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Remote Work in the Post-Pandemic Era and the Challenges and Opportunities to Good Work: The Experience of Software Engineers in Germany and Indonesia

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“Terbentur, terbentur, terbentur, terbentuk” - Tan Malaka.

This phrase is attributed to Tan Malaka, a prominent Indonesian nationalist and revolutionary thinker. It encapsulates the idea that through challenges, struggles, and collisions (*terbentur),* something new, structured, or formed (*terbentuk*) emerges. It implies that obstacles and difficulties are necessary in the process of shaping something new or achieving a goal.

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DECLARATION OF AUTHORSHIP

I hereby declare that the thesis submitted is my own unaided work. All direct or indirect sources used are acknowledged as references. This paper has not previously been presented to another examination board or published.

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Ich erkläre hiermit ehrenwörtlich, dass ich die vorliegende Arbeit selbständig angefertigt habe. Die aus fremden Quellen direkt und indirekt übernommenen Gedanken sind als solche kenntlich gemacht. Die Arbeit wurde weder einer anderen Prüfungsbehörde vorgelegt noch veröffentlicht.

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ABSTRACT

This study examines remote work practices among software engineers in Germany and Indonesia during and after the COVID-19 pandemic, exploring their alignment with the World Economic Forum's (WEF) Good Work framework. Through qualitative interviews, the research investigates the personal experiences and perspectives of software engineers on remote work amid the pandemic. The study found that boundary management preferences were not universally effective, reinforcing the notion that boundaries are not fixed and predefined, but rather socially constructed and subject to negotiation. As the pandemic forced participants to ignore their personal preferences and adapt to new situations, they eventually agreed that the benefits of remote work, particularly increased productivity and efficiency, outweighed the drawbacks. This study also revealed that different types of software engineers (managerial, pure, and combined roles) have varying degrees of remote work feasibility. Pure software engineers, with tasks requiring minimal direct interpersonal interaction, were perceived to have the highest remote work potential. These insights further highlighted how regional contexts in each country influenced participants' remote work dynamics, particularly in terms of work culture, differences between startups and established companies, gender roles, job security, and post-pandemic situations. Considering their overall remote work experiences, participants viewed hybrid work as the most ideal arrangement as it allows them to maintain remote work while also having the autonomy to come to the office when they feel needed. Allowing workers to choose their preferred setup plays an important role in improving job performance and satisfaction, aligning with the vision of the Good Work concept. When evaluated through the WEF's Good Work framework, this study found that software engineers typically have substantial opportunities to meet the framework's objectives despite of the pandemic situation, as participants reported minimal impacts on job security and wages, minimal technological obstacles, continued flexibility, minimal health concerns, absence of gender disparities at workplace, and sustained job stability with opportunities for skill development. However, in the broader context of the general workforce, disparities between both countries especially in terms of worker protection through laws and regulations were observed. This study contributes to current body of knowledge on the dynamics of remote work among software engineers, focusing on potential enhancements for the future of work. By examining and comparing the experiences of software engineers in Germany and Indonesia amid the pandemic, this study also provides nuanced insights that enrich our understanding of remote work practices across diverse contexts and settings. These findings offer valuable perspectives for policymaking, organizational strategies, and future research aimed at promoting Good Work standards for the future of work.

GLOSSARY

ASEAN	Association of Southeast Asian Nations
AI	Artificial Intelligence
ArbZG	*Arbeitszeitgesetz* or Germany's Working Time Act
Autobahn	Germany's highway system
Bantuan Subsidi Upah	Indonesia's Wage Subsidy Assistance Program
BEEG	*Bundeselterngeld und Elternzeitgesetz* or Germany's Parental Allowance and Parental Leave Act
Betriebsrat	Germany's Works Councils
BLT	*Bantuan Langsung Tunai* or Indonesia's Direct Cash Assistance Program for Micro, Small and Medium Enterprises
CDC	Centers for Disease Control and Prevention
CGT	Constructivist Grounded Theory
DSD	Distributed Software Development
ECJ	European Court of Justice
EU	European Union
Good Work	Work that is excellent in quality and in an ethical manner
Good Work Framework	World Economic Forum's new standards of Good Work to enhance work quality in light of the new trends and changes accelerated by the impact of the pandemic
GSD	Global Software Development
GT	Grounded Theory

GWD	Good Work Design
GWP	Good Work Project
HFESA	Human Factors and Ergonomics Society of Australia Inc.
INQA	New Quality of Work Initiative
IT	Information Technology
Job Creation Law	Indonesia's Law No. 11 of 2020 on Job Creation
Job Creation GRL	Indonesia's Government Regulation in Lieu of Law No. 2 of 2022 on Job Creation
Kartu Prakerja	Indonesia's Pre-Employment Card Program
Kartu Sembako	Indonesia's Basic Food Card Program
Klimaschutzgesetz	Germany's Climate Action Act
KSchG	*Kündigungsschutzgesetz* or Germany's Protection Against Unfair Dismissal Act
Kurzarbeit	Germany's short-time work scheme
Manpower Law	Indonesia's Law No. 13 of 2003 on Manpower
Mutterschutzgesetz	Germany's Maternity Protection Act
NATO	North Atlantic Treaty Organization
Pandemic	COVID-19/SARS-CoV-2 Global Pandemic
PEN	*Program Pemulihan Ekonomi Nasional* or Indonesia's National Economic Recovery Program
PM	Particulate Matter
PSBB	*Pembatasan Sosial Berskala Besar* or Indonesia's Large-Scale Social Restriction
PUS	Public Understanding of Science

Remote Work	A work arrangement in which employees do not need to work at a central workplace
RKI	Robert Koch Institute
RQ	Research Questions
STS	Science and Technology Studies
SWEBOK	Software Engineering Body of Knowledge
UK	United Kingdom
WEF	World Economic Forum
WHO	World Health Organization
WorkPanRisk	Work in Times of Pandemic – Risk Policy and Dynamic Boundary Management of Work under the Conditions of SARS-CoV-2

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1. INTRODUCTION

On 11 March 2020, the World Health Organization (WHO) declared COVID-19 as a global pandemic (WHO, 2020). Nations across the globe grappled with the challenge of containing the spreading of the virus. Many aspects remained uncertain, including the symptoms exhibited by the virus and how it is transmitted (Lovelace Jr. et al., 2020). Amidst the ambiguous situation, scientists and public health experts reached a consensus that maintaining a safe physical distance between individuals is a pivotal factor in curbing the virus (Pfizer, 2020). Centers for Disease Control and Prevention (CDC) describes physical distancing as the practice of keeping distance between individuals who do not live together, which includes avoiding groups, gatherings, and crowds in both indoor and outdoor spaces (CDC, 2020). In addition to this procedure, individuals are also required to adhere to additional measures such as wearing masks in public places, carrying out tests, and following proper hygiene protocols like frequent hand washing, mask-wearing, and the use of hand sanitizer. Furthermore, with the introduction of vaccines, individuals were also strongly encouraged to get vaccinated to bolster their immunity and mitigate the spread of the virus.

Three years have passed since the onset of the pandemic. Over this period, the situation has gradually improved, leading many countries to start easing measures and restrictions. In Germany, most of the protective measures have been repealed since March 2023 (The Local, 2023). The mandate for mask-wearing in public places has been ended and limitations on public gatherings are also no longer in place.

The restrictions and protective measures enforced throughout the pandemic have led to disruptions in the realm of work. Initially, many governments imposed strict restrictions and closures to protect worker health and curb the spread of COVID-19. However, halting work activities entirely was not feasible due to economic risks. Consequently, businesses and institutions were classified as essential or non-essential. Essential businesses were required to maintain operations, while non-essential ones faced continued restrictions. For example, in Germany, after a few weeks of full lockdown, essential services like schools and nurseries reopened, whereas non-essential businesses such as gyms, bars, theaters, and concert halls remained closed (Posaner & Nöstlinger, 2020).

Due to these restrictions, remote work - also known as home office, work from home, telecommuting, and teleworking – emerged as a solution and became a prevalent practice for many organizations worldwide. Remote work is a work arrangement in which employees do

not need to work at a central workplace (e.g., office building, warehouse, store) (Bao et al., 2022). This approach was seen as an ideal solution to address both economic and public health concerns during the Pandemic, as it allowed employees to safeguard themselves from the virus while continuing their job responsibilities remotely. However, the opportunity for remote work was not universal, leading to unequal outcomes across professions. Healthcare workers, for example, had to be physically present in hospitals for patient care, particularly during the pandemic's initial stages. In contrast, other professions like software engineers, who work in highly digitized environments, were better positioned to adopt remote work arrangements.

In Germany, the remote work obligation has ended since March 2022 (Carter, 2022). However, many organizations still choose to continue implementing remote work practices. Due to the continuation of this practice for over than a year, it appears that many employees also started to get accustomed to and prefer to maintain the remote work arrangement (Kong et al., 2022). According to the ifo Institut, the decline in remote work practice after the pandemic has been minimal, and the proportion of people working from home remains at a significantly higher level than before the pandemic (Alipour, 2023). As a result, the remote work setup continues to be a part of daily life in Germany, with 61 percent of companies currently still offering the remote work option (Tagesschau, 2023). The Information Technology (IT) service sector exhibited the highest proportion in 2022, with 76 percent of employees utilizing the remote work option at least on an occasional basis (Tagesschau, 2023).

In Indonesia, the situation is slightly different. The pandemic-related measures were lifted in December 2022, and most companies required employees to return to the office by early 2023 (Ministry of State Secretariat of the Republic of Indonesia, 2022; Sadya, 2023). Unlike in Germany, where remote work remains popular, a 2022 survey showed many Indonesian workers prefer working from the office even though the pandemic has ended (Jakpat, 2022). Despite this preference and the lifting of pandemic restrictions, Indonesia was confronted with air pollution crisis. Indonesia’s capital city, Jakarta, was ranked as the world’s most polluted city, as indicated by data provided by Swiss air quality technology company IQAir (Reuters, 2023). The residents of Jakarta found their health to be worsening, mainly complaining about respiratory problems which include cough, flu, nasal congestion, and fever (Indra, 2023). In response, the Indonesian government reinstated measures such as mask mandates and recommendations to return to remote work for some workers (Souisa & Salim, 2023; Chen, 2023).

These occurrences demonstrate that the pandemic has undeniably triggered a significant transformation in the realm of work, which includes the continuation of remote work practices. Even as the pandemic subsides, governments and organizations to some extent continue to adopt remote work as a measure to address new emergency states. Nevertheless, the dynamics surrounding remote work practices exhibit variations that can be attributed to many factors, including the differences in occupational types and regional contexts.

This study investigates the dynamics of remote work practices among software engineers, with a particular focus on Germany and Indonesia. As previously noted, the field of software engineering is recognized as one of the elite groups in remote work practice due to its high degree of digitization. However, this field entails a complex technical, knowledge-based task that requires focus, coordination, and collaboration (Ford et al., 2021). Working with these heightened demands can be a challenge for software engineers within a remote work setup if the environment is not conducive (e.g., having to share the workspace with their children). Research has revealed several negative outcomes experienced by software engineers during remote work, including interrupted focus (Ford et al., 2021), reduced productivity in large projects (Bao et al., 2022), and impaired team dynamics (Nallanagula, 2023). However, benefits like increased autonomy and more time with family or for self-care have also been observed (Ford et al., 2021). In light of these variations, this study aims to gain a deeper understanding of how the diverse remote work perspectives and experiences of software engineers in Germany and Indonesia impact their overall performance and satisfaction, both professionally and personally. Additionally, by examining these experiences in Germany and Indonesia, this study also highlights the regional context differences, offering insights into the varied aspects and interpretations of the findings.

In this study, the diverse experience of remote work among software engineers in Germany and Indonesia is further examined through the lens of the Good Work concept. The concept was initially defined by Gardner (2010) as work that is of excellent technical quality, work that is ethically pursued and socially responsible, and work that is engaging, enjoyable, and feels good. However, with the evolving nature of work resulting from the pandemic, the World Economic Forum (WEF) has introduced a fresh framework for Good Work. According to WEF, there are five key standards of Good Work, i.e. (i) promote fairness on wages and technology, (ii) provide flexibility and protection, (iii) deliver on health and well-being, (iv) drive diversity, equity, and inclusion, and (v) foster employability and learning culture (WEF, 2022). Thus, this study centers on these five key aspects to analyze the remote work experiences among software engineers in both Germany and Indonesia and examine the extent to which the Good Work framework can be applied in each country.

