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Investigating Remote Working Spaces during the COVID-19 Pandemic

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Abstract

The business world has experienced a pandemic for three years, affecting the workforce's productivity and efficiency. Since workers' well-being and satisfaction are crucial to effective workforce management, organizations and authorities make the employee's well-being and satisfaction the primary target to be achieved even in the post-pandemic period. Many countries and organizations have developed strategies to meet the emerging requirements of the business world. Like other countries, many of the workgroups in Türkiye were also forced to adopt working-from-home (WFH) practices. Although a substantial number of research studies were conducted for investigating well-being and productivity, there is still a need for empirical studies investigating WFH satisfaction and the well-being of workers to be used as a reference and guide for research. A survey was designed and implemented among employees from Türkiye to inspect and measure negative and positive relations between the physical work environment, well-being, and satisfaction of WFH workers. Regarding the range of participants, the survey results could be generalized to illustrate challenges, conditions, and aspects of working-from-home practices in Türkiye to define remote working spaces.

Keywords: *Remote working, employee comfort, working conditions, Covid-19, space features.*

Covid- 19 Pandemisi Süresince Uzaktan Çalışma Mekanlarının Araştırılması

Öz

İş dünyası üç yıldır süren bir pandemi deneyimi yaşadı ve bu durum işgücünün verimliliği ve etkinliği üzerinde etkili oldu. Çalışanları refahı ve memnuniyeti etkili işgücü yönetimi için önemli olduğundan, kuruluşlar ve yetkililer, çalışanların refahını ve memnuniyetini pandemic sonrası dönemde bile ulaşılması gereken birincil hedef olarak belirlemektedir. Birçok ülke ve kuruluş, iş dünyasının ortaya çıkan gereksinimlerini karşılamak için stratejiler geliştirmiştir. Diğer ülkeler gibi, Türkiye'deki birçok çalışma grubu da evden çalışma uygulamalarını benimsemek zorunda kalmıştır. Performans, refah ve verimlilki konusunda önemli sayıda araştırma yapılmış olmasına rağmen, çalışanların evden çalışma memnuniyeti ve refahını inceleyen ampirik çalışmalara ihtiyaç duyulmaktadır. Bu tür çalışmalar, referans ve araştırma rehberi olarak kullanılmak üzere Türkiye'deki çalışanların evden çalışma memnuniyeti ve refahını incelemek ve ölçmek için bir anket tasarlanmış ve uygulanmıştır. Katılımcılar aralığı açısından, anket sonuçları, zorlukları, koşulları ve evden çalışma uygulamalarının yönlerini belirlemek için genelleştirilebilir ve Türkiye'deki uzaktan çalışma alanlarını tanımlayabilir.

Anahtar kelimeler: *Uzaktan çalışma, çalışan konforu, çalışma koşulları, Covid-19, mekan özellikleri.*

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1. Introduction

With the sudden spread of COVID-19 in early 2019, lockdowns were introduced, movements were restricted, and people were forced to stay at their homes worldwide (Selvaraj, Krishnamoorthy, Vivekanandhan & Manoharan, 2022). The sudden shock of society due to restrictions and illness has caused social changes (Houweling, Power & Smith, 2022), addressing both positive and negative aspects of the well-being of people (Lemoine, Ebert, Koga & Bertin, 2022). Many business models have been transformed into remote and distributed working practices since people were locked in their homes. The new working formation is called Working-From-Home (WFH).

WFH has been so sudden for people worldwide that adjustments of individuals and organizations were significant, fast, and notable and impacted everyone within the same, very short time (George, Atwater, Maneethai & Madera, 2022). Organizations have not had time and chance to plan and intervene with measures designed to make the transition smooth for the workers. On the other hand, it was challenging for both organizations to establish effective business management and for employees to create an efficient working environment.

The pandemic changed to the epidemic in early 2022, and the business industry has returned to regular office work. On the other hand, literature has stated that the particular impact of the pandemic has continued and affected both business management and employee satisfaction. Workers demand and expect the ability to work remotely (Bhushan, Brown, Stubbings & Davies, 2021; Jordan & Baker, 2022; Osibanjo, 2022), the inclusion of the home as an alternative workplace (Bhushan et al., 2021; McLaurin, 2022), increased privacy since they were at a certain level of privacy during WFH (McLaurin, 2022), priority for health and well-being (Jordan & Baker 2022; McLaurin, 2022; Moss, 2022), seek for better work-life balance (Aaron, Dowling, Mugayar-Baldocchi & Schaninger, 2021; Bhushan et al., 2021; Craven, Staples & Wilson, 2022; Klein, Cameron & Basiouny, 2022; Moss, 2022; Osibanjo, 2022) and more green and sustainable life (Boyd, O'Keeffe & Sheth, 2022; Francis, Madgavkar & Smit, 2022; Schwab & Sternfels, 2022).

Since workers' well-being and satisfaction are crucial to effective workforce management, organizations, and authorities make the employee's well-being and satisfaction the primary target to be achieved even in the post-pandemic period. Many countries and organizations have developed strategies to meet the emerging requirements of the business world. Türkiye has a significant number of workers employed in various business sectors. Like other countries, many of the workgroups in Türkiye were also forced to adopt WFH practices. Although a substantial number of research studies were conducted for investigating specific work groups' performance, well-being, and productivity, there is still a need for empirical studies investigating WFH satisfaction and well-being of workers to be used as a reference and guide for research. Especially physical work environment and the impact of its upon well-being and satisfaction of WFH workers were investigated in this study.

2. Material and Method

The research aims to present Türkiye-specific WFH challenges and negative and positive aspects by addressing well-being and productivity dimensions. The practical approach of the study is to explore the relationship between the workplace's conditions and workers' feedback about productivity and social well-being. Firstly, existing studies on evaluating remote working experiences, their contributions, and gaps are investigated. Secondly, the criteria used to measure well-being and productivity are explored to construct the survey objectives. As indicated in Figure 1, the research study outlines the problem of WFH practices in Türkiye regarding the literature data, establishes a survey framework, executes the survey, analyzes the findings, and concludes and discusses the results.

