

## Productivity in Remote Work: A Holistic View at Remote Work by Investigating Individual-Level Elements, Interpersonal Dynamics and Organizational Factors

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### ARTICLE INFO

### ABSTRACT

#### Keywords:

Remote work  
Productivity  
Self-efficacy  
Social exchange  
JDCS model  
Motivation  
Job satisfaction  
Organizational commitment  
Technostress  
Mixed-methods

Received 22 March 2025  
Revised 28 January 2026  
Accepted 10 February 2026

#### Article Classification:

Research Article

**Purpose** – This study aims to examine the factors influencing productivity in remote work environments, a work model that gained prominence during the COVID-19 pandemic. It investigates the interplay of individual, interpersonal, and organizational factors by integrating Self-Efficacy Theory, Social Exchange Theory, and the Job Demand-Control-Support (JDCS) Model.

**Design/methodology/approach** – A mixed-methods approach was adopted within the pragmatic paradigm. Quantitative data were collected via surveys from 255 remote workers in Türkiye, and qualitative insights were obtained from 10 in-depth interviews. To assess construct validity and test the hypothesized relationships, the quantitative data were analyzed using AMOS 26 through Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). Qualitative data were examined using content analysis to provide contextual depth and complement the quantitative findings.

**Results** – Self-efficacy positively impacts motivation, job satisfaction, and job performance, but does not directly influence productivity. Motivation strongly predicts productivity, whereas job satisfaction has a significant but negative effect, possibly due to a focus on flexibility or work-life balance. Organizational commitment positively influences job performance, motivation, and satisfaction. Unexpectedly, interpersonal relationships have a negative effect on all three, reflecting virtual communication challenges. Technostress and management control & support were found to have no significant direct effects, suggesting adaptation and autonomy in remote work settings. In contrast, the physical work environment was a significant positive contributor to productivity.

**Discussion** – The study reveals complex interdependencies among personal traits, social dynamics, and organizational structures in remote work settings. It challenges some traditional assumptions, particularly around managerial oversight and technostress, while emphasizing the critical role of motivation, work environment, and relational dynamics. These findings contribute to the theoretical refinement of existing frameworks and offer actionable insights for improving remote work strategies.

## 1. Introduction

The COVID-19 pandemic brought a significant shift in work dynamics, pushing millions into remote work almost overnight. Initially a response to social distancing and workplace closures, remote work has steadily transformed into a long-term reality. Traditional office models have been re-evaluated, with flexible policies enabling part-time and full-time remote arrangements becoming widespread.

The rise of remote work presents both opportunities and challenges for individuals, organizations, and society as a whole (Hamouche, 2023; Ewers & Kangmennaang, 2023). On one hand, remote work offers benefits such as increased flexibility (Smite et al., 2023; Krajčák et al., 2023), reduced commute times (Roberto et al., 2023; Monte et al., 2023), and improved work-life balance (Prasad & Satyaprasad, 2023). It allows organizations to tap into a global talent pool (Ardi et al., 2024), enhance employee satisfaction (Buonomo et al., 2023), and potentially reduce overhead costs associated with maintaining physical office spaces (Barrero et al., 2023). However, remote work also poses unique challenges, including issues related to communication (Adisa et al.,

**ETHICAL APPROVAL:** The ethical approval for this study was obtained from the Human Research Ethics Committee of Gebze Technical University with the decision dated January 04, 2024, and numbered 2024/01-06.

#### Önerilen Atf/ Suggested Citation

Sahin, Z., Hüseyinov, F. (2026). Productivity in Remote Work: A Holistic View at Remote Work by Investigating Individual-Level Elements, Interpersonal Dynamics and Organizational Factors, *İşletme Araştırmaları Dergisi*, 18 (1), 160-182.

2023), collaboration (Mitchell, 2023), work-life boundaries (Mirbahaeddin & Chreim, 2023), and the maintenance of organizational culture and cohesion (Gibson et al., 2023).

In addition to its immediate impacts on work dynamics, the COVID-19 pandemic has sparked profound discussions and inquiries into the long-term implications of remote work on productivity (Kurdy et al., 2023; Straus et al., 2023; McPhail et al., 2024). As organizations and individuals confront the complexity of remote work arrangements, as remote work practices become preferred in more sectors, and as organizations' efforts to maintain remote work policies expand into the long-term, there is a growing need to understand the factors influencing productivity in this new paradigm.

The aim of this study is to provide a comprehensive understanding of productivity in remote work settings by examining individual-level elements, interpersonal dynamics, and organizational factors. By integrating insights from Self-Efficacy Theory (Bandura, 1977), Social Exchange Theory (Homans, 1958), and the Job Demand-Control-Support Model (Karasek, 1979), the study seeks to uncover the complex interplay between individual beliefs, social interactions, and organizational structures that influence remote work productivity.

At the individual level, the study applies Self-Efficacy Theory to investigate how employees' perceptions of their abilities affect task performance and overall productivity in remote work contexts. By examining the relationship between remote workers' confidence in their skills and their effectiveness, the research aims to uncover the psychological mechanisms that drive productivity in virtual work settings.

From an interpersonal perspective, the study employs Social Exchange Theory to analyze the dynamics of relationships among remote workers, supervisors, and colleagues. By analyzing the dynamics of social exchanges within remote work teams, the study seeks to understand how the exchange of resources and support contribute to productive working relationships in virtual settings. Additionally, this study investigates the role of organizational support in enabling social exchanges and cultivating a collaborative and supportive remote work environment.

In addition to examining the interpersonal dynamics of remote work, this study also considers the structural aspects of job design and workplace conditions using the Job Demand-Control-Support Model. This model proposes that job demands, job control, and social support collectively influence employee well-being and performance outcomes (Häusser et al., 2010). By applying this model to the remote working context, this study aims to evaluate the impact of management control and support on remote work productivity.

Overall, this study seeks to offer a nuanced understanding of the multifaceted nature of productivity in remote working environments. By integrating insights from Self-Efficacy Theory, Social Exchange Theory, and the Job Demand-Control Support Model, the study aims to provide valuable insights for individuals, organizations, and policymakers striving to optimize productivity and well-being in remote work settings.

Aligned with the purpose of this study, the following research questions were developed:

#### **Primary Research Questions (Quantitative / Hypothesis-Driven)**

**RQ1:** How do individual-level elements, relationships between employees, and organizational factors affect productivity in remote work?

**RQ2:** How do job performance, motivation, and job satisfaction influence employees' perceptions of their productivity?

**RQ3:** How do technostress and physical work environment affect productivity in remote work?

#### **Exploratory Sub-Questions (Qualitative / Interview-Based)**

**RQ4:** Will businesses continue to implement remote working practices from the perspective of employees?

**RQ5:** To what extent do employees feel socially isolated while working remotely, and how does this isolation impact their perceived productivity?

**RQ6:** When comparing an office environment and a remote working environment, which one is more productive for employees?