This study is structured in seven chapters. In the first chapter, the background of the study is presented, which includes an explanation of the impact of the pandemic on the realm of work, particularly the growing prevalence of remote work practices in two specific countries, i.e., Germany and Indonesia. As the study focuses on the software engineering profession, this chapter also highlights the challenges and opportunities presented by remote work in this field. The chapter also introduces the notion of Good Work, which is utilized as one of the analytical frameworks in this study. The second chapter presents the research gap, the aims and objectives, and the research questions. The third chapter provides a review of existing literature specifically on the forced remote work situation in Germany and Indonesia as well as the software engineering profession and its dynamics around remote work practices. In the fourth chapter, the concept of remote work, boundary theories from science and technology studies (STS), and sociology perspectives, along with the concept of Good Work, are introduced to serve as the basis for the subsequent analysis of the collected data. The fifth chapter presents the methodological approach applied in this study, including the research design, data collection, and analysis methods. In addition, the positionality and ethical considerations of the researcher are also addressed in this chapter. In the sixth chapter, the empirical findings from data collection are presented and analyzed. The seventh chapter discusses the empirical findings and analysis through the lens of the Good Work concept. Finally, the eighth chapter presents the conclusion and suggestions.

2. THE STUDY

2.1 Gaps in Existing Research

Research interest in remote work has grown over the past few years. However, the pandemic has caused an unprecedented situation in which millions of workers across the globe have been forced to transition to remote work (Allen et al., 2021). Before the pandemic, remote work was typically a voluntary option that workers choose for themselves (Lapierre et al., 2016). Because of this unique situation, recently there has been plenty of research conducted specifically on the topic of remote work in light of the pandemic. This research has brought attention to the opportunities and challenges in various facets of remote work, such as productivity and job satisfaction (Mirela, 2020; Hashim et al., 2020), organizational management (Khor & Tan, 2022; Zito et al., 2021), family relationships (Adisa et al., 2021; Bernhadt et al., 2022), public health (Alipour et al., 2020), personal well-being (Xiao et al., 2021; Somasundram et al., 2022), as well as gender role (Chauhan, 2022; González Ramos & García-de-Diego, 2022). The findings of this prior research illuminated the complex and paradoxical effects of remote work during the pandemic.

The majority of remote work experiences highlighted in prior studies occurred during the peak times of the pandemic when the practice was still forced rather than voluntary. Now that the pandemic has come to an end, some employers have started to mandate their employees to go back to the office (Kong et al., 2022) and remote work arrangements are being provided either as a choice or with restricted availability. In light of this transition, current research has revealed a divided response, with some employees expressing a preference for continuing remote work despite the relaxation of restrictions (Kong et al., 2022; Smite et al., 2023), while others favor a return to pre-pandemic office environments (Kong, et al., 2022).

As mentioned in the preceding chapter, the varying outcomes and responses associated with remote work can be attributed to various factors, including differences in occupational types and regional contexts. Several prior studies have placed particular emphasis on specific professions like teachers and university instructors (Badaru & Adu, 2022; Kraft & Simon, 2020) as well as artists (Skaggs, 2024), illuminating the unique remote work experiences within each profession.

As for regional context disparities, several studies have highlighted the diverse challenges faced by workers doing remote work in different countries. For instance, Meraj et al. (2024) revealed that infrastructure challenges like internet speed issues are prevalent in remote work practices in Pakistan. Other studies have also highlighted specific issues in European

countries concerning access, familiarity with, and integration of digital work tools (Ipsen et al., 2021).

This study further delves into the remote work practice in the field of software engineering. Numerous existing studies have explored the experiences of software engineers doing remote work during the pandemic, revealing a range of positive and negative outcomes (Juárez-Ramírez et al., 2022; Müller et al., 2023; Ford et al., 2021; Bao et al., 2022; Ralph et al., 2020; Russo et al., 2023; Nallanagula, 2023). In comparison to these existing studies, this study seeks to further investigate the nuances of remote work practices encountered by software engineers, not only during the pandemic but also in the post-pandemic period.

Several prior studies have discussed the topic of remote work based on boundary theory perspectives. Boundary theory refers to a conceptual framework used in various disciplines such as sociology (Riesch, 2010), psychology (Kossek et al., 2006; Allen et al., 2015; Allen et al., 2021), STS (Gieryn, 1983), and organizational theory (Ashforth et al., 2000) - it explores how boundaries are established, maintained, and negotiated within different contexts of social life. In the context of remote work, existing studies have underscored the correlation between how workers regulate their boundaries while engaged in remote work and their overall work performance (Allen et al., 2015; Kossek et al., 2006; Kossek et al., 2009; Gajendran & Harrison, 2007). Building upon this angle, this study explores how remote work practices influence the overall work performance and satisfaction of software engineers. As current research has also underscored the influence of regional specificity in the dynamics of remote work (e.g., Meraj et al. 2024; Ipsen et al., 2021), this study employs a comparative case study approach by concentrating on two distinct countries, i.e., Germany and Indonesia. Through this approach, this study enhances the existing research by elucidating disparities in outcomes between both countries.

As part of the analysis, this study also takes into account the Good Work concept. Several prior studies conducted by scholars, governments, and organizations have attempted to define and theorize what Good Work is. They have presented a diverse range of understandings of Good Work by taking into account various determining factors, such as ethics, health, and well-being, flexibility, as well as reliable income (Gardner et al., 2008; Gardner, 2010; Daria, 2011; Fuchs, 2006; Pazell et al., 2020; WEF, 2022). In 2022, the WEF introduced a more recent and comprehensive framework for Good Work, which was developed in response to the challenges posed by the Pandemic as well as various global shifts (WEF, 2022). This study centers its analysis on this framework. Expanding upon the findings, this study further investigates how the varied remote work experiences of software engineers in both Germany

and Indonesia align with the Good Work framework and assesses the extent to which it can be implemented in each country.

2.2 Aims & Objectives

This study aims to explore how individuals in the software engineering industry perceive and experience remote work during and after the pandemic, with a focus on differences between Germany and Indonesia. Additionally, it seeks to analyze how these experiences relate to the Good Work framework and evaluate the feasibility of implementing this framework in both countries. Thus, the objectives of this study are as follows:

- To investigate how remote work is perceived and experienced by individuals working in the software engineering industry *during* and *after* the pandemic, and how these practices have evolved throughout this period.
- To identify how the perceptions and experiences differ between Germany and Indonesia.
- To understand how remote work experiences among software engineers in both countries align with the values encompassed within the Good Work framework and evaluate the feasibility of implementing such a framework in each country.

2.3 Research Questions

Taking into account the aforementioned research gap as well as the aims and objectives, this study takes a qualitative research design to answer the following research questions (RQ):

Main RQ:
How has remote work during and after the pandemic been perceived and experienced by software engineers in Germany and Indonesia? How do they differ between the two countries?

Sub-RQ:
How do the remote work experiences of software engineers in Germany and Indonesia align with the Good Work framework? How feasible is its implementation in each country?

3. LITERATURE REVIEW

3.1 Forced Remote Work During Crises

Remote work has evolved significantly due to technological advancements and shifting workplace dynamics. However, the emergence of the pandemic has accelerated the adoption of remote work to an unprecedented level. Remote work transitioned from being seen as an alternative work arrangement to becoming mandatory during the pandemic, as individuals were required to stay home while ensuring business operations continued. This sudden change presented challenges for organizations and individuals, resulting in significant social and economic impacts. Countries around the globe responded with diverse policies to manage this shift. This chapter reviews the pandemic's impact on remote work in Germany and Indonesia, emphasizing governmental policy responses based on current literature.

3.1.1 The Situation in Germany

In Germany, the first COVID-19 infection was officially registered on 27 January 2020. Significant countermeasures were implemented after the Robert Koch Institute (RKI) released the National Pandemic Plan on 4 March 2020. The RKI is Germany's national public health institute which is dedicated to the prevention, control, and investigation of infectious diseases in Germany. Following the plan, the country adopted various measures including the closing of national borders, partial lockdown of businesses and educational institutions, mandatory use of masks in buildings, public spaces, and transportation, mandatory quarantine and testing for incoming travelers, and the release of a tracing app named the *Corona-Warn-App* by the government (Jasanoff et al. 2021). Implementing these measures was initially challenging due to the country's federal structure. This created the potential for a high degree of policy fragmentation (Büthe et al., 2020). Nevertheless, due to its perceived neutrality, highly pertinent expertise, and political independence, RKI managed to shape the public discourse throughout the pandemic as the public largely accepted its assessment of the risks as a whole and its quickly evolving conclusions about necessary measures (Büthe et al., 2020).

Due to lockdowns and physical distancing measures, the pandemic significantly impacted the global economy, including Germany. With public places closed and business activities halted, numerous companies and organizations struggled to maintain their operations. Consequently, many employees were unable to work as usual and faced the risk of losing their jobs. To prevent immediate layoffs, the German government implemented a job retention program known as *Kurzarbeit*. This short-time work scheme has been in place in Germany since in 1924 and is designed for the government to provide subsidies to employees working reduced hours (Casey & Mayhew, 2023; Aiyar & Dao, 2021). While *Kurzarbeit* is inherently a

permanent program, many of its features are specifically designed to encourage greater use during economic downturns, such as the pandemic (Aiyar & Dao, 2021).

All workers contributing to the social security system in Germany are eligible to take part in *Kurzarbeit* (Aiyar & Dao, 2021). To compensate for the lost net income from the hours not worked, the German government normally provides a replacement rate of 60 percent (67 percent for parents) (Aiyar & Dao, 2021). This rate, however, was raised to 70 percent (77 percent for parents) during the pandemic starting from the fourth month of the *Kurzarbeit* and further increased to 80 percent (87 percent for parents) from the seventh month onwards (Aiyar & Dao, 2021). Typically, *Kurzarbeit* lasts for up to 12 months, but during the pandemic, the duration was extended to 24 months (Casey & Mayhew, 2023; Aiyar & Dao, 2021). *Kurzarbeit* has proven effective in reducing unemployment and stabilizing Germany's economy in the short term, as it managed to lower the country's unemployment rate by an average of three percentage points (Aiyar & Dao, 2021).

3.1.2 The Situation in Indonesia

In March 2020, COVID-19 prompted the Indonesian government to declare a nationwide public health emergency. It was followed by the issuance of *Pembatasan Sosial Berskala Besar* (PSBB) or Large-Scale Social Restriction policy, which aimed to restrict non-essential activities and encourage citizens to stay at home (Pangaribuan & Munandar, 2021). These restrictions affected various sectors, including transportation, education, and business operations, resulting in a significant shift towards remote work and online learning.

Remote work became crucial to Indonesia's economic recovery strategy, aiming to maintain business continuity while minimizing physical interactions and controlling virus spread. Numerous organizations, previously hesitant about remote work, quickly adapted to this new norm (Suryahadi et al., 2020). However, many of them faced challenges with technological readiness, including inadequate hardware, software, and cybersecurity measures (CISCO, 2022). Additionally, the sudden shift exacerbated socioeconomic disparities, particularly the digital divide, with urban areas better equipped for remote work than rural areas with limited connectivity (Fatimah et al., 2023).

Despite the adoption of remote work, the Indonesian economy was hit hard in the second quarter (Q2) of 2020 (Basri & Fitrania, 2022). Businesses were not the only ones impacted; numerous workers were also at risk of job and income loss since they could not shift to remote work because of the nature of their work. The situation prompted the government to introduce a massive fiscal stimulus package through the National Economic Recovery Program or also

known as *Program Pemulihan Ekonomi Nasional (PEN)*, allocating IDR 699.43 trillion (approximately US$ 49.3 billion) in 2021 (United Nations Children's Fund, et al., 2021) to support individuals and businesses affected by the pandemic.

Various government social assistance programs were implemented to aid pandemic recovery efforts, including the Pre-Employment Card (Kartu Prakerja) to enhance skills and purchasing power (United Nations, 2024), partial electricity subsidies (Yulantias et al., 2022), internet quota subsidies, the Basic Food Card (Kartu Sembako) to help poor households access basic food (Sumarto & Ferdiansyah, 2021), Direct Cash Assistance (Bantuan Langsung Tunai or BLT) for MSMEs to boost their competitiveness (Purnama & Reyta, 2020), internet quota subsidies for students (Misran, 2023), and the Wage Subsidy Assistance Program (Bantuan Subsidi Upah) for affected workers with certain salary criteria (Tobing & Muhyiddin, 2022).

Despite these efforts, the Indonesian government faced criticism as the implementation of the programs was not as smooth as planned. For instance, research showed that the implementation of electricity subsidy in one of the Indonesian regencies was dissatisfactory, as 50 percent to 80 percent of the population did not receive such subsidy (Yulantias et al., 2022).

