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Department of Business Administration

RELATIONSHIP BETWEEN REMOTE WORK AND PRODUCTIVITY: EXPLORING THE MEDIATING ROLE OF JOB SATISFACTION AND THE MODERATING INFLUENCE OF DIGITAL COMPETENCE

Master Thesis

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Supervisor

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Turkish Abstract	**:**	Bu araştırma, uzaktan çalışma uygulamaları ile personel iş verimliliği arasındaki çok boyutlu ilişkiyi sistematik bir yaklaşımla incelemekte olup, iş tatminini aracı değişken, dijital yetkinliği ise düzenleyici değişken olarak konumlandırmaktadır. Çalışma kapsamında, iş tatmininin uzaktan çalışan personelin performansı üzerindeki etkisi ve dijital yetkinlik düzeyinin bu etkileşimi nasıl şekillendirdiği sorularına yanıt aramaktıdır. Araştırma verileri, İstanbul ilinde uzaktan çalışma modeli benimseyen 241 katılımcıdan toplanmış olup, veri analizinde Smart PLS 4.0 yazılımı tercih edilmiştir. Analiz sonuçları, dijital okuryazarlık ile bağlamsal verimlilik, iş

tatmini ile bağlamsal verimlilik, uzaktan çalışma örgütsel desteği ile bağlamsal verimlilik arasında istatistiksel olarak anlamlı ve pozitif yönlü doğrudan ilişkilerin varlığını ortaya koyarken, uzaktan çalışmanın duygusal tepkisi ile iş tatmini arasında negatif yönlü bir korelasyon tespit edilmiş, ancak uzaktan çalışmanın duygusal tepkisi ile bağlamsal verimlilik arasında istatistiksel olarak anlamlı bir doğrudan ilişki bulunamamıştır. Aracılık analizi bulgularına göre, uzaktan çalışmanın duygusal tepkisi ile bağlamsal verimlilik arasındaki ilişkide iş tatmininin tam aracılık rolü üstlendiği belirlenirken, örgütsel destek ve uzaktan çalışma ile bağlamsal verimlilik arasındaki ilişkide iş tatmininin kısmi aracılık etkisi gözlemlenmiştir. Düzenleyici etki analizleri neticesinde, uzaktan çalışma örgütsel desteği ile bağlamsal verimlilik arasındaki ilişkinin dijital okuryazarlık düzeyi tarafından anlamlı şekilde düzenlendiği tespit edilmiş, bununla birlikte bağlamsal verimlilik ile duygusal tepki arasındaki etkileşimde dijital okuryazarlığın düzenleyici bir rol oynamadığı belirlenmiştir.

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Istanbul – 2025

DECLARATION

I declare that this thesis has been prepared following scientific ethical rules, and the works of others have been referenced in following the scientific norms if used; there is no falsification in the data used, and no part of the thesis has been submitted to this university or any other university as another thesis.

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The thesis study of Mohammed Abdulelah Sufyan AL JABERI titled as "Relationship Between Remote Work and Productivity: Exploring the Mediating Role of Job Satisfaction and the Moderating Influence of Digital Competence" has been accepted as MASTER THESIS in the department of Business Administration by out jury.

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ÖZET

Bu araştırma, uzaktan çalışma uygulamaları ile personel iş verimliliği arasındaki çok boyutlu ilişkiyi sistematik bir yaklaşımla incelemekte olup, iş tatminini aracı değişken, dijital yetkinliği ise düzenleyici değişken olarak konumlandırmaktadır. Çalışma kapsamında, iş tatmininin uzaktan çalışan personelin performansı üzerindeki etkisi ve dijital yetkinlik düzeyinin bu etkileşimi nasıl şekillendirdiği sorularına yanıt aranarak, literatür taraması sonuçları uzaktan çalışma modalitelerinin iş tatmini ve verimlilik parametreleri üzerindeki çok yönlü etkilerini ortaya koymaktadır. Bu bağlamda araştırmanın temel hedefi, işletmelerin iş tatmini düzeylerini artırıcı stratejiler geliştirmesi ve çalışanların dijital kompetanslarını güçlendirmesi yoluyla uzaktan çalışma sistemlerini optimum düzeyde nasıl uygulayabileceklerine dair öneriler sunmak olup, nihayetinde uzaktan çalışma ortamlarında verimliliği etkileyen faktörlerin derinlemesine analiz edilmesi ve anlaşılmasını amaçlamaktadır. Araştırma verileri, İstanbul ilinde uzaktan çalışma modeli benimseyen 241 katılımcıdan toplanmış olup, veri analizinde Smart PLS 4.0 yazılımı tercih edilmiştir. Analiz sonuçları, dijital okuryazarlık ile bağlamsal verimlilik, iş tatmini ile bağlamsal verimlilik, uzaktan çalışma örgütsel desteği ile bağlamsal verimlilik arasında istatistiksel olarak anlamlı ve pozitif yönlü doğrudan ilişkilerin varlığını ortaya koyarken, uzaktan çalışmanın duygusal tepkisi ile iş tatmini arasında negatif yönlü bir korelasyon tespit edilmiş, ancak uzaktan çalışmanın duygusal tepkisi ile bağlamsal verimlilik arasında istatistiksel olarak anlamlı bir doğrudan ilişki bulunamamıştır. Aracılık analizi bulgularına göre, uzaktan çalışmanın duygusal tepkisi ile bağlamsal verimlilik arasındaki ilişkide iş tatmininin tam aracılık rolü üstlendiği belirlenirken, örgütsel destek ve uzaktan çalışma ile bağlamsal verimlilik arasındaki ilişkide iş tatmininin kısmi aracılık etkisi gözlemlenmiştir. Düzenleyici etki analizleri neticesinde, uzaktan çalışma örgütsel desteği ile bağlamsal verimlilik arasındaki ilişkinin dijital okuryazarlık düzeyi tarafından anlamlı şekilde düzenlendiği tespit edilmiş, bununla birlikte bağlamsal verimlilik ile duygusal tepki arasındaki etkileşimde dijital okuryazarlığın düzenleyici bir rol oynamadığı belirlenmiştir.

Anahtar kelimeler: Uzaktan çalışma, iş verimliliği, İş memnuniyeti, Dijital yeterlilik.

SUMMARY

In this research, we explore the intricate relationship between remote work and productivity, with a focus on job satisfaction as a mediating factor and digital competence as a moderator. It investigates whether job satisfaction influences the impact of remote work on employee output and examines how digital competence affects this relationship. The research delves into existing literature, analyzing the impact of remote work on job satisfaction and productivity. Its aim is to provide insights into how organizations can leverage remote work effectively by fostering job satisfaction and ensuring employees possess the necessary digital skills. Ultimately, this study aims to contribute to a better understanding of the factors that drive productivity in remote work environments. We gathered the data from a sample of 241 participants from people working remotely in Istanbul. We analyzed the data using the Smart PLS 4.0 program. In terms of direct relationships, the results show that there is a positive and significant relationship between digital literacy and contextual performance, job satisfaction and contextual performance, remote work organizational support and contextual performance, and remote work organizational support and job satisfaction. Also, there is a significant and negative relationship between remote work emotional response and job satisfaction. In addition to the non-significant relationship between remote work emotional response and contextual performance. In terms of the mediation, the results indicate a full mediation between remote work emotional response and contextual performance through job satisfaction. Additionally, a complementary partial mediation exists between the organizational support for remote work and the contextual performance, which is influenced by job satisfaction. Furthermore, in terms of moderation analysis, the results indicate that digital literacy moderates the relationship between remote work organizational support and contextual performance. However, digital literacy does not moderate the relationship between remote work, emotional response, and contextual performance.

Key Words: Remote Work, Employee productivity, Job satisfaction, Digital competence.

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ABBREVIATIONS

ACF	**:**	Ackerberg–Caves–Frazer
AVE	**:**	Average Variance Extracted
CP	**:**	Contextual performance
ConvLSTM	**:**	Convolutional Long Short-Term Memory
DL	**:**	Digital Literacy
ER	**:**	Emotional Support
FSSBs	**:**	Family-Supportive Supervisory Behaviors
HTMT	**:**	Heterotrait-Monotrait Ratio of Correlations
HR	**:**	Human Resources
IMUs	**:**	Inertial Measurement Units
ICTs	**:**	Information And Communication Technologies
IT	**:**	Information Technology
ITES	**:**	Information Technology Enabled Services
JCM	**:**	Job Characteristics Model
JS	**:**	Job Satisfaction
JSS	**:**	Job Satisfaction Scale
MSQ	**:**	Minnesota Satisfaction Questionnaire
NASA	**:**	National Aeronautics and Space Administration
OS	**:**	Organizational Support
PLS	**:**	Partial Least Squares Structural Equation Modeling
R-CNN	**:**	Region-Based Convolutional Neural Network
RVUs	**:**	Relative Value Units
RE	**:**	Remote Work
ROI	**:**	Return On Investment
SEM	**:**	Structural Equation Modeling
SDGs	**:**	Sustainable Development Goals
TVET	**:**	Technical And Vocational Education and Training
TFP	**:**	Total Factor Productivity
VIF	**:**	Variance Inflation Factor.
WAJDI	**:**	Weighted Abridged Job Descriptive Index

WFA	**:**	Working From Anywhere
WFH	**:**	Working From Home
WPM	**:**	Workplace Performance Measurement

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INTRODUCTION

The modern workplace is undergoing a notable transformation, largely influenced by advancements in information and communication technologies (Ancillo, Gavrila, & Núñez, 2023). Technological advancements have blurred geographical boundaries, making long-distance collaboration and job management easier. As a result, remote work has become a viable and increasingly popular option for companies across various sectors (Hanzis & Hallo, 2024). The COVID-19 pandemic acted as a catalyst, prompting businesses to quickly adopt remote work strategies to ensure operational continuity and protect employee well-being (Js & Venkatesh, 2023) This sudden shift highlighted both the potential benefits and the inherent challenges of remote work.

From an organizational perspective, remote work presents a potentially beneficial scenario, boosting productivity, reducing operational costs, and allowing access to a wider talent pool (Faruque, Talukder, Pranto, Debnath, & Sultana, 2024). Remote work provides employees with greater flexibility, improved work-life balance, and reduced commuting time (Ozimek, 2020). The successful execution of remote work requires careful consideration of various factors. To tackle significant challenges like effective communication, employee well-being, and sustained productivity, it is essential to have proper organizational support, thoughtful implementation of IT solutions, and effective management strategies (Ilag, 2021).

Despite the growing prevalence of remote work, its impact on employee productivity remains a subject of debate. Research suggests that remote work can boost productivity by reducing distractions and providing greater autonomy (Abdulrahim & Yousif, 2023). However, other studies point out potential downsides, such as social isolation, decreased collaboration, and difficulties in maintaining a healthy work-life balance (Abdulrahim & Yousif, 2023).

The relationship between remote work and productivity is likely influenced by various mediating and moderating factors. Job satisfaction, which reflects an employee's overall contentment with their work, may play a crucial role in mediating the impact of remote work on productivity (D. Kumar, 2024). Employee job

satisfaction can boost motivation and engagement, leading to higher productivity in a remote work setting (Abdulrahim & Yousif, 2023).

Furthermore, digital competence, encompassing the skills and knowledge required for the effective utilization of digital technology, may impact the connection between remote work and productivity (Ozimek, 2020). Remote work relies heavily on digital tools and platforms, and it can be managed more effectively by individuals with strong digital skills. These skills help them navigate the challenges of remote work and maintain high levels of productivity (Ilag, 2021).

This thesis aims to deepen our understanding of the complex relationship between remote work, productivity, job satisfaction, and digital competence. This study highlights the key factors that influence productivity in remote work environments, offering helpful conclusions for companies looking to improve their remote work strategies. The findings of this research can inform the development of policies and practices aimed at fostering job satisfaction, improving digital skills, and ultimately boosting employee productivity in remote work settings.

CHAPTER ONE

LITERATURE REVIEW

1.1. Remote Work

1.1.1. Historical Development of Remote Work

1.1.1.1. Origins and early implementations

The concept of remote work dates to the 1970s, when Dr. Jack Nilles, a physicist at NASA, first coined the term "telecommuting" (D. Kumar, 2024). He viewed it as a means to reduce commuting time and enhance productivity through the use of telecommunications and computers (Sanhokwe, Takawira, Kunene, & Maunganidze, 2022). Initially, remote work was primarily undertaken by a select group of individuals, predominantly within the IT sector, and it was often associated with cost savings through outsourcing rather than the pursuit of new talent (Hoffman, 2002). The advent of the Internet in the late 20th century significantly facilitated remote work by enabling communication across vast distances. This change led to the emergence of new types of organizations and work relationships (Hanzis & Hallo, 2024). Although remote work initially demonstrated potential, it remained largely overlooked until the onset of the COVID-19 pandemic. This situation prompted a global shift towards teleworking, compelling organizations to adapt their policies and technologies to align with this new reality (Mutiganda et al., 2022). This change highlighted both the benefits and challenges of remote work, such as increased independence and responsibility for employees, while also exposing inequalities related to gender and job qualifications (Katsabian, 2022). The pandemic accelerated the transition to remote work, transforming it from a minor trend into a widespread practice that has enduring implications for work-life balance and organizational structures (Hansen et al., 2023). The evolution of remote work is reshaping traditional employment frameworks, blurring the lines between salaried positions and independent contracting. This raises significant questions regarding fairness and management in the contemporary workplace (Berger, 2023).

During the 1980s, teleworking began to find its first practical applications, especially in sectors like printing. In this context, female workers often took on low-skilled roles, including text processing and data typing (Sanhokwe et al., 2022). This

period signified the onset of teleworks evolution, influenced by the declining costs associated with teleworking facilities and the prospect of various benefits, both financial and non-financial. These include lower real estate and energy expenses, as well as enhanced employee retention (Sanhokwe et al., 2022). Although remote work was embraced early on in the IT sector, it continued to be viewed as a specialized approach, frequently linked to cost-saving outsourcing strategies rather than a means of attracting talent (Sikes, Mason, & VonLehmden, 2011). The emergence of the Internet in the late 20th century significantly enhanced remote work by allowing for long-distance communication and the development of new organizational structures (Hislop, Axtell, & Daniels, 2009). It was not until the COVID-19 pandemic that remote work truly became mainstream (Contreras, Baykal, & Abid, 2020). Businesses around the globe were forced to embrace telecommuting to keep their operations running, resulting in a notable digital transformation (Contreras et al., 2020). This transition underscored the advantages of remote work, including enhanced work-life balance and cost savings, and has paved the way for its ongoing prominence in the post-pandemic landscape (Hassan, Karim, & Hameed, 2022).

1.1.1.2. Technological enablers

Remote work is supported by a range of digital tools and systems that facilitate communication, collaboration, and security for individuals working from afar. Digitalization plays a crucial role in transforming conventional work processes into formats that accommodate remote work. This transition necessitates organizations to reevaluate their management controls and create formal structures that enhance both employee performance and the organization's objectives (Kess-Momoh, Tula, Bello, Omotoye, & Daraojimba, 2024). The shift to remote work, accelerated by the COVID-19 pandemic, has led organizations to adopt virtual collaboration platforms and communication tools. These tools assist in maintaining employee engagement and productivity, even in the absence of physical presence (Js & Venkatesh, 2023). Video conferencing and project management software serve as essential tools for connecting individuals across distances and fostering teamwork, addressing challenges such as isolation and ineffective communication (D. Kumar, 2024). Furthermore, the advancement of internet technologies, including Web 3.0, necessitates robust cybersecurity measures to ensure secure data transmission and communication in remote environments (Kritika, 2024). Implementing comprehensive cybersecurity

frameworks is crucial. These frameworks should encompass encrypted data and secure access controls to mitigate potential threats (Kritika, 2024). Furthermore, technology solutions designed for communication within a company, supported by machine learning algorithms, can enhance employee motivation and satisfaction by providing insights into communication dynamics and identifying employee needs (Kritika, 2024). Research from Polish organizations indicates that the strategic adoption of new IT tools and the management of remote work processes are essential (Kocot, Maciaszczyk, Kocot, Kwasek, & Depta, 2021). The importance of tailoring support to meet the actual needs of employees and effectively monitoring the outcomes of remote work is highlighted (Urbaniec, Małkowska, & Włodarkiewicz-Klimek, 2022). In conclusion, these technological tools play a vital role in tackling the challenges of remote work and ensuring its effective implementation.

1.1.1.3. Impact of global events

Global events such as pandemics, economic downturns, and natural disasters significantly impact remote work by altering work dynamics, affecting productivity, and influencing employee well-being. The COVID-19 pandemic has notably hastened the transition to remote work, especially in sectors like IT, where it was less common prior to this event (Zahari, Manan, Razali, Zolkaflil, & Said, 2023). This change has led to both benefits and challenges. Remote work offers several benefits, such as increased flexibility, which includes shorter commute times and the ability to adjust work hours. These factors can enhance work-life balance and assist in attracting skilled employees (Faruque et al., 2024). However, it also exacerbates issues like presenteeism, absenteeism, and mental health challenges, including stress, anxiety, and feelings of isolation, all of which can negatively impact productivity and overall well-being (Jibunoh et al., 2025). Managers face heightened concerns regarding the lack of physical interaction and the difficulties in maintaining effective communication and supervision. They frequently perceive remote work as less effective compared to traditional office work (Petcu et al., 2023). The pandemic has also highlighted gender inequalities, with women, particularly those with children, experiencing diminished well-being and productivity due to increased domestic responsibilities (Jibunoh et al., 2025). The decrease in confidence regarding remote work, stemming from anxiety and feelings of isolation due to COVID-19, complicates the ability to adapt and excel in remote settings (Ozimek, 2020). To tackle these

challenges, organizations ought to implement supportive policies, enhance social support, and foster a positive remote work environment that caters to the psychological and practical needs of employees (Js & Venkatesh, 2023).

The COVID-19 pandemic has significantly impacted on remote work, altering its dynamics and affecting both employee well-being and organizational performance (Costin, Roman, & Balica, 2023). Remote work has led to challenges such as blurred boundaries between professional and personal time, heightened feelings of isolation, and increased stress, all of which can negatively impact employee well-being and productivity (Ferrara, Pansini, Vincenzi, Buonomo, & Benevene, 2022). The transition to remote work has highlighted issues such as presenteeism and absenteeism. A significant number of workers are experiencing psychological distress, including depression and anxiety, along with difficulties in maintaining a healthy work-life balance (Js & Venkatesh, 2023). Family interactions have evolved, influenced by the effects of remote work on daily routines and communication patterns. This necessitates the development of new strategies for managing space and time within the home (Jibunoh et al., 2025). The successful implementation of remote work, particularly within public services, relies on several key factors, including technological infrastructure, organizational culture, and performance evaluation. These components are crucial for maintaining service quality and efficiency (Ferrara et al., 2022). Furthermore, remote work has underscored the necessity for adaptable policies and investment in infrastructure to improve employee well-being and performance, as organizations adjust to the evolving work landscape in the post-pandemic era (Js & Venkatesh, 2023). The findings suggest that while remote work offers flexibility and potential benefits, it requires careful management and support to mitigate negative effects and enhance its overall effectiveness.