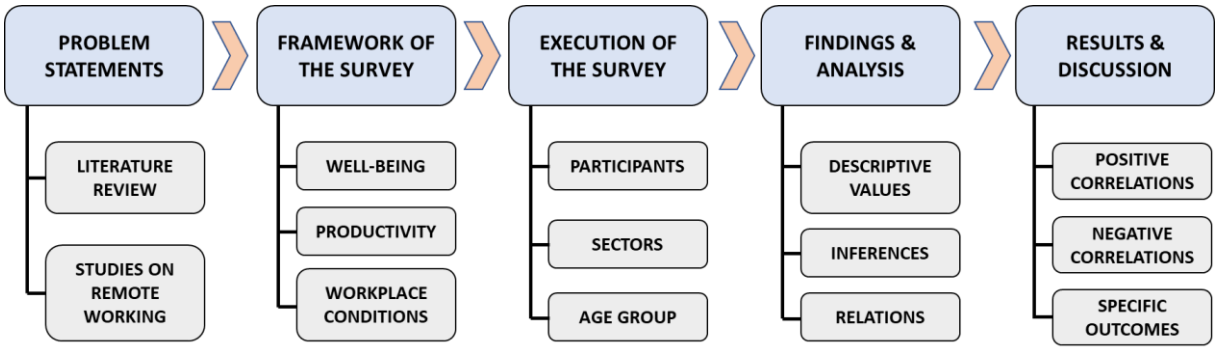

Figure 1. Research outline

2.1. Studies About the Remote Working

The literature review study focused on discussions about WFH practices. The scholar's findings about the WFH range as illustrated in Table 1. Some of the scholars stated that since WFH is working, there is no need for physical space out of the home for working (BBC Worklife 2020; Dickler 2021; Lufkin 2021; Morgan 2021; O'Connor 2021; Parker et al. 2020; Rubinstein 2021). The people on this side of the argument presented that the home environment is more suitable for them than offices due to its comfortable and flexible work environment. On the other hand, there were also opposite solid findings expressing that home cannot be an alternative to office workspaces (BBC Worklife, 2020; Hickok, 2021; McMenamin, 2021; Morgan, 2021; O'Connor, 2021; Parker et al., 2020; Yeung, 2021). Parents especially suffer from not finding a proper work environment at home since lockdown conditions stated that their responsibility has increased in both work and parental duties. Another group of scholars argues that WFH and resulting habits will terminate open office plans and culture (Johanson, 2021; Morgan, 2021; O'Connor, 2021; Rubinstein, 2021). The organizations have still been demanding a central office that would serve as headquarters; there is still a need for an analog world requiring address and physical existence at face-to-face communication (BBC Worklife, 2020; Lufkin, 2021; Morgan, 2021; O'Connor, 2021).

In early 2022, many countries slowly eased certain restrictions due to a typical fall in disease numbers. Organizations have started to call back their staff to their central office. On the other hand, many employees were already volunteers to return to the office; many resisted experiencing pre-pandemic office conditions again. People were getting used to the home environment's comfort, personalization, and flexibility. Furthermore, some employees consider resigning if they are not provided flexible time and work (O'Connor, 2021; Yeung, 2021). The companies have been required to not only re-design and arrange office environments but also the working schedule of employees in compile with COVID-19 guidelines where these new environments and working styles are called hybrid work. The hybrid work model allows employees to retain the flexibility of working from home and still have the kind of in-office contact with colleagues that strengthen teams and collaboration (Rubinstein, 2021).

Table 1. Existing discussions and arguments about working from home during the COVID-19 pandemic

Title	Arguments	Sources
Remote work is working. So, why do we need a physical space?	• Employees' adaptability to remote work is apparent. • Employees have proved remote work is both possible and profitable. • An office is not necessary for productivity. • There are proper work environments at home, enabling much more comfortable and flexible work than in an office environment. • Employees seek flexibility in terms of when and where to work. • Employers would like to decrease operation costs by eliminating the real estate cost of offices. Thus, working outside the office is good for them.	(BBC Worklife, 2020; Dickler, 2021; Lufkin, 2021; Morgan, 2021; O'Connor, 2021; Parker et al., 2020; Rubinstein, 2021)

The home is not suitable for being an alternative to the office workplace	• Parents do not desire to be at home working. • Being in the office enables focusing and getting away from home environmental factors preventing concentration. • There are too many interruptions at home. • The office environment is designed for productivity and the well-being of employees, while the home environment is designed for the family's life. Therefore, a home design needs a substantial change to achieve the same performance caught at the office workplace. • The corporate culture of companies expressed in the office environment cannot be dictated when employees do not stay there.	(BBC Worklife, 2020; Hickok, 2021; McMenamin, 2021; Morgan, 2021; O'Connor, 2021; Parker et al., 2020; Yeung, 2021)
The end of the open office plan and culture	• Employees seek more activity-oriented workplaces for meeting various services instead of a monotonous open plan expressing the same identity everywhere. • Employees do not want to return to the old working culture. They seek flexibility regarding when and where to work at the office and at home.	(Johanson, 2021; Morgan, 2021; O'Connor, 2021; Rubinstein, 2021)
The corporate headquarters	• Companies still need a central office that would serve as the headquarters. • There are still analog worlds requiring address. • The office is a way to express company identity. • The office is a collection of company-specific culture, providing a sense of belonging to both customers. • Physical existence instead of online collaboration and communication is still valuable for some people.	(BBC Worklife, 2020; Lufkin, 2021; Morgan, 2021; O'Connor, 2021)

Following the decrease in diseases, many governments announced returning to normal life conditions by still obeying specific COVID-19 guidelines. On the other hand, discussions continue about WFH and the centralized office concept. Covid requirements for presenting a healthy workplace have forced the organization to eliminate open-plan, co-working, hot desking, and other shared desk concepts, which were the familiar office pattern of the pre-pandemic business world (Cummins & Johanson, 2020). These new conditions bring extra operation costs for the organizations to meet both the requirements of COVID-19 transmission concerns and corporate profit and productivity challenges.

Many countries release WFH practice reports representing the workers' comfort, challenges, and productivity concerns, as depicted in Table 2. The results vary regarding the well-being and comfort of workers during working-from-home practices. Some workers stated that their jobs could be done from Home (Parker et al., 2020). Working mothers and parents struggle to balance work and family responsibilities (Houweling et al., 2022; Mars, Arroyo & Ruiz 2022; O'Connor, Wetherall, Cleare, McClelland, Melson, Niedzwiedz, O'Carroll, O'Connor, Platt, Scowcroft, Watson, Zortea, Ferguson & Robb, 2021; Parker et al., 2020). The well-being of the workers was decreased due to lockdown conditions (Houweling et al., 2022; Juchnowicz & Kinowska, 2021; Mars et al., 2022; Mostafa, 2021; O'Connor, Conboy & Dennehy, 2021; PARKER et al., 2020). On the other hand, there were studies indicating improvement in the productivity and well-being of workers (George et al., 2022; Mostafa, 2021; O'Connor et al., 2021). Furthermore, people's positive expectations about WFH and the pandemic represented much more satisfaction and productivity (Fida, Paciello, Watson, & Nayani, 2022; Zion, Louis, Horii, Leibowitz, Heathcote & Crum, 2022).