3.2 Software Engineers and Remote Work

Software engineering is known for its adaptability to technological advancements, combining technical expertise with creativity and problem-solving skills. Given the nature of its tasks, the software engineering profession is frequently lauded for its advantageous position in embracing remote work. However, remote work also poses unique challenges such as maintaining team spirit, navigating time zone differences, and preserving work-life boundaries. Understanding these complexities is crucial for fostering inclusive, productive work environments in software engineering. Building upon existing literature, this chapter delves into the attributes and characteristics of the software engineering profession, as well as the dynamics of remote work practices among software engineers, including the associated challenges and opportunities.

3.2.1 Software Engineering as a Profession

In today's modern society, the increasing reliance on computers across various facets of life (e.g., cars, toys, smartphones, televisions, and public infrastructures) has led to the widespread application of software products in people's social and personal spheres.

Consequently, the quality of software products must be taken seriously as they can profoundly impact personal well-being and societal harmony (Bourque & Fairley, 2014).

The impact of software errors and bugs can lead to dramatic and catastrophic consequences. At the 1968 North Atlantic Treaty Organization (NATO) Software Engineering Conference in Germany, the term *software crisis* was coined for the first time to describe the state of the software development industry to express the gap between the ability to develop quality software (i.e., product-correct, understandable, reliable, stable, and verifiable) and the rapid expansion in computing power (Lurie & Mark, 2015). It was reflected in irregular schedules, budget overruns, software that is inefficient or of low quality, non-compliance, and programs that are not delivered (Lurie & Mark, 2015).

Software engineering is thus an inherently risky activity (Crnkovic & Feldt, 2009). It is a complex technical, knowledge-based task that requires focused, uninterrupted work, as well as the ability to coordinate and collaborate with other developers and stakeholders (Ford et al., 2021). To develop high-quality software products, software engineers must possess certain sets of knowledge, skills, and attitudes so that they can work in a professional, responsible, and ethical manner area (Bourque & Fairley, 2014). This set of practices is also known as the *Software Engineering Professional Practice* knowledge area, as described in the *Guide of Software Engineering Body of Knowledge* (SWEBOK) (Bourque & Fairley, 2014). This knowledge area encompasses three primary focuses (Bourque & Fairley, 2014).

The first aspect is professionalism. Software engineers must display professionalism through adherence to certain practices, including but not limited to (i) obtaining proper accreditation, certification, and licensing, (ii) upholding codes of ethics and conduct encompassing values and behavior expected in the professional practice and decision-making (iii) engaging in professional societies for continuous learning, (iv) maintaining software engineering standards for quality and error prevention, (v) adhering engineer-to-customer contracts such as regarding confidentiality and intellectual property ownership, (vi) ensuring legal compliance related to trademarks, patents, trade compliance, and cybercrime, (vii) producing clear documentation, and (viii) conducting ethical tradeoff analyses.

The second aspect is group dynamics. Software engineers must be able to interact cooperatively and constructively with others (e.g., customers, co-workers, suppliers, and subordinates), which is essential to identifying and meeting the needs and expectations of all stakeholders when solving problems. Hence, it is crucial for software engineers to (i) be able to work in multidisciplinary environments and domains (ii) work in a cohesive, cooperative,

honest, and focused manner, (iii) cultivate good problem-solving habits, (iv) prioritize teamwork and intellectual humility, (v) maintain open and productive communication throughout the software product's lifetime, (vi) address clarity issues, and (vii) and demonstrate cultural tolerance in diverse settings.

The third aspect is communication skills. Software engineers are required to be able to communicate well, verbally, and in reading and writing. These skills are required as they facilitate a clear understanding between the software engineer and the customers, managers, co-workers, and suppliers, which is crucial for the successful attainment of software requirements and deadlines. Consequently, software engineers should be proficient in (i) reading and understanding technical material (e.g., manuals, source code), (ii) producing written products (e.g., source code, project plans, software requirements, user manuals), (iii) communicating effectively with team members using various tools and settings (e.g., emails, face-to-face interaction, digital collaboration tool).

3.2.2 Remote Work Dynamics of Software Engineers

Remote work is not a new reality for the software development world (Neto et al., 2022). Consequently, in their professional capacity, software engineers must exhibit a certain level of tolerance towards multicultural environments as it is common for a software project to be divided into pieces across national and cultural borders (Bourque & Fairley, 2014). Over the years, the management, development, and maintenance of software have been changing from being at a single location to a distributed network (Müller et al., 2023). This approach is commonly referred to as Distributed Software Development (DSD) (Müller et al., 2023). However, the pandemic has caused a new form of DSD, where software engineers were unexpectedly forced to shift from working together in a physical office to working individually from home although they reside in the same region or location (Müller et al., 2023).

Software engineering is inherently a social activity (Yilmaz & O'Connor, 2015), as it requires software engineers to constantly communicate and collaborate with other stakeholders. Hence, forced remote work due to the pandemic posed new challenges for software engineers, compelling them to adapt their working methods, especially in terms of how they collaborate with others.

Before the pandemic, challenges already persisted in DSD practices. Müller et al. (2023) identified five main challenges that continue to persist in DSD. These challenges include (i) collaboration – e.g., asynchronous collaboration due to different time zones and family matters, difficulty in maintaining team spirit and group awareness, (ii) communication – e.g.,

the lack of personal contact and trust, finding the right balance between tightly and loosely coupled work, (iii) tooling – e.g., inappropriate selection of communication technologies, the lack of tool supported training and knowledge sharing, (iv) management – e.g., the challenge of not knowing who is in charge of what due to different organization sites and fast-changing environments, lack of management commitment, lack of roles and responsibilities, and (v) control process – difficulty to conduct control processes across different time zones and cultures, particularly in the Global Software Development (GSD) arrangement.

After the pandemic came, various research has pinpointed new challenges experienced by software engineers engaged in remote work. Based on the literature review, this study has identified five key challenges faced by software engineers when doing remote work during the pandemic.

The first challenge is productivity. Gibbs et al., (2021) identified a decline in productivity as some work aspects are more difficult to perform in a virtual environment. Employees also expressed that they had reduced focus time as they spent more time attending short-duration meetings (Gibbs et al., 2021). Nevertheless, a study conducted by Bao et al. (2022) revealed that the impact of remote work on software engineers' productivity may also depend on factors like the type of programming language as well as the type, age, and size of the project.

The second challenge is well-being. To some extent, remote work has caused software engineers to change their working habits by working longer hours (Müller et al., 2023) and late at night (Nallanagula, 2023), which could affect their physical and mental health. Moreover, some employees also mentioned the negative effects of not getting enough exercise, working from unideal places like kitchen tables, bedrooms, and sofas, as well as excessive mental loads like stress, fear, loneliness, and isolation (Nallanagula, 2023).

The third challenge is communication and collaboration. Numerous prior research has revealed that software engineers faced problems with deteriorating relationships with their team members. Miller et al., (2021) pointed out that some employees experienced challenges in their team culture, such as a decreased ability to brainstorm with team members, difficulty communicating with colleagues, and a decreased social connectedness with other team members. Müller et al., (2023) noted that these problems can lead to the loss of awareness of tasks and decreased trust.

The fourth challenge is infrastructure, tools, and equipment. As noted by Juárez-Ramírez et al., (2022), the pandemic has caused an unforeseen need for rapid digital transformation

where new technological tools and frameworks were needed to facilitate software engineers in their tasks and product development during remote work. However, while a significant portion of respondents in this study had the basic work equipment and Internet connection, some of them did not possess important items such as a speaker device to attend meetings remotely and a private workspace (Juárez-Ramírez et al., 2022) which could hinder them from having an optimal working environment. Furthermore, infrastructure problems persisted for some software engineers. Although many had Internet access during remote work, some encountered disruptions in Internet speed and connectivity (Nallanagula, 2023). One of the respondents in this study noted that the internet speed at their home was more suitable for domestic usage than professional use (Nallanagula, 2023). Additionally, the abrupt shift to remote work also compelled employees to use new tools in new ways. To adapt with the situation, some employers also faced a challenge in choosing and implementing the right tools to facilitate collaboration and communication among their employees (Müller et al., 2023).

The fifth challenge is work and non-work boundaries. Several research studies have indicated that Remote work arrangements have resulted in software engineers grappling with challenges related to maintaining boundaries between work and non-work aspects. Some software engineers have expressed that family obligations arising during remote work (e.g., household work, parenting) caused struggle and disruption in their concentration (Nallanagula, 2023). Ralph et al., (2020) additionally noted that employees who live with small children have significantly less conducive workspace during remote work due to the noise and distractions caused by the presence of the children. Consequently, software engineers working under such conditions experienced reduced productivity.

Despite the many challenges, existing research has also revealed several contrasting results where software engineers experienced positive outcomes from remote work during the pandemic. With regard to productivity, studies have shown that several software engineers experienced no difference in the level of productivity between remote work and on-site work (Bao et al., 2022). Some of them even expressed feelings of enthusiasm, high energy levels, and enhanced focus on their work (Bao et al., 2022). As for work and non-work boundaries, in contrast with the previously mentioned challenges, some software engineers noted that the presence and the number of children or people living in the house during remote work did not pose as a source of interruption (Neto et al., 2020). In the research conducted by Ford et al. (2021), some respondents even pointed out that remote work allowed them to spend more time with families, children, and pets. They also found that work breaks during remote work felt more fulfilling as they could use them to take care of their family members (Ford et al. 2021).

In addition to these benefits, research has also shown that remote work can increase inclusion. Miller et al. (2021) addressed that remote work allows more accessibility for workers with disabilities, as it may allow them to use familiar equipment and manage time more flexibly (Spark, 2017). Remote work also creates an environment where traditionally marginalized people (e.g., transgenders) can be empowered and have more autonomy over workplace interactions (Miller et al. 2021). As Ford et al. (2019) argued, remote work gives transgender software engineers greater control of their professional identity, the opportunity to fight the severe economic hardship that they disproportionally face, and a safe space to find refuge from harmful or toxic work environments.

4. THEORETICAL BACKGROUND

4.1 Boundary Management and Remote Work

Creating and maintaining boundaries are fundamental to human nature (Nippert-Eng, 1996: Zerubavel, 1991). There are many different sociological approaches to boundaries, and one of the most prominent works from the STS field is the concept of boundary work by Thomas Gieryn (Riesch, 2010). Boundary work is described as an ideological style found in attempts made by scientists to create a public image for science by contrasting it favorably to non-scientific intellectual or technical activities (Gieryn, 1983). This theory suggests that scientists strive to demarcate science from non-science or pseudoscience to protect the autonomy of science from interference by politics or ideology, as well as rival accounts from other scientists (Gieryn, 1983; Riesch, 2010). Scientists use these demarcations to expand the authority of science into other fields, monopolize their professional authority and resources, as well as to protect them from the undesirable consequences of their science (Riesch, 2010). Gieryn's theory of boundary work has become a key conceptual tool for analyzing scientific groups and their rivalries (Riesch, 2010). The theory was particularly useful in understanding the sub-discipline of public understanding of science (PUS), where boundary work is evident when scientists first have to establish their own credibility to speak authoritatively about their science to the public (Riesch, 2010).

Gieryn's boundary work theory emphasizes that scientific knowledge and authority are socially constructed and negotiated. This theory can be adapted to other frameworks, including the boundary theory, which also recognizes that the distinctions that people make in their daily lives and culture are socially constructed (Zerubavel, 1991). According to the boundary theory, people have their ways of creating, maintaining, or changing boundaries in an effort to simplify and classify the world around them (Ashforth et al. 2000; Zerubavel, 1991). Home, work, and church are examples of the social domains created by boundaries (Nippert-Eng, 1996). Although these domains may be socially constructed, people perceive them as such and act as though they are real (Ashforth et al., 2000).

Within and across the social domains of work, home, and other places, boundaries tend to be further drawn around roles (Ashforth et al., 2000). According to the role theory - in particular organizational role theory – roles refer to recurrent activities within the social system that yield organizational output (Biddle, 1986; Kahn et al., 1964; Katz & Kahn, 1978; Allen et al., 2014). The ways individuals manage boundaries between different roles can be a source of order by clearly delineating expected behaviors for each role and forming the foundation for interactions with others (Allen et al., 2014). At the same time, they can also be a source of conflict when

the transitions between those roles get more difficult (Allen et al., 2014). Two key concepts affecting the process of role transitions are the (i) flexibility, and (ii) permeability of a given role boundary (Ashforth et al., 2000). Flexibility is the degree to which the spatial and temporal boundaries are pliable (e.g., a person working in a family business where she can do both the roles of worker and mother at any point during the day). Meanwhile, permeability is the degree to which a role allows one to be physically located in the role's domain but psychologically and/or behaviorally involved in another role (e.g., a person working at a dedicated workplace and has little opportunity of access and time to attend to other roles).