1.1.1.4. Current trends and future projections

The current trends in remote work have been significantly shaped by the COVID-19 pandemic, which has accelerated the shift towards flexible work arrangements across various industries (Nyathani, 2023). The shift has been particularly evident in the Information Technology (IT) sector, where remote work has become crucial due to its benefits, such as increased flexibility, enhanced productivity, and improved talent retention (Wang, Liu, Qian, & Parker, 2020). The pandemic has

demonstrated that employees can maintain productivity outside of a traditional office setting, leading to a greater acceptance of telecommuting and remote work (Ozimek, 2020). This change has demonstrated the significance of having technological support, clear communication, and a healthy work-life balance, all of which are crucial for effective remote work environments (Al-Habaibeh, Watkins, Waried, & Javareshk, 2021). Additionally, the concept of a "workation," in which employees perform their duties from vacation destinations, is gaining popularity; however, it raises concerns regarding legal and social security (Bello, Tula, Omotoye, Kess-Momoh, & Daraojimba, 2024). The transition to remote work is expected to persist beyond the pandemic, necessitating employers and policymakers implement strategic adjustments to address challenges such as cybersecurity threats, team cohesion, and equity concerns (D. Kumar, 2024). Furthermore, the transition to remote work has prompted a reevaluation of workplace regulations and practices, underscoring the significance of upskilling and reskilling to adjust to the changing work environment (Ezeilo & Green-McKenzie, 2024). Overall, remote work is becoming more widely regarded as a preferred method of employment. The future presents both opportunities and challenges that must be navigated carefully to foster sustainable and inclusive work environments (Ancillo et al., 2023).

Predictions for the future of remote work indicate a significant and enduring shift towards remote and hybrid work models, shaped by advancements in technology and changing trends within the workforce. It is anticipated that by 2025, 70% of the workforce will engage in remote work for a minimum of five days each month. This indicates that remote work is increasingly becoming standard practice rather than merely an exception ((Kowalski & Ślebarska, 2022). This change is not merely a response to the COVID-19 pandemic; it also continues trends that have been bolstered by years of advancements in information technology (Wang et al., 2020). In the Nordic countries, remote work is expected to influence urban and regional development, with national policy frameworks playing a crucial role in shaping these practices (OECD, 2021). The concept of "Telelife" envisions a future in which remote living is enhanced through technologies like digital twins and virtual prototyping (D. Kumar, 2024). The objective is to establish a connection between physical and virtual interactions by the year 2035 (Orlosky et al., 2021). This vision aligns with the increasing trend of remote work, as companies recognize the benefits and plan to

expand their remote hiring, shaped by positive experiences during the pandemic (Šmite, Moe, Hildrum, Gonzalez-Huerta, & Méndez, 2022). The future of remote work integrates emerging technologies with evolving work styles, providing a more adaptable and interconnected approach to professional life.

1.1.2. Defining Remote Work

The concept of remote work encompasses various ideas and practices that have evolved over time, particularly with advancements in information and communication technologies. “Remote work” encompasses various forms of employment conducted outside traditional office settings. This encompasses teleworking, telecommuting, working from home (WFH), and working from anywhere (WFA) (Wang et al., 2020). Telework, initially introduced by Jack Nilles in the 1970s, aimed to reduce commuting by allowing employees to work closer to their homes. During the COVID-19 pandemic, this practice experienced a significant rise as companies modified their policies to accommodate this shift (Blount & Taksa, 2023). Telework is often associated with salaried positions, in which employees use telecommunications to perform their duties from various locations, such as their homes or satellite offices (Wang et al., 2020). This work arrangement redefines traditional managerial roles, shifting the focus from control to one of support and trust. This also highlights issues of equality and fairness within organizations (Contreras et al., 2020). While remote work offers potential benefits such as reduced commuting stress and increased flexibility, it also presents certain challenges. These aspects involve maintaining productivity and remaining engaged with the company culture, which typically evolves in office environments through informal interactions (Costin et al., 2023). The terminology employed reflects a vibrant and intricate perspective on contemporary work practices, influenced by the unique cultural, geographical, and regulatory factors pertinent to each region (Blount & Taksa, 2023). As remote work continues to evolve, it is crucial for organizations to address its challenges and leverage its benefits to create a sustainable work environment (Kicheva, 2021).

Remote work encompasses various professional activities conducted outside traditional office settings, typically facilitated by technology. It includes both salaried telework, where employees function outside the organization using information and communication technologies, and self-employed work that occurs on the periphery of

organizations (Orlosky et al., 2021). Remote work can be categorized into several types of distances: psychological, temporal, technological, and structural. This also signifies a lack of access to material, social, and symbolic resources (Kohont & Ignjatović, 2022). Historically, remote work, commonly known as telework or telecommuting, aimed to reduce commuting time by allowing employees to perform their duties from locations closer to their residences. This method gained significant traction during the COVID-19 pandemic (Blount & Taksa, 2023). This shift has led to a reevaluation of work practices, with remote work becoming increasingly prevalent and normalized, influenced by the cultural, geographical, and regulatory factors unique to each region (Blount & Taksa, 2023). Additionally, remote work provides enhanced flexibility and autonomy, positively impacting employees' well-being and performance by fostering a better work-life balance and influencing their perceptions of their work environments (Ferrara et al., 2022). While remote work offers several benefits, it also presents challenges to the traditional productivity dynamics found in an office setting. This is primarily due to the absence of spontaneous interactions and cultural connections that characterize a traditional office setting (Ilag, 2021). Overall, remote work is redefining the boundaries of conventional employment, blending elements of both salaried positions and freelance opportunities (Orlosky et al., 2021).

1.1.3. Types of Remote Work Arrangements

Remote work encompasses various types; each characterized by distinct features and impacts on both employees and organizations. The term "remote work" typically denotes telework, a compensated form of remote employment where individuals operate outside the traditional office environment utilizing information and communication technologies. It also encompasses freelance work, which is characterized by greater independence and self-employment (Orlosky et al., 2021). Telework often fosters greater independence and accountability among employees, transforming the role of managers from one of oversight to that of support and trust-building. Nonetheless, it also highlights issues of inequality, particularly in relation to gender and qualifications (Orlosky et al., 2021). Hybrid work models, which combine remote and in-office work, are gaining popularity as they offer a balanced approach that enhances flexibility while also facilitating opportunities for in-person collaboration. This method addresses challenges such as social isolation and ambiguous work-life boundaries (Mustajab, 2024). Effectively managing remote and hybrid work arrangements requires well-defined policy documents that clearly outline

expectations and help prevent confusion. It also necessitates leaders who employ transformational styles and proactive communication approaches (Mustajab, 2024). Furthermore, contemporary information technologies are essential in facilitating remote work, providing platforms that support both distance employment and freelance endeavors (S. Prasad, Arahant, & Kaushik, 2024). These arrangements offer benefits like increased productivity and enhanced job satisfaction; however, they necessitate ongoing research to address emerging trends and uphold equitable practices (Mustajab, 2024).

1.1.3.1. Fully remote

Remote work arrangements are increasingly prevalent, driven by advancements in technology and a cultural shift that emphasizes flexibility and the integration of work with personal life. The COVID-19 pandemic accelerated this trend, transforming remote work from a necessity into a preferred mode of working for numerous employees and employers (Ţarcă & Bucurean, 2023). Remote work arrangements offer numerous benefits, including enhanced productivity and creativity. Research indicates that 83% of organizations implementing flexible work policies experience enhanced productivity (Hunter, 2018). Additionally, remote work allows employees to avoid the stress and time associated with commuting, resulting in a better work-life balance and increased job satisfaction (Ţarcă & Bucurean, 2023). Managing a fully remote workforce presents challenges, such as maintaining strong team dynamics and ensuring effective communication among team members situated in various locations (D. Kumar, 2024). Information and communication technologies (ICTs) have enabled remote work, permitting employees to perform their duties from any location. Nonetheless, this also complicates the distinction between work and personal life, potentially leading to increased stress and burnout (Lagutina, 2022). Despite these challenges, the transition to remote work is supported by a growing body of research and literature that highlights its benefits and underscores the necessity of thoughtful management to mitigate potential drawbacks (Ţarcă & Bucurean, 2023). As organizations adapt to this new mode of operation, it is essential for them to address these challenges to sustain productivity and promote employee well-being in a fully remote work environment (Js & Venkatesh, 2023).

1.1.3.2. Hybrid models

Hybrid work models, which integrate remote and in-office work, have emerged as a strategic approach to address the evolving needs of contemporary work

environments (Mustajab, 2024). These models offer significant benefits, including enhanced employee productivity, higher job satisfaction, and an improved work-life balance, primarily due to increased flexibility and reduced distractions in the workplace (Hassan et al., 2022). Research indicates that hybrid work arrangements in the tech industry enhance job satisfaction, highlighting the significance of flexibility and effective communication (Al-Habaibeh et al., 2021). However, challenges such as social isolation, communication barriers, and the need to maintain organizational culture persist (Mustajab, 2024). The Job Demands-Resources theory suggests that remote work can enhance job performance by fostering greater focus and engagement. Nonetheless, it may also lead to disengagement due to feelings of social isolation (D. Kumar, 2024). To address these challenges, organizations ought to develop comprehensive policies that clearly outline expectations and provide resources to enhance motivation and alleviate feelings of isolation (Javed, Balouch, & Hassan, 2014). Effective leadership, characterized by transformational strategies and proactive communication, is crucial for the successful implementation of hybrid models (Mustajab, 2024). Additionally, safety considerations, although not as prominent as other factors, still contribute to job satisfaction in hybrid environments (Hassan et al., 2022). Organizations could enhance the hybrid work model by implementing effective communication tools and establishing clear policies. This method fosters innovation, collaboration, and sustainable growth (Hassan et al., 2022).

1.1.3.3. Flexible arrangements

Flexible work arrangements in remote settings have become increasingly prevalent and are now regarded as a permanent feature in numerous organizations, primarily influenced by the COVID-19 pandemic. These arrangements offer numerous benefits, including improved work-life balance, increased productivity, and reduced costs for both employers and employees (Ţarcă & Bucurean, 2023). Employees can modify their work schedules and locations, which contributes to enhanced well-being and improved efficiency (Mishra, 2024). An examination of multiple generations reveals that different age groups hold varying perspectives on flexible work arrangements. Flexible hours and compressed workweeks contribute to enhancing both the productivity and well-being of employees (Ojha, 2024). However, the transition to remote work also presents challenges, such as potential feelings of isolation and difficulties in communication. If these issues are not managed effectively,

they can have a detrimental impact on employee engagement (D. Kumar, 2024). To tackle these challenges, organizations ought to develop comprehensive policies that clearly outline expectations and support systems for remote work, thereby assisting employees in remaining engaged and productive (Javed et al., 2014). The increasing popularity of flexible work arrangements has sparked greater academic interest, with research exploring the benefits and challenges associated with these emerging work models (Ţarcă & Bucurean, 2023). Overall, flexible work arrangements are seen as beneficial for fostering a more engaged and satisfied workforce if organizations effectively address the potential drawbacks.

1.1.4. Key Components and Characteristics of Remote Work

The concept of remote work has gained significant popularity, especially in the aftermath of the pandemic. It encompasses several key components that influence its effectiveness and its impact on both organizations and employees. An essential aspect is the utilization of information and communication technologies, which enable work to be conducted beyond conventional office settings, thereby facilitating telework and remote work (Beckel & Fisher, 2022). This change has led to increased flexibility and independence for workers, allowing them to manage their work hours more effectively, which can enhance their work-life balance and overall job satisfaction (Mamatha & Thoti, 2023). However, remote work presents challenges such as blurred boundaries between professional and personal life, along with potential social isolation, which can negatively impact work-life balance (Mamatha & Thoti, 2023). Furthermore, remote work transforms the responsibilities of managers, shifting their emphasis from control to one of support and trust. This also raises important issues related to equality and fairness, particularly in terms of gender and qualifications (Orlosky et al., 2021). The concept of distance in remote work is multifaceted, encompassing psychological, temporal, technological, and structural dimensions that affect access to material, social, and symbolic resources (Al-Habaibeh et al., 2021). Moreover, the health and well-being of employees are crucial aspects to consider, as remote work can influence these areas through various individual, organizational, and wider factors (Al-Habaibeh et al., 2021). To enhance remote work, organizations ought to establish supportive policies, provide technological support, and cultivate a virtual work environment that fosters productivity and well-being (Mamatha & Thoti, 2023).

Remote work is an increasingly popular concept that provides flexibility and utilizes information and communication technologies to perform tasks outside of traditional office settings. It encompasses telework, which is compensated for and occurs outside the organization, along with self-employed remote work, which expands the boundaries of conventional employment by generating additional self-employment opportunities (Orlosky et al., 2021). The pandemic has accelerated the transition to remote work, resulting in a notable increase in job listings offering remote opportunities across various countries. Nonetheless, this trend differs among various industries and regions (Hansen et al., 2023). Remote work presents various challenges, including psychological, time-related, technological, and structural gaps that arise from the absence of physical, social, and symbolic resources. The factors influence the manner, setting, and motivations behind remote work (D. Kumar, 2024). Remote work presents several challenges, including the blending of work and home life, ineffective communication, tendencies to procrastinate, and experiences of loneliness. Factors such as social support, job autonomy, workload, and self-discipline influence these issues (Orlosky et al., 2021). Moreover, remote work plays a crucial role in the broader transformations occurring in the labor market because of Industry 4.0 and demographic shifts. It offers financial benefits for employers and aids in drawing in skilled professionals. Nonetheless, it necessitates the implementation of new human resources strategies and technological solutions for effective execution. The features discussed illustrate the evolving nature of remote work and its implications for both employees and organizations in the current job market.

1.1.5. Theoretical Foundations

The theoretical foundation of remote work is intricate, integrating various models and theories to address the unique challenges and opportunities it presents. The NEAR/EARN model, developed by Zlatić, integrates Herzberg's Two-Factor Theory with the Job Demands-Resources Model to improve the performance of remote employees (Haque, 2023). The significance of the workplace environment, job autonomy, employee reward systems, and employee development is underscored, with job satisfaction serving as a crucial mediating factor (Ali, Narine, Hill, & Bria, 2023). The transition to remote work, accelerated by the COVID-19 pandemic, has highlighted the importance of understanding its impact on employee performance and

well-being. Frameworks like self-determination theory and social identity theory provide important insights into employee motivation and the functioning of group dynamics (Paudel & Sherm, 2024). Remote work, often referred to as "telework," presents challenges to conventional management roles. This emphasizes the significance of autonomy and responsibility, while also addressing concerns related to equality and fairness, particularly in terms of gender and qualification disparities (Orlosky et al., 2021). Self-determination theory elucidates the motivation of remote workers by emphasizing the significance of satisfying psychological needs, including autonomy, competence, and relatedness. This sense of fulfillment fosters intrinsic motivation and results in positive experiences in remote work (Gagné et al., 2022). Collectively, these theories offer a comprehensive insight into remote work, enabling organizations to create supportive environments that enhance success for both individuals and the organization overall.

1.1.6. Drivers and Challenges of Remote Work

1.1.6.1. Organizational drivers

Organizations adopt remote work for a variety of reasons, encompassing economic, psychological, and management factors. Remote work is shaped by the potential for cost savings, such as reduced office rental expenses, and the opportunity to access a global talent pool, which enhances competitive advantage (Ferreira, Pereira, Bianchi, & Silva, 2021). Adapting to telework holds significant importance from a psychological standpoint, as it affects the interplay between various factors and organizational performance, including individual psychological needs and job requirements (Lu, Zheng, & Ye, 2023). The digitalization of workplaces has a significant effect on both individual and social-psychological dynamics. This encompasses alterations in communication standards and work-life balance, which can affect employee engagement and productivity (Sheveleva & Rogov, 2021). From a management perspective, remote work necessitates new approaches for managing labor, supervising tasks, and assessing performance, as well as innovative strategies to maintain employee motivation and commitment to the organization (Sheveleva & Rogov, 2021). To fully benefit from remote work, it is essential to address challenges such as communication barriers, technical issues, and the potential decline of corporate culture and values (Ferreira et al., 2021). Additionally, the flexibility associated with

remote work significantly contributes to an improved work-life balance and enhances employee satisfaction, outcomes that professionals recognize as advantageous (Ferreira et al., 2021). Successfully implementing remote work requires a clear understanding of the key factors involved and the development of strategies to tackle the associated challenges.

1.1.6.1.1. Cost reduction

Remote work has significantly impacted the ways in which organizations can reduce expenses, as evidenced by various studies. The transition to remote work during the COVID-19 pandemic led to considerable cost savings in project execution, with consulting projects experiencing reductions of up to 31%, subsequently enhancing profit margins (Js & Venkatesh, 2023). The shift is supported by the broader economic impacts of remote work, which include savings on traditional financial elements such as office space and operational costs (Js & Venkatesh, 2023). Telework, as a management strategy, emphasizes these savings by reducing the need for physical office space and associated expenses, while also enhancing productivity (Anik & Habib, 2023). Despite these financial benefits, numerous organizations often overlook the return on investment (ROI) associated with telework, as measuring its impact can prove challenging. Nonetheless, indicators such as reduced absenteeism and turnover rates provide compelling evidence of their advantages (Mutiganda et al., 2022). Additionally, remote work arrangements have been linked to increased employee productivity and job satisfaction, contributing to the overall performance of organizations (Mustajab, 2024). However, the success of remote work policies depends on effective leadership and management strategies that address potential challenges like social isolation and foster a supportive remote work atmosphere (Mustajab, 2024). Overall, remote work presents a viable strategy for reducing expenses if organizations implement effective measurement and management practices to maximize its advantages.