Table 2. Working from home practice findings in the literature

Source	Research Field and Group	Findings
(Parker et al., 2020)	United States citizens forced to be work-from-home	• 40% of the workers' jobs can mostly be done at Home • 50% of the parents working from home have been confronted with home-related interruptions • A significant portion of the workers prefer working from home
(Mars, Arroyo & Ruiz 2022)	1827 citizens in the Valencian Region of Spanish	• The youngest participants and females present lower values of psychological well-being. • Those who walked more are related to lower values of well-being.
(Bamberry, Neher, Jenkins, Sutton, Frost, Roberts, Dwivedi, Omeara & Wong, 2022)	665 police professionals from all states and territories in Australia	• Increased stress, anxiety, and occupational burnout have been found • The rapid change in environmental factors has increased their stress. • Police were dealing with increased domestic violence, mental health cases, and alcohol consumption, resulting in assaults and antisocial behavior.
(O'Connor, Wetherall, Cleare, McClelland, Melson, Niedzwiedz, O'Carroll, O'Connor, Platt, Scowcroft, Watson, Zortea, Ferguson & Robb, 2021)	3077 adults in the UK participated in the survey. The survey covers waves 1 (31 March to 9 April 2020, 2 (10 April to 27 April 2020), and 3 (28 April to 11 May 2020)	• Symptoms of anxiety and levels of defeat and entrapment decreased • Positive well-being increased when compared with first-wave results • The level of loneliness did not change over the waves • Mental health problems have worsened in the following groups: Women, young people, those from more socially disadvantaged backgrounds, and those with pre-existing mental health problems
(Zion et al., 2022)	5,365 American adults participated in the survey conducted in March 2020.	• Agreement with the opportunity mindset is related to more significant positive affect, more experiences of growth/connection, fewer experiences of isolation/meaninglessness, and better well-being.
(Fida et al., 2022)	393 full-time employees participated in the UK across three waves (January 2020, October 2020, and January 2021)	• Being in two at-risk profiles significantly increases the likelihood of experiencing lower well-being during the pandemic. • The probability of belonging to Profile 2, "high assertive and task self-efficacy but low emotional," also significantly increased the risk of lower well-being in the longer timeframe.
(Mostafa, 2021)	318 employees participated in Egypt during the post-Covid-19 quarantine period	• Employees' perception of remote working significantly positively affects psychological well-being and work-life integration. • A significant negative effect of employees' perception of remote working and emotional exhaustion
(Juchnowicz & Kinowska 2021)	1000 Polish workers participated in the survey conducted in January 2021	• Working exclusively remotely was shown to negatively affect well-being in terms of workplace relationships and work-life balance. • There was no statistically significant association between remote working and subjective health assessment.
(George et al., 2022)	278 US workers who reported spending at least 50% of their time working at home or remotely rather than at their usual workplace participated in the survey	• Nearly half of the respondents report that their responsibilities, working hours, accountability, and demands have not changed. • 56% agree that the experience of working at home has been permanently transformative in a positive way • 61% agreed that if they had a choice, they would continue working remotely even when no longer necessary • Respondents perceive WFH as having a solid and positive impact on the aspects of work.
(Houweling et al., 2022)	274 UK parents participated in the survey conducted between February-May 2021	• Surveyed parents lacked space as well as time. • The difficulties of inadequate living space experienced widely during lockdown draw attention to those experiencing persistent social inequalities.

(Schifano, Clark, Greiff, Vögele & D'Ambrosio 2021)	More than 8,000 people from France, Italy, Germany, Spain, and Sweden, covering the period May–November 2020	• Well-being among workers is lower for those who work from home, and those who are not working have the lowest well-being of all. • Policy stringency is always negatively correlated with well-being. • The well-being penalty for working at home is more significant for the older, the better-educated, those with young children, and those with more crowded housing.
(Olsen, Hildrum, Kummen & Leirdal 2023)	The study uses data from a survey among young employees in a telecommunications company in Norway conducted in May 2021	• The results show that the difficulty of work tasks is positively related to stress, while time spent working from home, managing work-life balance, and receiving support from leaders are negatively related to stress. • A dedicated workspace at home is unrelated to job stress or engagement, and no gender differences exist.

The literature presented various outcomes for WFH practices during the pandemic lockdown. It is hard to result in a typical attitude toward WFH practices. On the other hand, organizations suffer from increased operating costs of the centralized office concept and some workers' insistence on WFH. However, organizations require not only developing and applying the right strategies for maintaining their operability but also challenging satisfying their employees' work environment.

The quality of most of the built environment in Türkiye, concerning comfort and well-being, was inspected as problematic by many Turkish scholars. Şentürk Sipahi & Yamaçlı explored the impact of daylight in dwelling units upon occupants' well-being. Even before the pandemic, the occupants spent 90% of their time in their homes. With the sudden spread of the pandemic, similar to other countries, People in Türkiye and their built environment were not ready and resilient to ensure the well-being of their users (Billur & Billur, 2020; Oğur, Özdede & Kalonya, 2022; Şentürk, Sipahi & Yamaçlı, 2021). Although findings about WFH practices during the lockdown vary in the literature depending on the country and focus group, there is less research on the well-being and productivity of workers in Türkiye during the WFH practices during the COVID-19 lockdown period. Regarding the gap in the literature, our research study investigates workers' satisfaction and comfort in experiencing WFH during the pandemic.

2.2. Survey and Variables

Surveys capture knowledge from the individual about their thoughts and behaviors (Marczyk, DeMatteo & Festinger, 2005). The themes aimed to measure should show the relationships and causality between facts. The questions, sample group, and execution procedure should be developed according to the survey's objectives. The survey was conducted among workers older than 20 with remote working experience during the pandemic. The survey was approved on 10.02.2023 and applied between 01.04.2022 and 09.05.2022. Questionary was delivered to the respondents by online survey system, and there was no restriction for the respondent selection to avoid focusing on a specific group. Any personal information has not been recorded. Any survey should have objectives and arrangements to avoid bias and conflicts. The objectives of measurements are listed as follows:

- Age, working conditions, and sector.
- Remote working frequency and remote working place type
- Physical conditions of remote working place
- Satisfaction level among spaces
- Productivity and well-being level during remote working

The question of the survey is designed to measure the objectives. Multiple choices diversify due to the fiction of the questions. The items are listed as follows:

- Questions 1, 2, 3, and 4 in order: Age, the density of traffic and population, sector, and occupation. The objective is to seek the relation of outcomes with a descriptive situation of respondents.
- Question 5: Remote working frequency in last two years and weekly. The objective is to ensure and measure respondents' remote working level.
- Question 6: The place of remote working with ratio (Home with private space, home, out of home)

- Questions 7 and 9 in order: The physical conditions of the home, the physical conditions of out of the home. The objective is to describe the features of remote working spaces.
- Questions 7 and 10 in order: Satisfaction level of the home, the satisfaction of out of the home. The objective is to measure the satisfaction level of respondents in remote working places.
- Question 11: The items related to productivity and well-being level during the remote working period.

