other hand, the implementation of remote work



as an alternative to face a difficult situation, which required flexibility and the ability to quickly adapt to other forms of work, constituted a challenge for the mental health of workers (Kondratowicz et al. 2022).

The implementation of remote work has been more widely accepted by people with a highly positive perception of job satisfaction than before the health crisis. This minimizes the conflict between work and family life, a fundamental aspect of personal well-being (Delgado Zamalloa et al. 2022).

In summary, Table 2 presents the different dimensions of remote work, as well as the indicators that will allow the analysis of each one, in addition to its measurement in the context of the COVID-19 pandemic.

**Table 2.** Details of the dimensions and indicators of the remote work variable.

Dimensions	Indicators
Flexibility	Organizational support, development of activities, adequate adaptation, appropriate communication, achievement of goals, target fulfillment time
Autonomy	Freedom of workload, planning of activities, execution of activities, decision making, necessary inputs, work schedule, required equipment
Productivity	Control and monitoring of activities, achievement of goals, performance evaluation, teamwork, working conditions, job satisfaction, work overload
Technology	Technological infrastructure, communication platforms, ICT, remote connection (internet), digital skills, resistance to change
Psychosocial Risks	Stress, discomfort, depression, anxiety, motivation, creativity, social isolation, interpersonal relationships

### 3. Materials and Methods

As part of the methodology implemented in the development of the research, the general objective was to investigate the characteristics of remote work in Peru during the COVID-19 pandemic. In addition, the study will allow exploring the advantages, disadvantages, challenges and opportunities faced by Peruvian remote workers during the scenario of the health crisis.

On the other hand, the research was developed according to various methodological aspects, including the type of study, the approach, the design, the level, the population considered and the sample selected. Regarding the type of research, the work was of a basic type, being the one that is carried out with the objective of satisfying the curiosity of obtaining new knowledge; it also serves as a foundation for the advancement of science (Ñaupas Paitán et al. 2014).

According to the approach, the study was quantitative, which according to Palella Stracuzzi and Pestana (2012) is one that includes the use of mathematical models and whose findings must be analyzed through statistical formulas. Likewise, the study was framed within the non-experimental design, considering that the remote work variable and its dimensions were evaluated in their natural context; that is, they were not manipulated (Hernández-Sampieri and Torres 2018). Regarding the level, the study was descriptive, since its objective was to verify the reality of a phenomenon, considering its characteristics, as well as the analysis and interpretation of the facts (Palella Stracuzzi and Pestana 2012).

For the present study, the population employed in formal jobs in Peru in times of pandemic was considered; obviously, this universe is too large, considering that, only in the

case of Metropolitan Lima, the National Institute of Statistics and Informatics (NISI 2022) indicates that the employed population reached 4,909,300 people in the fourth quarter of 2021.

In this case, the population is considered to be infinite, defined as that in which the total number of subjects that make it up is unknown, since there is no record of them, since its elaboration would be unfeasible. In this sense, this study employed intentional non-probabilistic sampling, where the study elements are chosen according to criteria pre-established by the researcher (Arias, Fidiás Gerardo 2016). Therefore, 275 workers from two companies that adopted remote work during the pandemic, located in Metropolitan Lima, were selected. The study was carried out in the months of March and April of the year 2021, in Metropolitan Lima, Peru, at the height of the global health crisis.

For the collection of primary data, a survey or questionnaire was used. This data collection tool is especially used for huge queries. It consists of the design of a questionnaire with a series of questions, generally sent by virtual means to the people that make up the population or sample, who must respond (Kothari 2004). Therefore, the questionnaire was configured with 30 questions related to the remote work variable and its dimensions (flexibility, autonomy, productivity, technology and psychosocial risks).

The questions in the questionnaire were designed according to the dimensions of the variable. For the flexibility dimension of remote work, items 1 to 6 were designed. The autonomy dimension of remote work was addressed by items 7 to 12. In the same way, the productivity dimension of remote work was addressed by items 13 to 18, the technology dimension of remote work was addressed by items 19 to 24 and the psychosocial risks dimension was addressed by items 25 to 30.

All the questions in the questionnaire had three response alternatives: always (A), sometimes (St) and never (N). In accordance with the established scale, the scores were established as follows: values between 61 and 90 points will be considered high; values between 31 and 60 points will be medium; and values between 1 and 30 will be low.

To visualize part of the questionnaire, Table 3 presents a detail of each variable with a question that is part of it and its response options.