1.1.6.1.2. Access to global talents

The transition to remote work has significantly enhanced companies' capacity to access global talent, presenting both benefits and challenges. Remote work allows companies to tap into a broader pool of talent by removing geographical barriers. This

enables organizations to employ talented professionals from various cities, countries, or even continents without requiring relocation (Ardi, Cahyadi, Meilani, & Pramono, 2024). This flexibility is particularly attractive to talented individuals seeking meaningful employment that aligns with their personal schedules and responsibilities (Ardi et al., 2024). The COVID-19 pandemic has accelerated this trend, prompting organizations to adapt their human resources practices to more effectively manage and engage a distributed workforce (Haque, 2023). However, this change brings with it a unique set of challenges. Organizations face difficulties in maintaining effective communication, monitoring performance, and sustaining corporate culture and values in a remote setting (Panchuk, 2023). Furthermore, multinational corporations are progressively engaging external talent globally by utilizing innovative intermediaries. This trend necessitates the development of new strategies for talent management and enhanced collaboration with internal teams (Phulpagar, 2020). Human resources professionals must embrace technology and acquire new skills to enhance remote work environments. This method will assist them in addressing challenges and leveraging the opportunities offered by a global talent pool (Haque, 2023). Overall, remote work has transformed the way companies seek talent, empowering them to attract top candidates from across the globe. Nonetheless, this transition necessitates thoughtful adjustments in human resource practices (Haque, 2023).

1.1.6.1.3. Business continuity

Numerous key factors play a significant role in the effectiveness of remote work in ensuring business continuity for organizations, as demonstrated by the studies presented. A crucial element is the presence of robust technological infrastructure, including computers and reliable internet connections, which facilitates effective remote work and continuous operations, as evidenced by the significant impacts observed in the Regional Development Planning Agency of Gunungkidul District (Nugroho, 2024). Furthermore, establishing clear remote work policies and guidelines, coupled with effective communication tools, enhances remote working experience and supports organizational resilience (Makkar & Rani, 2024). Providing support for employee mental health, such as counseling services and stress management programs, is crucial. Enhancing employee well-being and reducing burnout contributes to the stability of the organization (Tawas, Riyanti, Saputra, Abdillah, & Irianti,

2024). Agile project management facilitates remote work by enabling organizations to swiftly adapt to changes and effectively oversee projects. Maintaining high productivity during disruptions is crucial (Tawas et al., 2024). In Zimbabwe's telecommunications sector, teleworking became an essential strategy to maintain business operations during the COVID-19 pandemic. This situation highlighted the importance of teleworking in maintaining business continuity and sustainability strategies (Mhlophe & Chinjova, 2022). However, challenges such as an unreliable electricity supply and a lack of ergonomic resources can hinder effective teleworking, underscoring the need for comprehensive policies and standards to govern remote work practices (Mhlophe & Chinjova, 2022). These factors collectively contribute to the success of remote work, ensuring that businesses operate efficiently and remain resilient during challenging periods.

1.1.6.2. Employee drivers

1.1.6.2.1. Work-life balance.

Remote work influences the work-life balance of employees in various ways, as demonstrated by numerous studies. The transition to remote work, accelerated by the COVID-19 pandemic, has led to both positive and negative impacts on employees' work-life balance. Remote work offers several benefits, including increased flexibility and a greater sense of independence (Petcu et al., 2023). This arrangement enables employees to manage their work and personal lives more effectively, potentially resulting in increased satisfaction and productivity (Mamatha & Thoti, 2023). This flexibility can improve concentration, reduce commuting time, and increase overall happiness, enabling employees to have more time for personal activities and relaxation (Costin et al., 2023). However, challenges such as ambiguous boundaries between professional and personal life, experiences of social isolation, and increased stress levels represent significant issues that can negatively impact work-life balance (Mamatha & Thoti, 2023). The challenges highlight the importance of effectively managing boundaries, maintaining social connections, and fostering supportive work environments to mitigate negative impacts (Mamatha & Thoti, 2023). Organizations ought to implement policies that promote clear communication, enable flexible work hours, and offer employee support programs. These measures can enhance work-life balance and increase productivity (Mamatha & Thoti, 2023). In conclusion, remote

work can significantly improve the work-life balance and increase employee satisfaction. Nevertheless, it is essential to manage it carefully to address potential drawbacks and maximize its benefits for employees (Ismawati, Soetjipto, & Sopiah, 2023).

1.1.6.2.2. Geographic flexibility

The capacity to work from various locations, particularly through work-from-anywhere initiatives, significantly influences how employees transition between jobs and shift roles in the era of remote work. WFA programs offer flexibility in terms of both time and location, which makes them increasingly attractive to employees seeking to relocate to their preferred areas. This change enhances their overall job satisfaction (Choudhury, Foroughi, & Larson, 2020). Research shows that this flexibility can enhance productivity, as evidenced by a 4.4 percent increase in output at the United States Patent and Trademark Office when employees transitioned from working at home to WFA programs (Choudhury et al., 2020). The ability to work from any location can alleviate the constraints on job mobility that often arise from limitations on relocation and a restricted scope of job search options (Choudhury et al., 2020). However, the transition to remote work, particularly for high-income employees in the business services sector, poses challenges for the local economies of major urban areas. Their absence might result in reduced spending on local consumer services, potentially affecting employment in those regions (Dalton, Dey, & Loewenstein, 2022). Despite these challenges, the capacity to work remotely can enhance job mobility by expanding the range of employment opportunities available to workers, provided that personal constraints are considered (Sostero, Milasi, Hurley, Fernández-Macías, & Bisello, 2020). The capacity to work from various locations in the era of remote work enables employees to navigate their careers more fluidly and pursue new job opportunities. Nonetheless, it also introduces new economic changes and challenges.

1.1.6.3. Implementation challenges

1.1.6.3.1. Communication barriers

Individuals who work remotely face a range of common communication challenges, primarily stemming from the lack of face-to-face interactions and reliance

on communication tools. A significant barrier is ensuring that messages are both received and comprehended, as this can impede team communication and lead to misunderstandings (D. Kumar, 2024). Despite advancements in Information Communication Technology (ICT), virtual collaborative teams still encounter challenges in maintaining personal connections and communicating effectively. These elements are crucial for fostering a shared understanding and facilitating decision-making (Bjørn & Ngwenyama, 2009). Additionally, the geographical and cultural differences present in remote teams can exacerbate communication challenges, as existing technologies may not fully address the issues associated with managing a global workforce (Ilag, 2021). Individuals who work remotely often encounter feelings of isolation, which can affect their workflow and visibility within their team. This situation requires personalized strategies to address these challenges (D. Kumar, 2024). Moreover, lack of trust and misunderstandings are regarded as major barriers, with ineffective communication identified as a primary cause of project failures in virtual teams (Newman & Ford, 2020). To address these challenges, it is essential to establish strategies such as creating clear communication protocols and emphasizing the importance of trust-building within the team. These steps are essential for improving communication management in remote work settings (Newman & Ford, 2020).

1.1.6.3.2. Team cohesion

Key factors contributing to challenges in team cohesion within remote work environments include social isolation, communication difficulties, and trust issues. Remote work can occasionally lead to a reduction in face-to-face interactions, potentially resulting in feelings of loneliness and social isolation among employees. This may negatively impact their productivity and performance (Meiryani et al., 2022). The online nature of remote work alters the organization of team networks, leading to a decrease in network density and structural cohesion. This can fracture teams and hinder the sharing of personal information, which is crucial for fostering strong interpersonal relationships (D. Kumar, 2024). Furthermore, the distribution of team members across various locations in remote settings can impede communication and trust, both of which are essential for fostering a sense of unity or "teamness" among members (D. Kumar, 2024). Technology significantly influences our

communication methods; however, it also presents challenges that can affect team dynamics. This highlights the importance of effective leadership in guiding virtual collaboration while fostering motivation and well-being (Garro-Abarca, Palos-Sánchez, & Aguayo-Camacho, 2021). Effective management of remote teams emphasizes the importance of technology tools to facilitate communication, promote social interaction through virtual team-building activities, and foster a culture of trust and accountability to enhance team cohesion (Al-Habaibeh et al., 2021). These strategies aim to tackle the challenges associated with remote work and foster the development of strong and effective teams.

1.1.6.3.3. Performance monitoring

Organizations face a range of common challenges when it comes to monitoring performance in remote work environments, as evidenced by the studies presented. A significant issue is the difficulty in sustaining effective communication and feedback, which are crucial for evaluating task completion and managing workload, as emphasized in the research conducted in Lithuania (Müller, Schuberth, Bergsiek, & Henseler, 2022). Furthermore, the lack of direct observation in virtual environments raises concerns regarding employee commitment and performance levels. This circumstance compels managers to rely on indirect control methods, which might not be as effective (Raišienė, Rapuano, Dőry, & Varkulevičiūtė, 2021). The transition to remote work has raised ethical concerns, such as the misuse of technology and the management of confidential information, which complicates performance management further (Meiryani et al., 2022). Furthermore, employees working from home often face considerable stress and distractions that can impede their focus and productivity, leading to challenges in performance monitoring (Poovaiah & Mathew, 2022). Despite these challenges, virtual teams offer benefits like enhanced decision-making and a global presence. Nonetheless, these advantages are often obscured by the challenges associated with effectively monitoring and evaluating performance (Cascio, 2000). In conclusion, these challenges necessitate the development of targeted strategies to effectively manage performance in remote work settings, striking a balance between the need for oversight and the inherent flexibility of remote work (Gifford, 2022).

1.1.6.3.4. Technology infrastructure

Organizations transitioning to remote work face several significant challenges in establishing their technology infrastructure, as highlighted in the provided papers. One significant challenge is ensuring that communication technologies are robust and reliable, as they play a vital role in maintaining high levels of collaboration and productivity in a remote setting. The use of appropriate communication tools is crucial as they facilitate the establishment of clear goals and the assessment of performance, both of which are vital for effective remote work (Makkar & Rani, 2024). Additionally, technical challenges such as connectivity issues and inadequate digital infrastructure can impact on the effectiveness of remote work. The ongoing technology issues reported by both employees and employers underscore this point (S. Prasad et al., 2024). Integrating flexible and universal digital tools is essential for supporting various work environments and enhancing productivity. Nonetheless, this requires substantial investment and meticulous planning (Bello et al., 2024). Furthermore, organizations must address the challenge of establishing clear remote work policies and guidelines to support employees while ensuring consistency in operations (Makkar & Rani, 2024). This change necessitates a reevaluation of leadership and management approaches to adapt to the online environment. This entails providing mental health support and fostering a sense of community to mitigate social isolation (Snow, 2022). In conclusion, while remote work offers numerous benefits, it is crucial to tackle the technological and organizational challenges to ensure its effective implementation and sustainability (Snow, 2022).

1.2. Productivity

1.2.1. Key Characteristics of Productivity

1.2.1.1. Definition

Work productivity is a complex term that encompasses the efficiency and effectiveness with which individuals produce goods and services. This concept pertains to the ability of employees to produce outcomes relative to the resources they utilize, emphasizing a systematic evaluation of efficiency by contrasting the resources expended with the objectives achieved (Nur & Ihwan, 2017). This concept differs from productivity, which encompasses the ethical endorsement of productive efforts

and the creation of value through careful reflection. This suggests that productivity alone may not fully capture the contributions of human resources (L. Kumar, 2022). Labor productivity serves as a crucial indicator of the effectiveness of human labor. This metric reflects the cost associated with individual tasks and is determined by analyzing the volume of production in relation to the labor employed. This serves as a valuable benchmark for comparing various businesses, regions, and industries (Shankar & Aroulmoji, 2020). Assessing economic growth and sustainable development holds significant importance. This entails examining expenses, non-monetary contributions, and labor techniques. It also necessitates the identification of technical, organizational, socio-economic, and natural resources to enhance productivity (Novichenko, 2022). Furthermore, the productivity of intellectual work, particularly within public administration, requires distinct evaluation methods due to its unique characteristics. Models like the Matrix Objective model have been proposed to evaluate and analyze productivity in this field (Cretu & Lupu, 2020). Overall, work productivity serves as a crucial measure of the efficiency with which labor is utilized. It influences economic competitiveness and resource management across various industries.

1.2.1.2. Measurements of productivity

Assessing productivity is a complex idea that varies significantly across different industries and the approaches employed. In the field of macroeconomic analysis, there is growing concern that conventional productivity measures may not fully capture the intricacies of contemporary economic growth. The slowdown in productivity growth in advanced economies is particularly noteworthy, especially in light of ongoing technological advancements and improvements in living standards (J. Martin & Riley, 2024). Recent advancements on a smaller scale, such as the application of inertial measurement units (IMUs) and machine learning techniques for activity recognition in construction, have demonstrated significant effectiveness. Their ability to accurately assess worker productivity highlights the potential of technology in evaluating this aspect of performance (Hong, Ham, Chun, & Kim, 2023). The complexities of measuring productivity have increased due to both historical and contemporary challenges, such as the pandemic and climate change. This necessitates a broader examination that considers management roles and environmental factors (Kegode, 2020). In the pharmaceutical industry, an examination of productivity using ratio

analysis and statistical tests has revealed significant differences in productivity performance among various companies. This suggests that sector-specific factors significantly influence productivity outcomes (Dadhaniya, 2021). The application of Relative Value Units (RVUs) to assess productivity in healthcare, particularly within the realms of psychology and neuropsychology, has encountered significant criticism. There is considerable debate surrounding the adequacy of RVUs in reflecting the value of non-billable services and the outcomes for patients. This has resulted in calls for alternative metrics that more accurately reflect the diverse contributions of healthcare professionals (Dawson & Speelman, 2023). These studies emphasize the complexity and specificity involved in measuring productivity across various sectors. They propose that we require more comprehensive and meticulous approaches tailored to the distinct characteristics of each region.

Various industries employ distinct metrics to assess productivity, reflecting the unique characteristics of their work and the specific goals of each sector. In industrial environments, key metrics like cycle time and waste identification play a crucial role. Artificial intelligence can enhance these measurements by providing a robust and cost-effective analysis of human interactions with objects, as demonstrated by the application of ConvLSTM and Faster R-CNN algorithms (Hassani, Masrour, Hajji, Belmarouf, & Talhaoui, 2023). In the realm of knowledge work, it is essential that productivity measures focus on aspects such as effectiveness, efficiency, profitability, innovation, and customer satisfaction. The selected metric ought to represent the intensity level of the knowledge work being conducted. High-intensity tasks benefit from effectiveness metrics, while efficiency is more suitable for tasks that are less intense (Xiao, Nembhard, & Chang-jun, 2012). Research on productivity measurement, both historical and contemporary, highlights the vital role of management and underscores the importance of considering environmental externalities, especially in light of challenges like the pandemic and climate change (Costin et al., 2023). Furthermore, a comprehensive analysis of productivity measurement techniques suggests that organizations should employ a variety of methods, including innovative case studies, to accurately assess performance (Lesmana, Junaedi, & Triana, 2020). Key factors influencing productivity across different industrial sectors include human resource management, organizational culture, production methods, management strategies, and performance. The factors

outlined can contribute to the development of a productivity index, which serves to evaluate the maturity of an industry's productivity (Kamble & Wankhade, 2017). These insights emphasize the importance of selecting appropriate metrics that align with the specific context and objectives of each industry.

The integration of technology in the workplace significantly influences our assessment of productivity by providing more precise and comprehensive methods for data collection. RFID technology is utilized to track when employees are in proximity to one another, enhancing the comprehension of teamwork and its effects on productivity. This approach assists organizations in making informed decisions that improve work environments and elevate employee performance (Marri, Jarn, Mansoor, Atalla, & Miniaoui, 2022). Furthermore, the implementation of advanced technology and IoT innovations has demonstrated an ability to enhance employee productivity by fostering communication, commitment, and accountability—factors that are crucial for effectively managing evolving tasks and workloads (Hafizji, Rajput, & Chaudhry, 2022). The Workplace Performance Measurement (WPM) method emphasizes the role of technology in improving productivity analysis through the application of process mining and machine learning techniques. This method assesses the duration of tasks and their frequency, while also identifying any anomalies. This enhances production efficiency and provides valuable insights into management systems (Nesterak, Szelągowski, & Radziszewski, 2024). Moreover, reliable internet connectivity is crucial for maintaining high productivity levels, as it improves task completion rates, accelerates project turnaround times, and enhances overall employee performance. Reliable internet access reduces frustration and enhances teamwork, underscoring the significance of investing in digital infrastructure to elevate organizational performance (Buhari & A, 2024). The advancements in technology enhance our ability to measure productivity with greater precision, resulting in improved efficiency within the workplace.

Traditional methods of measuring productivity have notable limitations, primarily due to their narrow focus, which does not adequately capture the full spectrum of productive activities across different sectors. The Relative Value Unit (RVU) system, commonly utilized in healthcare, fails to accurately assess productivity as it focuses solely on billable services. This approach fails to consider important non-

billable activities, such as education and research, which play a crucial role in fields like psychology and neuropsychology (Dawson & Speelman, 2023). In the construction industry, traditional methods of measuring productivity fail to account for recent advancements and changes in the supply chain. This encompasses offsite prefabrication and the utilization of imported materials, which have the potential to enhance productivity across various sectors (Dawson & Speelman, 2023). Moreover, traditional measurements of Total Factor Productivity (TFP) often encounter challenges associated with endogeneity and biases, leading to unreliable results, especially at the micro-level of businesses (Li & sup, 2020). The intricate nature of productivity is illustrated by the comprehensive categorization of 38 distinct approaches. This emphasizes that the measurement of productivity can differ significantly based on the context, a nuance that traditional methods frequently overlook (Li & sup, 2020). To improve these measures, it is essential to adopt a more comprehensive approach that considers non-market activities, environmental externalities, and the influence of management (Costin et al., 2023). Additionally, employing advanced models like the ACF and De Loecker models can effectively address biases and yield more precise productivity estimates in competitive markets (Li & sup, 2020). A value chain approach in construction, which examines each stage of production, may provide a more comprehensive understanding of productivity (Haugbølle, Larsen, & Nielsen, 2019).

1.2.2. Factors Affecting Remote Work Productivity

1.2.2.1. Environmental factors

Various studies show that environmental factors have a big impact on how productive people are when working remotely. A supportive work environment at home is essential, with elements like proper equipment, reliable internet, and a consistent electricity supply being key for productivity (Toh, Tee, Ping, & Yuan, 2022). A dedicated workspace and the quality of the indoor environment, such as visual and acoustic comfort, are important factors that can boost productivity (Guo, Wu, Chen, Chang, & Ao, 2022). Additionally, individual lifestyle choices, like keeping a healthy lifestyle and handling workload efficiently, have a positive impact on productivity (Guo et al., 2022). Having flexible work schedules helps employees manage their personal and professional lives better. This flexibility is important because it can boost

productivity by lowering stress levels and improving the balance between work and life (Mamatha & Thoti, 2023). Nonetheless, issues like social isolation and unclear lines between work and personal life can harm productivity, making it essential to have clear communication and support from leadership (Mamatha & Thoti, 2023). Organizational support, while not always directly connected to productivity in certain situations, can still contribute to a positive work atmosphere by encouraging a supportive virtual culture (Toh et al., 2022). In general, enhancing these environmental elements can boost productivity for remote workers, which is advantageous for both employees and companies.