Building upon these theories, boundary management plays an important role for individuals to create, maintain, or change boundaries to effectively navigate the world around them, including their work and non-work roles (Ashforth et al., 2000; Nippert-Eng, 1996). Ashforth et al. (2000) argue that role boundaries can vary from highly segmented, in which each role has a strict location and time, to highly integrated, in which multiple roles can occur within the same location and time. Individuals with a preference toward integration are generally comfortable removing boundaries between work and non-work, while those with a preference toward segmentation prefer to keep temporal and physical boundaries between work and non-work (Ashforth et al., 2000). The spectrum between segmentation and integration may vary depending on personal preferences, actual behaviors enacted by individuals, and environmental circumstances (Allen et al., 2021). In this context, boundary management preferences are important to the extent that individuals are able to act in ways consistent with their needs and preferences (Allen et al., 2021). Effective boundary management is thus essential for maintaining both the productivity and well-being of workers.

The rise of remote work, particularly accelerated by the pandemic, has fundamentally transformed the way people work and manage their professional and personal lives. This shift has brought to the forefront the critical issue of boundary management, specifically how individuals navigate the blurred lines between work and non-work life. Effective boundary management becomes increasingly relevant and requires more effort to navigate in remote work environments.

Remote work, also known as telecommuting, is not a new concept in the world of work. It is defined as work conducted from home supported by telecommunications technology such as phone, internet, and computer (Nilles, 1998). Before the pandemic, remote work was often offered as a flexibility option to certain employees in certain circumstances such as family reasons. Eaton (2003) introduced the term *formal flexibility policies* - it is defined as written, officially approved human resource policies that provide flexibility for workers based on the

approval of the human resources department and the supervisor's discretion. While this definition suggests that formal flexibility policies are usually conditional, the pandemic brought about an entirely different scenario. Remote work transformed from being an optional arrangement to a mandatory requirement, leading to new challenges as employees were forced to swiftly adapt to the new setup without the choice to decline or opt out. As a result, achieving effective boundary management became increasingly challenging for many workers as the lines between work and personal lives blurred to an unprecedented degree.

In a situation where remote work is mandatory, boundary management preferences become less relevant as individuals no longer have the autonomy to determine their ideal working setup. Individuals with a preference for segmentation found it particularly challenging to establish and maintain their strict boundaries (Allen et al., 2021), as both work and personal activities occur within the same temporal and physical settings for an extended duration. They must inevitably adapt to the situation and negotiate their preferences accordingly. In contrast, those who prefer integration should more readily be able to adapt and thrive (Allen et al., 2021), as they have greater tolerance towards blurred lines between work and non-work life.

Nevertheless, as the pandemic continued for an extended period, individuals had the opportunity to adjust to the new work setup. Consequently, there were possibilities that the relationship between their boundary management preferences and the balance between work and personal life evolved (Allen et al., 2021). In this case, adaptation theory suggests that stressors or shock events will have a negative impact on individuals' well-being in the short term, however, over a longer period, individuals adapt to their new situation, and their well-being returns (Brickman et al., 1978; Allen et al., 2021).

Therefore, as individuals adapt to new work settings in light of the pandemic, understanding the dynamics of boundary management becomes crucial in fostering a sustainable and healthy work culture. Recognizing and supporting diverse boundary management preferences can enhance employees' well-being and productivity, ultimately contributing to a more resilient and adaptable workforce.

4.2 Good Work and The Future of Work

4.2.1 The Development of Good Work Definition

The notion of Good Work has been evolving over time. Some notable proponents of this idea are Howard Gardner, William Damon, and Mihaly Csikszentmihalyi. The three founded a project in 1996 – originally called *The Humane Creativity Project* – named *The Good Work*

Project (GWP) (Nakamura, 2010). The term Good Work was initially defined as work that is excellent in quality and ethical manner (socially responsible) (Gardner, 2008; Seevers & Shaughnessy, 2003). It comprises three "E" elements, i.e., excellence, ethics, and engagement (Gardner, 2008; Gardner, 2010). Based on these elements, the term Good Work is further defined as work that is good in a (i) technical sense – meaning that the worker is highly skilled and keeps up with the latest knowledge and techniques, (ii) phenomenal sense – meaning that the work feels good, right, and is personally engaging, and (iii) moral sense – meaning that the work is carried out ethically in a way that is responsible and serves the wider good, even it goes against the immediate interests of the worker (Gardner, 2010; Barendsen et al., 2011).

The initial conception of Good Work by GWP leaned more towards the interest of customers and less towards the workers. Therefore, the characterization of Good Work within the GWP continued to change (Gardner, 2010). For instance, two additional "E" elements were proposed, including (i) empathy – the capacity to put oneself in the place of those who serve as professionals, and (ii) equity – the consideration of whether workers are treated fairly by those in power and whether their compensation is reasonable (Gardner, 2010). Barendsen et al. (2011) as trustees of the GWP, recognized that implementing Good Work in the interest of customers, clients, or citizens, must be reciprocated by workers' motivation to try their best to accomplish Good Work.

The attempt to define the notion of Good Work has been done not only by GWP but also by other scholars, organizations, and governments. In Germany, an initiative called *New Quality of Work* (INQA) was established in 2002 through a collaborative effort involving the German federal government, the federal states, trade unions, companies, associations, and foundations – aiming to boost the quality of work, which is the key to innovation and competitiveness in Germany (Quartavista, n.d.). Within the INQA initiative, the definition of Good Work is mainly taken from the workers' perspective, which is defined as work with regular, reliable income, permanent employment, the ability to use one's professional and creative skills in the job, recognition, and social relations (Fuchs, 2006). Another condition highlighted in this definition is that the level of requirements placed on the workers should not be too strongly experienced as a strain (Fuchs, 2006).

Another definition of Good Work was proposed by the Human Factors and Ergonomics Society of Australia Inc. (HFESA) (Pazell et al., 2020). According to HFESA, Good Work involves activities that are purposeful, fortify and condition the workers, engage workers and create a positive impact, and are meaningful to those who do the work (Pazell et al., 2020). In addition

to this definition, HFESA emphasized the importance of (i) clear and transparent work expectations, (ii) adequate support, technology, and systems provided by employers, (iii) a work environment that supports health and happiness, (iv) consultative and participative practices among workers, and (v) a work environment that supports diversity (Pazell et al., 2020). HFESA then expands upon this definition of Good Work to introduce the concept of Good Work Design (GWD). GWD is a human-centered approach aimed at ensuring Good Work is accessible to all workers, entailing a holistic and inclusive process that considers all aspects of human performance at work and enables prosperous working conditions (Pazell et al., 2020).

4.2.2 Good Work in The Post-Pandemic Era

The occurrence of the pandemic in 2020 has also played a significant role in the redefinition of Good Work. In May 2022, the WEF under its initiative called *The Good Work Alliance*, published a white paper titled *The Good Work Framework: A New Business Agenda for the Future of Work*. The paper proposed new standards of Good Work to enhance work quality in light of the new trends and changes accelerated by the impact of the pandemic (WEF, 2022). One of the most apparent shifts caused by the pandemic is the altered perspective on the physical dimension of work, which has led to the widespread adoption of remote work. A study conducted by McKinsey Global Institute (2021) highlighted that the physical dimension of work is a new factor shaping the future of work, which is mainly based on health and safety considerations (Lund et al., 2021). The study revealed that remote work will continue even after the pandemic ends, where a 20-25 percent share of the workforce in regions with advanced economies will work remotely three to five days a week (Lund et al., 2021).

Because of this shift, WEF in its white paper proposed new standards of Good Work named *The Good Work Framework* which is intended to be applicable to the full post-pandemic work landscape including in-person, hybrid, virtual work (or remote work), and to all categories of employment (WEF, 2022). Thus, within this framework, Good Work is defined as a healthy, equitable, resilient, and human-centric future of work, respecting fundamental rights, across in-person, hybrid, and virtual work, and for all workers (WEF, 2022). The integration of the Good Work Framework according to WEF is based on five objectives (WEF, 2022), as outlined below.

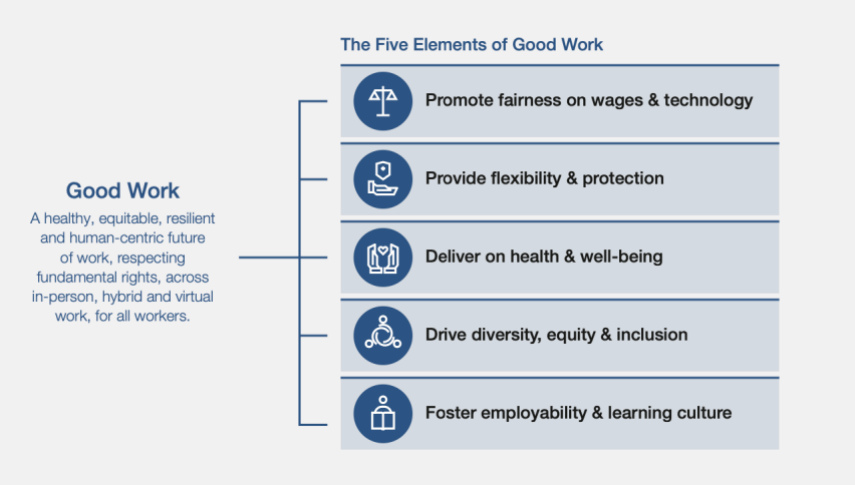

Figure 1. The Five Elements of Good Work

The first objective is to promote fairness in wages and technology. Regarding fairness in wages, workers should receive a living wage that allows them to live with dignity and provide for themselves and their families. Workers should also receive adequate, accessible, and transparent support and process for dispute resolution on issues like wages, working hours, benefits, and working conditions. As to fairness on technology, workers should be able to maximize the benefits of the introduction and adoption of new technology, by receiving adequate support and being able to effectively utilize the technology to complement their work. Moreover, with the proliferation of Artificial Intelligence (AI) – especially for human resources purposes - workers should have more ownership over their data and transparency on how their data (e.g., work activities, work performance) is being collected and used.

The second objective is to provide flexibility and protection. Within this objective, flexibility means the ability of workers to make choices influencing when and where they engage in work-related tasks. Meanwhile, protection means workers have security in the face of vulnerabilities and contingencies. Workers should be able to benefit from flexibility in choosing (i) where they work, (ii) the intensity of work (e.g., 50 hours one week and 30 hours the next), and (iii) the option to share and exchange components of work with other workers (e.g., part-time, reduced hours). However, it is important to ensure that flexibility does not become a new form of inequality among workers. Lower-skilled workers or those with non-permanent contracts should also have equitable access to flexibility, similar to workers with higher-skill or permanent contracts. Furthermore, it is also important that the benefits of in-office work are not overlooked, especially for new workers who want to develop informal learnings or those whose domestic arrangements are not conducive to remote work. Thus, flexibility can also be translated into the availability of a *hybrid work* arrangement. As for protection, workers should be protected against economic and social distress that would be caused by the absence or a

substantial reduction of income from work as a result of various contingencies (e.g., sickness, maternity, pandemic). Moreover, independent workers without standard or traditional employment arrangements should receive more protection in terms of earnings, job security, and benefits.

The third objective is to deliver on health and well-being. Within this objective, workers should be allowed to protect their physical well-being, mental well-being, financial well-being, and social well-being. This means that workers should be able to (i) maintain a healthy quality of life that allows them to do daily activities without undue fatigue and physical stress (ii) cope with normal stresses so that they can work productively and contribute to the community, (iii) meet current and ongoing financial obligations and feel secure in their financial future, and (iv) share, develop, and sustain meaningful relationships with others. In order to achieve this, employers should (i) protect physical and psychological safety in the workplace, (ii) provide predictability of hours and boundaries on working time, and (iii) ensure that workers feel valued and find purpose in their work.

The fourth objective is to drive diversity equity, and inclusion. Workers should be able to work in an environment that supports (i) diversity – welcoming different perspectives and experiences from various viewpoints (e.g., background, gender, race, age, religion), (ii) equity – accommodating different circumstances (e.g., socioeconomic, gender-related, life-stage factors), and (iii) inclusion – giving all workers a sense of belonging and encouraging them to participate in decision-making, and providing reasonable accommodations for workers with mobility and sensory impairments.