**Table 3.** Detail of the questionnaire: dimensions, items and response options.

Dimension	Item	Options
Flexibility	Do you find the established work schedule flexible?	Always Sometimes Never
Autonomy	Do you have the freedom to schedule the activities you must do during the week?	Always Sometimes Never
Productivity	Do you receive rewards or recognition bonuses when you do your job effectively?	Always Sometimes Never
Technology	Do you use personal or company cloud storage?	Always Sometimes Never
Psychosocial Risks	Have your stress levels decreased working remotely?	Always Sometimes Never

The validity of the instrument (questionnaire), defined as the measure in which an instrument measures and what it intends to measure, was verified. Validity is the dimension where the conclusions of the findings generated with the use of the test are guaranteed (Kimberlin and Winterstein 2008). In the present investigation, the validity of the questionnaire was determined through the judgment of three experts, who evaluated

the questions according to construct parameters, pertinence, relevance, coherence and clarity, with the final verdict being that the questionnaire was applicable.

Similarly, the reliability of the questionnaire, which consists of the degree to which the findings achieved by a measurement can be repeated, was calculated. Lack of reliability can result from differences between researchers or instruments, such as a questionnaire, which will definitely affect the validity of the questionnaire (Rothman et al. 2008; Wong et al. 2012). In this case, reliability was estimated by conducting a pilot test with 27 workers (10%) who were not part of the sample, but with characteristics similar to those of the study, where a Cronbach's alpha coefficient was obtained.  $\alpha = 0.85$ . In this way, it was verified that the instrument is reliable.

Once the validity and reliability of the questionnaire for data collection were verified, it was sent virtually by email to the workers who made up the sample, for their response. Subsequently, the collected data were tabulated using the Microsoft Excel and SPSS version 25 programs.

The findings were evaluated from the descriptive scope, firstly, by analyzing the behavior of the variable and its dimensions, considering the sociodemographic data of the sample, such as age and gender. In this sense, an analysis of the relationship between remote work and the gender of the workers was carried out using the non-parametric chi-square test.

The chi-square test was designed to study the differences when the dependent variable is measured from the nominal point of view. This test does not require equality of variances between the study groups, nor does it require homoscedasticity in the data. Through this test, the analysis of dichotomous independent variables can be carried out, as can studies of multiple variables (McHugh 2013).

Subsequently, the measures of central tendency (mean, median and mode), defined as the statistical measures that seek to synthesize a group of values in a single value, were analyzed. Similarly, dispersion measures (standard deviation and covariance), which aim to summarize the dispersion of a group of data in a single value (Quevedo Ricardi 2011), were used.

Finally, the findings were analyzed through the absolute and relative frequencies of the variable and each of its dimensions, which allowed for the discussion and comparison of the results and the corresponding conclusions.

## 4. Results

### 4.1. Descriptive and Inferential Study of the Remote Work Variable According to the Sociodemographic Data of the Sample

To evaluate the behavior of the sample in reference to remote work during the COVID-19 pandemic, certain specific characteristics or sociodemographic data were collected. With this information, the descriptive analysis was carried out, considering gender, age, service time and working hours.

Regarding gender, of the total sample, 60.0% are men, while 40.0% are women, demonstrating that the majority of the individuals that make up the sample are men.

Regarding the age of the respondents, 38.55% are between 41 and 50 years old, 24.00% are between 31 and 40 years old, 22.91% are between 21 and 30 years old, 10.18% are between 51 and 60 years old and 4.36% are over 61 years of age. This indicates that most of the subjects that make up the sample are between 41 and 50 years old.

Regarding the time of service that the respondents have, 40.73% have between 1 and 5 years working, 29.82% have between 6 and 11 years and 29.45% have more than 12 years of service. In other words, the majority of those surveyed have between 1 and 5 years of service.

Finally, in reference to the working day, 65.09% of those surveyed work full-time; while 34.91% work part-time. Consequently, most of the respondents work a full-time shift, as presented in Table 4.

**Table 4.** Sociodemographic data of the sample.

Sociodemographic Data	Characteristic	Frequency (f)	Percentage (%)
Gender	Male	165	60.00
	Female	110	40.00
	Total	275	100.00
Age	21 to 30 years	63	22.91
	31 to 40 years	66	24.00
	41 to 50 years	106	38.55
	51 to 60 years	28	10.18
	more than 61 years	12	4.36
	Total	275	100.00
Service time	1 to 5 years	112	40.73
	6 to 11 years	82	29.82
	more than 12 years	81	29.45
	Total	275	100.00
Workday	Full-time (8 h)	179	65.09
	Part-time (5 h)	96	34.91
	Total	275	100.00

Regarding the analysis of the remote work variable according to the gender of the sample, it was possible to verify that, in the case of men, 18.55% of the respondents reported a medium level, 10.91% reported a low level and 10.55% indicated the existence of high level; for women, 22.18% of the respondents reported a medium level, 21.82% a high level and 16.00% a low level, as can be seen in Table 5.