1.2.2.2. Technical infrastructure

The technical setup that influences productivity in remote work is complex, including technology support, communication tools, and management systems. Having good technological support is very important because it helps people communicate and work together easily, which is necessary for staying productive when working remotely. Insufficient technology can result in higher communication expenses and lower productivity. This was highlighted in a study of Indian technology professionals, which found that increased communication costs and fewer networking opportunities were key reasons for the drop in productivity during remote work periods (Gibbs, Mengel, & Siemroth, 2022). Moreover, having strong communication tools is essential for dealing with issues like physical isolation and keeping social interactions alive. These factors are important for job satisfaction and productivity, especially noted in the Saudi financial sector (Abdulrahim & Yousif, 2023). Additionally, the shift to work-from-anywhere (WFA) programs, which provide both time and location flexibility, has demonstrated a 4.4% rise in productivity at the United States Patent and Trademark Office. This indicates that allowing geographic flexibility can boost employee performance without leading to more rework (Choudhury et al., 2020). Nonetheless, issues like distractions and feelings of isolation can still harm productivity, highlighting the importance of finding ways to enhance the advantages of remote work while reducing its downsides (Мазур, 2023). In summary, combining advanced technology with effective management systems is crucial for enhancing productivity in remote work. This combination aids in communication, collaboration, and the well-being of employees (Mamatha & Thoti, 2023).

1.2.2.3. Organizational support

Support from the organization plays a key role in boosting the productivity of remote workers by offering necessary resources and creating a positive work atmosphere. A systematic review shows a strong positive link between organizational support and employee performance. This means that when employees feel appreciated, their productivity goes up ((Tamimi, Tamam, & Sopiah, 2023). Support is very important in remote work environments, where keeping a good work-life balance is essential for being productive. Good organizational support involves having flexible work hours, clear communication, and programs that help employees, all of which boost creativity and engagement (Singh, Kaunert, & Vig, 2024). Additionally, a supportive organizational culture has a positive effect on job performance, though the connection may differ depending on the work environments of the employees (B. H. Martin & Mesler, 2012). After COVID, a complete approach to helping organizations is crucial for successful remote work. This includes formal procedures, tools for self-management, and supportive leadership (Errichiello & Pianese, 2021). Moreover, in the public sector, support from the organization helps reduce the negative impact of home interruptions on productivity, highlighting its importance as a key resource for jobs in smart working settings (Barbieri et al., 2024). These findings indicate that organizational support boosts the productivity of remote workers by meeting their various needs and fostering a supportive and flexible work environment that fits their personal and professional lives.

1.2.2.4. Individual characteristics

Several personal factors have a notable impact on productivity in remote work. These include age, education level, digital skills, motivation to work, and the capacity to handle distractions. Older people and those with less education have been linked to steady or higher productivity when moving to telework, likely because there are fewer distractions at home, like children (Shi, Moudon, Lee, Shen, & Ban, 2020). Having digital skills and strong work motivation are very important because they directly influence how productive people are when working remotely. This means that those who are good with technology and have a strong drive are more likely to succeed in a work-from-home situation (Saputra et al., 2021). Managing distractions is very important. Knowledge workers who have fewer distractions at home than in the office usually say they are more productive (Poovaiah & Mathew, 2022). Moreover, having

flexible work schedules and the freedom to make choices can boost productivity by enabling people to adjust their work settings to fit their personal preferences. However, this flexibility may also create difficulties, such as unclear lines between work and personal life (Mamatha & Thoti, 2023). Moreover, changes in lifestyle like better sleep and less time spent on social media have been associated with higher productivity, emphasizing how personal habits play a crucial role in remote work environments (Shi et al., 2020). In summary, these factors highlight the intricate relationship between individual traits and the remote work setting when it comes to productivity results.

1.2.2.5. Work-life boundaries.

How employees view the boundaries between work and personal life has a big impact on their productivity when working remotely, as shown by several studies. Managing these boundaries well is important for keeping a good work-life balance, and this helps improve productivity. Singh and others highlight that when workers have enough time for their personal lives and relaxation, they can concentrate more effectively on their job tasks. This results in better productivity and engagement (Singh et al., 2024). Mamatha and Kumar explain that remote work provides more flexibility and independence, which can improve the balance between work and personal life, leading to greater satisfaction. They also point out that unclear boundaries and feelings of isolation can harm work-life balance. This highlights the importance of establishing clear limits and creating supportive work environments to enhance productivity (Mamatha & Thoti, 2023). Berger's study backs the idea that managing work-life boundaries with care and flexibility results in a good balance, which is crucial for productivity (Berger, 2023). Jaiswal and Prabhakaran emphasize how boundary control affects the connection between well-being and performance. They suggest that having strong boundary control and low professional isolation enhances this relationship (Jaiswal & Prabhakaran, 2023). The study by the unnamed authors in Context 3 shows that using temporal boundary management tactics can improve productivity. However, it seems that physical tactics might reduce this positive effect ((Magni, Tang, Manzoni, & Caporarello, 2022). These findings highlight how important it is to manage boundaries effectively to boost productivity in remote work environments. They suggest that organizations should create policies that encourage flexible work arrangements and establish clear boundaries to improve employee well-being and performance.

1.3. Job Satisfaction

1.3.1. Key Characteristics of Job Satisfaction

1.3.1.1. Key theories and models

Job satisfaction is a broad concept that has been examined from numerous perspectives through a variety of theories. For instance, Herzberg's Two-Factor Theory, which separates hygiene factors (like salary and working conditions) from motivators (such as success and acknowledgment) as important elements of job satisfaction (Andersson, 2017). This theory indicates that although hygiene factors can stop dissatisfaction, real job satisfaction comes from motivators. A notable theory is the Job Characteristics Model, which suggests that job satisfaction is affected by five main job dimensions: skill variety, task identity, task significance, autonomy, and feedback (Dugguh & Ayaga, 2014). The Affective Events Theory helps us understand job satisfaction by highlighting how workplace events influence employees' emotional responses, which then impact their overall job satisfaction (Dugguh & Ayaga, 2014). The Equity Theory also emphasizes how crucial perceived fairness is in the workplace. It suggests that employees evaluate their job satisfaction by comparing their contributions and rewards to those of their colleagues (Dugguh & Ayaga, 2014). These theories together emphasize how complex job satisfaction is, as it is shaped by both internal and external factors. They also point out its important role in improving employee performance, commitment to the organization, and lowering turnover rates (Batranak & Giliuvienė, 2018). As companies deal with the difficulties of globalization and cultural diversity, it is important to understand and use these theories to create a happy and productive workforce (Andersson, 2017).

Job satisfaction is a multifaceted concept that can be examined from various angles, with each framework offering its unique insight into the factors that influence employees' happiness in their roles. The Job Characteristics Model (JCM) created by Hackman and Oldham highlights how psychological states are affected by job characteristics. On the other hand, Herzberg's Two-Factor Theory separates hygiene factors from motivators, which are essential for job satisfaction (Bayad & Touri, 2024). Dennis Roach proposed an integrated model that brings together aspects of discrepancy, equity, need, value, and valence theories within a control theory framework. This model emphasizes the significance of discrepancies and the role of

comparison others in assessing job satisfaction (Sahito & Väisänen, 2017). In the construction industry, an integrated model highlights compensation, work-life balance, career growth, and job security as key elements that improve job satisfaction, especially in developing countries (Khahro, Zainun, Khahro, & Sultan, 2023). The Causal Attitude Network (CAN) model presents a new viewpoint by combining network theory with attitude theory. It proposes that job satisfaction arises from linked cognitive and emotional assessments, with instrumental and symbolic aspects creating separate groups (Carter et al., 2019). Furthermore, looking at it from a human resources management viewpoint highlights how important job involvement, career development, and compensation are for job satisfaction, with compensation being the most impactful factor (Hadi, Siregar, & Hafnidar, 2020). These models together show how complex job satisfaction is, emphasizing the interaction of psychological, social, and organizational factors that influence employee experiences in various situations.

1.3.1.2. Components of job satisfaction

Job satisfaction is a complex concept influenced by a range of factors, as evidenced by numerous studies. Roach's integrated model highlights how discrepancies, equity, need, value, and valence theories play a crucial role. It suggests that both specific and overall assessments of job satisfaction are greatly influenced by these discrepancies and their significance, along with comparisons to others over different periods (Thiagaraj & Thangaswamy, 2017). Handayani and Joeliaty point out that work-life balance, workplace incivility, psychological well-being, and employee assistance programs are important factors. They suggest that organizations should implement initiatives to support these areas to improve job satisfaction (Handayani & Joeliaty, 2023). Pandey and Asthana highlight six important aspects: salaries, chances for promotion, supervision, the nature of work, and colleagues. They also stress the significance of compensation, organizational policy, working conditions, and job stress as major factors influencing these areas (Pandey & Asthana, 2017). Pratiwi and Djemain emphasize how work motivation, employee empowerment, compensation, and transformational leadership can positively influence job satisfaction and boost organizational productivity (Pratiwi & Djemain, 2023). Simorangkir also notes that self-efficacy, training, and a positive organizational culture play a major role in job satisfaction. Self-confidence, appropriate training, and a supportive work environment are especially important factors (Simorangkir, 2024). These studies show that job

satisfaction is influenced by a mix of personal, organizational, and environmental factors, with each playing a distinct role in an employee's overall satisfaction and performance.

1.3.1.3. Measurement approaches

Various commonly applied approaches exist for assessing job satisfaction among employees. These methods include different models and scales, each having unique characteristics and uses. The Job Characteristics Model (JCM) created by Hackman and Oldham, along with Herzberg's Two-Factor Theory, are key frameworks that focus on psychological states and divide factors into hygiene and satisfaction, respectively (Bayad & Touri, 2024). The Minnesota Satisfaction Questionnaire (MSQ) and the Job Satisfaction Scale (JSS) are notable among the specific measurement tools. The MSQ provides both a long and short version, enabling thorough or quick evaluations of job satisfaction (Bayad & Touri, 2024). The JSS, especially its Italian version, is recognized for being reliable and for its capability to differentiate between intrinsic and extrinsic factors of job satisfaction (Pickens & Tayback, 2004). Moreover, facet scales and facet-items are utilized to evaluate job satisfaction. Facet-items allow for a quick and economical assessment, whereas facet scales provide more in-depth insights (Lepold, Tanzer, Bregenzer, & Jiménez, 2018). The Weighted Abridged Job Descriptive Index (WAJDI) has been suggested as a dependable approach in the hospitality sector. It overcomes the shortcomings of earlier indices by taking into account both emotional and cognitive factors (Khalilzadeh, Chiappa, Jafari, & Borujeni, 2013). Additionally, the Job Satisfaction Scale created by the Sheffield Institute of Work Psychology is utilized for comparison across different sectors, showcasing variations in job satisfaction levels among various occupational groups (Al-Zoubi, 2012). These various methods address different research and practical requirements, making sure that job satisfaction is assessed accurately in different situations.

1.3.2. Job Satisfaction in Remote Settings

1.3.2.1. Factors Affecting Remote Worker Satisfaction

Numerous studies indicate that the satisfaction of remote workers is influenced by a variety of factors. The significance of work stress, health and safety measures, and work-life balance cannot be overstated. Stress has the potential to diminish

satisfaction, whereas implementing health measures and achieving a good balance can enhance it (To et al., 2024). Family-supportive supervisory behaviours (FSSBs) are important as they directly impact job satisfaction and help create a positive spillover between work and family life. This, in turn, influences how FSSBs affect overall satisfaction (García-Salirrosas, Rondon-Eusebio, Campos, & Acevedo-Duque, 2023). Intrinsic motivation, emotional commitment, and opportunities are important predictors of job satisfaction. Additionally, human resources practices and organizational culture have an indirect effect on these factors (Ali et al., 2023). Autonomy and performance feedback play a vital role, showing strong positive links to job satisfaction. This indicates that improving these aspects can lead to greater satisfaction and productivity (Shafizadeh, 2022). Moreover, self-efficacy and support from the organization are important. Self-efficacy enhances job satisfaction and well-being, while help from supervisors and colleagues reduces techno-complexity and increases satisfaction (Shafizadeh, 2022). These studies highlight the need to consider both personal and organizational aspects, like managing stress, having supportive supervision, ensuring autonomy, providing feedback, and fostering self-efficacy, to enhance job satisfaction in remote work environments.

1.3.2.2. Comparison with traditional workplace satisfaction

Job satisfaction levels have significant differences between remote workers and individuals in conventional office settings. The variations observed are primarily influenced by factors such as autonomy, compensation, and intrinsic motivation. Individuals who engage in remote work often report greater job satisfaction compared to those employed in conventional work environments. This primarily stems from their improved perceptions regarding compensation, workplace processes, and interpersonal relationships (Taboroši, Popović, Poštin, Konjikušić, & Nikolić, 2022). A key factor that adds to this satisfaction is the feeling of autonomy, which plays a role in connecting remote work to job satisfaction, as shown in a study done in the Malaysian oil and gas sector (Jamaludin & Kamal, 2023). Moreover, intrinsic motivation and emotional commitment play a vital role in the job satisfaction of remote workers. These factors improve personal well-being and are backed by the organization's culture and HR policies (Ali et al., 2023). Intrinsic motivation plays a significant role in modern organizations, acting as an important factor for employee well-being and satisfaction in non-physical work settings (Marchelinda & Abadiyah,

2023). Additionally, job autonomy and performance feedback are important factors that influence job satisfaction for remote workers. There are strong positive links showing these elements greatly improve both job satisfaction and productivity . These studies show that remote work settings can improve job satisfaction more than traditional workplaces. This is because they encourage independence, offer good feedback, and tap into people's inner motivation. This indicates that companies need to thoughtfully create remote work policies to enhance these aspects, which will lead to better employee satisfaction and retention.

1.3.2.3. Cultural and demographic influences

Numerous studies indicate that cultural and demographic factors significantly influence the relationship between job satisfaction and remote work. The culture of an organization is very important, especially aspects like involvement and mission, which significantly affect how satisfied remote employees are. These cultural dimensions have a stronger impact in the United States than in Poland, indicating that national culture can affect how organizational culture influences job satisfaction (Oleksa-Marewska & Tokar, 2023). In Malaysia, the way people view their autonomy plays a crucial role in how remote work affects job satisfaction. This shows that having autonomy is important for improving job satisfaction across various cultural settings (Jamaludin & Kamal, 2023). Furthermore, the balance between work and personal life, along with commitment to work, plays a crucial role in determining job satisfaction for remote workers in Malaysia. However, the style of leadership does not have a major impact on satisfaction levels, suggesting that cultural values might place more importance on integrating personal and work life rather than on hierarchical leadership (Aziz et al., 2023). Autonomy and performance feedback are crucial for everyone, showing a strong positive link to job satisfaction for remote workers. This indicates that these elements go beyond cultural differences and are vital for improving remote work experiences (Shafizadeh, 2022). In Utah, intrinsic motivation and emotional commitment play important roles in predicting job satisfaction. HR practices and organizational culture have an indirect impact on satisfaction, highlighting the importance of organizational support across different demographic groups (Ali et al., 2023). These findings show that although some factors, such as autonomy and organizational culture, are important everywhere, cultural, and demographic

differences greatly affect how these factors impact job satisfaction in remote work environments.

1.3.3. Job Satisfaction & Productivity

1.3.3.1. Theoretical foundations

Various theories support the connection between job satisfaction and productivity, primarily highlighting the roles of motivation and human needs. Maslow's hierarchy of needs and Herzberg's two-factor theory are frequently cited as significant frameworks that demonstrate how job satisfaction can affect the relationship between the work environment and employee productivity. Theories suggest that addressing both the fundamental and psychological needs of employees can lead to increased job satisfaction, which in turn enhances productivity (Syahrir, Zakaria, & Labo, 2024). Moreover, the two-way connection between job satisfaction and perceived productivity is emphasized in the realm of software development, where both social and technical elements are important. This relationship indicates that job satisfaction affects productivity, and in turn, how one perceives their productivity can also affect their job satisfaction. This creates a feedback loop that can be shaped by different contextual factors (Storey et al., 2019). Moreover, happy employees tend to connect better with the goals of the organization. This can result in better performance and lower costs related to absenteeism and turnover, which are often seen with unhappy employees (Mulyadi, Nursyamsi, & Massepe, 2020). Theoretical perspectives highlight the significance of recognizing and meeting employee needs and motivations to create a productive work environment, which in turn gives organizations a competitive edge (Al-Suraihi, Samikon, Alsuraihi, & Ibrahim, 2021). In summary, these theories highlight the important role of job satisfaction in boosting employee productivity. This suggests that organizations need to focus on building supportive work environments to reach the best performance results.

1.3.3.2. Empirical evidence

Studies indicate a distinct relationship between job satisfaction and productivity across various workplace environments. Numerous studies indicate that job satisfaction is a crucial factor in linking the work environment to productivity. Improving the work environment can enhance job satisfaction, which subsequently boosts productivity (Syahrir et al., 2024). For example, a study done in the

manufacturing industry in Karnataka discovered a strong positive link between job satisfaction and how well an organization performs. It highlighted that employees who are satisfied usually show positive attitudes, which in turn boosts their productivity (Jadhav et al., 2021). A study conducted in the Nigerian federal civil service found that communication is an important factor in job satisfaction, which greatly affects employee productivity (Rabiu, Bakare, Lamino, Olalekan, & Oluseun, 2024). In educational environments like Bekasi, Indonesia, it was discovered that job satisfaction has a direct positive impact on teacher productivity, highlighting its significance for the quality of education (Utami, Herlyna, Widiatna, Ariani, & Karyati, 2020). Additionally, a study from Poona College in India showed that happy employees tend to be more punctual, loyal, and dedicated, which results in better performance (SAEED & Waghule, 2021). The idea that "a happy worker is a productive worker" is backed by research showing a connection between intrinsic and extrinsic rewards and job satisfaction, which is positively related to employee performance (Seema, 2022). Moreover, research highlights how important job satisfaction is in creating a positive work environment, which is crucial for reaching high productivity levels (Tentama, Subardjo, Mulasari, & Meilani, 2019). In summary, these studies show that job satisfaction plays a crucial role in productivity. Therefore, organizations should focus on improving job satisfaction to achieve better performance results.