The fifth objective is to foster employability and learning culture. Within this objective, employability means the ability to find and maintain employment based on a combination of skills, knowledge, and attitudes. Meanwhile, learning culture means encouraging a growth mindset among workers so that people feel encouraged to learn and to apply what they have learned, as well as to share their knowledge with others. To enable this, employers should promote a culture of continuous learning where reskilling and upskilling will be ongoing processes along with rapid technological advancement. Employees should be encouraged to allocate some of their working time to focus on reskilling and upskilling and then receive recognition and rewards for their learning achievements.

The Good Work Framework offers a comprehensive strategy for shaping the future of employment, particularly in light of the significant shift in work practices accelerated by the pandemic. The widespread adoption of remote work during this period has underscored the

potential for adaptable work environments that still prioritize employee well-being, welfare, and productivity. The framework addresses this potential by promoting flexible work arrangements and ensuring that workers, regardless of their physical location, have access to fair treatment and opportunities for advancement. This approach is paramount in building resilient, productive, and equitable global workforces as remote and hybrid work models become the norm. Ultimately, it can lead to significant improvements in job quality and satisfaction, driving economic growth and societal well-being. However, it is important to note that achieving this vision requires close collaboration between governments and businesses.

5. RESEARCH DESIGN & METHODOLOGY

5.1 Research Design

This study takes an empirical approach and adopts a qualitative research design to understand the experiences and perspectives of software engineers doing remote work during and after the pandemic as well as the impacts on Good Work, with a particular focus on Germany and Indonesia. As an initial step, secondary research is conducted to understand four key areas, including (i) the social dynamics around the pandemic (ii) the evolution of remote work practices before and after the pandemic in Germany and Indonesia, (iii) the professional aspects of software engineers and their experiences with remote work, and (iv) the concept of Good Work. Secondary research involves collecting and analyzing secondary data which consists of sources of data and other information collected by others and archived in certain forms, such as government reports, archived data sets, books, as well as academic journals (Stewart & Kamins, 1993).

In this study, secondary research was conducted mainly based on news articles, academic journals, and results from previous studies. Specifically, this research is conducted in collaboration with the researcher's supervisor, Dr. Nils Matzner, and his team who are working on the *WorkPanRisk* (Work in Times of Pandemic – Risk Policy and Dynamic Boundary Management of Work under the Conditions of SARS-CoV-2) research project (Universität Hamburg, 2024). Funded by the German Research Foundation (DFG), the project explores the balance between digital and in-person work during the pandemic and how associated risks are managed, focusing on software development, theaters, hospitals, and manufacturing SMEs.

The secondary research of this study takes into account the insights from the studies conducted by this project, particularly those related to the IT field. The initial analysis through this secondary research contributes to framing the research problem, establishing the research background, developing a robust conceptual foundation, formulating initial research questions, and shaping the discussion of the empirical findings.

Qualitative research, as a general approach, aims to observe the world in its natural setting, interpreting situations to understand the meanings that people make in day-to-day life (Walia, 2015). It enables the researcher to investigate different social issues or phenomena and formulate new theories around them (Mohajan, 2018). In combination with a qualitative research approach, this study employs a comparative case study design, which is structured around regional differences. As described by Dion (1998), a comparative case study entails

the selection of dependent variables (e.g., age, region), the identification of a specific phenomenon to investigate, the collection of data regarding the occurrences of such phenomenon, and subsequently the analysis of the distinguishing or shared characteristics of the occurrences. Therefore, in addition to understanding the remote work experiences of software engineers in light of the pandemic and the impacts on Good Work, this study also sheds light on the variations and unique representations observed in two distinct countries, i.e., Germany and Indonesia.

Due to its inherent flexibility, qualitative research allows for adjustments and adaptations throughout the research process. Thus, this study adopts the Grounded Theory (GT) method, which originated from the work of Barney G. Glaser and Anselm L. Strauss in 1967 (Glaser & Strauss, 1967). The two initially worked together in a study examining the experience of terminally ill patients who had differing knowledge of their status (Tie et al., 2019). Glaser and Strauss argued that the GT method allows researchers to generate new theories from data inductively rather than from pre-existing theories (Glaser & Strauss, 1967). In this approach, researchers are encouraged to develop constant comparisons – a key element of the GT method – (Chun Tie et al., 2019) in order to understand participants' experiences and stories and subsequently construct theories based on the findings.

The original work from Glaser and Strauss extended to several distinct genres, i.e., traditional GT, evolved GT, and constructivist GT (Chun Tie et al., 2019). Traditional GT aims to generate a conceptual theory that accounts for a pattern of behavior that is relevant and problematic for those involved (Glaser & Strauss. 1967; Glaser, 1978; Tie et al., 2019). Evolved GT, on the other hand, is based on symbolic interactionism, which addresses the subjective meaning people place on objects, behaviors, or events based on what they believe is true (Strauss & Corbin, 1990; Clarke, 2005; Chun Tie et al., 2019). Constructivist GT is rooted in constructivism and centers on the process by which participants construct meanings and experiences in relation to the area of inquiry, with the researcher co-constructing these meanings and experiences alongside the participants (Charmaz, 2006; Chun Tie et al., 2019). For the purpose of this study, the researcher adopts the constructivist GT (CGT) as proposed by Kathy Charmaz (Charmaz, 2006). Unlike traditional GT, CGT recognizes researchers as part of the world they study, and the data they collect (Charmaz, 2006). In the CGT method, researchers construct their theories through their past and present involvements and interactions with people, perspectives, and research practices (Charmaz, 2006).

As qualitative research primarily deals with data in the form of words rather than numbers (Frey et al., 1992), interviews are one of the most familiar strategies employed for data

collection (DiCicco-Bloom & Crabtree, 2006). This study particularly adopts semi-structured interviews for collecting the data. This approach is open-ended in nature, thus providing a greater degree of flexibility to allow the researcher to capture a thick description of the impact of remote work in light of the pandemic on Good Work based on the experiences and perspectives of the participants. Noaks & Wincup (2004), suggest that in open-ended interviews, to ensure thick data are gathered, it is essential for the interviewer to allow interviewees to speak freely and ascribe their own meanings, while still bearing in mind the broader aims of the project (Noaks & Wincup, 2004). In open-ended semi-structured interviews, several questions are framed to prompt the discussion between the interviewer and interviewees. And as the conversation unfolds, follow-up questions are probed to further stimulate and guide the discussions. Thus, although guidelines are provided prior to the interview, researchers still retain their freedom to go deep for discovery (Magaldi & Berler, 2020).

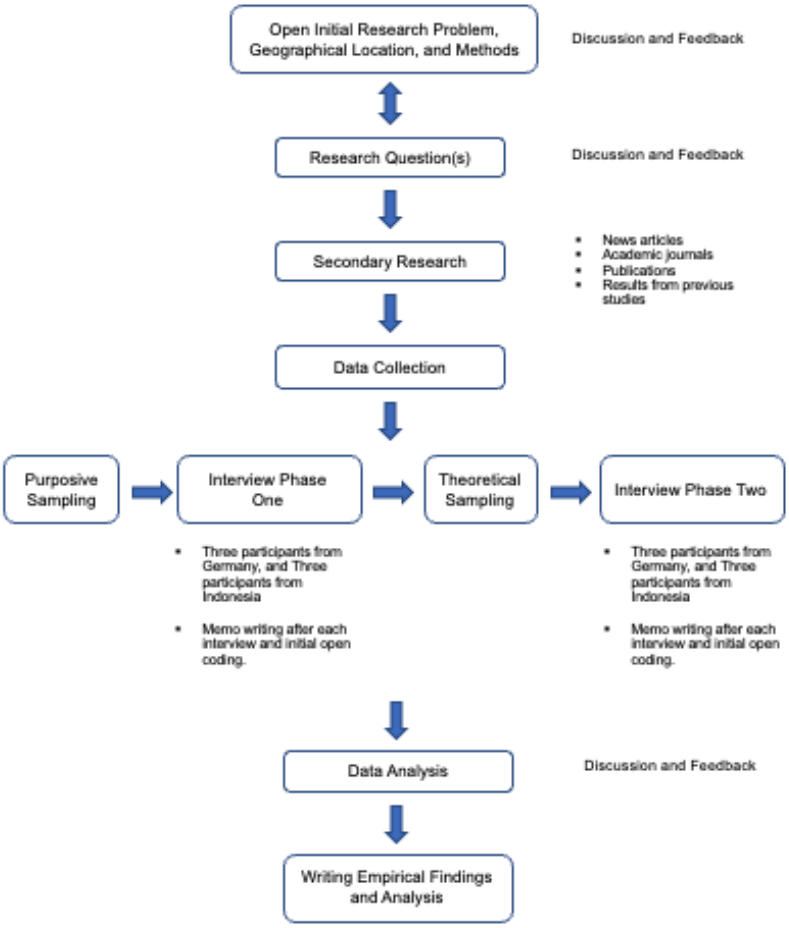

Figure 2. The Research Design

5.2 Data Collection

The use of the GT method also influences the sampling process in data collection. In line with the central principle of constant comparisons in GT, the GT method endorses the use of theoretical sampling. Theoretical sampling is the process of data collection for generating theory whereby the researcher jointly collects, codes, and analyses her or his data and decides what data to collect next and where to find them, in order to develop her or his theory as it emerges (Glaser & Strauss, 1967; Breckenridge & Jones, 2009). However, in this study, as the interviews are divided into two phases, theoretical sampling is integrated with purposive sampling.

The whole interview process took place from October 2023 to December 2023, involving a total of 12 participants. In each phase of the interview, three participants from Germany and three from Indonesia were included. The interviews were conducted both in English and Indonesian languages. For the first phase of interviews, participants were selected using purposive sampling. This method is widely used in qualitative research that involves identifying and selecting individuals or groups of individuals who are especially knowledgeable about or experienced with certain phenomena or subjects (Cresswell & Plano Clark, 2011). According to Breckenridge & Jones (2009), researchers should establish a set of inclusion or exclusion criteria based on their RQs and a preliminary review of related literature that to ensure the selection of the most information-rich participants. Therefore, the participants selected for this first interview phase were software engineers who work and reside in Germany and Indonesia (i.e., specifically Jakarta), regardless of their (i) specific role (e.g., product owner, scrum master, developers, testers, business analysts (Müller et al., 2023), (ii) employment type (e.g., permanent, non-permanent, freelancers), (iii) company type (e.g., startup, big company), (iv) gender, (v) age, and (vi) household arrangements (e.g., single, married, married with kids). Based on this criteria, three participants from Germany (i.e., P1, P2, P5) and three participants from Indonesia (i.e., P3, P4, P6) were selected, all of whom were acquaintances of the researcher.

Initial contact was made through emails providing a brief overview of the study and an invitation to participate in the interview. The email also included an attached exposé for further reference regarding the study. Upon receiving responses from the prospective participants, the researcher proposed interview schedules and sent the meeting invitations along with a consent form to be signed before the interview. In line with the nature of semi-structured interviews, an interview guideline was prepared in advance to ensure comprehensive exploration of the participants' experiences and perspectives during the interviews. All

interviews were conducted via Zoom calls, typically lasting approximately 1 hour each. While most of the interviews were conducted as audio calls, a few also took place as video calls. Recognizing the limitation of communication in the online sphere, the researcher focused only on the content of the conversation rather than non-verbal cues such as facial expressions or body language. Additionally, after each interview, the researcher attempted to apply the snowball method (Naderifar et al., 2017), asking participants if they could suggest their colleagues or acquaintances to participate in the subsequent phase of interviews.

Following the preliminary findings from the first interview phase, the second interview phase was conducted using a theoretical sampling approach. Unlike purposive sampling, theoretical sampling selects participants based on criteria that change following the theoretical needs of the study (Morse, 2008). In this case, new criteria were formulated based on the results of the initial coding and analysis from the first interview phase. To select new participants, the researcher once again sought candidates from her acquaintances, as the snowball method applied in the first interview phase did not yield suitable candidates. After a screening process, another set of three participants from Germany (i.e., P10, P11, P12) and three participants from Indonesia (i.e., P7, P8, P9) were selected. Additionally, adjustments were also made to the interview guidelines according to the updated theoretical needs.