**Table 5.** Level of the remote work variable in Peruvian workers during the COVID-19 pandemic, according to gender.

Gender	Low		Medium		High		Total
	Frequency (f)	%	Frequency (f)	%	Frequency (f)	%	
Male	30	10.91	51	18.55	29	10.55	40.00
Female	44	16.00	61	22.18	60	21.82	60.00
Total	74	26.91	112	40.73	89	32.36	100.00

This shows that both the majority of men and women perceive a medium level in the remote work variable in Peruvian companies, during the COVID-19 pandemic.

On the other hand, for the remote work variable according to the age of the participants, it was corroborated that in the case of those surveyed between the ages of 21 and 30, 8.73% indicate that there is a high level, 8.36% indicate a medium level and 5.82% indicate a low level. For respondents who are between 31 and 40 years old, 8.73% reported high and medium levels, while 6.55% reported a low level.

In the case of workers aged between 41 and 50 years, 17.45% reported a medium level, 10.91% a high level and 10.18% a low level. Regarding workers aged 51 to 60 years, 5.45% reported a medium level, 2.91% reported a high level and 1.82% reported a low level. Finally, among workers over 61 years of age, 2.55% indicated that there is low level, 1.09% indicated that there is high level and 0.73% indicated that there is medium level, as shown in Table 6.

**Table 6.** Level of the remote work variable in Peruvian workers during the COVID-19 pandemic, according to age.

Age	Low		Medium		High		Total
	Frequency (f)	%	Frequency (f)	%	Frequency (f)	%	
21 to 30 years	16	5.82	23	8.36	24	8.73	22.91
31 to 40 years	18	6.55	24	8.73	24	8.73	24.01
41 to 50 years	28	10.18	48	17.45	30	10.91	38.54
51 to 60 years	5	1.82	15	5.45	8	2.91	10.18
more than 61 years	7	2.55	2	0.73	3	1.09	4.37
Total	74	26.92	112	40.72	89	32.37	100.00

Consequently, the majority of workers between the ages of 21 and 30 perceive a high level, unlike the majority of workers between the ages of 31 and 40 who perceive a medium level. The majority of those surveyed aged between 41 and 50 years perceive a medium level, in the same way as those aged between 51 and 60 years. On the contrary, those over 61 years of age affirmed that there is a low level.

In other words, workers between the ages of 41 and 50 had a moderate perception of remote work, accepting it as the new normal they faced.

In reference to the analysis of the remote work variable according to the service time of the workers, it was confirmed that for the respondents who have between 1 and 5 years of service, 17.09% reported a medium level, 12.00% reported a high level and 11.64% reported a low level. Regarding workers who have between 6 and 11 years of service, 13.09% reported a medium level, 9.09% reported a high level and 7.64% reported a low level.

Finally, for those with more than 12 years of service, 11.27% affirm that there is a high level, 10.55% that there is a medium level and 4.64% that there is a low level. In other words, the majority of those surveyed whose service time is between 1 and 5 years affirm that there is a medium level, as do the majority of those whose service time is between 6 and 11 years. On the contrary, for those with more than 12 years of service, there is a high level, as can be seen in Table 7.

**Table 7.** Level of the remote work variable in Peruvian workers during the COVID-19 pandemic, according to service time.

Service Time	Low		Medium		High		Total
	Frequency (f)	%	Frequency (f)	%	Frequency (f)	%	
1 to 5 years	32	11.64	47	17.09	33	12.00	40.73
6 to 11 years	21	7.64	36	13.09	25	9.09	29.82
more than 12 years	21	7.64	29	10.55	31	11.27	29.46
Total	74	26.91	112	40.73	89	32.36	100.00

In summary, workers whose service time is between 1 and 5 years had the greatest acceptance and positive adaptation to remote work as a way to continue performing their tasks.

In reference to the analysis of remote work, according to the working day, it was confirmed that in the case of respondents who work full-time, 27.64% perceive a medium level, 21.82% perceive a high level and 15.64% perceive a low level. For those surveyed who work part-time, 13.09% perceive a medium level, 11.27% a low level and 10.55% a high level, as can be seen in Table 8.



**Table 8.** Level of the remote work variable in Peruvian workers during the COVID-19 pandemic, according to the working day.

Workday	Low		Medium		High		Total
	Frequency (f)	%	Frequency (f)	%	Frequency (f)	%	
Full-time	43	15.64	76	27.64	60	21.82	65.09
Part-time	31	11.27	36	13.09	29	10.55	34.91
Total	74	26.91	112	40.73	89	32.36	100.00

This means that the majority of full-time workers perceive an average level of remote work, as do most of those who work part-time.