3. Findings and Discussion

One hundred twenty-six respondents participated in the survey. Figure 2 and Figure 3 show the age distribution and traffic & and population features of the respondents' living environment. 63% of the group was between 31-45 years, and 24% was between 20-30 years. 87% of the respondents were between 20-45 years old and actively working. Figure 3 states that many respondents lived in areas with high traffic and population frequencies.

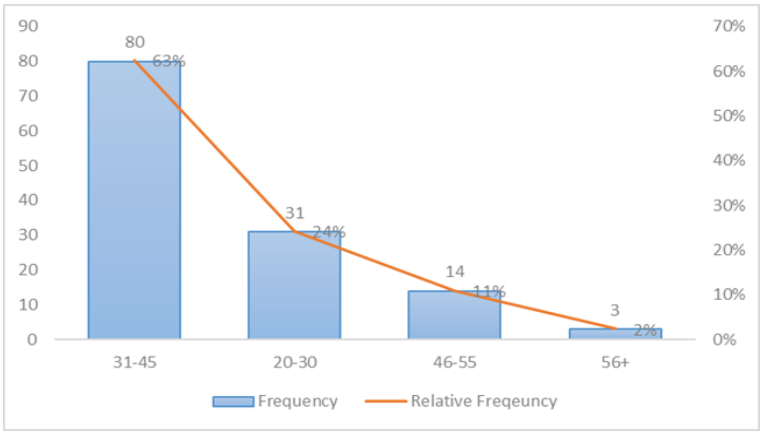

Figure 2. Age distribution

Figure 3 shows the relative and cumulative frequencies; 86 participants are in High Population and Traffic, 29 are in Mid Population and Traffic, and 13 are in Low Population and Traffic. Figure 4 shows the participants' distribution by the work area sector. With 36 people, Education &Consultancy has the most, while Sales &Marketing has the least participatory work area with ten people. Figure 5 shows the participants' distribution and relative frequencies according to the occupation type. Forty-four people are the highest frequency of the Full-Time category and the least number of participatory working types, with three people in the Freelance category.

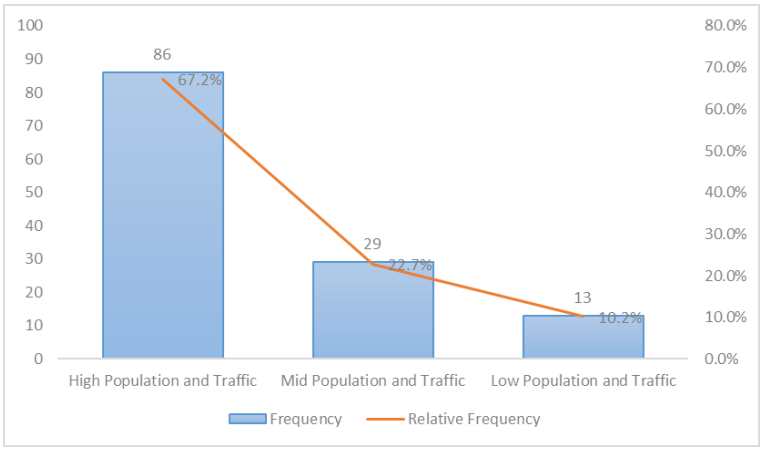

Figure 3. Traffic and population

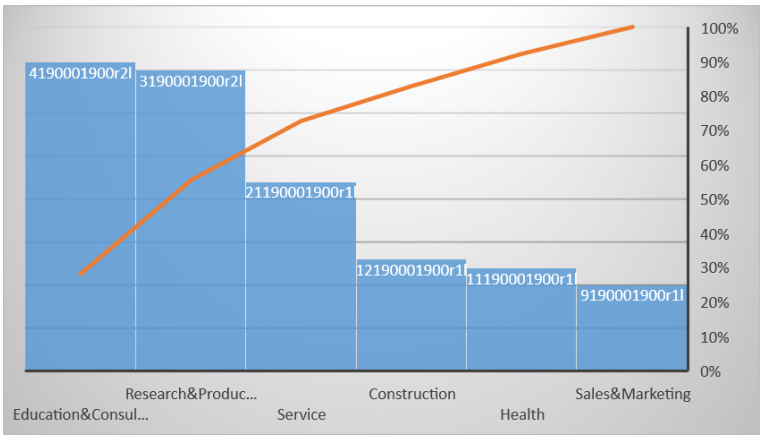

Figure 4. Working sector

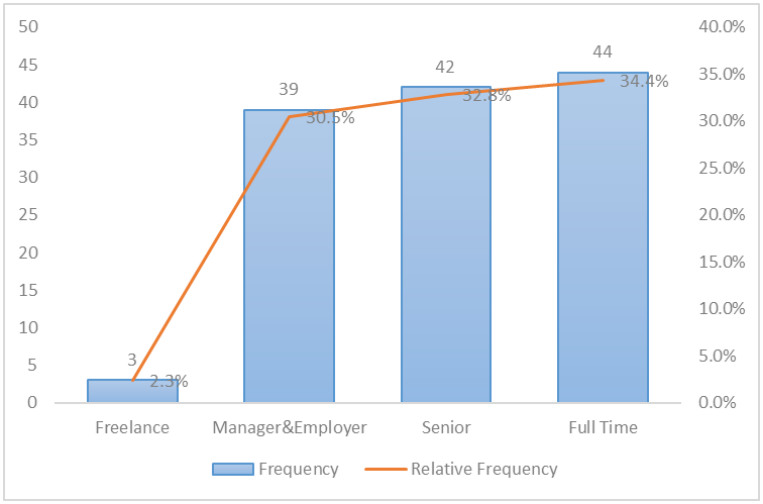

Figure 5. Occupation

Figure 6 shows the distribution and relative frequencies of the participants according to the type of remote work. The relative frequency of the Ratio of Yearly Remote Working was 51%, while the relative frequency of the Ratio of Weekly Remote Working was 49%. Figure 7 shows the distribution and relative frequencies of the participants according to the type of remote workplace. The relative frequency of "Remote Working Area (Private House Space)" was 51%, the relative frequency of "Remote Working Area (House)" was 39%, and the relative frequency of "Remote Working Area (Out of House)" was 14%.