Participant	Position	Role Type	Field	Industry	Company Type	Gender	Household Situation	Country
P1	Head of Engineering	Combination	Infrastructure & Security	Finance & Banking	Startup	Male	Married with Kids	Indonesia
P2	Senior Consultant	Pure Software Engineer	Apps & Middleware	IT Consultancy	Big Company	Male	Married	Indonesia
P3	Senior Software Engineer	Pure Software Engineer	Research & Development for Over-the Air Update	Automotive	Big Company	Male	Married	Germany
P4	Project Manager	Combination	After Sales Software	Automotive	Big Company	Male	Married with Kids	Germany
P5	Co-Founder	Managerial Software Engineer	Apps & Interactive Digital Solutions	Digital Creative Agency	Startup	Male	Married with Kids	Indonesia
P6	Software Developer	Pure Software Engineer	Human Machine Interface	Automotive	Big Company	Male	Married with Kids	Germany

P7	Senior Software Developer	Pure Software Engineer	Java-Based Banking Software	Finance & Banking	Big Company	Male	Single	Indonesia
P8	System Architect	Pure Software Engineer	AI Based Market Intelligence	Artificial Intelligence	Startup	Male	Married with Kids	Indonesia
P9	Founder/ Software Developer/ Head of Operation	Combination	Secondary Ticketing Platform	Ticketing	Startup	Male	Married with Kids	Indonesia
P10	Software Developer	Pure Software Engineer	Proprietary Software	Robotics & Automotive	Big Company	Male	Married with Kids	Germany
P11	Software Developer	Pure Software Engineer	Infotainment System	Automotive	Big Company	Female	Single	Germany
P12	Senior Software Developer	Pure Software Engineer	Infotainment System	Automotive	Big Company	Female	Married	Germany

Table 1. The Interview Participants

Although the main unit of analysis in this study is the software engineers working and residing in Germany and Indonesia, the selected participants were heterogeneous in terms of their (i) position, (ii) role type, (iii) field, (iv) industry, (v) company type, (vi) gender, and (vii) household situation. As for the role type criterion, the researcher classified the participants into three archetypes based on the nature of work in their job positions, i.e., (i) pure software engineer, (ii) managerial software engineer, and (iii) combination. Fowel (2023) suggests that pure software engineers primarily engage in code writing, software testing, and troubleshooting, whereas managerial software engineers are more involved in project management, people management, and strategic planning. Considering this distinction, the researcher also included the combination category, encompassing roles that incorporate aspects of both pure and managerial software engineers. This categorization was crucial as their nature of work may vary, which leads to different experiences and perspectives regarding the degree of remote work possibility during the pandemic or in general.

Furthermore, the distinction in the type of companies where the participants are employed was also revealed, i.e. (i) big companies, and (ii) startups. Giglio et al. (2023) define startups as companies that are small or medium-sized, in the embryonic phase of their life cycle, engaged in the process of discovering, developing, or implementing a business model, and have not yet reached an economic financial condition that can guarantee their autonomy. Meanwhile, large corporations or big companies are defined as companies that exceed a certain size

threshold with respect to the number of employees, turnover, or both (Giglio et al., 2023). This differentiation in company types may unveil variations in participants' individual experiences regarding the work culture, support they received in light of the pandemic, their scope of responsibilities as software engineers, and their connection with the degree of remote work possibility.

In the first interview phase, the researcher interviewed three pure software engineers (i.e., P2, P3, P6), one managerial software engineer (i.e., P5), and two combination software engineers (i.e., P1, P4). Four of them work at big companies (i.e., P2, P3, P4, P6) and the other two work at startups (i.e., P1, P5). All of these participants, despite their experience with remote work, expressed varying perspectives on its advantages, disadvantages, and the support provided by their companies, especially during the pandemic.

It came to light that all participants during the first interview phase were male, primarily married or married with children. This demographic aligns with the data from Statista, which indicates that 92 percent of software engineers are male (Kovaleva, et al., 2022). During the interviews, the responses shared by these participants further unveiled a common thread regarding gender roles in households. This prompted the researcher to include female software engineers as well as single individuals in the second interview phase. However, finding female software engineers proved to be more challenging than expected – although the researcher finally managed to include two of them (i.e., P11, P12). From these new participants, the researcher gained some further insights, particularly regarding experiences working as women in a male-dominated industry.

As mentioned earlier, the researcher prepared an interview guideline before the interviews. The interview guideline was flexible in nature, comprising of open-ended questions to prompt discussions and potential follow-up questions. The interviews always started with an introduction from the researcher, explaining the intention of the interview, overview of the study, as well as the interview procedures (e.g., recordings, consent form). The conversation began with initial questions regarding the participants' professional background such as job positions, projects, and career journey. The researcher also asked the participants' perspectives on being a software engineer such as their typical responsibilities and required skills. From this part, the researcher began asking about the participants' experiences regarding remote work during the pandemic. The researcher first asked the participants to describe the pandemic situation in the place where they reside and work. Based on their answer, the researcher prompted further questions regarding the impacts of the forced remote work on their personal life and professional life. For instance, in the context of personal life,

the researcher asked, *"How did the forced remote work during the pandemic affect you personally in terms of health and social relationships?".* As for the professional life, the researcher also asked, *"Did the forced remote work during the pandemic affect your salary and job security?".* These questions were structured and designed to delve into the participants' individual concerns and thoughts regarding remote work during the pandemic, as well as their strategies for navigating the situation.

Following this part, the researcher shifted the focus to inquire about the remote work situation in the post-pandemic era. The researcher prompted some questions like *"How does your work arrangement look like after the pandemic ends (e.g., full remote, full in-office, hybrid)?"*. These inquiries led to the discovery of new information, including new emergent situations faced by some participants in the post-pandemic era. In the last past of the interview guideline, the researcher prompted the participants to reflect on their experiences about remote work and asked about their thoughts about an ideal work arrangement as well as their hopes for the future of work.

5.3 Data Analysis

Each interview call was recorded and stored securely based on the signed consent forms provided by the participants. The recordings were transcribed using a software called Sonix.ai, which were subsequently imported to a qualitative data analysis software, MAXQDA 2022, for coding and analysis. According to Bryman (2001), data analysis is fundamentally about data reduction – reducing the large body of information gathered so that the researcher can make sense of it. The reduction of data from interview transcripts is done through the process of coding. Coding is a process whereby the data are broken down into their component parts and those parts are then given labels (Bryman, 2001). The researcher then searches for recurrences of the sequences of the coded text within and across transcripts and also finds links between different codes (Bryman, 2001). According to Strauss & Corbin (1990), coding procedures are divided into three types, i.e., (i) open coding, (ii) axial coding, and (iii) selective coding (Vollstedt & Rezat, 2109). Open coding focuses on the conceptualization and categorization of phenomena through an intensive analysis of the data, where they are broken up into smaller parts that are deeply analyzed (Vollstedt & Rezat, 2019). On the other hand, axial coding is conducted to investigate the relationships between concepts and categories that have been developed in the open coding process (Strauss & Corbin, 1990). Although Strauss & Corbin (1990) differentiated between axial coding and selective coding, Vollstedt & Rezat (2019) argued that the two do not have much of a difference.

In this study, open coding is employed for the first phase of the interviews. Along with the memos the researcher prepared in each interview, the data were coded based on three overarching themes, i.e., (i) software engineering as a profession, (ii) experience during and after the pandemic, and (iii) regional characteristics. Within the first theme, the researcher inquired the participants about their job positions, roles, and the projects they were working on. The researcher also posed questions about the technology utilized and communication methods, as well as how remote work shifted the dynamics. These questions revealed some insights related to their professional practices as software engineers such as their day-to-day tasks, responsibilities, and typical required skills. The researcher then inquired about the participants' experiences with remote work, both amid the pandemic and in general, to assess compatibility between remote work and their specific job roles. It was revealed that role types (i.e., pure software engineer, managerial software engineer, or combination) can determine the degree of remote work possibility. This discussion led to further exploration of the second theme. The researcher sought to delve deeper into participants' individual experiences regarding the effects of remote work during the pandemic, covering not only their professional lives but also personal aspects such as job stability, finances, health, and social relationships.

Due to the comparative case study approach employed in this research, the responses from participants unveiled new insights that highlighted the disparities and similarities between two countries, i.e., Germany and Indonesia. This prompted further investigation within the third theme which focuses on regional characteristics. It came to light that certain practices and circumstances were specific to Indonesia, such as the cultural norm of hiring full-time domestic helpers, higher tolerance towards working beyond legal working hour limits, and stark differences in work culture between startups and big companies. Additionally, other factors like traffic congestion and the onset of chronic air pollution post-pandemic were mentioned, highlighting how remote work enabled the participants to avoid mental stress caused by traffic and safeguard their health from pollutants. Conversely, these practices and occurrences were less prevalent in the responses from participants in Germany. However, certain aspects, such as internet connection issues and lower involvement of men in household duties, exhibited similar patterns in the responses from participants in both Indonesia and Germany.

The open coding conducted in this first interview phase aided the researcher not only in formulating preliminary theories but also in identifying additional criteria for selecting participants and adjusting the interview guidelines for the second interview phase. As a result, in the second interview phase, the researcher included female software engineers and single individuals in the sample. The interview guideline was also enhanced to include additional inquiries, particularly to investigate the role of works councils in safeguarding employees'

rights during the pandemic, the experiences of female software engineers in a male-dominated industry, gender roles within households, and participants' visions for the ideal future of work.

When analyzing the data from the second interview phase, the researcher transitioned from open coding to axial coding. Building upon the findings from the open coding in the initial interview phase, the coding framework in the second interview phase was expanded to encompass the five objectives outlined in the Good Work Framework, i.e., (i) fairness on wages and technology, (ii) flexibility and protection, (iii) health and well-being, (iv) diversity, equity and inclusion, (v) employability and learning culture.

In the first objective, specifically under the topic of fairness on wages, the researcher integrated the participants' responses regarding salary or bonus change amidst the pandemic and the support received from their employers and governments. As for fairness on technology, participants' feedback on their experiences with technology during remote work, such as technology adaptation and equipment availability were included.

Within the second objective, particularly under the topic of flexibility, the researcher incorporated participants' individual experiences regarding the degree of remote work possibility and work flexibility in general. For the topic of protection, the researcher included insights shared by the participants concerning adherence to legal working hour limits, the role of works councils, and job stability during the pandemic or remote work in general.

In the third objective, the researcher integrated diverse experiences shared by participants concerning the impact of remote work on their physical health and mental health, along with the measures taken by their employers and/or governments to safeguard them. Furthermore, in the fourth objective, the researcher focused on how remote work aided the participants in managing personal matters (e.g., caring for sick parents, and childcare duties) and how their employers supported and enabled such flexibility. Additionally, the perspectives shared by female participants regarding their experiences as women in the field of software engineering were also taken into account. Finally, within the fifth objective, the researcher focused on participants' experiences regarding career advancement and upskilling opportunities in the context of remote work and the pandemic.

A key element in the GT method is the constant comparison between data, analysis, and the theories generated throughout the research process (Chun Tie et al., 2019). The data analysis approach, as elaborated above, enabled the researcher to continuously compare, iterate, and interpret the data. This iterative process facilitated a deeper understanding and allowed for

the development of robust and well-grounded theories. In particular, it shed light on the specific remote work experiences of software engineers in Germany and Indonesia, their alignment with the Good Work objectives, and subsequently the applicability of the Good Work framework in each country.

5.4 Ethical Considerations

When conducting this study, the researcher adhered to the highest standards of research ethics. Ethical considerations are fundamental in any kind of research, as they allow for researchers to gather the most important information without causing any harm to the participants in the research (Orb et al., 2001). Mirza et al. (2023) suggest that there are eight ethical aspects that social science researchers must consider when conducting research involving living participants, i.e., (i) informed consent, (ii) relationship and conflict of interest with participants, (iii), ethics of respect, (iv) incentives, (v) confidentiality and anonymity, (vi) report to the participants, (vii) trustworthiness of the research, and (viii) translation issues.

In this study, the involvement of participants was entirely voluntary and without any form of coercion. When recruiting the participants, the researcher always included a description of the study's purpose in the email body as well as an *exposé* document for clarity. If the participant agreed to participate in the interview, the researcher sent a proposed interview schedule, a meeting invitation link, and a consent form to be signed before the interview. The consent form specified that the interview would be recorded and transcribed and that anonymized quotes might be used in publicly accessible publications. It also assured participants that their data would be securely handled and retained. Additionally, the form highlighted their right to withdraw from the interview at any time without providing a reason. Participants who agreed to these conditions signed and returned the consent form. All participants agreed to these terms by signing and returning the consent form; some suggested alternative interview schedules but none declined to return the form.

As some of the recruited participants were acquaintances of the researcher, potential conflicts of interest cannot be overlooked. Therefore, as suggested by Mirza et al., (2023), the researcher established a clear and transparent relationship and interaction with all the participants throughout the research process. During the interviews, the researcher maintained a formal demeanor as an interviewer, and participants were addressed as interviewees. Moreover, the researcher consistently treated all participants with respect, irrespective of factors such as age, gender, race, religion, political beliefs, or any other differences between them and the researcher. All participants were treated equally, and the researcher gave careful consideration to each viewpoint they raised during the interviews.