Additionally, the inferential analysis of the level of remote work was carried out according to the different sociodemographic variables of the workers: gender, age, length of service and working hours. This calculation was performed by applying the chi-square test, since this allows recognizing the association between two categorical variables, with the aim of verifying the goodness of fit between the expected and observed results. First, the association between remote work and the gender of workers was analyzed through the following hypotheses:

**H<sub>0</sub>.** *There is an association between remote work and the gender of the worker.*

**H<sub>1</sub>.** *There is no association between remote work and the gender of the worker.*

Based on these considerations and according to the results described in Tables 9 and 10, the null hypothesis (H<sub>0</sub>) is rejected, with  $p\text{-value} = 0.176 > 0.05$ ; consequently, there is no association between remote work and the gender of the workers.

**Table 9.** Cross table of remote work level and gender.

			Gender		
			Female	Male	Total
Remote work	Low	Count	30	44	74
		% within the gender of the person	27.3%	26.7%	26.9%
	Medium	Count	51	61	112
		% within the gender of the person	46.4%	37.0%	40.7%
	High	Count	29	60	89
		% within the gender of the person	26.4%	36.4%	32.4%
Total	Count	110	165	275	
	% within the gender of the person	100.0%	100.0%	100.0%	

**Table 10.** Chi-square tests: remote work and gender.

	Value	df	Asymptotic (Bilateral) Significance
Pearson chi-square	3.478 <sup>a</sup>	2	0.176
Likelihood ratio	3.512	2	0.173
linear by linear association	1.254	1	0.263
No of valid cases	275		

<sup>a</sup> 0 cells (0.0%) have expected a count less than 5. The minimum expected count is 29.60.

To verify the association between the age of the workers and remote work, the following hypotheses were established:

**H<sub>0</sub>.** *There is an association between remote work and the age of the worker.*

**vs**

**H<sub>2</sub>.** *There is no association between remote work and the age of the worker.*

In this sense, the null hypothesis (H<sub>0</sub>) is denied, since  $p\text{-value} = 0.195 > 0.05$ ; therefore, there is no association between remote work and the age of the workers, as shown in Tables 11 and 12.

**Table 11.** Cross table of remote work level and age.

			Age					
			21 to 30 Years	31 to 40 Years	41 to 50 Years	51 to 60 Years	More Than 61 Years	Total
Remote Work	Low	Count	16	18	28	5	7	74
		% within the gender of the person	25.4%	27.3%	26.4%	17.9%	58.3%	26.9%
	Medium	Count	23	24	48	15	2	112
		% within the gender of the person	36.5%	36.4%	45.3%	53.6%	16.7%	40.7%
	High	Count	24	24	30	8	3	89
		% within the gender of the person	38.1%	36.4%	28.3%	28.6%	25.0%	32.4%
Total		Count	63	66	106	28	12	275
		% within the gender of the person	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**Table 12.** Chi-square tests: remote work and age.

	Value	df	Asymptotic (Bilateral) Significance
Pearson chi-square	11.118 <sup>a</sup>	8	0.195
Likelihood ratio	10.515	8	0.231
linear by linear association	1.963	1	0.161
No of valid cases	275		

<sup>a</sup> 3 cells (20.0%) have expected a count less than 5. The minimum expected count is 3.23.

In the same way, the association between the service time of workers and remote work was verified; in this sense, the following hypotheses were established:

**H<sub>0</sub>.** *There is an association between remote work and the worker's service time.*

**vs**

**H<sub>3</sub>.** *There is no association between remote work and the worker's service time.*

In this regard, the null hypothesis (H<sub>0</sub>) is rejected, since  $p\text{-value} = 0.703 > 0.05$ ; therefore, it is confirmed that there is no association between remote work and workers' service time, as shown in Tables 13 and 14.

**Table 13.** Cross table of remote work level and service time.

			Time Service			
			1 to 5 Years	6 to 11 Years	More Than 12 Years	Total
Remote Work	Low	Count	32	21	21	74
		% within the gender of the person	28.6%	25.6%	25.9%	26.9%
	Medium	Count	47	36	29	112
		% within the gender of the person	42.0%	43.9%	35.8%	40.7%
	High	Count	33	25	31	89
		% within the gender of the person	29.5%	30.5%	38.3%	32.4%
Total		Count	112	82	81	275
		% within the gender of the person	100.0%	100.0%	100.0%	100.0%

**Table 14.** Chi-square tests: remote work and time of service.

	Value	df	Asymptotic (Bilateral) Significance
Parson chi-square	2.177 <sup>a</sup>	4	0.703
Likelihood ratio	2.153	4	0.708
linear by linear association	1.019	1	0.313
No of valid cases	275		

<sup>a</sup> 0 cells (0.0%) have expected a count less than 5. The minimum expected count is 21.80.