In this study, there is an assumption that the classification of remote workers encompasses individuals who engage in either full-time remote work or follow a hybrid work model. Moreover, the construct “perceived management control and support” was operationalized by adapting items from the Perceived Organizational Support (POS) scale developed by Eisenberger et al. (1990). While the original POS scale aims to measure employees’ general perceptions of organizational care, appreciation, and concern for their well-being, the current study reinterprets these items to fit the unique dynamics of remote and hybrid work environments. In such settings, managerial support is often conditional, emerging after an initial assessment or control of employees’ performance—rather than being provided unconditionally or through spontaneous interpersonal interaction, as in traditional office settings. Accordingly, the construct in this study is reframed as “perceived management control and support”, reflecting a performance-contingent support mechanism. This conceptualization is supported by the nature of the adapted items, which emphasize recognition, influence, or job security being granted after the employee demonstrates task completion, timeliness, or output quality.

For example, the items include:

“My immediate supervisor gives me more recognition when I get a lot of work done.”

“If I get my job done on time, I have more influence with my immediate supervisor.”

“It is more likely that I will be given a pay raise or promotion if I do high quality work.”

“When I finish my job on time, my job is more secure.”

These items illustrate that support is perceived as a managerial reaction following control or evaluation of performance, rather than a proactive or relational form of support. Thus, the construct aligns with the remote work context where performance monitoring replaces face-to-face managerial presence, and support becomes outcome-dependent.

## 2. Research Background

Remote work, or “telecommuting,” involves employees carrying out their job responsibilities partially or entirely outside the traditional office environment, relying on information and communication technologies (Molino et al., 2020). Self-efficacy, defined as an individual's belief in their ability to successfully perform tasks (Bandura, 1978), plays a critical role in remote work settings. According to Singh et al., (2009) self-efficacy is related to a person's confidence in his ability to solve various problems that remain or will be encountered. High self-efficacy empowers employees with the confidence to manage workloads, overcome challenges, and adapt to changing circumstances (Lange & Kayser, 2022). This confidence drives proactive behaviors (Huang, 2017), such as task organization, goal setting, and perseverance, which enhance productivity (Cherian & Jacob, 2013).

Albert Bandura's (1977) Self-Efficacy Theory asserts that individuals with high self-efficacy are more likely to engage in behaviors that lead to successful performance outcomes (Lai & Chen, 2012; Espedido & Searle, 2020). Van Tam (2024) further emphasizes that such individuals are more inclined to invest significant effort into ambitious goals, thereby enhancing their motivation and productivity. Consistent with these findings, numerous studies have demonstrated a strong positive relationship between self-efficacy and job performance across various contexts (Lai & Chen, 2012; Downes et al., 2021; Yagil et al., 2023).

“Productivity is defined as the relationship between input and output in a production system, and this relationship is often expressed as the ratio of output to input (Bakhtiar et al., 2018; Hoffman & Mehra, 1999).” Obtaining more output with the same input and similarly obtaining the same output with less input can be considered as productivity increase. Hoffman and Mehra (1999) also stated in their research that “time” is an important element in today's global competition and that achieving the same amount of output in a shorter time can be described as increasing productivity.

Motivation, defined as the internal cognitive and emotional processes driving goal-directed actions (Schunk & DiBenedetto, 2021), is closely linked to self-efficacy. Individuals with high self-efficacy are better equipped to regulate their motivation, drawing on their confidence to address challenges and achieve desired outcomes (Bandura, 1977; Trautner & Schwinger, 2020). These individuals demonstrate enhanced resilience, persistence, and goal orientation, which contribute to improved work outcomes.

Job satisfaction, the positive emotional response individuals have toward their job or work-related experiences (Locke, 1976), is another key factor influenced by self-efficacy. Employees with high self-efficacy feel more competent in their roles, derive a greater sense of accomplishment, and report higher levels of job satisfaction (Bargsted, 2019; Maha & Babu, 2024). The sense of fulfillment gained from achieving their goals amplifies their overall satisfaction and well-being.

Building on these insights, this study advocates the following hypotheses to deepen our understanding of the interplay between self-efficacy and critical work outcomes:

**H1a:** Self-efficacy positively affects productivity in remote work.

**H1b:** Self-efficacy positively affects job performance in remote work environments.

**H1c:** Self-efficacy positively affects motivation in remote work environments.

**H1d:** Self-efficacy positively affects job satisfaction in remote work environments.

Homan's Social Exchange Theory (SET) is one of the most influential frameworks for understanding workplace behaviors (Cropanzano & Mitchell, 2005). According to Blau (1964), individuals engage in social interactions with the expectation of receiving rewards or benefits, which may include material goods, emotional support, knowledge, or status. Within the workplace, interpersonal relationships—characterized by the quality of interactions, collaboration, and social support—play a pivotal role in determining work outcomes (Guinot & Chiva, 2019; Newman et al., 2020; Beckel & Fisher, 2022).

Strong interpersonal connections among employees enhance teamwork, information sharing, and the effective use of collective resources to achieve tasks, which positively impacts job performance (Muresan et al., 2024; Beckel & Fisher, 2022). Positive relationships also foster collaboration, communication, and social support among team members (Agbaria & Mokh, 2022). For remote teams, these dynamics influence individuals' motivation levels (Morrison-Smith & Ruiz, 2020), which directly affects productivity (Kamaruddin et al., 2023; Allo et al., 2024).

When remote workers experience positive interactions and build social capital through meaningful exchanges with colleagues, they develop a sense of fulfillment, belonging, and engagement (Tapani et al., 2022; Durakovic et al., 2022). A strong sense of connection also contributes to a corporate culture that fosters differentiation and employee loyalty, enhancing job satisfaction (Zuhra, 2022). Continuous nurturing of these interpersonal dynamics helps sustain high levels of satisfaction and productivity within the workplace. Supporting this, Poljašević et al. (2021) highlight that positive interpersonal relationships significantly influence job satisfaction. Based on these insights, this study advocates the following hypotheses:

**H2a:** Interpersonal relationships positively affect job performance in remote work environments.

**H2b:** Interpersonal relationships positively affect motivation in remote work environments.

**H2c:** Interpersonal relationships positively affect job satisfaction in remote work environments.

Organizational commitment has been extensively studied for its impact on job performance, with numerous studies confirming a positive relationship (Loan, 2020; Yandi & Havidz, 2022; Demir et al., 2023). Employees with strong organizational commitment often display higher levels of dedication, engagement, and motivation in their roles, contributing to improved job performance. Despite the physical distance in remote work arrangements, research indicates that organizational commitment remains robust among remote employees, often exceeding that of traditional office workers (Taboroši et al., 2020). Similarly, Alshibly and Alzubi (2022) found that remote work, when effectively structured, enhances both job satisfaction and organizational commitment.

Strong organizational commitment also significantly influences motivation. Employees who identify with their organization and value their work experience higher motivation, as they form an emotional bond with the organization and its goals (Jung & Yoon, 2016; Yousf & Khurshid, 2024).