1.3.3.3. Mediating Mechanisms

The studies presented illustrate that various mediating mechanisms influence the relationship between job satisfaction and productivity. Job satisfaction is a crucial element that links various factors to productivity outcomes. The work environment significantly influences job satisfaction, which in turn enhances productivity. This suggests that enhancing the work environment can lead to greater job satisfaction and, as a result, improved productivity (Syahrir et al., 2024). Moreover, job satisfaction plays a key role in connecting transformational leadership and knowledge management practices with employee performance. This suggests that strong leadership and good knowledge management can improve job satisfaction, which in turn can lead to better performance (Siyaphat, Kajornatthapol, Amornrat, & Thumtheang, 2024). Social exchange theory also suggests that job satisfaction acts as a link between internal and external factors, such as job characteristics and workplace

events, and voluntary workplace behaviours like citizenship and counterproductive actions (Credé, Chernyshenko, Stark, Dalal, & Bashshur, 2006). Additionally, job satisfaction plays a key role in mediating how social and economic exchange relationships influence in-role behaviours, highlighting its importance in promoting positive exchanges between employees and organizations (Zhu, 2012). It is important to understand that although job satisfaction plays a role in many relationships, it does not completely mediate how dispositions affect contextual behaviours. This indicates that other factors might also be involved (Credé et al., 2006). In summary, these studies highlight the complex role of job satisfaction as a mediator that boosts productivity by considering different organizational and individual factors.

1.3.3.4. Contextual factors

Research indicates that various contextual factors influence both job satisfaction and productivity. A positive work environment is essential as it significantly impacts job satisfaction, which in turn affects productivity. Improved working conditions lead to higher job satisfaction, which subsequently enhances productivity, as demonstrated by the research conducted at PT Air Minum Jayapura Robongholo Nanwani (Syahrir et al., 2024). Both intrinsic and extrinsic motivation are important factors that significantly affect job satisfaction and performance. Businesses can improve productivity by concentrating on boosting motivation and fostering a supportive workplace (Angelina & Meilani, 2023). The culture within an organization and the chances for career growth play a significant role in enhancing job satisfaction. A strong organizational culture that promotes effective communication and inclusivity, combined with well-defined career development programs, greatly enhances employee satisfaction (Faradiba & dhuhri, 2021). In Malaysian higher education, there is a positive relationship between engagement, motivation, and a supportive culture with job satisfaction, while organizational learning was not found to be significant (Majid, Ramli, Badyalina, Roslan, & Hashim, 2020). Moreover, in Technical and Vocational Education and Training (TVET) institutions, job satisfaction plays a crucial role in enhancing work productivity, which is in line with the Sustainable Development Goals (SDGs) and the Fourth Industrial Revolution (4IR) (Rokeman & Kob, 2024). These results highlight how crucial a supportive work environment, motivation, organizational culture, and career development are for improving job satisfaction and productivity in different sectors.

1.4. Digital Competence

1.4.1. Key Characteristics of Digital Competence

1.4.1.1. Definitions and dimensions

Digital competence is a broad term that encompasses the ability to utilize technology effectively, confidently, and responsibly across various aspects of life, including education, employment, and community engagement. The Digital Competence Framework of the European Union encompasses five key areas: information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving (B. Le & Palsolé, 2024). This ability goes beyond just technical skills; it also includes a mix of knowledge, skills, and attitudes needed to successfully navigate the digital landscape (Marrero-Sánchez & Vergara-Romero, 2023). In education, digital competence is important for students and teachers because it allows them to use digital tools in a thoughtful and creative way. For example, in secondary education, digital competence means being able to access, use, and make good use of information and communication technologies (ICT) effectively. This is often focused on socializing and looking up information in a shallow way (Guillén-Rascón & Baca, 2024). In higher education, having digital skills is considered crucial for students to effectively use communication tools and tackle technological challenges (Marrero-Sánchez & Vergara-Romero, 2023). Additionally, it is highlighted that incorporating digital skills into teacher training programs is crucial to tackle gaps in digital assessment, security, and safety in the online environment (Thi & Hoang, 2024). Building digital skills is important in the workplace, as it includes using advanced digital tools and technologies like virtual reality, cloud services, and artificial intelligence to improve both personal and professional tasks (Zhovnych, Бахмат, Kochubei, Duchenko, & Ivashkevych, 2024). In general, digital competence is becoming more acknowledged as an essential life skill, similar to traditional academic subjects. This calls for its inclusion in educational programs from primary school to higher education (B. Le & Palsolé, 2024).

Digital competence includes a variety of skills and knowledge that are essential for successfully engaging in the digital environment. The literature indicates that digital competence is typically organized into several important dimensions. The cognitive dimension includes critical thinking, problem-solving, and the skill to

process and assess information effectively (Calvani, Fini, Ranieri, & Picci, 2011). The technical aspect involves the practical abilities needed to effectively use digital tools and technologies (Moreira-Chóez et al., 2024). The ethical aspect emphasizes grasping the consequences of digital behaviours, which encompasses matters of safety and responsible usage (Moreira-Chóez et al., 2024). The European framework also emphasizes the significance of communication and collaboration, the creation of digital content, and data literacy as key parts of digital competence (Budai, Csuhai, & Tózsa, 2023). The important aspect, as mentioned in the European setting, highlights creativity, thoughtful reflection, and the capacity to participate in significant digital interactions (Sánchez-Canut, Usart, Grimalt-Álvaro, Requejo, & Gómez, 2023). In professional environments, digital competence is broadened to encompass particular skills that are important for the workplace. Frameworks such as DigComp are utilized to evaluate and enhance these competencies (Sánchez-Canut et al., 2023). Even though many people believe that younger generations are naturally good with technology, research shows that their skills usually only cover basic technical tasks. They often miss out on important cognitive and socio-ethical aspects (Calvani et al., 2011). This emphasizes the importance of thorough educational plans to tackle these gaps and make sure that digital skills are developed in a well-rounded way across all areas.

1.4.1.2. Components of Digital Competence

In the 21st century, digital competence is a complex concept that is crucial for personal, professional, and community involvement. It includes various skills and knowledge that help people to successfully use and manage digital technologies. Martínez-Bravo et al. state that digital competence goes beyond just basic operational skills. It also involves critical thinking, cognitive abilities, social skills, emotional intelligence, and projective dimensions. These aspects are essential for effectively using technology in everyday life and fostering social innovation (Martínez-Bravo, Sádaba, & Serrano-Puche, 2022). Kar and Shaw divide digital competencies into five key areas: digital survival skills, communication, data management and preservation, data analysis and presentation, and critical making, design, and development. They emphasize the significance of these competencies in educational settings (Kar & Shaw, 2021). Marrero-Sánchez and Vergara-Romero highlight the importance for university students to build digital skills in technological, informational, multimedia, and communicative areas. This development is essential for them to access, analyze,

evaluate, and create information effectively (Marrero-Sánchez & Vergara-Romero, 2023). Enciso and others highlight how digital skills contribute to economic growth, job opportunities, and social inclusion. They point out the differences in digital skills among various groups and emphasize the need to include these skills in educational programs (Enciso, Yang, & Ugarte, 2024). Sánchez-Caballé and colleagues highlight important aspects of digital competence, including skills in information, content creation, communication, ethics, problem-solving, and technical abilities. They emphasize that educational institutions should work on improving students' digital skills, which are frequently overvalued (Sánchez-Caballé, Cervera, & Esteve-Mon, 2020). These studies together show how important digital competence is for succeeding in today's digital world.

1.4.1.3. Assessment Methods

Evaluating digital skills in contemporary workplaces requires a comprehensive approach that incorporates both theoretical concepts and practical applications. The DigComp framework serves as a valuable reference for assessing digital skills due to its comprehensive criteria and wide-ranging applicability, as demonstrated in a study involving teleworkers and entrepreneurs across Europe (Bartolomé, Garaizar, & Larrucea, 2021). This framework enables performance-based evaluations that extend past basic self-assessment. It uses simulations and real-world scenarios to offer a more precise assessment of digital skills (Bartolomé et al., 2021). Moreover, using neural network modelling provides a new way to evaluate digital skills, especially in industrial environments. This method helps train neural networks to understand skills, which can assist companies in improving their workforce and achieving competitive benefits (Popova, Strih, & Ширинкина, 2022). Additionally, the development of digital skills is strongly connected to how organizations operate and the success of digital transformation. This implies that evaluation methods need to take these factors into account (Petrova, Лашманова, & Косухина, 2019). A competency-based approach, as described in a standard process model, focuses on creating assessment tools that are customized to individual skills, making sure that the evaluation process is centred around the person (Potgieter & Merwe, 2002). These methods show how important it is to use organized frameworks, modern technologies, and tailored assessment strategies to properly assess digital skills in the workplace.

1.4.2. Digital Competence in Remote Work

1.4.2.1. Required technical skills.

In the context of remote work, a range of technical skills is essential for attaining effective performance, as demonstrated by recent research. Technical and operational skills hold significant importance. The effective use of digital tools and platforms is crucial for maintaining high productivity in a virtual environment (Afonso, Barbosa, & Bizarria, 2021). Moreover, skills related to technology and relationships, like good communication and working together online, are essential for promoting teamwork and solving problems in remote environments (Afonso et al., 2021). It is important to be able to mentally separate work from personal life, especially since remote work can make it hard to tell the difference between the two. This means that developing skills in managing time and space at work is essential for maintaining a good work-life balance (Lazauskaitė-Zabielskė, Žiedelis, & Urbanavičiūtė, 2022). Skills in self-leadership, such as setting goals and managing tasks independently, are essential because of the greater independence found in remote work (Lazauskaitė-Zabielskė et al., 2022). Additionally, it is crucial to differentiate between the skills required for virtual and remote work, as each situation demands particular abilities, including adaptability and hybrid skills that merge aspects of both (Makarius & Larson, 2023). It is recommended that these skills be included in educational programs to get future professionals ready for remote work, emphasizing the significance of cognitive, social, and technological abilities (Ezeilo & Green-McKenzie, 2024). In conclusion, having knowledge of modern information technologies and being aware of the regulatory frameworks that oversee remote work are essential skills for remote workers and freelancers (Hislop et al., 2009). These skills together help people manage the challenges of remote work successfully, keeping their productivity and well-being intact.

1.4.2.2. Digital communication capabilities

The capacity for digital communication significantly influences the productivity and job satisfaction of remote workers, presenting both advantages and challenges. The utilization of digital tools such as virtual collaboration platforms, communication applications, and project management software has become essential for enhancing the ease of remote work, increasing flexibility, and reducing overhead costs (Asmi, 2024).

These tools allow for smooth communication and sharing of information, which is essential for keeping productivity and engagement high among remote teams (Asmi, 2024). The effect on job satisfaction is quite complicated. Digital tools can boost job satisfaction by making remote work more efficient and improving how organizations perform (Barbu et al., 2024). However, if not handled well, they can also cause information overload and higher stress levels, which might lower job satisfaction and productivity (L. Martin, Hauret, & Fuhrer, 2022). The way and how often digital tools are used are very important. For example, using communication tools in a balanced way can improve productivity, but it might reduce job satisfaction if it causes too much information to come in (L. Martin et al., 2022). Additionally, satisfaction with telework has been found to have a positive impact on subjective well-being and self-reported performance, with subjective well-being playing a partial mediating role in this relationship (Blahopoulou, Ortiz-Bonnín, Montañez-Juan, Espinosa, & Buades, 2022). For U.S. federal workers, regular telework has been linked to higher job satisfaction, improved relationships with supervisors, and lower intentions to leave their jobs. This emphasizes how crucial effective digital communication is in remote work environments (Lewis, Pizarro-Bore, & Emidy, 2023). In summary, digital communication tools are essential for enabling remote work, but their effect on productivity and job satisfaction relies on how well they are incorporated and handled in the organization's practices.

1.4.2.3. Virtual Collaboration Competencies

Effective remote work requires essential skills for virtual collaboration, encompassing technical, relational, organizational, and leadership capabilities. Technical-operational skills encompass the proficient use of technological tools for communication and collaboration, essential for maintaining productivity and fostering teamwork within remote teams (Afonso et al., 2021). Relational competencies highlight the significance of clear communication, trust, and team integration. These elements are essential for addressing the challenges that come with geographical dispersion and for promoting effective teamwork (Montaudon-Tomás, Pinto-López, & Amsler, 2021). Organizational managerial competencies involve setting clear expectations, giving regular feedback, and creating a culture of accountability and trust. These elements are essential for maintaining motivation and well-being among remote workers (Afonso et al., 2021). Leadership skills are important for leading virtual teams

by managing tasks well and encouraging social interaction to create strong relationships and teamwork (Sharma, 2023). Moreover, being able to adjust to different cultural dynamics and participate in problem-based learning improves teamwork in various online settings (Afonso et al., 2021). The experience of remote working groups, like those in The International Statistical Society, shows how technology helps in creative collaboration and networking. This emphasizes how important these skills are for achieving scientific and organizational objectives (Meis et al., 2024). In summary, these skills are essential for improving virtual collaboration and making remote work efforts successful.

1.4.2.4. Digital literacy

Literature emphasizes various key elements that influence digital literacy in remote work environments. The technical dimension of digital literacy holds significant importance as it influences the effectiveness of collaborative technologies in practice. These technologies play a crucial role in maintaining communication and fostering a sense of social connection in hybrid work environments (Deschênes, 2023). This technical skill is one part of a larger group of digital abilities needed for remote work. It also involves cognitive and social-emotional skills that are essential for managing complex digital settings (Eshet-Alkalai, 2012). The rise of digital tools has changed the nature of work, making it essential to develop skills for handling information overload and using both real-time and delayed communication platforms (Oberländer & Bipp, 2021). Additionally, adapting to remote work needs a well-organized transition period to build these skills, since employees usually have the required abilities but do not have the chance to use them effectively in new ways of communication (Tsareva & Omelyanenko, 2020). The holistic model of digital literacy encompasses various skills, including photo-visual, reproduction, branching, information, socio-emotional, and real-time thinking. This model offers a thorough framework for grasping the different skills required in digital settings (Eshet-Alkalai, 2012). These skills are important not just for personal performance but also for promoting good teamwork and communication in remote work environments, highlighting the need for a comprehensive digital literacy framework in today's workplace.

1.4.3. Role of Digital Competence

1.4.3.1. As an enabler of remote work

Digital competence plays a crucial role in remote work, as it enables employees to adapt to digital environments and perform their tasks efficiently. The Fourth Industrial Revolution has underscored the importance of digital skills. These skills are now regarded as crucial for both individuals and socio-economic systems to function effectively (SHATALOVA, 2023). In the realm of remote work, digital skills play a crucial role in shaping innovative work behaviour. A study focusing on Chinese remote workers revealed that these skills positively impact innovative work behaviour, self-efficacy in e-work, commitment to the organization, and strategies for managing e-work boundaries (Liu, Chen, & Ni, 2024). This skill is crucial for managing complicated digital systems, like telehealth, where a greater level of digital ability is linked to more frequent use and a greater readiness to keep using telehealth services after the pandemic (T. V. Le, Galperín, & Traube, 2023). Additionally, digital skills help in carrying out innovative educational projects like STEAM by making it easier to access information, work together, and create digital products (BIBIC, 2023). Developing digital skills is essential for education and work. It helps people use digital tools effectively and support the goals of their organizations. As digital transformation keeps changing work environments, improving digital skills will be essential for keeping productivity and engagement high in remote work situations (SHATALOVA, 2023).

1.4.3.2. Impact on job performance

Numerous studies illustrate the intricate relationship between digital competence and job performance in contemporary workplaces. The significance of digital competence is increasingly recognized as a key factor in enhancing job performance, particularly within the tourism sector. The utilization of social digital networks in this domain can significantly improve performance by facilitating knowledge sharing and promoting a more positive organizational culture (Moyano-Castolo, Barajas-Portas, & Hidalgo-Toledo, 2024). The effect of digital connectivity on job performance is not straightforward; it follows a curved pattern. When used moderately, it boosts social capital and lowers emotional exhaustion, which in turn enhances performance. However, using it too much can have negative consequences (Ren, Hu, Tang, &

Chadee, 2021). Additionally, digital competence, together with digital leadership, has a positive effect on job satisfaction. This job satisfaction then plays a role in connecting digital leadership to employee performance. However, it is important to note that digital competence by itself does not directly affect performance unless job satisfaction is involved (Hidayat, Sumantri, Rumengan, Wibisono, & Khaddafi, 2023). In the wider scope of the cyber economy, having digital skills is crucial for employees to stay competitive. This is because it goes hand in hand with the technical updates and new equipment in organizations, which require the growth of skills to handle cyber-physical systems (GROSHEVA & Bondarchuk, 2019). Moreover, developing digital skills, being adaptable, and enhancing soft skills like communication and teamwork are essential for boosting employee performance. This emphasizes the importance of ongoing learning and creating supportive work environments (Adhim & Suherman, 2024). These findings highlight how important digital skills are for improving job performance. They also stress the need for a balanced approach to digital connectivity and supportive practices within organizations.

1.4.3.3. Relationship with job satisfaction

The relationship between digital competence and job satisfaction in the contemporary workplace is intricate and significant. The capacity to utilize digital technologies, encompassing the necessary skills and knowledge for effective application, is increasingly vital for enhancing job satisfaction. This becomes particularly evident when examining digital leadership and the broader transformations occurring in workplaces as a result of digital transformation. Studies indicate that possessing digital skills can enhance job satisfaction. Employees are able to perform their tasks with greater efficiency and effectiveness, resulting in an improved overall work experience (Hidayat et al., 2023). Additionally, using digital technologies in the workplace helps enhance communication and teamwork, which are important factors for job satisfaction (Barbu et al., 2024). In the IT field, job satisfaction is strongly connected to employee engagement and work-life balance. These factors are enhanced by digital skills that enable flexible work setups and effective task management (Naveen & Sunil, 2024). Moreover, the changing needs of the digital economy require ongoing learning and adaptation, which can improve job satisfaction by creating a feeling of growth and accomplishment among employees (Сизова, Orlova, & Elagina, 2023). It is essential to recognize that although digital

competence greatly influences job satisfaction, it does not have a direct effect on employee performance. This indicates that other factors are also involved in this relationship (Hidayat et al., 2023). In summary, digital competence is an important part of today's workplace. They help improve job satisfaction by allowing for efficient work methods and creating a positive atmosphere at work.