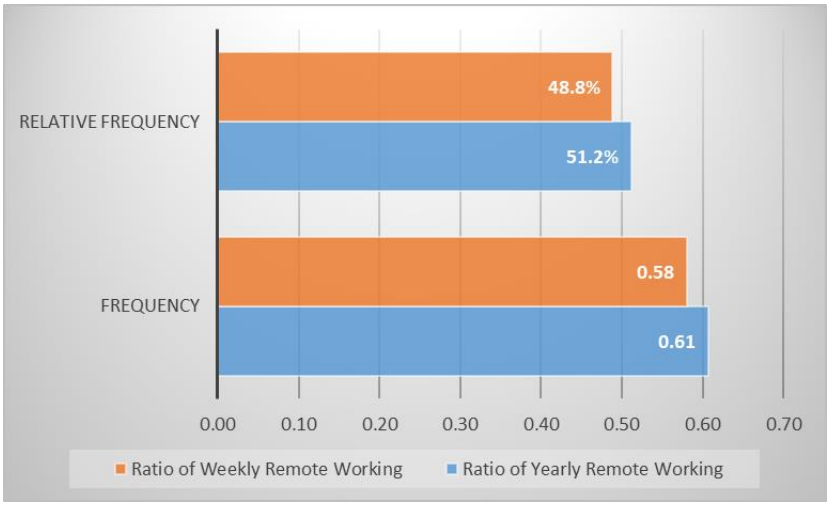

Figure 6. Remote working frequency

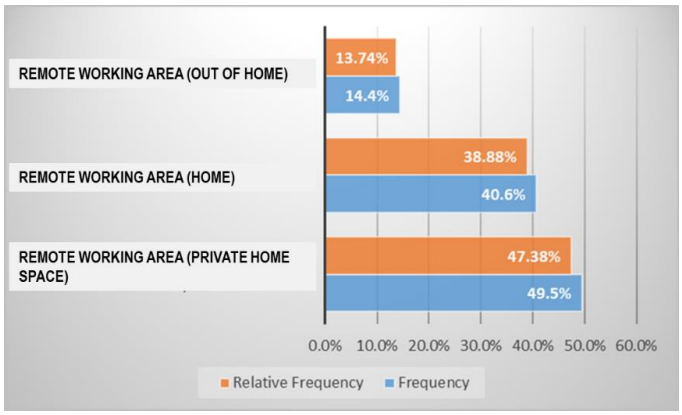

Figure 7. Remote working places

When the Ratio of Yearly Remote Working and Ratio of Weekly Remote Working participation rates are analyzed cumulatively, 47% of the participants were in the Remote Working Area (Private House Space), 39% in the Remote Working Area (House), and 14% in the Remote Working Area. (Out of House). Linear regression is used to study the linear relationship between a dependent variable Y () and one or more independent variables X (). The dependent variable Y must be continuous, while the independent variables may be continuous, binary, or categorical. The initial judgment of a possible relationship between two continuous variables should always be based on a scatter plot. Table 3 shows the calculations of the regression equation for working from home. The findings show that the equation explicitly created for "Remote Working Area (House)" is explained at a rate of 34% over independent parameters. The ratio of the explained to total variation is the sample coefficient of determination, which is 0.34 for this equation. The coefficient of determination measures the percentage of variability in Y, the Remote Working Area (House), which can be explained through knowledge of the variability (differences) in the independent variable X. The coefficients, directions, and intensities can be observed in the above equation based on the correlation matrix. The coefficients, directions, and intensities can be observed in the above equation based on the correlation matrix. For example, with a constant coefficient of 0.417, "Home / Satisfaction-Comfort," with a coefficient of 0.577, is the variable that affects the equation in the most positive direction. At the same time, "Home / Daylight" is the variable that affects the equation most negatively, with a coefficient of -0.35.

Table 3. The regression equation for working from home

RW-House = 0.417 + 0.0 Home / Private Space Usage_0 - 0.111 Home / Private Space Usage_1
+ 0.177 Home / Private Space Usage_2 + 0.0 Home / Desk-Chair-Computer Suff_0
- 0.133 Home / Desk-Chair-Computer Suff_1
- 0.138 Home / Desk-Chair-Computer Suff_2 + 0.0 Home / Daylight_0
- 0.350 Home / Daylight_1 - 0.286 Home / Daylight_2
+ 0.0 Home / Natural Ventilation_0 + 0.459 Home / Natural Ventilation_1
+ 0.379 Home / Natural Ventilation_2 + 0.0 Home / Not Being Disturbed_0
+ 0.378 Home / Not Being Disturbed_1 + 0.252 Home / Not Being Disturbed_2
+ 0.0 Home / Sound Level_0 + 0.126 Home / Sound Level_1
+ 0.066 Home / Sound Level_2 + 0.0 Home / Similarity to Office Spa_0
- 0.069 Home / Similarity to Office Spa_1
+ 0.117 Home / Similarity to Office Spa_2 + 0.0 Home / Lighting_0
- 0.096 Home / Lighting_1 - 0.137 Home / Lighting_2 + 0.0 Home / Temperature_0
+ 0.354 Home / Temperature_1 + 0.346 Home / Temperature_2
+ 0.0 Home / Services(internet,electr_0 - 0.069 Home / Services(internet,electr_1
- 0.038 Home / Services(internet,electr_2 + 0.0 Home / Eating_0
- 0.108 Home / Eating_1 - 0.153 Home / Eating_2
+ 0.0 Home / Satisfaction-General Con_-1 - 0.239 Home / Satisfaction-General Con_0
- 0.003 Home / Satisfaction-General Con_1 + 0.0 Home / Satisfaction-Visual Appe_-1
- 0.187 Home / Satisfaction-Visual Appe_0
- 0.102 Home / Satisfaction-Visual Appe_1 + 0.0 Home / Satisfaction-Comfort and_-1
+ 0.577 Home / Satisfaction-Comfort and_0
+ 0.336 Home / Satisfaction-Comfort and_1 + 0.0 Home / Satisfaction-Privacy_-1
- 0.267 Home / Satisfaction-Privacy_0 - 0.185 Home / Satisfaction-Privacy_1
+ 0.0 Home / Satisfaction-Cleaning_-1 - 0.075 Home / Satisfaction-Cleaning_0
+ 0.060 Home / Satisfaction-Cleaning_1

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.390564	34.39%	0.00%	*

Table **4** shows the calculations of the regression equation for working from out of home. The findings show that the equation explicitly created for "Remote Working Area (Out of House)" is explained at a rate of 59.5% over independent parameters. The ratio of the explained to total variation is the sample coefficient of determination, which is 0.595 for this equation. The coefficient of determination measures the percentage of variability in Y, the Remote Working Area (Out of House) that can be explained through knowledge of the variability (differences) in the independent variable X. The coefficients, directions, and intensities can be observed in the above equation based on the correlation matrix. For example, with a constant coefficient of -0.056, "Out of Home / Daylight" with a coefficient of 0.592 is the variable that has the most positive effect on the equation. In contrast, "Out of Home / Satisfaction-Comf" is the variable that affects the equation most negatively, with a coefficient of -0.571.