Organizational commitment is also closely tied to job satisfaction. As Čulibrk et al. (2018) describe, it reflects an employee's positive attitude toward the organization as a whole, fostering a greater sense of belonging and meaning in their work. Empirical studies consistently reveal a strong link between organizational commitment

and job satisfaction (Loan, 2020; Al-Refaei et al., 2023). Based on these insights, this study proposes the following hypotheses:

**H3a:** Organizational commitment positively affects job performance in remote work environments.

**H3b:** Organizational commitment positively affects motivation in remote work environments.

**H3c:** Organizational commitment positively affects job satisfaction in remote work environments.

The Job Demand-Control (JDC) model, introduced by Robert Karasek in the 1970s, provides a framework for analyzing how job characteristics influence employee health and overall well-being (Karasek, 1979). Karasek asserted that the balance between the demands placed on employees and the level of control afforded to them is critical for fostering well-being, motivation, and productivity, while also reducing psychological and physiological strains (Fila, 2016). The model shows that high job demands cause stress, but this can be mitigated by gaining more job control and building strong relationships with colleagues and supervisors. By integrating "management control & support" into the support section of JDCS; the study specifically focused on the social support dimension of the model with coworkers and supervisors. According to Karasek and Theorell (1990), "there is generally beneficial social interaction in the workplace among both coworkers and managers." Additionally, for the "support" part of the model, another variable of the research, interpersonal relationships, can be considered together with the management control and support component.

Effective management control and support play a critical role in improving job performance, especially in remote work environments. According to the JDCS model, the balance between the demands placed on employees and the level of control given to them is critical to promoting well-being, motivation and productivity, while also reducing psychological and physiological tensions (Fila, 2016). When managers provide structured yet flexible control, employees feel a greater sense of autonomy and authority, which can increase their intrinsic motivation (Van der Kolk et al., 2019). According to Malmi and Brown (2008), the focus of management control is "to motivate and increase the performance of individuals and groups within the organization by ensuring harmony between their goals and activities and the goals and activities of the organization." Additionally, Qammar et al. (2007) argue that organizational support enables employees to behave in a more motivated manner and increases productivity.

Drawing from these insights, this study advances the following hypotheses:

**H4a:** Appropriate levels of perceived management control & support in remote work settings positively impact job performance.

**H4b:** Appropriate levels of perceived management control & support in remote work settings positively impact motivation.

**H4c:** Appropriate levels of perceived management control & support in remote work settings positively impact job satisfaction.

**H4d:** Perceived management control & support has a positive impact on productivity in remote work.

Inayat and Khan (2021) emphasize that an organization's overall productivity and success are inherently tied to the performance of its employees. This perspective aligns closely with the dynamics of remote work, where individual performance becomes even more critical due to the autonomous nature of the work environment. A study by Farah and Aydoğan (2023) highlighted that remote work positively influences employees' task performance. This outcome is consistent with existing research suggesting that remote work enhances productivity by allowing employees increased autonomy and flexibility in organizing their tasks and schedules (Carrillo et al., 2021). Therefore, this study supports the following hypothesis:

**H5:** Job performance positively affects productivity in remote work.

As many studies in the literature have already stated (Kalogiannidis, 2021; Kamaruddin et al., 2023), motivation is one of the critical determinants of productivity in any work environment, and its importance increases even more in the context of remote working. Remote work environments, characterized by increased autonomy and reduced physical supervision (Leonardi et al., 2024), need heightened levels of self-regulation and intrinsic motivation from employees to sustain their performance and dedication, comparable to that observed in traditional workplace settings. Thus, this study upholds the following hypothesis:

**H6:** Motivation positively affects productivity in remote work.

Job satisfaction is one of the fundamental drivers of employee performance and productivity (Alrawahi et al., 2024), particularly in remote work environments. Employees who are content with their roles and working conditions are more likely to perform their tasks effectively, demonstrate higher levels of motivation. Accordingly, this study predicts and supports the validity of the following hypothesis:

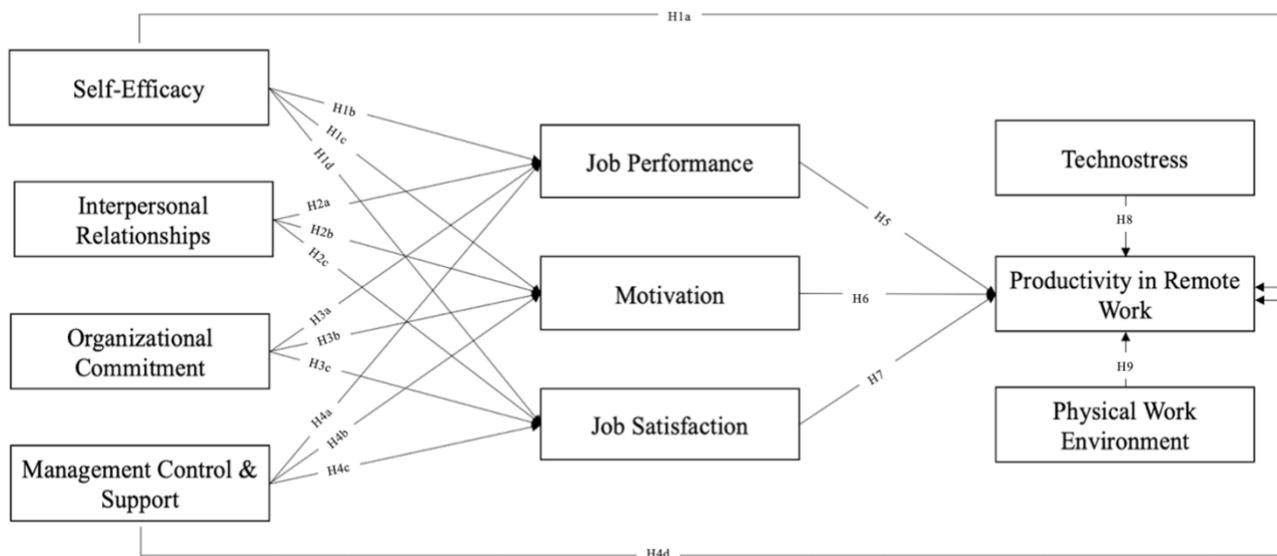
**H7:** Job satisfaction positively affects productivity in remote work.

Technostress describes the adverse psychological effects arising from the extensive use of modern information and communication technologies (ICT) in both professional and personal spheres (Weil & Rosen, 1997). With the rise in remote work, researchers have once again turned their attention to the concept of technostress, with numerous studies in the literature exploring its association with remote working (Ewers and Kangmennaang, 2023). Research has shown a clear connection between the use of digital technologies and platforms and heightened stress levels among workers (Mariani et al., 2023), commonly referred to as technostress. The demands of remote working require employees to use technology extensively for communication, task management and collaboration (Lal et al., 2023). But this requirement can also bring its own unique challenges that hinder productivity (Pothuganti, 2024). Therefore, building on all these factors, this study supports the following hypothesis:

**H8:** Technostress negatively affects productivity in remote work.

A suitable working environment is crucial for remote workers, as individuals naturally seek spaces that meet their needs and align with their characteristics to adapt effectively (Mura et al., 2023). Key elements such as ergonomic furniture, proper lighting, minimal noise, and an organized workspace significantly impact an individual's ability to concentrate and complete work efficiently. Furthermore, a sense of crowding, whether physical or psychological, can directly or indirectly impact remote workers' satisfaction, well-being, and job performance, highlighting the importance of creating a comfortable and spacious workspace (Park et al., 2023). In light of these factors, this study supports the following hypothesis by emphasizing the critical role of a well-designed and comfortable workspace in enhancing remote workers' productivity:

**H9:** Favorable physical working environment conditions positively influence remote work productivity.



**Figure 1:** Conceptual Model

The conceptual model shown in Figure 1 includes nine independent variables: Self-Efficacy, Interpersonal Relationships, Organizational Commitment, Management Control & Support, Job Performance, Motivation, Job Satisfaction, Technostress, and Physical Work Environment. The dependent variable of the model is Productivity in Remote Work. In the model, Job Performance, Motivation, and Job Satisfaction are influenced by Self-Efficacy, Interpersonal Relationships, Organizational Commitment, and Management Control &

Support, while they also act as predictors of Productivity in Remote Work alongside Technostress and Physical Work Environment.