1.4.3.4. Development and training implications

Digital skills play a crucial role in fostering growth and facilitating training within the workplace. They are regarded as a crucial factor in enhancing employment opportunities and the effectiveness of organizations across various sectors. In India, developing digital skills is essential for leveraging the potential of the nation's youthful demographic and ensuring sustainable employment opportunities in an evolving digital economy. Government initiatives like Skill India and Digital India are vital in providing the necessary infrastructure and resources for the development of digital skills. This, in turn, enhances individual job opportunities and strengthens the nation's competitiveness (Bhattacharya & Rakshit, 2024). In the same way, when it comes to competency-based human resource management, companies are focusing on improving digital skills by offering ongoing training and development programs. This method encourages a creative and adaptable workplace while supporting Sustainable Development Goals by advancing decent work and economic growth (Nurani, Khuzaini, & Shaddiq, 2024). Additionally, the DigComp framework is commonly utilized to evaluate and enhance digital skills in the workplace, tackling gender inequalities and promoting equal access to opportunities in digital transformation (Sánchez-Canut et al., 2023). In the tourism industry, having digital skills is connected to better job performance, especially for women in leadership roles, emphasizing its importance in reducing gender disparities in the workplace (Moyano-Castolo et al., 2024). In Indonesia, the organized growth of digital skills in public institutions such as the Ministry of Agrarian and Spatial Planning has resulted in the rise of a digital culture, promoting changes within the organization and enhancing performance (Mulianto, Maarif, Zulbainarni, & Hasanah, 2024). In conclusion, possessing digital skills is crucial for fostering a flexible, creative, and inclusive workforce capable of thriving in the contemporary digital landscape.

CHAPTER TWO

HYPOTHESIS DEVELOPMENT

2.1. Research Model

The following research model was proposed in light of the literature review. See Figure 1.

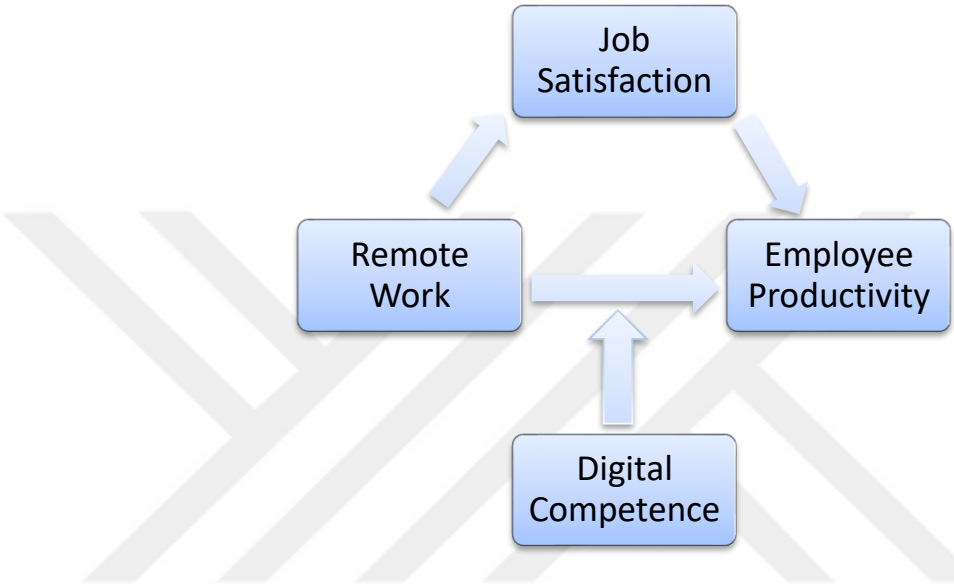


Figure 1. PROPOSED RESEARCH MODEL

2.2. Hypothesis development

2.2.1. Remote work Emotional Response and Job Satisfaction

Job satisfaction, often defined as an emotional response to a job (Huynh, Bui, & Nguyễn, 2023), and significantly influenced by the work environment. Remote work introduces both potential benefits and challenges that can impact an employee's emotional state and, consequently, their job satisfaction. The modifications caused by remote work can lead to increased emotional exhaustion, affecting the quality of life, mental well-being, and job satisfaction of employees (García-Salirrosas et al., 2023). Remote work can lead to increased autonomy and flexibility, which may positively influence an employee's emotional state. However, it can also lead to feelings of isolation, communication difficulties, and a blurring of work-life boundaries, potentially resulting in negative emotional responses (Ham, 2022; K. D. V. Prasad, Vaidya, & Rani, 2023). One study identifies remote work as a major factor causing

anxiety and stress due to the absence of interaction with peers and work-family conflicts (K. D. V. Prasad et al., 2023). It's important to consider the affective consequences of telework and the characteristics that determine who will benefit more or less from working at home (Anderson, Kaplan, & Vega, 2014). Therefore, we proposed hypothesis 1 below. This hypothesis posits that the emotional experiences associated with remote work will be significantly related to an individual's level of job satisfaction. The direction of this effect (positive or negative) will likely depend on the individual's experiences with the various facets of remote work. Positive emotional responses to remote work are expected to be associated with higher job satisfaction, while negative emotional responses are expected to be associated with lower job satisfaction.

H1: Remote work emotional response has a positive effect on job satisfaction.

2.2.2. Job Satisfaction and Contextual performance

Job satisfaction, reflecting an employee's overall contentment with their job, can significantly influence various aspects of their work performance. Contextual performance, also known as organizational citizenship behavior, refers to discretionary actions that go beyond an employee's formal job duties and contribute to the overall effectiveness of the organization (Sherr & Jones, 2007). These behaviors include helping coworkers, volunteering for extra tasks, and promoting a positive work environment. When employees are satisfied with their work, they feel motivated (Zakaria, Zamri, Anual, & Karim, 2023). Employees who are satisfied with their jobs are more likely to exhibit contextual performance. This is because job satisfaction fosters a sense of loyalty, commitment, and a desire to contribute to the organization's success (Javed et al., 2014). Satisfied employees are more likely to go the extra mile, assist colleagues, and engage in behaviors that benefit the organization as a whole. A satisfied employee builds and participates in the success of any organisation (Sypniewska, 2014). Therefore, we proposed hypothesis 2 below. This hypothesis suggests that higher levels of job satisfaction will be associated with increased engagement in contextual performancebehaviors among employees. Satisfied employees are more likely to contribute to a positive and productive work environment, going beyond their required tasks to support their colleagues and the organisation’s goals.

H2: Job satisfaction has a positive effect on the contextual performanceof employees.

2.2.3. Remote Work Emotional Response and Contextual performance

Contextual performance refers to the ability to generate new ideas, think creatively, and solve complex problems (Hoboubi, Choobineh, Ghanavati, Keshavarzi, & Hosseini, 2016).In a remote work environment, an employee's emotional state can significantly influence their cognitive processes and, therefore, their contextual performance. Positive emotions, such as feeling calm, inspired, and connected, can enhance cognitive flexibility, broaden attention, and promote creative thinking (Higgins, Qualls, & Couger, 1992). Remote workers experiencing positive emotions may be more likely to engage in exploration, generate novel ideas, and approach problems with innovative solutions (Pabilonia & Vernon, 2023). Conversely, negative emotions like stress, anxiety, and isolation can impair cognitive function, narrow focus, and inhibit creativity (Costin et al., 2023). Remote workers experiencing negative emotions may struggle to concentrate, generate new ideas, and solve problems effectively (Consiglio, Massa, Sommovigo, & Fusco, 2023). Change can be a significant source of stress, which can have debilitating physical, emotional, and work-related outcomes (George, Atwater, Maneethai, & Madera, 2021).

H3: Remote work emotional response has a positive effect on the contextual performanceof employees.

2.2.4. Job Satisfaction as Mediator Between Remote Work Emotional Response and Contextual performance

To propose a mediation hypothesis, we need to argue that job satisfaction explains how emotional response influences contextual performance in a remote work environment. As established in H1, remote work emotional response significantly affects their job satisfaction. Positive emotional responses tend to increase job satisfaction, while negative ones decrease it. Employees who are satisfied with their jobs are more likely to be motivated, engaged, and experience positive emotions, which in turn enhances their cognitive flexibility and creativity, as detailed in H2. Therefore, job satisfaction acts as a mechanism through which emotional responses influence contextual performance. A positive emotional response leads to higher job

satisfaction, which in turn leads to increased contextual performance. Conversely, a negative emotional response leads to lower job satisfaction, resulting in decreased contextual performance. Studies show job satisfaction is a crucial element of the professional sphere, as it has the potential to influence the productivity, dedication, and retention of employees within an organization (García-Salirrosas et al., 2023). Therefore, we proposed hypothesis 4 below. This hypothesis suggests that the effect of emotional response on contextual performance is, at least partially, explained by the level of job satisfaction experienced by the employee. In other words, emotional response influences job satisfaction, which in turn influences contextual performance.

H4: Job satisfaction mediates the relationship between remote work emotional response and Contextual performance.

2.2.5. Remote Work Organizational Support and Job Satisfaction

Organizational support refers to the extent to which employees perceive that their organization values their contributions, cares about their well-being, and is willing to provide assistance when needed. In a remote work environment, where employees may feel more isolated and disconnected from their colleagues and the organization, perceived organizational support becomes particularly crucial (Mihalache & Mihalache, 2021). When remote workers feel supported by their organization, they are more likely to experience higher levels of job satisfaction. This is because organizational support can buffer the negative effects of remote work, such as feelings of isolation and lack of connection (Buonomo, Vincenzi, Pansini, D'Anna, & Benevene, 2024). Support from leaders and colleagues plays a crucial role in promoting employees' work-life balance and job satisfaction (Buonomo et al., 2024). Organizational support can take various forms, including providing adequate resources and technology, offering opportunities for professional development, and fostering a sense of community and belonging. Conversely, a lack of organizational support can lead to feelings of frustration, disengagement, and decreased job satisfaction (Costin et al., 2023). Therefore, we proposed hypothesis 5 below. This hypothesis proposes that the higher the level of organizational support perceived by remote workers, the greater their job satisfaction will be. This suggests that organizations that prioritize the well-being and needs of their remote employees will be more likely to have satisfied and engaged workforces (Ali et al., 2023).

H5: Remote work organizational support has a positive effect on job satisfaction.

2.2.6. Remote Work Organizational Support and Contextual performance

Organizational support, as defined earlier, plays a vital role in shaping the work environment and influencing employee outcomes. In a remote work context, where employees may experience feelings of isolation and detachment, the impact of organizational support on contextual performance becomes even more pronounced (Faruque et al., 2024). When remote workers perceive high levels of organizational support, they are more likely to feel valued, connected, and motivated (Buonomo et al., 2024). This sense of security and belonging can foster a more positive and creative mindset, which in turn enhances their ability to generate new ideas, solve complex problems, and think innovatively, ultimately boosting their contextual performance. Employees reported increased productivity due to supportive management (D. Kumar, 2024). Supportive management along with suitable communication and collaboration tools positively influences productivity in remote work (D. Kumar, 2024). Furthermore, with organizational support remote employees are more likely to have access to the resources, tools, and training they need to effectively perform their jobs (Faruque et al., 2024). Therefore, we proposed hypothesis 6 below. This hypothesis suggests that remote workers who perceive greater organizational support will exhibit higher levels of contextual performance. This highlights the importance of organizations providing adequate support and resources to their remote employees to foster a thriving and innovative work environment (Rahman, Annuar, & Sabri, 2023).

H6: Remote work organizational support has a positive effect on contextual performanceof employees.

2.2.7. Job Satisfaction as a Mediator Between Remote Work Organizational Support and Contextual performance

To hypothesize that job satisfaction mediates the relationship between organizational support and contextual performance, we need to establish the links between these variables. First, Organizational Support Affects Job Satisfaction: As established in H5 , organizational support has a significant positive effect on job satisfaction in a remote work environment. When employees feel supported by their

organization, they are more likely to be satisfied with their jobs (Buonomo et al., 2024). Secondly, Job Satisfaction Affects Contextual performance: As detailed previously, job satisfaction enhances cognitive flexibility and creativity, boosting their contextual performance. Therefore, job satisfaction serves as a pathway through which organizational support influences contextual performance. When remote employees perceive strong organizational support, their job satisfaction increases, which in turn fosters a more positive and innovative mindset, ultimately leading to higher contextual performance (Faruque et al., 2024). Job satisfaction is a crucial element of the professional sphere, as it has the potential to influence the productivity, dedication, and retention of employees within an organization (García-Salirrosas et al., 2023). Therefore, we proposed hypothesis 7 below. This hypothesis proposes that the effect of organisational support on contextual performance is, at least partially, explained by the level of job satisfaction experienced by the employee. In other words, organisational support influences job satisfaction, which in turn influences contextual performance.

H7: Job satisfaction mediates the relationship between remote work organizational support and Contextual performance.

2.2.8. Digital Literacy as a Moderator between Remote Work Emotional Response and Contextual performance

To propose a moderation hypothesis, we need to argue that the strength of the relationship between emotional response and contextual performance depends on the level of an employee's digital literacy. On one hand, employees with high digital literacy are better equipped to navigate the challenges of remote work, such as technical difficulties, communication barriers, and information overload. They can leverage technology to manage their emotions, maintain social connections, and optimize their work environment (Roldan-Castellanos, Pérez-Olguín, Gutiérrez-Vázquez, Méndez-González, & Rodríguez-Picón, 2023). on the other hand, Individuals with low digital literacy may struggle to adapt to remote work, leading to increased stress, frustration, and feelings of isolation. This can amplify the negative impact of negative emotional responses on their contextual performance (Costin et al., 2023). Therefore, digital literacy acts as a buffer that weakens the relationship between negative emotional responses and decreased contextual performance. Conversely,

digital literacy may enhance the positive impact of positive emotional responses on contextual performance. Therefore, we proposed hypothesis 8 below. This suggests that digital literacy can play a protective role, enabling employees to maintain their contextual performance even when experiencing negative emotions in a remote work environment.

H8: Digital literacy has a moderating role between Remote work emotional response and contextual performanceof employees.

2.2.9. Digital Literacy as a Moderator between Remote Work Organizational Support and Contextual performance

Employees with high digital literacy are better able to leverage the resources and support provided by the organization in a remote work setting. They can effectively utilize communication and collaboration tools, access online training and development opportunities, and navigate digital platforms to connect with colleagues and leaders (Hasgall & Shoham, 2015). On the contrary, Individuals with low digital literacy may struggle to access and utilize organizational support effectively, even when it is readily available. This can diminish the positive impact of organizational support on their contextual performance. Therefore, digital literacy acts as an amplifier that strengthens the relationship between organizational support and contextual performance. When employees have both high organizational support and high digital literacy, they are more likely to experience increased contextual performance. Conversely, the positive effect of organizational support on contextual performance may be weaker for those with low digital literacy. Therefore, we proposed hypothesis 9 below. This suggests that organizations should not only provide adequate support to their remote employees but also invest in enhancing their digital literacy to maximize the benefits of that support and foster a more innovative and productive work environment (D. Kumar, 2024).

H9: Digital Literacy has a moderating role between remote work organizational support and contextual performanceof employees.

CHAPTER THREE

METHODOLOGY

3.1. Sampling and Data Collection Method

In this study, we employed a quantitative approach, using a survey to gather data from people working remotely in Istanbul. Data collection was conducted via an online survey. Before collecting data, we applied for ethics committee approval, and it was unanimously decided that it was in compliance with ethical rules. See the ethics committee decision in ANNEX 1.

3.2. Scales

In this research we used four scales and demographic questions. Please refer to ANNEX – 2 for the detailed scales. For the purpose of this study, the scales were translated into English and Arabic. The translation was performed using a forward-backward translation method. A bilingual expert reviewed the translation for accuracy.

3.2.1. Remote Work Scale

The Remote Work Scale was originally developed in Turkish by Eroğlu and Gündem. This scale consists of 34 items with 7 dimensions which are: Perception of Appropriateness, Influence on Relationships, Work Life Balance, Emotional Response, Organizational Support, Financial Contribution and Skill Development, and Impact on Society (Eroglu, Gündem, & Eroğlu, 2022). In our reserch we used 2 dimensions related to our study which are Emotional Response (7 questions) and Organizational Support (5 questions).

3.2.2. Employee Productivity Scale

The Employee Productivity Scale was originally developed

In Turkish by Köroğlu and Öztürk. This scale consists of 14 items with three dimensions which are: Task Performance, Contextual Performance, and Counterproductive Work Behavior (Köroğlu & Öztürk, 2021). In our research we only used Contextual Performance dimension (6 questions) which is related to our study.

3.2.3. Job Satisfaction Scale

The Job Satisfaction Scale was originally developed in English by Brayfield and Rothe and adapted by Judge, Locke, Durham, and Kluger. Keser & Bilir adapted it to Turkish (Keser & Bilir, 2019). This scale consists of 5 items.

3.2.4. Digital Competence Scale

The Digital Competence Scale was originally developed in Turkish by Bayrakcı and Narmanlıoğlu. This consists of 29 items and six dimensions which are: Ethic and Responsibility, General Knowledge and Functional Skills, Daily Usage, Advanced Production, Privacy and Security, and Social Dimension. In our research we used General Knowledge and Functional Skills (6 questions) which is related to our study (Bayrakçı & Narmanlıoğlu, 2021). Our aim is to see if digital competence moderates the relationship between remote work and employee productivity.

CHAPTER FOUR

FINDINGS

4.1. Descriptive Statistical Information

The descriptive statistical data were derived from the demographic results of the survey participants in this study. The target population consists of remote workers in Istanbul. The gender distribution in the survey was 68.5% male and 31.5% female. The distribution of marital status indicated that 41.5% of individuals were married, whereas 58.5% were single. The educational levels are categorized as follows: pre-high school level comprises 1.2% (3 individuals), high school level accounts for 3.3% (8 individuals), undergraduate level represents 38.2% (92 individuals), and master's degree and above constitutes 57.3% (138 individuals). The age distribution of participants is as follows: 18.3% were under 25 years (44 individuals), 66% were aged 25-35 years (159 individuals), 10.8% were between 36-46 years (26 individuals), 3.7% were aged 47-57 years (9 individuals), and 1.2% were above 58 years (3 individuals).