Furthermore, as material incentives are considered unethical when conducting research (Mirza et al., 2023), none of the participants in this study were provided with material or monetary benefits.

Furthermore, confidentiality and anonymity of all participants are also safeguarded in this study. As previously mentioned, the consent form presented to participants stipulated that all data collected during interviews would be anonymized prior to publication in publicly available documents. The researcher also ensures secure storage of the data, limiting access to only the researcher, the researcher's supervisor, and members of the WorkPanRisk research team. Additionally, upon completion of this study, the researcher ensures that all participants will receive a copy of the study report as proof of and appreciation for their involvement in the research.

Finally, to uphold the credibility of this study, the researcher implements all necessary measures to mitigate potential bias. As this study was conducted with participants from Indonesia and Germany, the interviews were conducted both in English and Indonesian language. For interviews conducted in the Indonesian language, the researcher interpreted the meaning based on her prior linguistic and cultural knowledge and subsequently translated them into English. As Filisetti & Fives (2003) suggest, the translation process in interviews from one language to another is important to create measures of belief constructs within cultural contexts so that meaning within items is consistent with common cultural understandings.

5.5 Limitations, Self-Reflections, and Positionality

Initially, this study set out to investigate the remote work experiences of software engineers during the pandemic without specifying specific geographic regions. However, following consultations with the researcher's supervisor, the study was expanded to include a comparative analysis between two distinct countries: Germany and Indonesia. In the case of Indonesia, the researcher narrows the focus to only include the capital city of the country, Jakarta. This decision to shift from a purely explorative study to a regional comparative analysis was driven by the aim of enriching the research with diverse perspectives on remote work from different regional contexts. Moreover, the selection of the countries was influenced by their relevance and familiarity to the researcher, as well as their unique socio-economic contexts, which could provide insightful and compelling comparisons. Additionally, to deepen the reflective aspect of the study, the researcher decided to incorporate the concept of Good Work as an analytical framework. Throughout these processes, the research questions of this study were also adjusted several times.

The researcher acknowledges that the potential for data bias in this study cannot be overlooked. Regarding data collection, the researcher recognizes the limitations of semi-structured interviews because they did not allow for direct observation of the participants' situations or actions. Instead, the researcher's insights were derived from the participants' own descriptions and interpretations of their behaviors and thoughts.

Despite employing purposive and theoretical sampling approaches to ensure diversity in the overall sample, the researcher faced challenges in achieving a diverse set of participants. Recruiting sufficient female participants proved to be difficult, reflecting the male-dominated nature of the software engineering industry. This imbalance restricts a comprehensive understanding of women's experiences and perspectives on remote work and their broader roles in the software engineering field.

Moreover, recruiting participants with diverse industry backgrounds also posed challenges, particularly among those from Germany. Initially, the researcher intended to use snowball recruitment by asking participants from the initial interview phase to refer their software engineer contacts to participate in the study. However, this approach took longer than expected. Due to time constraints, the researcher decided to reach out to acquaintances - many of whom came from similar industries, particularly the automotive sector. Consequently, some participants' responses may reflect typical perspectives and may not fully represent the entire software engineering field.

6. FINDINGS AND ANALYSIS

The analysis of the interview data uncovered diverse perspectives concerning remote work practices among software engineers in Germany and Indonesia. Through semi-structured interviews, participants from both countries shared their individual experiences as software engineers. They discussed how remote work, particularly since the onset of the pandemic, has impacted their professional practice. While most participants said that remote work was not entirely new to them, the forced remote work prompted by the pandemic brought some impacts both to their professional and personal lives. However, as remote work persists even after the pandemic ended, participants have adjusted to the new arrangement and recognized both its advantages and disadvantages. Overall, they agreed that the benefits outweighed the drawbacks, particularly highlighting the increase in productivity and efficiency. Nonetheless, it also became evident that not all types of software engineer roles experienced the same level of benefits from remote work, with distinctions observed between pure software engineers and managerial software engineers.

Moreover, the data gathered from the interviews also unveiled some contrasts between Indonesia and Germany particularly in terms of work culture and ethics, gender roles, and infrastructures - all of which are interconnected within the context of remote work. It was evident that several practices and norms observed in Indonesia are less prevalent in Germany, and vice versa.

Thus, this section presents the findings in three primary topics, i.e., (i) remote work and the professional practice of software engineers, delving into the contrasts between pure software engineers and managerial software engineers and the benefits of remote work, as well as (ii) regional contrasts between Germany and Indonesia, exploring the aspects of work culture and ethics, gender roles and household management, the difference between startups and established corporations, job security, and post-pandemic situation and infrastructure challenges.

6.1 Remote Work and the Professional Practice of Software Engineers

6.1.1 Exploring the Contrasts Between Pure and Managerial Software Engineers

According to Müller et al. (2023), software engineers encompass a range of roles, such as product owner, scrum master, developer, tester, and business analyst. The interviews revealed that participants occupied different software engineering positions, including head of engineering, senior consultant, project manager, founder/co-founder, software engineer, software developer, head of operation, and system architect. Some participants even held

multiple roles. This diversity in roles highlighted the varying nature of work among them, leading to the identification of three distinct archetypes of software engineers, i.e., (i) pure software engineers (ii) managerial software engineers, and (iii) the combination of both categories.

Archetype	Role	Participant	Country
Pure Software Engineers	Senior Software Engineer	P3	Indonesia
	Senior Software Developer	P7	Indonesia
	Software Developer	P6, P9, P10, P11, P12	Germany, Indonesia, Germany, Germany, Germany
	System Architect	P8	Indonesia
Managerial Software Engineers	Founder	P9	Indonesia
	Co-Founder	P5	Indonesia
Combination	Project Manager	P4	Germany
	Head of Engineering	P1	Indonesia
	Head of Operation	P9	Germany
	Senior Consultant	P2	Indonesia

Table 2. The Archetypes of Software Engineers Based on Participants' Roles

While the concept of pure software engineers is well-defined in existing literature, there are no explicit definitions of *managerial software engineers*. Several pieces of literature refer to this archetype as either *software engineering managers* or *managers of software engineers*. Verma et al. (2022) suggested that software engineering managers are quite different from pure software engineers, as they must combine their technical skills with project management and people skills to lead and support a team and drive initiative results. Similarly, Kalliamvakou, et al. (2017) pointed out that the manager of software engineers' role is multifaceted – their tasks are not only to deliver a successful product but also to create conditions where other employees are motivated and productive.

Although these definitions correspond to the concept of managerial software engineers, the terms *software engineering managers* or *managers of software engineers* are somewhat restrictive as they refer solely to the job title of *manager*. Meanwhile, from the interviews, it was evident that there are other roles in the software engineering field aside from the *manager* that involve comparable tasks, skills, and responsibilities. As shown in Table 2, these roles may include founder, co-founder, head of engineering, head of operation, and senior consultant. For example, P1, who held a position as head of engineering, highlighted that his career started with a position as a software developer. He noted that his responsibilities initially centered around developing websites, features, and products. Over time, as he transitioned

to assume the head of engineering role, his responsibilities expanded beyond technical tasks to encompass team management (e.g., mentoring team members) and liaising with various stakeholders, including auditors and regulators. Hence, in this study, the term *managerial software engineer* is preferred as it represents more of an archetype rather than a specific job title.

In the context of remote work, insights from the interviews suggest that the contrasts between pure software engineers and managerial software engineers may also reflect the extent to which remote work is feasible for each participant. P5, a co-founder of a digital creative agency, discussed how his remote work opportunities evolved as he transitioned from a software engineer to a leadership role.

P5 (Co-Founder): [...] ***a software engineer*** *or senior software engineer* ***is not necessarily required to be physically present*** *at the office. However, as I evolved into* ***a leader****, of course,* ***it became crucial for me to be physically present*** *at the office for brainstorming and knowledge transfer [...] after the pandemic, everything became digital, and we can be more flexible by working from home or anywhere [...] Nevertheless, I find* ***working from the office to be the most efficient****.*

He further highlighted the impact of forced remote work during the pandemic on his day-to-day work. As a co-founder of a creative company, he stressed that building and maintaining relationships with his teams and clients is paramount. However, he mentioned that the forced remote work caused reduced opportunities for generating spontaneous ideas with his team as well as maintaining connections with his internal team members, external partners, and clients. Consequently, these relationships deteriorated.

While P5 holds primarily a managerial role, remote work is also not always a viable option for roles that encompass a mix of pure and managerial software engineering tasks. P1, who is the head of engineering, has observed that his physical presence is not always required when he performs technical tasks related to infrastructure and security. However, in situations such as audits or meetings with regulatory officials, he is always required to meet the stakeholders in person at the office.

Another example of a combined role is P2, who is a senior consultant. He pointed out that although he is not obliged to be physically present 80% of the time, there are instances when he must visit customers' offices when they specifically request him to work in their environment. As a consultant, it is his responsibility to maintain customer relationships by

demonstrating his support in various aspects, including technical matters and project management. Consequently, even during the pandemic when remote work was still mandatory, he had to visit customers' offices on several occasions. Nevertheless, obtaining strict permission from upper management was necessary, and a valid reason had to be provided to justify the need for such visits. P4, a project manager overseeing the software product cycle of car diagnostic devices at workshops, shared similar experiences. Aside from technical expertise in car diagnostics, his role also entails holding meetings with stakeholders and delivering presentations to management. These meetings sometimes necessitate his physical presence at the office, particularly for technical discussions where he must demonstrate the software directly on the device. Additionally, P4 believes that physical presence at the office is still crucial for networking and pitching ideas with other managers.

The aforementioned observations bring to light the fact that software engineers holding managerial roles frequently have greater duties to fulfill which often involve interpersonal aspects. As a result, a balance between working remotely and being present on-site is often required for this archetype.

In comparison with managerial software engineers, the nature of work in pure software engineering roles enables a greater possibility of remote work. For instance, P11, a software developer at a well-established automotive company, explained that her tasks are conducive to remote work as they primarily involve screen-based activities. She expressed that whether she works remotely from her desktop or directly interacts with the target, it does not significantly affect her work. The only exceptions occur when she needs to troubleshoot issues directly on the target or meet with specific colleagues. However, she emphasized that these situations only account for five to ten percent of her time. P3, who works as a senior software engineer, also shared a similar perspective, emphasizing that physical presence is not necessary for his role. He mentioned that he has been working with different partners outside Germany. All his work including software development, meetings, and brainstorming takes place in a remote environment.

P3 (Senior Software Engineer): [...] ***the physical presence or being on-site, is definitely not something that we expect*** *[...] there has not been a single case where I really had to be at the office.*

Similarly, P5, a software developer, mentioned that he primarily works remotely from home, and being at the office is rarely necessary. He mentioned that over the past two years, he has

been to the office three to five times only to test his work directly on the hardware and observe its behavior.

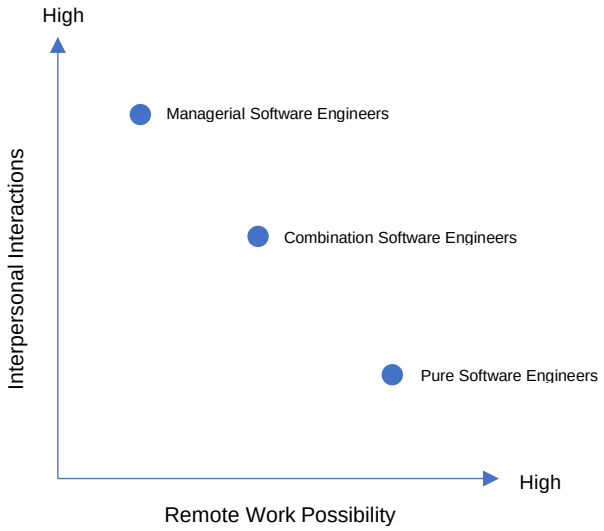

Figure 3. Degree of Remote Work Possibility Based on Software Engineering Archetypes

Nevertheless, from the interviews, there were also some participants with pure software engineering roles who shared slightly different perspectives and experiences regarding remote work. P12, who is a senior software engineer, shared her experience with remote work during the pandemic. She explained that while she had the opportunity to take some hardware home and perform tests remotely, she was not entirely confident about how productive she had been because she could not fully validate her work. She prefers to be at the office because it keeps her more engaged mentally, as she has better access to the resources and targets that she must work on or research. She also added that having direct interactions at the office makes her days more fulfilling.