### 3. Methodology

#### 3.1. Sampling, Participants, and Data Collection

This research combines quantitative survey methods with qualitative in-depth interviews to examine the factors affecting remote work productivity in terms of individual, relational, and structural dimensions. The target population for this study consisted of remote workers actively engaged in the labor force in Türkiye. Data collection employed convenience and snowball sampling techniques to reach a diverse range of participants. All participants were thoroughly informed about the aims of the research and willingly took part in both the survey and in-depth interviews on a voluntary basis.

The quantitative study employed an online survey distributed via social networks and web platforms to reach a diverse participant pool. The survey included demographic questions and measurement items assessed on a 5-point Likert scale. Originally in English, the scales were carefully translated into Turkish for clarity. The survey conducted for this study received a total of 274 responses, of which 255 were deemed valid after screening. Participants completed the survey in approximately 15–20 minutes. Data collection was carried out via the Surveyey platform, ensuring both user-friendly access and secure data processing.

**Table 1:** Characteristics of Quantitative Data Sample (N= 255)

Variable	Frequency	Percentage (%)
Gender		
Male	96	37.6
Female	159	62.3
Age		
24 or less	37	14.5
25-34	175	68.6
35-44	34	13.3
45 or more	9	3.5
Marital Status		
Single	172	67.4
Married	83	32.5
Education		
High School	10	3.9
College	27	10.5
Bachelor	188	73.7
Master	28	10.9
PhD	2	0.7
Income		
17.002 (wage floor)	14	5.4
17.003-23.999	34	13.3
24.000-30.999	43	16.8
31.000-38.999	48	18.8
39 or more	116	45.4

The qualitative study utilized in-depth interviews to explore participants' remote work experiences. Conducted online or face-to-face based on preferences, the sampling used convenience and snowball techniques to ensure diversity. Open-ended questions covering topics such as advantages and disadvantages of remote work, supervisory control of job duties and responsibilities, work routines, communication, company support, remote work and retention policies their companies have, and perceptions of productivity

encouraged participants to share their personal insights. Ten participants from a variety of professional backgrounds were interviewed, with each session lasting 20–25 minutes. The data collected complemented the quantitative findings by providing detailed perspectives on the challenges and opportunities of remote work, enriching the understanding of its impact on employee productivity.

### 3.2. Measurement for Quantitative Study

The quantitative dimension of the study utilized a diverse range of well-established scales from the literature to comprehensively assess all variables included in the online survey. To measure Self-Efficacy, the renowned scale developed by Schwarzer and Jerusalem (1995) was employed. For Interpersonal Relationships, the scale crafted by Szostek and Łapińska (2020) was used. Organizational Commitment was evaluated using the scale designed by Demirel and Göç (2013). Motivation was assessed with the scale developed by Gagné et al. (2010), while Job Satisfaction was measured using the scale by Macdonald and MacIntyre (1997). The Physical Work Environment was evaluated through the scale introduced by Tleuken et al. (2022). For Technostress, a blend of scales from Fernández et al. (2023) and Ragu-Nathan et al. (2008) was thoughtfully integrated to provide a comprehensive perspective. The study assessed Perceived Management Control and Support using the well-established scale by Eisenberger et al. (1990). Additionally, Perceived Job Performance was measured with the scale created by Na-Nan et al. (2018), while Perceived Productivity was captured using the scale developed by Akman et al. (2023). Additionally, all responses were collected using a 5-point Likert scale, where 1 represented "Strongly Disagree" and 5 represented "Strongly Agree."

## 4. Analysis

The quantitative analysis for this study was conducted using AMOS 26 software, employing Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to ensure the robustness and validity of the research model. CFA was utilized to verify the measurement model by assessing the reliability and validity of the constructs, while SEM was applied to test the hypothesized relationships between variables. In addition to the quantitative, the qualitative data obtained from in-depth interviews were analyzed using content analysis.

### 4.1. Reliability and Validity Assessment

In this study, AMOS software from the SPSS suite was used to assess the reliability and validity of the measurement scales. These analyses aimed to ensure that the constructs used in the research were both internally consistent and capable of accurately measuring the intended theoretical concepts. The validity analysis, summarized in Table 2, evaluates Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and the maximum reliability of constructs (MaxR[H]). Additionally, correlations between constructs and their square root of AVE are presented for discriminant validity testing. According to Hair et al. (2010), the thresholds for assessing key measurement properties are as follows: For reliability, a Composite Reliability (CR) value greater than 0.7 is considered acceptable. Convergent validity is supported when the Average Variance Extracted (AVE) exceeds 0.5. Additionally, discriminant validity is established when the Maximum Shared Squared Variance (MSV) is less than the AVE, and the square root of the AVE is greater than the inter-construct correlations. As shown in Table 2, all constructs demonstrated strong reliability, with CR values exceeding the threshold of 0.7, indicating internal consistency. Convergent validity was also confirmed, as AVE values for all constructs were above 0.5. Malhotra and Dash (2011) explain that AVE serves as a stricter measure compared to CR. They note that relying solely on CR may lead researchers to assume adequate convergent validity for a construct, even when a significant portion of the variance—over 50%—is attributed to error. Discriminant validity was largely supported, with MSV values lower than AVE for most constructs, except for "Satisfaction," which showed a marginal overlap with other constructs, warranting further review. Overall, the constructs meet the necessary thresholds, confirming the robustness of the model's measurement properties.