We also inquired about the duration of remote work for these participants. We categorized them into five groups. 21.2% of participants have been working remotely for less than a year (51 individuals), 22% for 1-3 years (53 individuals), 32.8% for 3-5 years (79 individuals), 18.3% for 5-10 years (44 individuals), and 5.8% for more than 10 years (14 individuals).

Table 1. DESCRIPTIVE STATISTICAL INFORMATION

Variable	Category/ Statistic	Frequency (n)	Percentage (%)
Gender	Male	165	68.5 %
	Female	76	31.5 %
Marital Status	Married	141	41.5 %
	Single	100	58.5 %
Education Level	Pre-High School	3	1.2 %
	High School	8	3.3 %
	Undergraduate	92	38.2 %
	Master's Degree and Above	138	57.3 %
Age	0 - 25	44	18.3 %
	25 - 35	159	66 %
	36 - 46	26	10.8 %
	47 - 57	9	3.7 %
	58+	3	1.2 %
How long have you been working/worked remotely? (Years)	0-1	51	21.2 %
	1-3	53	22 %
	3-5	79	32.8 %
	5-10	44	18.3 %
	10+	14	5.8 %

4.2. Data Analysis

In this study, the Smart PLS 4 program was utilized to analyze the data collected from the survey. Three steps were followed in the data analysis and results process. Initially, data cleaning is performed, followed by the assessment of the measurement model, and finally, the evaluation of the structural model. Initially, we assessed the dataset for missing values that required filling, removal, or imputation. Subsequently, we proceeded with the measurement model analysis.

4.2.1. Measurement Model Analyses

The first step in this process is factor loading of the variables. In other words, the outer loading relevance testing. It shows how strongly each observed variable is associated with an unobserved variable. The values range from 0-1. A higher loading indicates a strong correlation between the indicator and the underlying construct. For example, when outer loading equal or greater than 0.70 it means very good, and we retain the reflective indicator. When the outer loading is between 0.40 – 0.70, we analyze the construct's internal consistency reliability and convergent validity. If construct measures do not meet the recommended thresholds we delete the reflective indicator but consider its impact on content validity. On the other hand, if the construct measures meet the recommended thresholds, we retain the reflective indicator. And finally, when the outer loading is less than 0.40, we delete the reflective indicator.

4.2.1.1. Factor Loading

In table 2. We have the results of the outer loading relevance testing. In the table CP1-6 we refer to contextual performancescale questions (6 questions), DL1-5 dijital literacy scale questions (6 questions), JS1-5 job satisfaction scale question (5 questions), and the remote work scale has two dimensions: the first one emotional response referred as RW/ER (7 questions), and the second is organizational support referred as RW/OS (5 questions).

Table 2. MEASUREMENT MODEL ASSESSMENT – FACTOR LOADING.

	Contextual performance	Digital Literacy	Job Satisfaction	RW/ Emotional Response	RW/Org. Support
CP1	0.747				
CP2	0.824				
CP3	0.882				
CP4	0.769				
CP5	0.662				
CP6	0.722				
DL1		0.887			
DL2		0.923			
DL3		0.864			
DL4		0.9			
DL5		0.853			
DL6		0.708			
JS1			0.881		
JS2			0.879		
JS3			0.15		
JS4			0.881		
JS5			0.588		
RW/ER1				0.73	
RW/ER2				0.702	

Note: RW= Remote Work, Org.= Organizational, CP= contextual performance, DL= Digital Literacy, JS= Job Satisfaction, ER= Emotional Response, OS= Organizational Support.

Table 2. CONT. MEASUREMENT MODEL ASSESSMENT – FACTOR LOADING.

	Contextual performance	Digital Literacy	Job Satisfaction	RW/ Emotional Response	RW/Org. Support
RW/ER3				0.579	
RW/ER4				0.739	
RW/ER5				0.143	
RW/ER6				0.627	
RW/ER7				0.067	
RW/OS1					0.799
RW/OS2					0.83
RW/OS3					0.903
RW/OS4					0.927

Note: RW= Remote Work, Org.= Organizational, CP= contextual performance, DL= Digital Literacy, JS= Job Satisfaction, ER= Emotional Response, OS= Organizational Support.

The outer loading of JS3, RW/ER5, RW/ER7 and RW/OS5 are below 0.40, as a result, we delete them and move to the next step.

Table 3. MEASUREMENT MODEL ASSESSMENT – FACTOR LOADING (OUTER LINE < 0.40 DELETED)

		Contextual performance	Digital Literacy	Job Satisfaction	RW Emotional Response	RW Org. Support
CP1		0.747				
CP2		0.824				
CP3		0.882				
CP4		0.770				
CP5		0.662				
CP6		0.722				
DL1			0.887			
DL2			0.923			
DL3			0.864			
DL4			0.900			
DL5			0.853			
DL6			0.708			
JS1				0.882		
JS2				0.883		
JS4				0.883		
JS5				0.581		
RW/ER1					0.740	
RW/ER2					0.705	
RW/ER3					0.599	

Note: RW= Remote Work, Org.= Organizational, CP= contextual performance, DL= Digital Literacy, JS= Job Satisfaction, ER= Emotional Response, OS= Organizational Support.

Table 3. CONT. MEASUREMENT MODEL ASSESSMENT – FACTOR LOADING (OUTER LINE < 0.40 DELETED)

		Contextual Performance	Digital Literacy	Job Satisfaction	RW Emotional Response	RW Org. Support
RW/ER4					0.744	
RW/ER6					0.626	
RW/OS1						0.800
RW/OS2						0.836
RW/OS3						0.903
RW/OS4						0.929

Note: RW= Remote Work, Org.= Organizational, CP= contextual performance, DL= Digital Literacy, JS= Job Satisfaction, ER= Emotional Response, OS= Organizational Support.

From table 3 we can see there are still values between 0.40 – 0.70, and we are going to see if they meet the recommended threshold or not using the convergent validity test (AVE).

4.2.1.2. Convergent validity (AVE)

Here is the result of Convergent validity (AVE) in table 4.

Table 4. CONVERGENT VALIDITY (AVE) RESULT

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
RW Emotional Response	0.800	0.940	0.815	0.470
Job Satisfaction	0.836	0.895	0.887	0.669
Contextual Performance	0.862	0.873	0.897	0.594
RW Org. Support	0.890	0.909	0.924	0.754
Digital Literacy	0.928	0.943	0.944	0.737

The convergent validity (AVE) shouldn't be below 0.50 and from Table 4, we can see that RW emotional Response is 0.470 which is below 0.50, as a result, we delete RW/ER3 to meet the minimum acceptable level.

Table 5. CONVERGENT VALIDITY (AVE) RESULT (RW/ER3 DELETED)

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Contextual Performance	0.862	0.873	0.897	0.594
Digital Literacy	0.928	0.943	0.944	0.737
Job Satisfaction	0.836	0.895	0.887	0.669
RW Emotional Response	0.740	0.850	0.785	0.480
RW Org. Support	0.890	0.909	0.924	0.754

From Table 5, we can see the result of the RW emotional response result 0.480. As a result, we deleted RW/ER6 to meet the minimum acceptable level.

Table 6. CONVERGENT VALIDITY (AVE) RESULT (RW/ER6 DELETED)

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Contextual Performance	0.862	0.873	0.897	0.594
Digital Literacy	0.928	0.943	0.944	0.737
Job Satisfaction	0.836	0.895	0.887	0.668
RW Emotional Response	0.635	0.730	0.749	0.505
RW Org. Support	0.890	0.909	0.924	0.754

In order to meet the minimum acceptable level, we deleted the low outer loading and as a result the AVE increased. Although Cronbach's Alpha decreased from 0.740 to 0.635, it remained above 0.60, and the Composite Reliability value remained above 0.70, we can say we retained the internal consistency reliability.

Table 7. OUTER LOADING FINAL TABLE

	Contextual Performance	Digital Literacy	Job Satisfaction	RW Emotional Response	RW Org. Support
CP1	0.747				
CP2	0.825				
CP3	0.882				
CP4	0.768				
CP5	0.660				
CP6	0.724				
DL1		0.887			
DL2		0.923			
DL3		0.864			
DL4		0.900			
DL5		0.853			
DL6		0.708			
JS1			0.883		
JS2			0.883		
JS4			0.883		
JS5			0.579		
RW/ER1				0.852	
RW/ER2				0.619	
RW/ER4				0.636	
RW/OS1					0.800
RW/OS2					0.836
RW/OS3					0.903
RW/OS4					0.929

Note: RW= Remote Work, Org.= Organizational, CP= contextual performance, DL= Digital Literacy, JS= Job Satisfaction, ER= Emotional Response, OS= Organizational Support.

4.2.1.3. Discriminant validity HTMT

Discriminant validity ensures that constructs intended to measure different concepts are indeed distinct, meaning that the indicators of one construct do not strongly overlap with indicators of another (Fornell & Larcker, 1981). On the other

hand, HTMT stands for Heterotrait-Monotrait Ratio of Correlations. It is a modern and more reliable method for assessing discriminant validity in Structural Equation Modeling (SEM), particularly when using variance-based approaches such as SmartPLS (Henseler, Ringle, & Sarstedt, 2014).

Discriminant validity was evaluated using the HTMT criterion. In our result table 8 we can see that all of our results are below 0.85, supporting the discriminant validity of the model (Henseler et al., 2014).

Table 8. DISCRIMINANT VALIDITY HTMT

	Contextual Performance	Digital Literacy	Job Satisfaction	RW Emotional Response	RW Org. Support
Contextual Performance					
Digital Literacy	0.547				
Job Satisfaction	0.594	0.265			
RW Emotional Response	0.308	0.562	0.363		
RW Org. Support	0.366	0.167	0.282		

4.2.1.4. Discriminant validity Farnell Locker Criteria

Discriminant validity Farnell Locker Criteria tests whether each construct is truly distinct from the others by comparing how strongly it correlates with itself vs. how strongly it correlates with other constructs (Fornell & Larcker, 1981).

Table 9. DISCRIMINANT VALIDITY FARNELL LOCKER CRITERIA TABLE

	Contextual Performance	Digital Literacy	Job Satisfaction	RW Emotional Response	RW Org. Support
Contextual Performance	0.771				
Digital Literacy	0.518	0.859			
Job Satisfaction	0.547	0.254	0.818		
RW Emotional Response	-0.276	-0.425	-0.320	0.710	
RW Org. Support	0.322	0.162	0.279	-0.242	0.868

Discriminant validity was evaluated using the Fornell-Larcker criterion. The square root of AVE for each construct was greater than its correlations with other constructs, indicating satisfactory discriminant validity.

4.2.2. Structural Model Assessment

4.2.2.1. Collinearity

When collecting data from a single participant, there is a risk of common method bias, which can affect the accuracy of the results. To determine whether a reflective model is affected by this bias, a thorough collinearity test can be conducted, paying close attention to the inner VIF values. If all inner VIF values are 3.3 or lower, it indicates that the model is not affected by common method bias (Kock, 2015). In this study, a VIF test was performed to evaluate collinearity, and none of the VIF values exceeded this threshold.

Table 10. Collinearity statistics (VIF) TABLE

	VIF
Digital Literacy -> Contextual Performance	1.246
Job Satisfaction -> Contextual Performance	1.189
RW Emotional Response -> Contextual Performance	1.324
RW Emotional Response -> Job Satisfaction	1.062
RW Org. Support -> Contextual Performance	1.118
RW Org. Support -> Job Satisfaction	1.062

4.2.2.1. Direct effect

We first look at the p-values which tests the path coefficient is statistically different from zero. In other words, whether the direct effect is real or just random. A significant p-value (≤ 0.05) means we have evidence that there is a real direct effect and not due to chance. Secondly, we look at the T statistics (|O/STDEV|), if the T value is greater than 1.96 it is considered significant with 95 % confidence and under that considered not significant. Also, if it is greater than 2.58, we can say with 95 % confidence it is very significant. And lastly, greater than 3.29 is considered highly significant with 99.9 % confidence. A higher T value means a more significant result.

In Table 11 we can clearly see the p-values and the T-values are significant for all of them except one which is remote work emotional Response -> Contextual

Performance. In other words, for remote work emotional Response -> Contextual Performance means there is no direct effect. And for the rest it means there is a direct effect. Table 12. Summarize the results for direct effect analysis.

Table 11. DIRECT EFFECTS

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Digital Literacy -> Contextual Performance	0.417	0.416	0.057	7.262	0.000
Job Satisfaction -> Contextual Performance	0.422	0.423	0.047	9.064	0.000
RW Emotional Response -> Contextual Performance	0.073	0.066	0.068	1.076	0.282
RW Emotional Response -> Job Satisfaction	-0.268	-0.277	0.061	4.380	0.000
RW Org. Support -> Contextual Performance	0.154	0.153	0.049	3.155	0.002
RW Org. Support -> Job Satisfaction	0.214	0.216	0.061	3.481	0.001

Table 12. DIRECT EFFECT RESULTS

Hypothesis	Relationship	Original sample (O)	T statistics (|O/STDEV|)	P values	Results
H1	RW/ER -> JS	-0.268	4.380	0.000	Accepted
H2	JS -> CP	0.422	9.064	0.000	Accepted
H3	RW/ER -> CP	0.073	1.076	0.282	Rejected
H5	RW/OS -> JS	0.214	3.481	0.001	Accepted
H6	RW/OS -> CP	0.154	3.155	0.002	Accepted

Note: RW= Remote Work, CP= contextual performance, JS= Job Satisfaction, ER= Emotional Response, OS= Organizational Support.

4.2.2.2. Mediator Analysis

After analyzing the direct effect, we can make the mediator analysis. We start by checking the specific indirect effects, see table 13. First, the indirect effect of remote work emotional response on contextual Performance through job satisfaction was significant (β = -0.113, t = 3.92, p = 0.000). In other words, remote work emotional response indirectly affects contextual Performance through job satisfaction. The direct effect between remote work emotional response and contextual Performance was not significant (β = 0.073, t = 1.076, p = 0.282), as a result, we can say we have full mediation. In regard to O value (β = -0.113), since it is negative, it indicates the mediator has a negative effect, and when the independent variable (remote work emotional response) increases, the dependent variable (Contextual Performance) decreases through the mediator (job satisfaction).

On the other hand, we check the specific indirect effect for the other variable. The indirect effect of remote work organizational support on contextual Performance through job satisfaction was significant (β = 0.090, t = 3.247, p = 0.001). In other words, remote work organizational support indirectly affects contextual performancethrough job satisfaction. The direct effect between remote work organizational support and contextual performancewas significant (β = 0.154, t = 3.155, p = 0.002). As a result, we can say we have complementary partial mediation here. Regarding the O value (β = 0.090), since it is positive, it indicates the mediator has a positive effect, and when the independent variable (remote work organizational

support) increases, the dependent variable (Contextual performance) increases through the mediator (job satisfaction).

Table 13. SPECIFIC INDIRECT EFFECT.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
RW Emotional Response -> Job Satisfaction -> Contextual performance	-0.113	-0.117	0.029	3.920	0.000
RW Org. Support -> Job Satisfaction -> Contextual performance	0.090	0.091	0.028	3.247	0.001

And now we can check the results of our analysis. As detailed in table 14. H4 and H7 are accepted. In other words, job satisfaction mediates the relationship between remote work two variables (emotional response and organizational support) and contextual performance. In the case of emotional response, we have full mediation. And in the case of organizational support, we have complementary partial mediation.

Table *14.* *MEDIATION ANALYSIS RESULT*

Hypothesis	Relationship	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Results
H4	RW/ER -> JS -> CP	-0.113	0.029	3.920	0.000	Accepted
H7	RW/OS -> JS -> CP	0.090	0.028	3.247	0.001	Accepted

Note: RW= Remote Work, CP= contextual performance, JS= Job Satisfaction, ER= Emotional Response, OS= Organizational Support.

4.2.2.3. PLS-Predict

In order to assess the practical relevance of our model and to check if it has predictive accuracy, not just statistical significance, we are going to use PLS-Predict see table 15. First, we can clearly see that all our Q^2_predict values are greater than zero, which indicates that our model has predictive relevance for all indicators (Shmueli, Ray, Estrada, & Chatla, 2016). For Contextual performance indicators for example, CP2: Q^2_predict = 0.258; RMSE = 0.876, the model performed better than

the baseline model using individual means and was comparable to the linear regression benchmark, indicating moderate predictive power.

However, for Job Satisfaction indicators (e.g., JS2: Q^2_predict = 0.092), the PLS model showed weaker predictive accuracy compared to the linear model, suggesting that this construct may require additional predictors or improved measurement.

Table 15. PLS PREDICT TABLE

	Q^2predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE	IA_RMSE	IA_MAE
CP1	0.160	1.055	0.816	1.053	0.821	1.151	0.933
CP2	0.258	0.876	0.687	0.871	0.684	1.018	0.730
CP3	0.267	0.923	0.719	0.915	0.721	1.078	0.780
CP4	0.072	1.170	0.986	1.174	0.978	1.214	1.032
CP5	0.046	1.207	1.008	1.228	1.000	1.236	1.034
CP6	0.234	0.999	0.776	1.017	0.779	1.142	0.871
JS1	0.119	1.113	0.898	1.111	0.877	1.186	0.983
JS2	0.092	1.146	0.919	1.125	0.895	1.203	0.948
JS4	0.080	1.059	0.839	1.080	0.858	1.104	0.906
JS5	0.011	1.125	0.929	1.155	0.932	1.131	0.958

Note: CP= contextual performance, JS= Job Satisfaction.

4.2.2.4. R^2 (R-squared) in SmartPLS

R^2 tells us how much of the variance in the dependent variable is explained by the independent variables and we followed Cohen's (1988) guidelines. Regarding contextual performance, the R^2 value was 0.490, which means the model explains approximately 49% of the variance, which reflects a moderate explanatory power. Also, we have a t-value of 8.166 and p 0.000, which indicates this R^2 is statistically significant.

On the other hand, job satisfaction R^2 value was 0.145, which means only 14.5% of the variance in job satisfaction explained by our predictors, which means weak explanatory power. And in regard to the t-value of 3.118, and p of 0.002, which

indicates this R^2 is statistically significant, but because of the low R^2 value there is weak explanatory power. See Table 16. For details R^2 results.

Table 16. R^2 (R-SQUARED)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Contextual performance	0.490	0.509	0.060	8.166	0.000
Job Satisfaction	0.145	0.160	0.047	3.118	0.002

4.2.2.5. Moderating Analysis

The moderate analysis revealed that digital literacy significantly and positively influences contextual performance($\beta = 0.376$, $p < 0.001$). However, the interaction term between digital literacy and remote work emotional response was not statistically significant ($\beta = -0.039$, $p = 0.656$), indicating that emotional response does not moderate this relationship. In contrast, the interaction between digital literacy and remote work organizational support was significant and negative ($\beta = -0.130$, $p = 0.026$), suggesting that high levels of organizational support actually weaken the positive effect of digital literacy on productivity.