Table 4. The regression equation for out-of-home

RW-OH = -0.056 + 0.0 Out of Home / Private Space Usa_0
+ 0.262 Out of Home / Private Space Usa_1 + 0.400 Out of Home / Private Space Usa_2
+ 0.0 Out of Home / Desk-Chair-Comput_0 + 0.027 Out of Home / Desk-Chair-Comput_1
+ 0.075 Out of Home / Desk-Chair-Comput_2 + 0.0 Out of Home / Daylight_0
+ 0.288 Out of Home / Daylight_1 + 0.592 Out of Home / Daylight_2
+ 0.0 Out of Home / Natural Ventilati_0 - 0.550 Out of Home / Natural Ventilati_1
- 0.854 Out of Home / Natural Ventilati_2 + 0.0 Out of Home / Not Being Disturb_0
+ 0.133 Out of Home / Not Being Disturb_1 - 0.320 Out of Home / Not Being Disturb_2
+ 0.0 Out of Home / Sound Level_0 + 0.050 Out of Home / Sound Level_1
+ 0.293 Out of Home / Sound Level_2 + 0.0 Out of Home / Similarity to Off_0
- 0.147 Out of Home / Similarity to Off_1 + 0.204 Out of Home / Similarity to Off_2
+ 0.0 Out of Home / Lighting_0 + 0.082 Out of Home / Lighting_1
- 0.224 Out of Home / Lighting_2 + 0.0 Out of Home / Temperature_0
- 0.046 Out of Home / Temperature_1 + 0.104 Out of Home / Temperature_2
+ 0.0 Out of Home / Services(internet_0 - 0.099 Out of Home / Services(internet_1
- 0.258 Out of Home / Services(internet_2 + 0.0 Out of Home / Eating_0
+ 0.222 Out of Home / Eating_1 + 0.353 Out of Home / Eating_2
+ 0.0 Out of Home / Satisfaction-Gene_-1 + 0.164 Out of Home / Satisfaction-Gene_0
- 0.010 Out of Home / Satisfaction-Gene_1 + 0.0 Out of Home / Satisfaction-Visu_-1
+ 0.238 Out of Home / Satisfaction-Visu_0 + 0.339 Out of Home / Satisfaction-Visu_1
+ 0.0 Out of Home / Satisfaction-Comf_-1 - 0.571 Out of Home / Satisfaction-Comf_0
- 0.415 Out of Home / Satisfaction-Comf_1 + 0.0 Out of Home / Satisfaction-Priv_-1
+ 0.298 Out of Home / Satisfaction-Priv_0 - 0.011 Out of Home / Satisfaction-Priv_1

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.258967	59.54%	0.00%	0.00%

Figure 8 shows the relationship between "Remote Working Area - Home" and other variables over the correlation (r) values. "Home / Private Space Usage," "Home / Satisfaction-General Conditions," and "Home / Desk-Chair-Computer Sufficiency" were the strongest, respectively, while the weakest were "Home / Eating," "Home / Lighting" and " Home / Temperature." A positive relationship was observed with all variables.

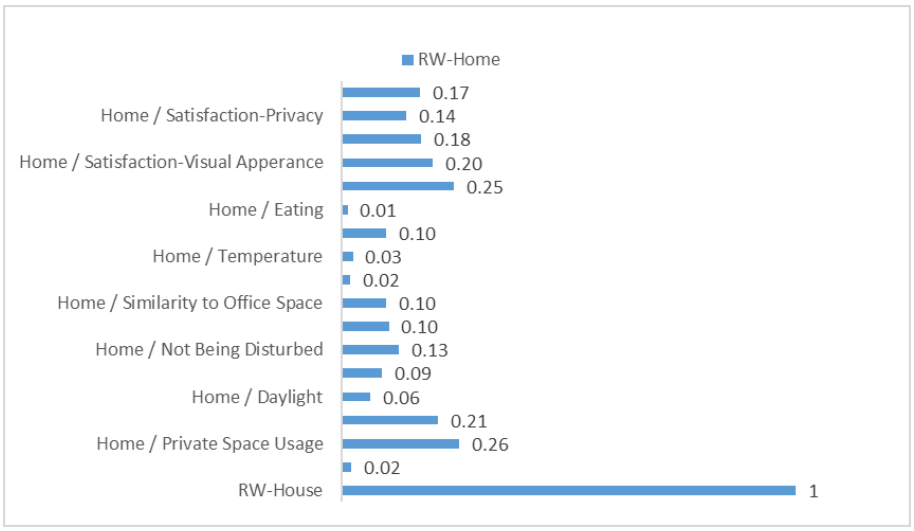

Figure 8. Correlation analysis of remote working for home

Similarly, Figure 9 shows the relationship between "Remote Working Area -Out of House" and other variables over correlation (r) values. While the strongest correlation is "Out of Home / Desk-Chair-Computer Sufficiency, "Out of Home / Satisfaction-General Conditions" and "Out of Home / Satisfaction-Visual Appearance," the weakest and negative relationship is "Out of Home," respectively. / Sound Level" and "Out of Home / Not Being Disturbed" A positive correlation was observed with all variables.