Finally, the association between the workers' working hours and remote work was verified, and in this sense, the following hypotheses were established:

**H<sub>0</sub>.** *There is an association between remote work and the worker's workday.*

**vs**

**H<sub>4</sub>.** *There is no association between remote work and the worker's workday.*

In this sense, the null hypothesis (H<sub>0</sub>) is rejected, since  $p\text{-value} = 0.337 > 0.05$ ; in other words, it is verified that there is no association between remote work and workers' working hours, as presented in Tables 15 and 16.

#### 4.2. Descriptive Study of the Remote Work Variable and Its Dimensions, According to the Measures of Central Tendency and Dispersion

Table 17 presents the results of the measures of central tendency and dispersion of the variable and its dimensions. Remote work presented an average of 2.05, standard deviation of 0.77 and covariance of 0.59. For the flexibility dimension, the mean was 2.03, the deviation was 0.76 and the variance was 0.58. The autonomy dimension presented a mean of 2.13, deviation of 0.82 and variance of 0.68.

**Table 15.** Cross table of the level of remote work and working hours.

			Workday		Total
			Full Time	Part Time	
Remote Work	Low	Count	43	31	74
		% within the gender of the person	24.0%	32.3%	26.9%
	Medium	Count	76	36	112
		% within the gender of the person	42.5%	37.5%	40.7%
	High	Count	60	29	89
		% within the gender of the person	33.5%	30.2%	32.4%
Total		Count	179	96	275
		% within the gender of the person	100%	100%	100%

**Table 16.** Chi-square tests: remote work and working hours.

	Value	df	Asymptotic (Bilateral) Significance
Pearson chi-square	2.177 <sup>a</sup>	2	0.337
Likelihood ratio	2.142	2	0.343
linear by linear association	1.416	1	0.354
No of valid cases	275		

<sup>a</sup> 0 cells (0.0%) have expected a count less than 5. The minimum expected count is 25.83.

**Table 17.** Measures of central tendency and dispersion of the variable and its dimensions.

Variable/Dimension	Mean	Median	Mode	Standard Deviation	Variance
Remote work	2.0545	2	2	0.7694	0.5919
Flexibility	2.0291	2	2	0.7588	0.5758
Autonomy	2.1309	2	3	0.8223	0.6762
Productivity	2.0400	2	2	0.7511	0.5641
Technology	1.9636	2	1	0.8319	0.6921
Psychosocial Risks	2.0364	2	2	0.7868	0.6191

Regarding the productivity dimension, the average was 2.04, the deviation was 0.75 and the variance was 0.56. Regarding the technology dimension, the average was 1.96, the deviation was 0.83 and the variance was 0.69. Finally, in the psychosocial risks dimension, the mean was 2.04, the was deviation 0.79 and the variance was 0.62.

These findings indicate that, in general, remote work among Peruvian workers during the COVID-19 pandemic was at a regular level, given the unforeseen conditions of its implementation and the legal regulations issued by the Peruvian government, with the aim of protecting workers' rights.

#### 4.3. Descriptive Study of the Remote Work Variable and Its Dimensions, According to Absolute and Relative Frequencies

In reference to the descriptive findings of the remote work variable in Peruvian workers during the COVID-19 pandemic, as shown in Table 18, 40.73% of the respondents

indicate that this variable is located at a medium level, 32.36% place it at a high level and 26.91% place it at a low level. Indeed, these results reflect that remote work during the health crisis has a medium level for the majority of workers surveyed. As a consequence of the unexpected and unplanned implementation of this form of work, the workers found themselves in a position of change forced by sanitary conditions.

**Table 18.** Level of the remote work variable in Peruvian workers during COVID-19.

Variable	Level	Frequency (f)	Percentage (%)
Remote work	High	89	32.36
	Medium	112	40.73
	Low	74	26.91
Total		275	100.00

Regarding the descriptive analysis of the flexibility dimension of remote work, 42.55% of the respondents report a medium level, 30.18% indicate that there is a high level and 27.27% affirm that there is a low level. These findings show that the majority of respondents think that the flexibility provided by remote work during the health crisis is medium, where the freedom and ability to adapt to alternate one's personal life with one's work life in an adequate way stand out, allowing one to be able to share more time with one's family and at the same time accomplish one's work activities.