**Table 2:** Reliability and Validity Analysis

	CR	AVE	MSV	MaxR(H)	SE	IR	OC	MO	JS	PWE	TS	MCS	JP	PRW
SE	0,909	0,667	0,523	0,915	0,817									
IR	0,862	0,560	0,541	0,887	0,714***	0,749								
OC	0,781	0,641	0,511	0,783	0,404***	0,575***	0,801							
MO	0,912	0,722	0,712	0,920	0,641***	0,636***	0,542***	0,850						
JS	0,887	0,569	0,712	0,893	0,710***	0,735***	0,715***	0,844***	0,754					
PWE	0,903	0,609	0,466	0,911	0,673***	0,561***	0,417***	0,668***	0,679***	0,781				
TS	0,894	0,632	0,107	0,918	0,166*	0,179*	0,291***	0,111	0,141*	0,060	0,795			
MCS	0,852	0,539	0,378	0,875	0,352***	0,479***	0,479***	0,451***	0,615***	0,394***	0,327***	0,734		
JP	0,939	0,722	0,523	0,947	0,723***	0,585***	0,393***	0,601***	0,713***	0,683***	0,156*	0,424***	0,849	
PRW	0,913	0,642	0,367	0,943	0,508***	0,384***	0,238**	0,492***	0,437***	0,606***	0,133†	0,307***	0,482***	0,801

(SE: Self-Efficacy, IR: Interpersonal Relationships, OC: Organizational Commitment, MO: Motivation, JS: Job Satisfaction, PWE: Physical Work Environment, TS: Technostress, MCS: Management Control & Support, JP: Job Performance, PRW: Productivity in Remote Work)

4.2. Confirmatory Factor Analysis (CFA)

According to Hoyle (2000), Confirmatory Factor Analysis (CFA) is a statistical method specifically designed to identify and examine hypothetical constructs as reflected in imperfect indicators. What distinguishes CFA from other approaches to studying these constructs is its ability to test precise hypotheses in a deductive manner (Hoyle, 2000). In this study, CFA was conducted using SPSS’s AMOS 26 software, which provides an efficient platform for estimating and testing these models. The CFA model is as seen in Figure 2.

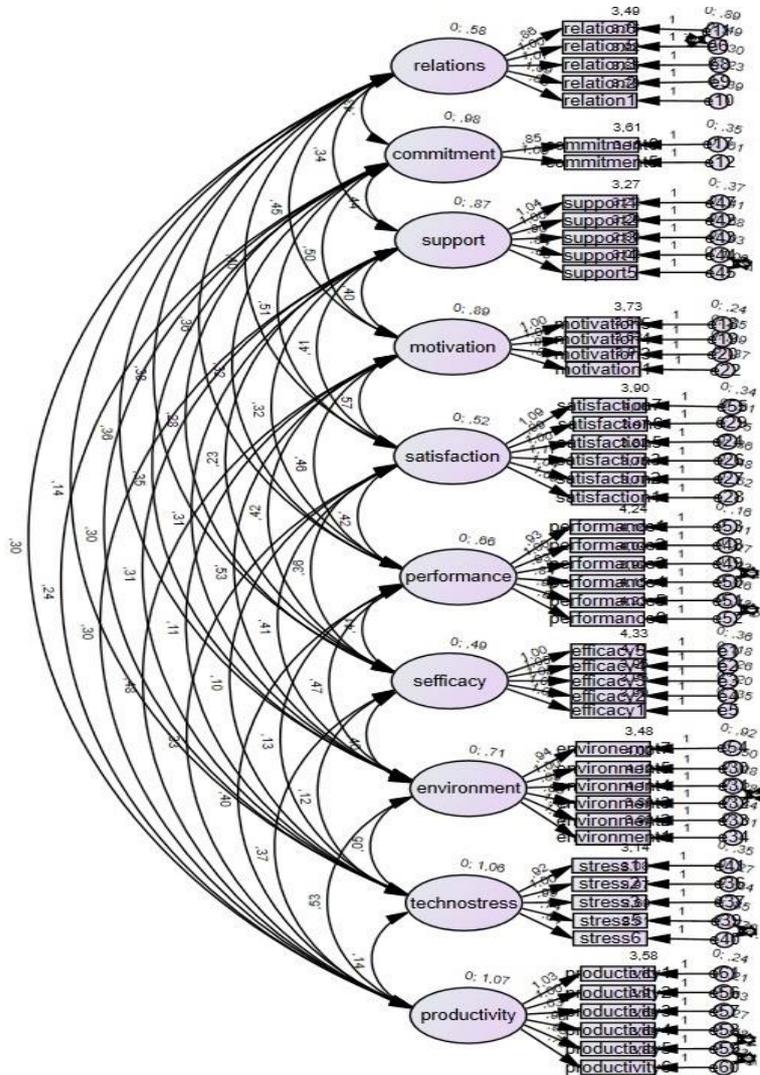


Figure 2: CFA Model

To enhance the model's clarity and accuracy, certain items were removed based on the results of standardized regression analyses. The final version of the model, as shown in Figure 2, reflects these adjustments. This refinement process ensures the model is more focused and effectively captures the key constructs influencing remote work productivity. The regression weights from the Confirmatory Factor Analysis (CFA) indicate that all factor loadings are highly significant, confirming strong relationships between the observed indicators and their respective latent variables.

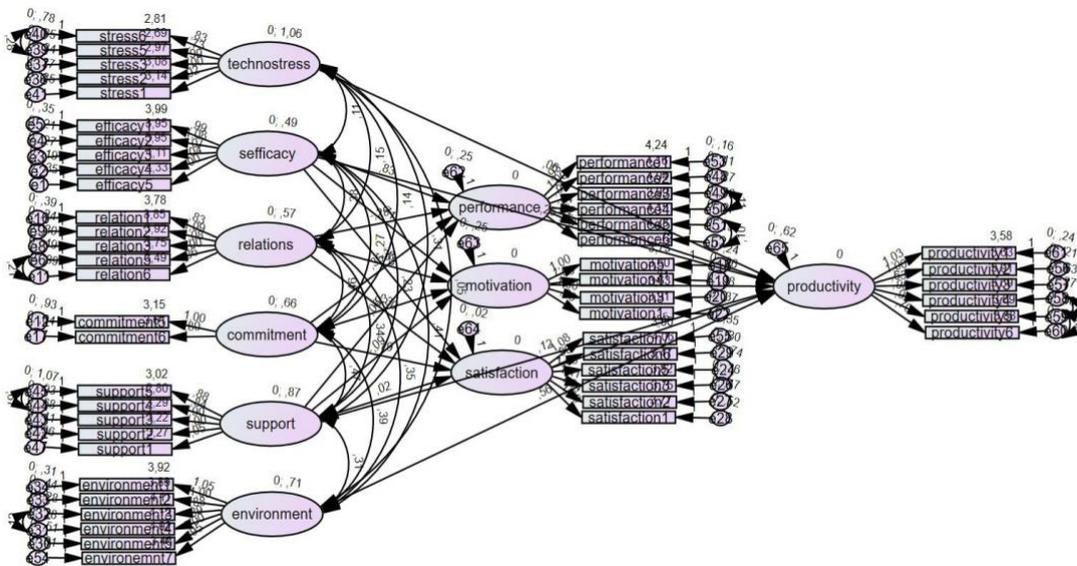
Moreover, model fit evaluates how well the proposed relationships and structures within the model align with the collected data (West et al., 2012). In this study, model fit was assessed using AMOS software to determine the degree to which the hypothesized model aligns with the observed data. This evaluation is critical for establishing the accuracy and validity of the proposed relationships in the model. The following table presents the key fit indices used to assess the model's performance:

**Table 3: Model Fit Measures, AMOS**

Measure	Estimate	Threshold	Interpretation
CMIN	2129.719	--	--
DF	1122.000	--	--
CMIN/DF	1.898	Between 1 and 3	Excellent
CFI	0.901	>0.95	Acceptable
SRMR	0.065	<0.08	Excellent
RMSEA	0.059	<0.06	Acceptable

**4.3. Evaluation of Hypotheses: Testing the Relationships Between Constructs**

The path analysis results reveal several significant and nuanced insights into the relationships between the hypothesized factors and productivity in remote work environments. The regression weights corresponding to the hypotheses are presented in Table 4. According to the results; self-efficacy (H1a, H1b, H1c, H1d) demonstrates strong positive effects on job performance (0.832;  $p<0.001$ ), motivation (0.711;  $p<0.001$ ), and job satisfaction (0.530;  $p<0.001$ ), suggesting that individuals who feel confident in their abilities tend to perform better, feel more motivated, and experience greater satisfaction in remote work contexts. However, in response to the issue addressed by RQ1, the direct effect of self-efficacy on productivity (0.250;  $p=0.114$ ) was not statistically significant. Unexpectedly, interpersonal relationships (H2a, H2b, H2c) negatively affect job performance (-0.250;  $p=0.044$ ), motivation (-0.384;  $p=0.029$ ), and job satisfaction (-0.301;  $p=0.026$ ), which contradicts the hypotheses predicting positive effects. This could indicate challenges unique to remote work, such as difficulties in communication, feelings of isolation, or conflict in virtual collaborations. On the other hand, organizational commitment (H3a, H3b, H3c) significantly and positively impacts job performance (0.354;  $p<0.001$ ), motivation (0.930;  $p<0.001$ ), and job satisfaction (0.795;  $p<0.001$ ), aligning with the hypotheses and highlighting the critical role of employees’ emotional and psychological attachment to their organizations in achieving better outcomes.



**Figure 3: Structural Equation Model**

**Table 4:** Regression Weights

			Estimate	S.E.	C.R.	P
performance	< ---	sefficacy	0.832	0.106	7.845	***
motivation	< ---	sefficacy	0.711	0.139	5.103	***
satisfaction	< ---	sefficacy	0.530	0.107	4.942	***
performance	< ---	relations	-0.250	0.124	-2.014	0.044
motivation	< ---	relations	-0.384	0.176	-2.183	0.029
satisfaction	< ---	relations	-0.301	0.135	-2.225	0.026
performance	< ---	commitment	0.354	0.104	3.406	***
motivation	< ---	commitment	0.930	0.159	5.848	***
satisfaction	< ---	commitment	0.795	0.142	5.601	***
performance	< ---	support	0.056	0.063	0.899	0.369
motivation	< ---	support	-0.088	0.089	-0.986	0.324
satisfaction	< ---	support	0.022	0.066	0.339	0.735
productivity	< ---	sefficacy	0.250	0.158	1.581	0.114
productivity	< ---	support	0.125	0.094	1.332	0.183
productivity	< ---	performance	0.119	0.118	1.009	0.313
productivity	< ---	motivation	0.312	0.131	2.387	0.017
productivity	< ---	environment	0.561	0.117	4.790	***
productivity	< ---	technostress	0.062	0.060	1.033	0.302
productivity	< ---	satisfaction	-0.546	0.243	-2.249	0.025

Note: \*\*\* p<0.001

Perceived management control & support (H4a, H4b, H4c, H4d), surprisingly, does not have significant effects on job performance (0.056; p=0.369), motivation (-0.088; p=0.324), or job satisfaction (0.022; p=0.735). Its direct effect on productivity which pertains to RQ1 (H4d; 0.125; p=0.183) is also not significant. In addressing the questions outlined in RQ2, the analysis reveals that motivation (H6) has a significant positive impact on productivity (0.312, p=0.017), highlighting its crucial role as a key driver of productivity in remote work settings. Conversely, job satisfaction (H7) has a significant negative effect (-0.546; p=0.025), a surprising result that may indicate complex dynamics where high satisfaction might not necessarily translate into efficient output, possibly due to complacency or satisfaction with lower work expectations.

Physical working environment (H9), which addresses RQ3, emerges as the most influential factor for productivity (0.561; p<0.001), emphasizing the importance of ergonomic and supportive workspaces for employees' efficiency in remote settings. Lastly, technostress (H8; 0.062; p=0.302) and job performance (H5; 0.119; p=0.313) do not have significant impacts on productivity, indicating these factors may be less critical than others in this specific context.

Furthermore, Table 5 provides a comprehensive overview of all hypotheses and their corresponding evaluation results.

**Table 5: Hypotheses Testing Results**

No	Code	Hypothesis	Statu
H1	H1a	Self-efficacy positively affects productivity in remote work.	Not Supported
	H1b	Self-efficacy positively affects job performance in remote work environments.	Supported
	H1c	Self-efficacy positively affects motivation in remote work environments.	Supported
	H1d	Self-efficacy positively affects job satisfaction in remote work environments.	Supported
H2	H2a	Interpersonal relationships positively affect job performance in remote work environments.	Not Supported
	H2b	Interpersonal relationships positively affect motivation in remote work environments.	Not Supported
	H2c	Interpersonal relationships positively affect job satisfaction in remote work environments.	Not Supported
H3	H3a	Organizational commitment positively affects job performance in remote work environments.	Supported
	H3b	Organizational commitment positively affects motivation in remote work environments.	Supported
	H3c	Organizational commitment positively affects job satisfaction in remote work environments.	Supported
H4	H4a	Appropriate levels of perceived management control & support in remote work settings positively impact job performance.	Not Supported
	H4b	Appropriate levels of perceived management control & support in remote work settings positively impact motivation.	Not Supported
	H4c	Appropriate levels of perceived management control & support in remote work settings positively impact job satisfaction.	Not Supported
	H4d	Perceived management control & support have a positive impact on productivity in remote work.	Not Supported
H5	H5	Job performance positively affects productivity in remote work.	Not Supported
H6	H6	Motivation positively affects productivity in remote work.	Supported
H7	H7	Job satisfaction positively affects productivity in remote work.	Not Supported
H8	H8	Technostress negatively affects productivity in remote work.	Not Supported
H9	H9	Favorable physical working environment conditions positively influence remote work productivity.	Supported

#### 4.4. Qualitative Data Analysis

##### 4.4.1. Reliability and Validity of the Qualitative Data

To ensure the trustworthiness of the qualitative findings, key strategies were adopted to address reliability and validity. First, data triangulation was achieved by incorporating participants from diverse professional backgrounds, age groups, and genders, enabling a rich representation of remote work experiences. To enhance reliability, all interviews were conducted using a semi-structured protocol to maintain consistency, while participants were encouraged to elaborate freely, allowing for natural emergence of themes.

For validity, member checks were conducted in selected cases to verify the accuracy of interpreted meanings. In addition, the analysis sought to identify negative cases or contradictory perspectives to avoid confirmation bias. Direct quotations were used throughout the reporting to preserve the authenticity of participant voices and ensure transparency. The integration of qualitative insights with quantitative findings also served to strengthen interpretative validity, supporting a comprehensive understanding of the complexities surrounding remote work productivity.