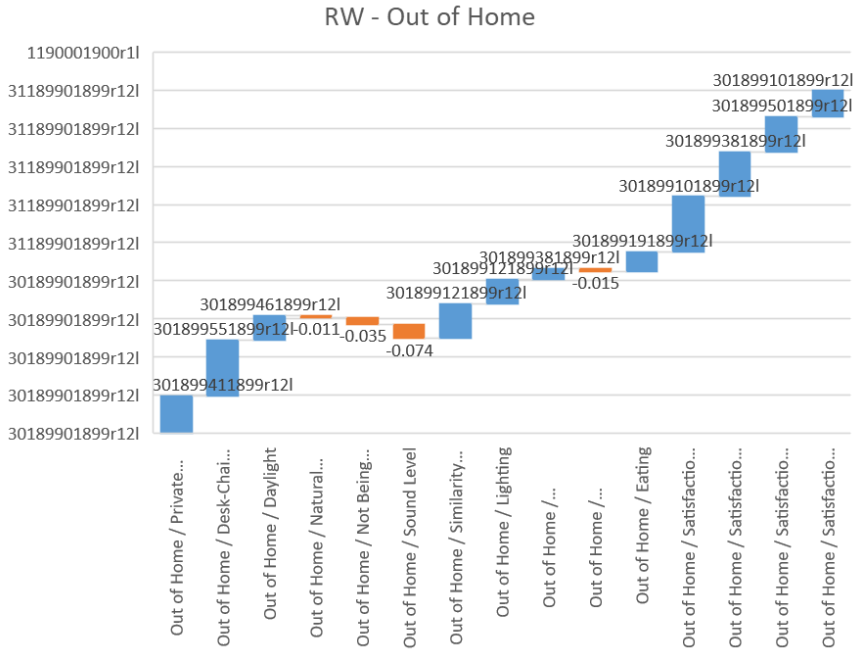

Figure 9. Correlation analysis of remote working for out-of-home

In Figure 10, the level of proficiency is shown with a distribution between 2 and 0, with 2 representing the best level and 0 being the lowest level. While the highest competency in high population and traffic (HPT) was Natural Ventilation, Temperature, and Eating, respectively, the lowest was Satisfaction-Comfort and Flexibility, Satisfaction-Privacy, and Satisfaction-Visual Appearance. While the highest proficiency in mid-population and traffic (MPT) was Temperature, Natural Ventilation, Daylight, and Desk-Chair-Computer Sufficiency, respectively, the lowest proficiency was analyzed as Satisfaction-Visual Appearance, Satisfaction-Privacy, and Satisfaction-Comfort and Flexibility, respectively. The highest proficiency in low population and traffic (LPT) is Desk-Chair-Computer Sufficiency, Daylight, and Sound Level, respectively. In contrast, the lowest proficiency is Satisfaction-Visual Appearance, Satisfaction-Comfort, Flexibility, and Satisfaction-Privacy.

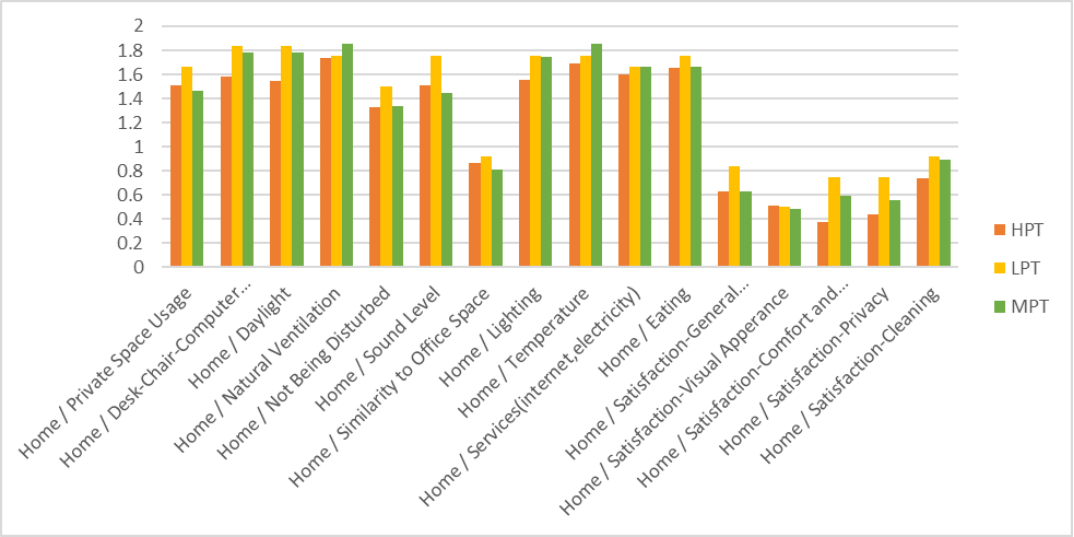

Figure 10. Level of proficiency correlation study regarding High Population and Traffic (HPT), Mid Population and Traffic (MPT), and Low Population and Traffic (LPT)

Correlation coefficients presented in Figure 11 stated that the positive and most robust relationship is between "Prefer Remote Working" and "My work is proper for remote working" with a coefficient of 0.744, "Ability to manage roles" and "Managing common life at home" with a coefficient of 0.668, and "Managing common life outside" and "ability to manage roles" with a coefficient of 0.653, respectively. On the other hand, the negative and most substantial relationship is between "Managing relations in work and personal life" and "Managing common life at home," with a coefficient of 0.201, and between "Need to change remote working space to continue" and "Managing relations in work and personal life" with a coefficient of 0.196, respectively. Thirty-six correlation coefficients were positively correlated, while nine were negatively correlated.

	Managing relations in work and personnal life	Managing common life at home	Managing common life outside home working space	Ability to manage roles	Have a life near to ideal	Pleased of working life	My work is proper for remote working	Prefer Remote Working	Need to change remote working space to continue	Comfort level in remote working
Managing relations in work and personnal life		0.5836	0.4891	0.5570	0.4716	0.4135	0.4184	0.3681	-0.1959	0.4071
Managing common life at home	0.5836		0.5151	0.6683	0.3999	0.3550	0.2430	0.3119	-0.2006	0.4160
Managing common life outside home working space	0.4891	0.5151		0.6532	0.3156	0.4059	0.2450	0.2600	-0.0965	0.2296
Ability to manage roles	0.5570	0.6683	0.6532		0.4671	0.4770	0.3474	0.3627	-0.1004	0.3394
Have a life near to ideal	0.4716	0.3999	0.3156	0.4671		0.6181	0.4645	0.4993	-0.1074	0.3714
Pleased of working life	0.4135	0.3550	0.4059	0.4770	0.6181		0.5382	0.4659	-0.0632	0.4117
My work is proper for remote working	0.4184	0.2430	0.2450	0.3474	0.4645	0.5382		0.7440	-0.0413	0.5349
Prefer Remote Working	0.3681	0.3119	0.2600	0.3627	0.4993	0.4659	0.7440		-0.0971	0.5867
Need to change remote working space to continue	-0.1959	-0.2006	-0.0965	-0.1004	-0.1074	-0.0632	-0.0413	-0.0971		-0.1627
Comfort level in remote working	0.4071	0.4160	0.2296	0.3394	0.3714	0.4117	0.5349	0.5867	-0.1627	