In the case of the autonomy dimension of remote work, 41.09% of those surveyed indicate that they perceive a high level, 30.91% that there is a medium level and 28.00% that they perceive a low level. In other words, the majority of workers indicate that the autonomy of remote work during the health crisis is at a high level, considering the possibilities of carrying out other tasks during confinement and the freedom to make decisions related especially to the planning of a working day.

In relation to the productivity dimension of remote work, 43.64% of those surveyed perceive a medium level, 30.18% a medium level and 26.18% a low level. This evidence shows that the majority of workers surveyed affirm that there is a medium level of productivity in remote work, considering that there are various factors that improve productivity, such as flexibility itself, as well as fluid communication with the work team through electronic means.

For their part, in the technology dimension of remote work, 36.36% of those surveyed indicated that there is a low level, 32.73% that there is a high level and 30.91% that there is a medium level. The results show that the majority of workers perceive a low level of technology as a tool for remote work during the pandemic; this indicates low knowledge of ICT, as well as the absence of digital skills. In addition, the impact of the management of technological platforms for the development and reporting of work activities is presented, due to the change in the way of working, a situation for which they were not prepared.

Finally, in the psychosocial risks dimension of remote work, 38.18% of those surveyed affirm that there is a medium level, 32.73% affirm that there is a high level and 29.09% affirm that there is a low level, as shown in Table 19. It is interesting to note that despite the fact that the implementation of remote work was carried out unexpectedly and without planning, the majority of workers believe that it has a medium level. The main causes indicate that the impact on people's way of life and work, confinement and subsequent adoption of remote work moderately affected the mental health and interpersonal relationships of workers.



**Table 19.** Level of remote work dimensions in Peruvian workers during the COVID-19 pandemic.

Dimensions	Level	Frequency (f)	Percentage (%)
Flexibility	High	83	30.18
	Medium	117	42.55
	Low	75	27.27
	Total	275	100.00
Autonomy	High	113	41.09
	Medium	85	30.91
	Low	77	28.00
	Total	275	100.00
Productivity	High	83	30.18
	Medium	120	43.64
	Low	72	26.18
	Total	275	100.00
Technology	High	90	32.73
	Medium	85	30.91
	Low	100	36.36
	Total	275	100.00
Psychosocial Risks	High	90	32.73
	Medium	105	38.18
	Low	80	29.09
	Total	275	100.00

## 5. Discussion

This study seeks to provide knowledge for the understanding of remote work in Peruvian workers, as an alternative to the declaration of the COVID-19 virus as a pandemic and the consequent restrictions. In the same way, it seeks to analyze the degree to which the ways of working have changed since this event.

In order to have an adequate context of the characteristics of the sample, a descriptive analysis of the sociodemographic data was carried out, showing that the majority of the surveyed workers are men. In the same way, the majority of those surveyed are between 41 and 50 years old. Regarding the service time, most of the respondents have between 1 and 5 years of service. Finally, regarding the working hours they complete, the majority of those surveyed work full-time.

The inferential analysis of the association between remote work and sociodemographic variables such as gender, age, length of service and working hours, using the chi-square test, showed that there is no association between these variables and remote work, with  $p$ -value  $> 0.05$ . These findings differ from those of [Izdebski and Mazur \(2021\)](#), who determined that the mental health symptom level index was 40.91 and the mental health symptom change index was 60.51. In both cases, a worse assessment was obtained in women than in men. On the other hand, the linear regression results suggest that the increased rate of change in mental health symptoms is impacted by female gender, college education and remote work.

For the variable remote work in Peruvian workers during the COVID-19 pandemic, the descriptive results reflect that the majority (40.73%) of the respondents indicated that there is a medium level. Considering that the declaration of COVID-19 as a pandemic was something unexpected for companies, the Peruvian government implemented emergency measures, including mandatory confinement and the closure of workplaces. This led companies to adopt remote work as an alternative to continue with their economic activities. Consequently, the lack of planning and the need to continue working forced people to adapt quickly, the effects of which had a medium impact on their lives.

Similarly, Uribe Kajat et al. (2021) conclude in their study about the opinion of workers on the implementation of remote work as a result of the pandemic; 47% expressed that they are indifferent, 33% agreed with this form of work, 18% said they disagreed, 2% strongly agreed and 1% strongly disagreed.

In addition, the results of the present study are similar to those of Błaszczuk et al. (2022), who determined that one in three respondents prefers to work entirely remotely. Likewise, workers reported their preference for a hybrid work model with a predominance of remote work, while one in five respondents opted for the hybrid model with a preference for stationary work.