#### 4.4.2. Advantages and Disadvantages

Participants identified key advantages of remote work, including the elimination of commuting challenges, reduced time spent in traffic, and improved work-life balance. Remote work provided a comfortable environment, allowing participants to engage in personal and leisure activities. One participant appreciated the flexibility of starting her day at a preferred time, highlighting the burdensome nature of preparing for office work, particularly for women. Another participant valued the ability to set her schedule, while others emphasized enhanced focus and motivation at home compared to crowded office environments. One participant mentioned the following as advantages of working remotely: "Even when I go to the office as a software developer, collaboration often looks the same as it does remotely. My colleagues and I stay at our respective desks, working individually on our computers, without sitting side by side, leaning in together, or sharing a screen. In that sense, there's no real difference between working from home and working in the office when it comes to completing tasks. However, I prefer working from home because the office environment consumes significantly more time and energy while also impacting my social life. For instance, when I worked from the office, I couldn't make it to the gym because I spent so much time stuck in traffic. Now that I work from home, I can go to the gym and still have plenty of time for myself, which helps me feel more motivated overall."

However, participants also identified several key disadvantages that contributed to answering RQ5. Feelings of social isolation and communication challenges were frequently mentioned. A remote worker caring for a young child observed that tasks often took longer remotely than in an office. Conversely, a software developer noted no substantial difference in task collaboration but preferred working from home due to saved time and energy. Social isolation was further highlighted by participants who lamented the lack of face-to-face interactions and the gradual weakening of work friendships. A participant working entirely remotely shared: "I can say that working remotely makes you feel a bit antisocial. Yes, we work with people, but many of us have never seen each other's faces. Communication happens exclusively online, mostly through verbal exchanges, which creates a more negative impact on communication compared to face-to-face interactions." Another participant explained that remote communication often feels impersonal and task-oriented, limiting opportunities for socialization, as follows: "One disadvantage, which may not be immediately noticeable when starting remote work, is that workplace friendships gradually weaken over time, leaving only work-focused dialogues. During remote work, communication is always limited to voice or video meetings centered around work tasks. This eliminates opportunities for socializing, one-on-one interactions, and mutual mood analysis throughout the day, leading to monotonous and impersonal exchanges."

#### 4.4.3. Control

In remote work settings, managers employ various strategies to ensure task completion and maintain control. Daily or weekly meetings are commonly used to track progress and deadlines, as one participant noted, "Control is maintained through daily and weekly meetings, ensuring tasks are completed and delivered on time." Technological tools, such as Jira and GitHub, play a vital role in monitoring tasks, with a participant stating, "It's very clear whether tasks are completed or not through tools that track coding progress precisely." Goal-oriented management is another prevalent approach, where managers assign objectives, monitor progress, and evaluate outcomes through regular meetings. Flexible management styles are also evident in some sectors, with one participant highlighting the use of agile methodologies and daily stand-ups as a "soft form of accountability."

#### 4.4.4. Sustaining and Expanding Remote Work Practices

In response to RQ4, participants largely believe that organizations will continue adopting and expanding remote work due to its benefits for productivity, employee satisfaction, and cost efficiency. Many noted that remote work reduces expenses on office space, transportation, and meals, while also improving morale and efficiency. Additionally, remote work aligns with modern workforce demands, enabling organizations to access a broader talent pool and enhance employee retention. Participants highlighted that accommodating remote work preferences has become essential for retaining top talent. Overall, remote work is viewed as a strategic adaptation to modern workplace needs.

#### **4.4.5. Adequate Communication with the Team and the Leader**

Participants reported frequent and effective communication with their teams and leaders in remote settings, often facilitated through daily online meetings. Digital platforms were highlighted as enabling seamless collaboration despite physical separation. However, participants noted challenges in leader-employee communication, particularly the lack of visibility into workflows and employee struggles, which can hinder managers' ability to address issues. This gap was seen as impacting motivation, productivity, and the development of personal connections with managers. One of the participants expressed the following thoughts that also contributed to answering RQ5: "The inability to establish adequate communication with the manager is a net negative impact of remote work. In face-to-face settings, workflows happen directly in front of the manager. However, during remote work, the problems and stress experienced throughout the process are not visible, making it difficult for the manager to analyze these issues. Therefore, employees who feel that their labor is not being rewarded may experience a decrease in both motivation and productivity." Additionally, the participant elaborated on how these challenges extend to the personal relationship between employees and managers, explaining: "Since personal dialogue with the manager cannot be developed adequately, the levels of mutual initiative are also not clarified." Social interactions were also emphasized, with participants valuing online coffee meetings and occasional in-person events as opportunities to foster camaraderie and strengthen team bonds. While digital tools support efficient communication, personal connections remain essential for building stronger relationships.

#### **4.4.6. Stick to a Work Routine**

Participants' responses about maintaining a work routine in remote settings highlighted both benefits and challenges. While many emphasized the importance of adhering to traditional working hours for productivity and collaboration, others struggled with blurred boundaries and the flexibility of remote work. Some participants appreciated a structured schedule, noting that it enhanced focus and teamwork. However, others found it difficult to step away from tasks, leading to overwork and disrupted breaks, with some organizations implementing policies to encourage better routines. Flexibility was valued by participants who preferred non-traditional hours. Overall, remote work offers adaptability but poses challenges in maintaining structured routines, emphasizing the need for organizational support to balance flexibility with sustainability.

#### **4.4.7. Technical Equipment and Costs Incurred Due to the Performance of the Work**

Participants reported varying levels of technical support and cost reimbursements from employers for remote work. While most received basic equipment like computers, additional support varied significantly. Some companies provided comprehensive packages, including internet bill assistance, office furniture, and allowances for utilities, while others offered minimal support, such as covering only computers. A few participants appreciated structured systems for reimbursements, while others expressed dissatisfaction with inadequate provisions, noting that they had to cover their own expenses. The diversity in support highlights a spectrum of employer approaches, ranging from proactive to limited, reflecting differing levels of commitment to facilitating remote work.

#### **4.4.8. Productivity Perceptions in Remote Work**

To address RQ6, participants highlighted the influence of personal circumstances and work environments on productivity in remote and office settings. Many reported higher or equal productivity at home due to fewer distractions and greater flexibility, with one noting, "I progress better with full focus, without people around to chat with." However, others faced challenges, such as caregiving responsibilities or a lack of a dedicated workspace, which hindered their productivity. One participant shared, "If I had a separate workspace from my bedroom, I could be more productive," emphasizing the importance of home environments.

Some participants noted a paradox, feeling more accomplished in the office due to its structure and accountability, despite working longer hours at home. One stated, "I work more at home, but I feel more productive in the office," reflecting the motivational aspects of office settings.

While many people prefer to continue working remotely, they also cited the benefits of a hybrid model over fully remote work because of the balance between flexibility and collaboration. They suggested hybrid arrangements are especially beneficial for newcomers, enabling in-person interactions crucial for

understanding organizational structure, building relationships, and adapting to company culture. A few participants, however, expressed a preference to avoid remote work due to its adverse effects on their experience.