Additionally, job satisfaction emerged as a strong positive predictor of contextual performance($\beta = 0.404$, $p < 0.001$). While emotional responses did not significantly influence productivity directly ($\beta = 0.066$, $p = 0.382$), they did negatively affect job satisfaction ($\beta = -0.268$, $p < 0.001$). Organizational support, on the other hand, had a significant positive effect on both productivity ($\beta = 0.180$, $p = 0.001$) and job satisfaction ($\beta = 0.214$, $p = 0.001$). Table 17. Summarize the results of moderating analysis.

Table 17. MODERATING ANALYSIS

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Digital Literacy -> Contextual performance	0.376	0.374	0.083	4.559	0.000
Digital Literacy x RW Emotional Response -> Contextual performance	-0.039	-0.025	0.088	0.446	0.656
Digital Literacy x RW Org. Support -> Contextual performance	-0.130	-0.121	0.058	2.231	0.026
Job Satisfaction -> Contextual performance	0.404	0.405	0.049	8.167	0.000
RW Emotional Response -> Contextual performance	0.066	0.058	0.075	0.874	0.382
RW Emotional Response -> Job Satisfaction	-0.268	-0.277	0.061	4.380	0.000
RW Org. Support -> Contextual performance	0.180	0.177	0.054	3.358	0.001
RW Org. Support -> Job Satisfaction	0.214	0.216	0.061	3.481	0.001

The interaction between Digital Literacy and RW Organizational Support significantly moderates the effect on Contextual performance($\beta = -0.130$, $t = 2.231$, $p = 0.026$). Thus, the moderation hypothesis is accepted. However, the interaction between Digital Literacy and RW Emotional Response was not significant ($p = 0.656$), so the moderation hypothesis is not accepted. Table 18. Summarize the moderating analysis result.

Table 18. MODERATING ANALYSIS RESULT

Hypothesis	Relationship	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Results
H8	DL x RW/OS x CP	-0.130	0.058	2.231	0.026	Accepted
H9	DL x RW/ER x CP	-0.039	0.088	0.446	0.656	Accepted

Note: RW= Remote Work, CP= contextual performance, DL= Digital Literacy, ER= Emotional Response, OS= Organizational Support.

4.2.2.6. Slope analysis

A simple slopes analysis was conducted to analyze the moderating effect of Remote Work Organizational Support on the relationship between Digital Literacy and Contextual performance. As illustrated in Figure 2. It displays three lines starting from below. The red line represents low digital literacy (–1 SD below the mean), the blue line shows average digital literacy (mean), and the green line at the top represents high digital literacy (+1 SD above the mean).in other words the positive relationship between Remote Work Organizational Support and Contextual performancewas strongest when Digital Literacy was low, and weaker when Digital Literacy was high. This suggests that organizational support plays a compensatory role for individuals with lower digital skills.

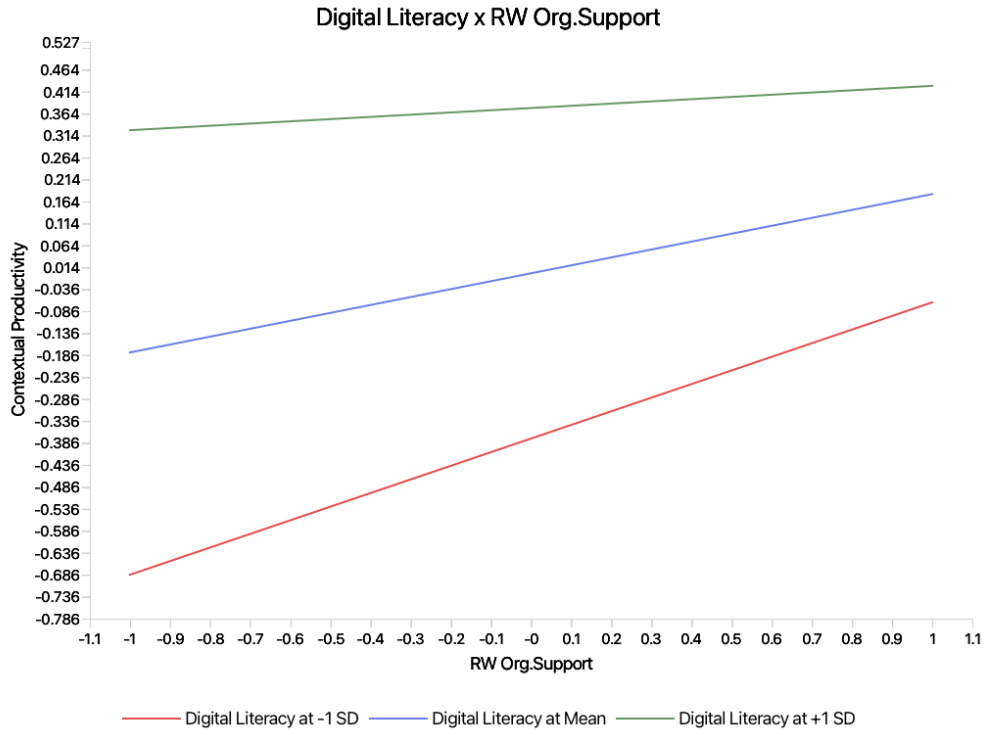


Figure 2. Slop Analysis

In the end, here is a graphical representation of the research model after the analysis. See Figure 3.

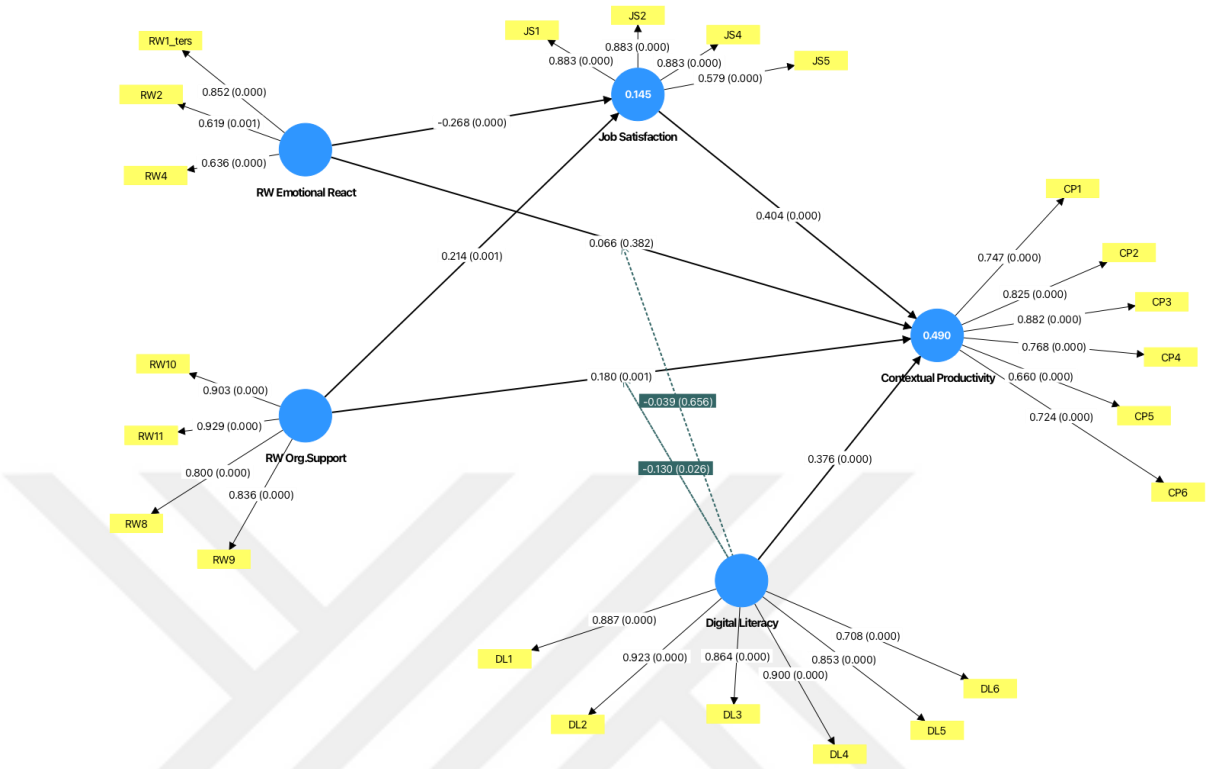


Figure 3. GRAPHICAL REPRESENTATION OF RESEARCH MODEL

4.2.2.7. Summary of the findings

Table 19. SUMMARY OF THE HYPOTHESES' RESULTS

#	Relationship	Results
H1	Remote work emotional response has a positive effect on job satisfaction	Accepted
H2	Job satisfaction has a positive effect on the contextual performanceof employees	Accepted
H3	Remote work emotional response has a positive effect on the contextual performanceof employees	Rejected
H4	Job satisfaction has a mediating role between remote work emotional response and contextual performanceof employees	Accepted
H5	Remote work organizational support has a positive effect on job satisfaction	Accepted
H6	Remote work organizational support has a positive effect on contextual performanceof employees	Accepted
H7	Job satisfaction has a mediating role between remote work organizational support and contextual performanceof employees	Accepted
H8	Digital literacy has a moderating role between Remote work emotional response and contextual performanceof employees	Accepted
H9	Digital Literacy has a moderating role between remote work organizational support and contextual performanceof employees	Accepted

CONCLUSION AND RECOMMENDATIONS

This study explored the complex connections between remote work, employee productivity, job satisfaction, and digital skills. The findings align with previous research, indicate that remote work presents both advantages and disadvantages. While it offers benefits such as increased flexibility and reduced commute times, it also poses challenges related to social isolation, communication barriers, and blurred work-life boundaries. The importance of job satisfaction as a mediator is underscored, highlighting the need for organizations to proactively address these challenges by providing adequate support, fostering a sense of community, and promoting a healthy work-life balance.

This study highlights the significant mediating role of job satisfaction in the relationship between remote work and productivity. This suggests that organizations should prioritize creating a supportive and engaging remote work environment that fosters employee well-being and satisfaction to maximize the productivity benefits of remote work. Furthermore, the study emphasizes the critical role of digital competence in influencing the relationship between remote work and productivity. Employees with strong digital skills are better equipped to handle the complexities of remote work and maintain high productivity levels. Therefore, organizations should invest in training and development programs to enhance employees' digital competence, ensuring they can effectively utilize digital tools and platforms.

As with any research, this study has limitations. First, the sample may not fully represent the entire population of remote workers, potentially exhibiting bias towards a specific industry, geographic area, or demographic group. This could limit the generalizability of the findings. Second, the cross-sectional design restricts the ability to draw definitive conclusions about causal relationships among remote work, job satisfaction, digital competence, and productivity. Longitudinal studies are needed to establish temporal relationships between these variables. Finally, the study relied on self-report measures, which are susceptible to social desirability bias or recall inaccuracies. Future research could benefit from incorporating more objective measures of productivity and digital competence for a more comprehensive evaluation.

Future research should explore additional variables that may influence the relationship between remote work and productivity, such as personality traits, communication styles, and the nature of tasks performed remotely. Longitudinal studies would provide valuable insights into the long-term effects of remote work on employee well-being, career advancement, and overall organizational performance. Additionally, research could investigate the impact of different remote work arrangements, like hybrid models, on productivity and job satisfaction. Qualitative studies could offer deeper understanding of the lived experiences of remote workers and the challenges they face in maintaining productivity and well-being.

Based on this analysis, several implications can be highlighted. The research underscores the significant mediating role of job satisfaction in the relationship between remote work and productivity. This suggests that organizations should prioritize creating a supportive and engaging remote work environment that fosters employee well-being and satisfaction to maximize the productivity benefits of remote work. Additionally, the research highlights the critical role of digital competence in influencing the relationship between remote work and productivity. Therefore, organizations should invest in training and development programs to enhance employees' digital competence, ensuring they can effectively utilize digital tools and platforms.

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APPENDIXES

APPENDIX – 1

T.C.
İSTANBUL GELİŞİM ÜNİVERSİTESİ REKTÖRLÜĞÜ
Etik Kurul Başkanlığı

ETİK KURUL KARAR ÖRNEĞİ

Toplantı No	Toplantı Tarihi	Toplantı Saati	Toplantı Yeri
2024 – 16	30.10.2024	14.00	Rektör Yardımcısı Odası

KARAR NO: 2024-15-112: Lisansüstü Eğitim Enstitüsü, İşletme (İngilizce) Tezli Yüksek Lisans Programı 221432071 numaralı Mohamed Abdulelah Sufyan AL-JABERI' nın, Dr. Öğr. Üyesi Birol BAYSAK' ın danışmanlığında yürütülen "The Relationship Between Remote Work and Productivity Exploting the Mediating Role of Job Satisfaction and the Modering Influence of Digital Competence" konulu çalışması hakkında yapacağı anket sorularının, etik kurallara uygun olup olmadığını tespit etmek üzere, İGÜ Etik Kurulumuzun 20.09.2024 tarih ve 2024-14 sayılı toplantısında, İGÜ Etik Kurul Yönergesinin 12(1) maddesine göre değerlendirme yapmak üzere görevlendirilen öğretim elemanlarının raporları incelenmiş olup, ilgili çalışmada yer alan bilimsel araştırmanın etik kurallara uygun olduğuna oy birliği ile karar verildi.

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APPENDIX – 2

Remote Work Scale

Emotional Response Dimension						
#	Statement	strongly disagree	disagree	neutral	agree	strongly agree
1	I think working remotely is driving me towards workaholism.	1	2	3	4	5
2	I think working remotely has a negative impact on my psychology.	1	2	3	4	5
3	I feel burnt out when working remotely.	1	2	3	4	5
4	I feel mentally exhausted when working remotely	1	2	3	4	5
5	I think I am constantly being watched and followed through the software I use while working remotely.	1	2	3	4	5
6	I think working remotely increases my stress and anxiety levels.	1	2	3	4	5
7	I think I was exposed to digital mobbing (constantly scheduling meetings outside of working hours, monitoring employees' computer activities using special computer programs, etc.) during the remote working process	1	2	3	4	5
Organizational Support Dimension						
#	Statement	strongly disagree	disagree	neutral	agree	strongly agree
1	I can get the support I need (informational, career, etc.) from my managers to work efficiently remotely.	1	2	3	4	5
2	I can get the support I need from my colleagues to work efficiently remotely	1	2	3	4	5
3	I can get the support I need from the human resources department to work efficiently remotely	1	2	3	4	5
4	I can receive the technical support I need to work efficiently remotely from the relevant department heads	1	2	3	4	5
5	My company organizes social events (Yoga, meditation, and online motivation trainings, etc.) to reduce the negative effects of remote working on employees	1	2	3	4	5

Job Satisfaction Scale

#	Statement	strongly disagree	disagree	neutral	agree	strongly agree
1	I am quite happy with my current job.	1	2	3	4	5
2	Most days I go to work with enthusiasm.	1	2	3	4	5
3	Every day at work feels like it will never end.	1	2	3	4	5
4	I find my job fun	1	2	3	4	5
5	I think my job is unpleasant.	1	2	3	4	5

Contextual performance Scale

#	Statement	strongly disagree	disagree	neutral	agree	strongly agree
1	When challenging tasks arose, I took them on.	1	2	3	4	5
2	I tried to keep my knowledge about my job up to date	1	2	3	4	5
3	I proposed creative solutions to new problems	1	2	3	4	5
4	I took on extra responsibilities.	1	2	3	4	5
5	I have always taken on difficult tasks in my job.	1	2	3	4	5
6	I actively participated in meetings and/or consultations.	1	2	3	4	5

Digital Literacy Scale

#	Statement	strongly disagree	disagree	neutral	agree	strongly agree
1	I know the concepts such as licensed software, demo software, pirated software, malware, crack etc.	1	2	3	4	5
2	I know what hardware and software technologies mean.	1	2	3	4	5
3	I can install / format the operating system on my computer.	1	2	3	4	5
4	I can install software or programs on my computer or other electronic devices	1	2	3	4	5
5	I know what Torrent, Internet, World Wide Web (WWW) terms mean.	1	2	3	4	5
6	I can change the proxy /dns settings of devices to access banned websites.	1	2	3	4	5

APPENDIX – 3

RELATIONSHIP BETWEEN REMOTE WORK AND PRODUCTIVITY: EXPLORING THE MEDIATING ROLE OF JOB SATISFACTION AND THE MODERATING INFLUENCE OF DIGITAL COMPETENCE

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Working remotely can enhance productivity by providing flexibility, cutting down on commuting time, and improving the balance between work and personal life, which results in greater job satisfaction (Hunter, 2019). Nonetheless, problems such as social isolation, unclear boundaries, and increasing communication expenses can adversely affect productivity (Miller, 2016). When the work-life balance gets better and distractions at work decrease, job satisfaction increases (Orellana et al., 2022). Digital competence is essential for employees to successfully handle remote work environments. Strong digital skills can help overcome challenges in communication and task management, while a deficiency in these skills can make these problems worse (Haan, 2010). The significance of this study is in offering important insights for organizations that want to improve employee performance and well-being by understanding the relationship between job satisfaction and digital competence in the setting of remote work. Grasping this concept can result in the creation of specific training programs and policies that promote a positive remote work atmosphere, which in turn boosts employee engagement and satisfaction. Our purpose in this study is to explore the relationship between remote work and productivity. Second, examine the mediating role of job satisfaction in the relationship between remote work and productivity. And third, explore the moderating influence of digital competence on the relationship between remote work and job satisfaction. In this study, the participants are going to be from small and midsize enterprises (SMEs) in Istanbul. We will collect the data using a survey that consists of five parts which will be handed face-to-face as well as online. Part one consists of 5 questions about general information such as age, education etc. Second part consists of 12 questions about remote work from EROĞLU & GÜNDEM 2022. The third part consists of 6 questions about productivity from KABA & ÖZTÜRK 2021. The fifth part consists of 5 questions about job satisfaction from KESER & BİLİR 2019. And the last part consists of 6 questions about digital competence from BAYRAKÇI & NARMANLIOĞLU. We will use a 5-point scale from 1 to 5 in which 1 is strongly disagree and 5 strongly agree.

Keywords: Remote Work, Productivity, Job Satisfaction, Digital Competence.

RESUME

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