According to Popovici and Popovici and Popovici (2020), the official data of people who worked in the European Union under the remote work modality in 2019 indicate that 5.4% of people worked remotely. The Netherlands and Finland had the highest rates of remote work, at 14.1%; the lowest rates were in Bulgaria and Romania with 0.5% and 0.8%, respectively. These data changed drastically as a result of the pandemic; more and more companies have adopted this way of working, and it will continue to increase due to the context of uncertainty introduced by the global health crisis.

Likewise, de Araújo and Lua (2021), who developed a study in Brazil on remote work, concluded that not all professions or trades allow remote work to be adopted. Examples include informal activities that have low use of technology, among them agriculture, domestic work and informal commerce. This allows us to understand the differences in remote work in various Brazilian regions, because the lower the required qualification, the lower the adoption and the lower the use of remote work. In addition, remote work is more used in trades traditionally performed by women, such as education, science and administrative support.

On the other hand, the results are different from those of Donati et al. (2021), who evaluated remote work from the level of employees and the factors related to the implementation of this modality. That domain consisted of company size, previous remote work experience, teamwork, workload, and number of children. Consequently, they identified five different groups of workers: face-to-face workers, lone workers, SMB remote workers, early-stage remote workers from large companies and experienced remote workers from large companies.

Regarding the flexibility dimension of remote work, the majority (42.55%) of the workers reported a medium level. This shows that flexibility as a characteristic of remote work had a positive impact on freedom and adaptability, as well as on the possibility of balancing private and work life, considering that aspects such as company support, adequate communication with the work team, achievement of goals and execution time of activities had a positive development.

These results are similar to those of Ferreira et al. (2021), who specified that flexibility positively influences the balance of work and personal life of workers, making them manage the most efficient way of working, which also influences their job satisfaction.

In relation to the autonomy dimension of remote work, the majority (41.09%) of the workers perceived a high level. This evidence reflects that workers perceive the autonomy provided by remote work as something positive, which allowed them to have freedom in planning tasks and their execution, as well as in decision making.

These results are in line with those of Wang et al. (2021), who in their study on effective remote work and its design during the COVID-19 pandemic specified that autonomy is a fundamental aspect for workers. Labor autonomy is favorable for the performance and well-being of workers since people with greater autonomy can balance work and rest, as well as choose the most productive ways to carry out their tasks. Similarly, they identified that labor autonomy is beneficial for a healthy work–family relationship.

Likewise, van Zoonen et al. (2021), in their study on the factors that influence the adaptation to remote work during the start of the pandemic in Finland, determined that work independence (autonomy) and the clarity of work criteria help to improve the adaptation of workers in remote work environments.

Regarding the productivity dimension of remote work, the majority (43.64%) of the workers indicated that there is a medium level. Among the aspects that they considered important and positive to improve their productivity are working conditions, teamwork, working from home and improving relationships with the family.

In a similar study, [Galanti et al. \(2021\)](#) determined that autonomy and self-leadership have a positive relationship with productivity and work commitment. In general terms, promoting autonomy and self-leadership can be an alternative that increases the effectiveness of the company's objectives and planning. In this sense, training can be carried out and schedules of activities and times can be established, based on work goals to be met, to improve productivity.

Additionally, [Galanti et al. \(2021\)](#) identified that remote work can be a valid and applicable alternative, especially for people worried about contracting COVID-19, considering that the fear of this virus is positively associated with high levels of productivity and commitment. That is, people emotionally affected by the virus reported being more productive and motivated working remotely.

According to [Ferreira et al. \(2021\)](#), promoting the benefits of remote work and establishing an appropriate organizational culture minimize resistance to change and improve productivity, as well as morale.

Within this framework, the study by [Toscano and Zappalà \(2020b\)](#), referring to social isolation and stress as predictors of perceived productivity and job satisfaction during the pandemic, determined that the positive relationship between perceived remote work productivity and satisfaction increased in workers less concerned about the virus, while it decreased in those who were more concerned. This means that remote job satisfaction was higher for workers with higher perceived productivity and less fear of the virus.

On the other hand, in the technology dimension of remote work, the majority (36.36%) of the workers indicated that there is a low level. These results allow us to interpret that the adaptation to the technological platforms, the ICT and the digital competences necessary for the execution of tasks was slow and difficult, considering that the change was unexpected and without planning.

According to [Sengupta and Al-Khalifa \(2022\)](#), in their study on the remote work arrangements imposed by the pandemic, workers found it difficult to maintain fluid communication and collaboration with their collaborators, since they were not used to working with virtual tools and digital platforms.