Figure 11. Correlation analysis for working from home

Similarly, the correlation coefficients study presented in Figure 12 demonstrated that the positive and strongest correlations were between "Increase in Productivity" and "Increase in Productivity of Company" with a coefficient of 0.822, between "Contribute working performance" and "Increase in Productivity" with a coefficient of 0.678, and between "Increase in Productivity of Company" and "Contribute working performance" with a coefficient of 0.63, respectively. On the other hand, the negative and most vital relationship was found between "The needed working space cannot be ensured in remote working space" and "Contribute working performance" with a coefficient of 0.517, and between "Need to change remote working space to continue" and "Increase in Productivity" with a coefficient of 0.488, respectively. Twenty-six correlation coefficients were positively correlated, while 19 were negatively correlated.

	Increase in Productivity	Increase in Productivity of Company	Increase in personnal comfort	Contributte working performance	Situation of remote working space decreased productivity	All working actions are proper for remote working	The needed working space can not be ensured in remote	For stable and beneficial remote working, the space of house	For stable and beneficial remote working, the space out of	Conditions of working space is important for comfort and
Increase in Productivity		0.8221	0.4885	0.6784	-0.3668	0.5694	-0.4875	-0.0056	-0.1585	0.1530
Increase in Productivity of Company	0.8221		0.4221	0.6302	-0.3638	0.5093	-0.3772	0.0320	-0.1112	0.1426
Increase in personnal comfort	0.4885	0.4221		0.5639	-0.2404	0.3631	-0.3971	0.2020	-0.0115	0.0802
Contributte working performance	0.6784	0.6302	0.5639		-0.4363	0.5637	-0.5166	0.0805	-0.0852	0.1533
Situation of remote working space decreased productivity	-0.3668	-0.3638	-0.2404	-0.4363		-0.3136	0.3521	0.0410	0.1945	-0.1926
All working actions are proper for remote working	0.5694	0.5093	0.3631	0.5637	-0.3136		-0.3967	0.0381	-0.0664	0.1761
The needed working space can not be ensured in remote working space	-0.4875	-0.3772	-0.3971	-0.5166	0.3521	-0.3967		-0.0396	0.1109	-0.2355
For stable and beneficial remote working, the space of house should be arranged	-0.0056	0.0320	0.2020	0.0805	0.0410	0.0381	-0.0396		0.4256	0.1947
For stable and beneficial remote working, the space out of the house should be arranged	-0.1585	-0.1112	-0.0115	-0.0852	0.1945	-0.0664	0.1109	0.4256		0.1480
Conditions of working space is important for comfort and productivity	0.1530	0.1426	0.0802	0.1533	-0.1926	0.1761	-0.2355	0.1947	0.1480	

Figure 12. Correlation analysis for out-of-home

4. Conclusion and Suggestions

The impact of remote and distributed working practices during the Türkiye pandemic on participants' working-from-home experiences was investigated in this study by surveying 126 participants. The findings of the research were studied by correlation analysis to statistically present the relations between survey parameters. It has been revealed for correlation analysis at working from home that a positive and most robust relationship exists between the couples of "Prefer Remote Working – My work is proper for remote working," "Ability to manage roles – Managing common life at home" and "Managing common life outside – Ability to manage roles." In contrast, the negative and most robust relation existed between the couples "Managing relations in work and personal life," – " Managing common life at home," "Need to change remote working space to continue," – and "Managing relations in work and personal life." Similarly, a correlation analysis study for out-of-home revealed that there is a strong and positive relation between the couples of "Increase in Productivity" and "Increase in Productivity of Company" and "Increase in Productivity of Company" and "Contribute to working performance." At the same time, there is a negative but strong relation between the couples of the needed working space cannot be ensured in remote working space" and "Contribute working performance" and "Need to change remote working space to continue" and "Increase in Productivity."

Regarding the correlation analysis study for working from home, it has resulted in the following:

- The workers prefer remote working because their work is proper for remote working, and they can manage work and life roles at home.
- On the other hand, workers who do not have good remote work at home need to change remote workplace at home to continue and thus manage relations in work and personal life.
- The above two findings are paralleled by the literate statement that “the home is not suitable for being an alternative to the office workplace.”

Regarding the correlation analysis study for out of home, it has been unveiled that:

- Remote working increases productivity and the working performance of remote workers and the company.
- On the other hand, not having proper remote working space at home decreases working performance. Furthermore, remote working space needs to be changed to increase the productivity of the company and workers.
- The above two findings are correlated with the literate statement that “remote work is working, so why do we need a physical space?”.

The findings of working from home in Türkiye represented that the success of the WFH strictly depends on having a proper workplace environment in the workers' home. Although the literature discussions in Table 1 covered four titles, two seem valid for Türkiye practices. When remote workers have a proper workplace at their home, working from home could be accepted as an alternative to office workplaces and increase the workers' productivity. On the other hand, when there is no proper workplace at home, working from home cannot be an alternative to office workplaces. The valid arguments in Turkiye draw a layout for the remote workers' workplace conditions that Turkish remote workers are happy to work remotely when they have a proper home working environment.

Considering the literature findings in Table 2, the remote working practices in Turkiye are paralleled to the findings of Parker et al. (2020) that a significant portion of the workers prefers working from home, and Houweling et al. (2022) that inadequate living space decreases the wellbeing of the workers at home.

Regarding the quality of the built environment in Türkiye for occupancy comfort and well-being is low by many scholars; the increase in the remote workers' productivity addresses two possibilities. Either the workers are not satisfied with the office workplaces or the quality of the living environment at home is better than office workplaces for the workers. However, these possibilities require further investigation. The research study could be expanded to investigate the validity of these possibilities.

The study results are expected to be informative for the researchers considering Türkiye's business practices and work performance during the pandemic lockdown. Remote workers' workplace environment needs can be improved to increase the productivity and performance of remote working. The findings of the research present inputs for the improvement studies and state the spatial features' impact on the productivity, performance, and well-being of workers.

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The article complies with national and international research and publication ethics. Ethics Committee approval in the study was taken from the Ethics Committee of the University of Ankara Yıldırım Beyazıt with the decision no 2022-05.

Author Contribution and Conflict of Interest Declaration Information

All authors contributed equally to the article. There is no conflict of interest.

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