## 5. Discussion and Conclusion

### 5.1. Theoretical Implications

This study extends existing frameworks—Self-Efficacy Theory (Bandura, 1977), Social Exchange Theory (Homans, 1958), and the JDCS Model (Karasek, 1979)—into the remote work context, highlighting their explanatory power and limitations. Adapting the JDCS model revealed how job demands, control, and support are shaped by environmental and technological conditions. The integration of Social Exchange Theory underscores how the lack of informal interactions in virtual settings weakens trust and reciprocity. The inverse relationship between job satisfaction and productivity introduces a critical nuance to Self-Efficacy Theory, showing that psychological comfort may not always translate into higher output. Collectively, the study contributes a more integrated theoretical model for understanding productivity in distributed work environments.

Contrary to the hypothesized positive relationship, the significant negative association between job satisfaction and productivity in remote work settings can be explained, at least in part, by the “comfort zone” effect. Remote workers generally prefer working from home, which can create a secure environment characterized by low stress levels and the absence of discomfort. This allows employees to feel more relaxed and safe. However, according to Ryan & Markowa (2006), comfort zones offer limited opportunities for reflection and learning; in environments lacking challenges and uncertainty, individuals tend to engage less in self-reflection and personal growth. This effect becomes particularly evident in jobs with low complexity and highly repetitive routines. Therefore, even when employees report high job satisfaction, such satisfaction may lead to reduced innovative behavior and lower effort levels. As Baig et al. (2017) note, excessive satisfaction can negatively affect productivity, ultimately limiting the growth and development potential of the organization.

The non-significant effect of job performance on productivity can be explained by the conceptual distinction between the two constructs: while job performance refers to individual behaviors and contributions shaped by knowledge, skills, abilities, and motivation that support organizational goals (Campbell et al., 1993; Meyer & Peng, 2005; Motowidlo, 2003; Jalagat, 2016), productivity denotes the efficiency of transforming inputs into outputs, often measured by output–input ratios and time-based efficiency (Solow, 1957; Hoffman & Mehra, 1999; Bakhtiar et al., 2018). As performance indicators may not fully capture aspects such as quality, speed, or resource utilization, strong performance does not always directly translate into measurable productivity gains, which may account for the non-significant direct relationship observed in this study.

Social connection is a core dimension of human life, reflecting the basic need for interpersonal relationships and belonging (Folkson, 2024). In remote-work contexts, deficits in social communication have been shown to undermine motivation (Dryselius & Pettersson, 2021; Ward & Shabha, 2001). Consistent with this literature, the structural model indicates a significant negative effect of interpersonal relationships on motivation. Triangulating with in-depth interviews, participants described remote interactions as largely formal and task-bound, reported a progressive weakening of workplace friendships and feelings of social isolation, and noted that limited managerial visibility constrained recognition and feedback—conditions observed to coincide with diminished motivational outcomes. On the other hand, Pooja et al. (2016) show that under low social interaction, the negative effects of job stressors on organizational commitment are stronger, whereas under high interaction these effects are attenuated. In this context, in low-interaction remote work, task pressure and interpersonal frictions erode commitment; accordingly, interpersonal relationships negatively affect job satisfaction (Hee et al., 2018) and job performance (Suleiman et al., 2023). This explanation is consistent with the strong positive effects of commitment on satisfaction ( $\beta = 0.795$ ) and performance ( $\beta = 0.354$ ).

### 5.2. Practical Implications

Findings suggest actionable strategies for enhancing productivity and well-being in remote work. Organizations should prioritize self-efficacy through training and mentoring, and invest in ergonomic, well-equipped home offices. To convert high satisfaction into output-oriented productivity, managers should

strengthen goal clarity, regular performance feedback, and incentives for innovativeness/autonomy, align performance criteria with outcome-based Key Performance Indicators (KPIs; e.g., features delivered, cycle/lead time, customer-impact metrics, error/defect rates) and use brief, deliverable-focused check-ins so that role performance reliably translates into measurable output, while using hybrid touchpoints to bolster belonging and accountability. In highly routine work, gradually increasing task challenge and variety, implementing self-regulation supports (breaks/flow cues), and improving the physical work setup may mitigate the negative association.

To address interpersonal disconnection, managers should facilitate regular, meaningful interactions and consider hybrid models for balancing collaboration and flexibility. Avoiding micromanagement and encouraging autonomy aligns with the observed minimal impact of managerial control & support and technostress.

### 5.3. Limitations and Future Research Directions

This study's methodological limitations—non-probability sampling, self-reported data, and a cross-sectional design—affect generalizability and causal inference. Future research should include longitudinal studies, objective productivity metrics, and more diverse samples across roles, industries, and cultural settings.

Another limitation arises from the use of items adapted from Eisenberger et al.'s (1990) Perceived Organizational Support (POS) scale to operationalize the construct of "perceived management control and support," since the original scale does not explicitly capture the control dimension. As noted earlier, the adaptation was based on the assumption that, within remote work contexts, support is perceived only after employees' work is monitored by supervisors.

The negative impact of job satisfaction on productivity warrants deeper psychological investigation. Additionally, exploring hybrid work's influence on cohesion and performance, and incorporating managerial perspectives, could yield practical guidance for distributed team management.

### 5.4. Conclusion

Taken together, mixed-methods evidence converges on a coherent account of remote-work productivity. Quantitatively, self-efficacy increased motivation, job satisfaction, and job performance, with its direct effect on productivity proving statistically non-significant; motivation was a significant positive driver of productivity, whereas job satisfaction exhibited a significant negative association. Organizational commitment positively influenced performance, satisfaction, and motivation, while interpersonal relationships showed unexpected negative effects on these outcomes. The physical work environment emerged as the strongest predictor of productivity, whereas technostress and management control & support showed negligible direct effects, consistent with the salience of autonomy in remote settings.

The qualitative interviews corroborated and contextualized these patterns. Participants emphasized flexibility and autonomy as central benefits—reinforcing the motivational pathway—yet also described formal, task-bound interactions, social isolation, and limited managerial visibility, which align with the negative coefficients for interpersonal relations and the counterintuitive negative link between satisfaction and productivity. Interview accounts also underscored the critical role of ergonomics and dedicated workspaces, supporting the strong quantitative effect of the physical environment. Reports of technological competence and routine use of collaboration tools help explain why technostress did not materially depress productivity, while the value placed on autonomy is consistent with the weak effects of management control & support.

Overall, the findings suggest that organizations are likely to continue implementing remote work practices because of their benefits for efficiency, flexibility, and employee retention. At the same time, employees frequently reported feelings of social isolation, which were perceived to undermine motivation and productivity over time. Productivity comparisons between office and remote settings showed no uniform pattern: while many employees felt more focused and efficient at home, others highlighted the motivational advantages of the office. These perspectives converge on a preference for hybrid arrangements, which balance flexibility with opportunities for face-to-face interaction and collaboration.

Together, these insights strengthen the validity of the findings and highlight where managerial interventions—such as fostering social connection, supporting hybrid work models, and improving home workspace ergonomics—can most effectively translate autonomy and flexibility into sustained productivity.

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