In contrast, the results of [Uribe Kajat et al. \(2021\)](#), who in their study determined the technological support received by workers during the pandemic, reflect that the majority of those surveyed reported feeling indifferent or in agreement regarding the support they received from the company. In other words, the organizations did everything possible so that the tasks were not affected by the level of use of technological tools.

Finally, in the psychosocial risks dimension of remote work, the majority (38.18%) of the workers stated that there is a medium level. The risks to health, specifically to mental health, are one of the most critical aspects of the implementation of remote work. The workers had a double fear: the fear of themselves or their relatives contracting COVID-19 and the fear of not being able to meet work objectives by working from home.

In the same way, [Sengupta and Al-Khalifa \(2022\)](#) point out that the degree of uncertainty faced during the pandemic produced feelings of discomfort and established venturing to work outside the home as a health risk, generating an environment of uncertainty and anxiety. Consequently, the workers saw their nerves affected, causing them to lose concentration and affecting their mental health.

Consistently, [Izdebski and Mazur \(2021\)](#), in their study on changes in the mental well-being of adults at the beginning of the pandemic in relation to their occupation and remote work, verified that the associated restrictions had a negative impact on the mental health of workers. Aspects related to the decline of mental health were associated with the female gender and the vision of the deterioration of the professional situation.

Likewise, these findings coincide with those of [Kondratowicz et al. \(2022\)](#), who determined the existence of a relationship between remote work during the pandemic and job and personal satisfaction, with the degree of stress, self-efficacy and self-esteem playing a mediating role in this relationship. In other words, remote work is associated with personal and job satisfaction in a positive way.

## 6. Conclusions

The present investigation allowed us to characterize remote work in Peru during the COVID-19 pandemic and also helped to establish the most important aspects that affected workers who switched to this modality due to the health crisis. These aspects were as follows: flexibility, autonomy, productivity, technology and psychosocial risks.

Before the appearance of the COVID-19 pandemic, remote work was already implemented, conservatively and for specific occupations. As a result of the health crisis, mandatory confinement was something that impacted companies and organizations, leading to the need for them to consider alternatives to not completely close their operations. Consequently, remote work constituted a valid alternative, which indisputably had effects on the lives of workers.

The findings of this study reflect that Peruvian companies implemented remote work in an improvised manner and without planning, despite the fact that the government developed laws to establish standards and conditions for the benefit of workers.

Therefore, Peruvian workers felt the effects of the flexibility of remote work moderately, since they received support from the organization and had adequate adaptation and appropriate communication with their collaborators. In contrast, the workers perceived a high level of autonomy, which gave them the freedom to carry out the tasks at their convenience, plan their activities and make decisions in this regard.

Regarding the level of productivity of the workers in the remote modality, they reported a medium level, considering that the company carried out the control and follow-up of the tasks, the analysis of the goals achieved and the performance evaluation. In addition, they stated that they worked as a team adequately and were overloaded with work at the beginning of the pandemic.

Regarding technology as a component of remote work during the COVID-19 pandemic, workers reported a low level, considering that they did not have the required technological infrastructure or knowledge about communication platforms and in general had deficiencies in the necessary digital skills.

On the other hand, the psychosocial risks of workers during the COVID-19 pandemic reached a medium level, since the impact on their way of life was very great. The subsequent transfer from work to home caused those moments of stress, and anxiety and in some cases increased motivation and creativity, considering that they had to deal with social isolation.

In conclusion, it can be said that there is a before and after for remote work and that this form of work is here to stay. Therefore, companies must evaluate the advantages, disadvantages, effects and consequences of remote work in their human talent and in their organization, before adopting it.

One way to promote the implementation of remote work is through the promulgation of laws and regulations by the competent authorities. This suggests that companies adopt this way of working, as long as their economic support allows them. In turn, this, carried out properly, will benefit the workers and their family–work relationships and reduce expenses and pollution.

In the Peruvian context, companies have been increasingly implementing remote work; however, working conditions, salaries and incentives, among others, must be improved. Likewise, the stability of the work and the productivity of the employer must be ensured, minimizing the risks of contagion in the workplace or during the transfer, as well as preserving the health of workers and their families in response to COVID-19.

This research contributes to understanding and analyzing how the pandemic determined the adoption of remote work in Peru as a solution to the contingency, and it will also provide a starting point to continue delving into this topic in case of future events.

The limitations of this study include the fact that it was developed based on the workers of two companies with economic activity that allowed them to adopt this modality during the crisis; therefore, the results cannot be generalized to workers of all the companies. In addition, it was developed in Peruvian companies; therefore, it cannot be generalized to other countries or regions. On the other hand, the study was developed with a descriptive level, which only allows the observation, organization, simplification and description of the relevant information of a sample, in relation to the study variable.

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