*P5 (Senior Software Engineer): [...] when **going to the office**, being with colleagues is something [...] **the day becomes fulfilling** for you. **Satisfying**. [...] you are there **attending physical meetings** and **giving your feedback**.*

Fortunately, as the pandemic subsided, she can return to the office. Although her manager has now expressed a more relaxed approach towards remote work, she still prefers to go to the office as much as possible.

While P12 has the privilege of choosing her preferred working arrangement, there are instances where participants with pure software engineering roles do not have that option. P8, who works as a system architect, believes that physical presence is still crucial even though

his work can be accomplished entirely remotely. He explained that as a system architect, being physically present would enable him to make better technical decisions as he would have the opportunity to directly interact with stakeholders such as the product manager and Chief Technology Officer (CTO). However, despite his preferences for this work arrangement, the pandemic forced his company, which is a startup, to close its physical office. Consequently, he had no choice but to work remotely full-time.

A comparable situation was also experienced by P7, a senior software developer at a well-established bank, but with a contrasting preference. He mentioned that he did not find significant differences between working remotely and on-site, and personally preferred full-time remote work. However, after the pandemic ended, his company mandated all employees, including him, to return to the office full-time due to a non-negotiable policy.

P7 (Senior Software Developer): [...] ***I actually wish for full remote work*** *[...] However,* ***considering my office culture****, it is not possible [...] I work in the IT department, it should be more flexible [...] but* ***it is not possible in my company****.*

Furthermore, there is another instance where a participant in a pure software engineering role is required to be physically present at the office due to security and proprietary concerns. For example, P10, a software developer, explained that he must be at the office most of the time only because the targets he is currently working on have not yet been released to the market and are still physically placed in the lab. Since he cannot bring them home, he needs to always go to the office to get access to the lab.

Considering the above points, although the nature of work between pure software engineers and managerial software engineers can superficially determine the extent of remote work opportunities, it became evident that other factors can also come into play. Specifically, in the case of participants with pure software engineering roles, the fact that their work and responsibilities can be done remotely does not necessarily mean they can or want to work remotely full-time. Some of them are required or prefer to work on-site instead. This can be attributed to various factors, including personal preferences for an ideal work environment, non-negotiable company culture and policies, unforeseen circumstances of the company, or confidentiality and privacy reasons.

6.1.2 Embracing Remote Work: Maximizing Benefits Over Drawbacks

As discussed in the theoretical framework section, the management, development, and maintenance of software have been changing from being at a single location to a distributed

network, which is commonly referred to as DSD (Müller et al., 2023). However, the pandemic introduced a new form of DSD where software engineers had to shift swiftly and unexpectedly from working *together* in a physical location to working *individually* from home (Müller et al., 2023). According to the current body of literature, this new setup posed challenges in various aspects for software engineers, including (i) productivity and efficiency (Gibbs et al., 2021), (ii) communication and collaboration (Miller et al., 2021), (iii) infrastructure, tools, and equipment (Juárez-Ramírez et al., 2022; Nallanagula, 2023), (iv) well-being (Nallanagula, 2023) as well as (v) work and non-work boundaries (Ralph et al., 2020). The interviews revealed that most participants experienced these challenges, especially during the initial phase of the pandemic. However, over time, they adapted to the new circumstances and agreed that remote work brought more positive impacts than negative ones.

- *Productivity and Efficiency*

In terms of productivity and efficiency, some participants like P2 noted that during the initial phase of the pandemic, they felt like they were working longer hours than before. This experience is consistent with a study conducted by Gibbs et al. (2021) at a large Asian IT services company, which found that working hours during remote work amid the pandemic tended to increase, with a rise of 18% outside normal business hours.

P2 (Senior Consultant): [...] in terms of ***working hours,*** *it actually* ***got longer*** *[...] the total working hours were* ***more than normal****.*

Despite the challenging transition, participants acknowledged the positive outcomes after making some adjustments. For example, P3, while noting an increase in emails and calls outside his normal working hours, emphasized that he could accomplish more in a single day by working longer hours.

P3 (Senior Software Engineer): I don't know if it could be evaluated as something good or bad [...] ***I have more chance to be able to work for longer hours*** *[...]* ***it means I can achieve more in a single day****.*

From the interviews, it was evident that the perception of working longer hours during remote work was not always due to increased workloads. Some participants worked longer because they streamlined their daily routines and reallocated their time to focus more on work. They explained that since they started working remotely, they could begin work immediately after

waking up as they no longer needed to follow morning routines, such as getting dressed and commuting to the office.

P7 (Senior Software Developer): [...] I used to be stuck in traffic at 8. a.m. every morning [...] ***when working from home, I can start opening my laptop earlier****.*

P6 (Software Developer): [...] after driving my daughter to the kindergarten, ***it is more comfortable to go home directly and join the meeting right away from there*** *[...]* ***if I go to the office,*** *I need to* ***drive there, park my car, and walk to the office*** *[...] we also must* ***walk for ten minutes*** *to the canteen for lunch [...]* ***that is not really nice****.*

According to participants, increased productivity during remote work was also attributed to the improved focus resulting from a more conducive working environment at home. P11 emphasized that when working at home she can concentrate better and work without distractions. She compared it with the situation at the office, where she faced numerous distractions from colleagues who frequently talked and invited her for coffee breaks. A similar perspective was also shared by P3. He said he is more productive when working remotely from home because he does not get distracted by his colleagues working in the same space.

These findings indicate that while remote work is familiar to software engineers, they encountered challenges due to the sudden transition during the pandemic. However, after making adjustments, some aspects that were initially perceived as negative turned out to be positive, as evidenced by their experiences with longer working hours. It emerged that they worked longer because they were able to skip certain daily routines, such as commuting to the office, enabling them to achieve more in a day compared to working in the office.

- *Communication and Collaboration*

Despite having fewer distractions at home, participants highlighted that remote work has an impact on their communication dynamics during work. P3, for instance, highlighted that communication with his colleagues became slightly slower and more challenging.

P3 (Senior Software Engineer): [...] normally ***if you are in the office****, if you have a very small question, you could just turn your head and ask [...] this* ***question would be answered in a few seconds*** *[...] but* ***if you are working from home****, there is no guarantee that this person is available on that spot of time [...]* ***you might get an answer maybe one day later****.*

P9 also experienced significant communication challenges within his team during the pandemic, as all offline activities had to transition abruptly to online platforms. He shared that some of his team members were struggling to deliver their work due to the distractions at home.

Moreover, participants highlighted that remote work affected not only communication dynamics but also their team spirit. P11 noted that team spirit is not there anymore since the pandemic, because everything has taken place online. She said it feels like everyone is against each other instead of being with each other.

These experiences highlighted that remote work can be challenging for certain people, resulting in delays in responding to work-related questions, delivering work, and deteriorating team spirit. To address these issues, participants came up with different solutions. For instance, P9 took the initiative to create a daily online meeting room on Microsoft Teams from 8 a.m. to 5 p.m. to monitor the activities of his team members and ensure they could deliver the expected work results. Similarly, P6 mentioned that his manager attempted to foster team spirit by organizing online team events. However, he expressed that virtual team events felt somewhat odd and could not fully replace the experience of physical interactions.

As a result, the majority of participants agreed that online communication cannot fully replace the efficacy of face-to-face interactions. With the easing of the pandemic situation, participants increasingly prefer a hybrid work model. This approach enables them to work remotely while still having the flexibility to choose when to go to the office, thus facilitating ongoing communication with colleagues while enjoying the advantages of remote work.

- *Infrastructure, Tools, and Equipment*

The interviews indicated that communication challenges during remote work were frequently linked to internet connectivity issues. P5 stressed that these connectivity problems not only restrict communication but also have a substantial impact on efficiency, especially in digital creative companies where tasks often entail handling large data files.

Participants from both Indonesia and Germany reported difficulties related to unstable internet connectivity. Nevertheless, Indonesian participants appeared more accustomed to these issues, as they typically had multiple internet providers at home as a backup in case one failed.

*P1 (Head of Engineering): [...] I have **two internet providers** at home. So, I would be able to stay connected to the internet in case one is down [...] for mobile phones, I have **three internet provider**s [...] I have maintained this setup **since before the pandemic**.*

Furthermore, it was revealed that internet disruptions in Indonesia stem not only from service providers but also from power outages. P7 noted that power outages are a common occurrence in his area, leading to his internet connection being automatically disconnected. In such a situation, he normally relies on the internet service from his private mobile phone. In Germany, while issues with internet connectivity are widespread, power outages as the underlying cause are not typical.

Participants from Germany underscored the reputation of Germany's internet for its sluggishness.

*P3 (Senior Software Engineer): [...] unfortunately, **Germany** is **known** to **have a very bad internet connection** [...] not only bad, but also **very slow** [...] I would say almost every two or three days **my internet got cut off** for five to ten minutes.*

However, unlike participants from Indonesia who independently arranged multiple internet providers, those from Germany mostly depended solely on their office mobile phones for tethering in case their home internet went down. P4 even emphasized that he did not feel the urge to immediately reestablish the connection if he was cut off during a meeting. Instead, he would simply text his colleagues to inform them of the internet issue and resume work once it was resolved.

Indonesia is significantly behind on 4G/LTE and fixed broadband rollout compared to its neighboring countries (World Bank, 2021). The country’s archipelagic geography further complicates the widespread deployment of internet networks, especially in remote areas (Ramdani et al., 2019). Universal access to high-quality internet across Indonesia remains challenging due to several key factors, including limited spectrum, the unavailability of specific bands, regulatory uncertainty regarding infrastructure sharing, and a lack of competition in providing fixed broadband services (World Bank, 2021).

Meanwhile in Germany, a 2022 survey by DE-CIX revealed that 38 percent of internet users experience noticeable delays in internet use several times a week or even daily. Girard et al. (2018) argue that Germany lags in the availability of gigabit-capable broadband connections as copper cable connections still hold the largest market share. As of 2018, only two percent

of connections in Germany are pure fiber optics, significantly below the OECD's average recommendation of 21 percent (Girard et al., 2018). The main obstacles Germany faces in improving its internet access include a lack of customer willingness to pay and the high costs of expansion (Girard et al., 2018).

Thus, despite the significant difference in economic growth between Indonesia and Germany, both countries face persistent challenges in achieving reliable and high-speed internet access. While Indonesia mainly grapples with geographical complexities and regulatory issues, Germany struggles with outdated infrastructure and economic barriers. Addressing these issues is crucial for both countries to achieve digital equity and safeguard the future of work, where internet reliance for flexible working is increasingly vital.

- *Health and Well-Being*

Furthermore, some participants agreed that remote work especially during the early phase of the pandemic affected their well-being to some extent. For example, P12 noted that she experienced psychological effects during this period due to the sense of isolation from her colleagues. As Nallanagula (2023) argued, being confined at home, and constantly working remotely can lead to feelings of loneliness, fear, and isolation.

P12 (Senior Software Developer): [...] I could say some sort of ***psychological effect*** *[...] I felt kind of* ***scared*** *actually [...] because there were no colleagues around [...] I could reach them out on Microsoft Teams, but still,* ***there was no physical presence of anybody while I was working*** *[...] this created a kind of* ***lone space****.*

P12 further emphasized that during this period, she was not entirely confident about her productivity because she could not fully validate her work, adding more pressure to her well-being. P12's experience can be described as work-related loneliness, a negative feeling that arises when an employee perceives that there is a discrepancy between their desired and actual social connection with others from their workplace (Becker et al., 2022). A forced change to remote work can disrupt an individual's social baseline, particularly if they prefer in-person interactions with their work partners (Becker et al., 2022).

The interviews further revealed that negative impacts on well-being were not only experienced by participants due to work-related loneliness but also due to the constant presence of family members. P6, who has a young daughter, found the early period of the pandemic particularly stressful. Since he and his wife could not take their daughter outside to play or meet with other

families, they struggled to continuously entertain her in a confined space while managing their work daily. P1 echoed this sentiment, explaining that his household experienced heightened stress during this period as they had to take care of multiple children at home in isolation.

In light of these findings, Becker et al. (2022) highlighted the disparity between remote work during normal times and under forced circumstances, particularly regarding job control. While remote work during normal times can provide employees with greater job control (e.g., increased autonomy in managing work and non-work responsibilities), remote work during forced circumstances like the pandemic tends to diminish job control (e.g., blurred boundaries between work and non-work activities). Consequently, individuals with a higher perception of job control are less likely to experience emotional exhaustion, while those with lower perceived job control are more susceptible to diminished well-being (Becker et al., 2022).

- *Work and Non-Work Boundaries*

The previous insights demonstrate that poor well-being during remote work can be attributed to the blurred boundaries between work and personal life. The experiences shared by P6 and P1 showed that working at home with kids or other household members can be particularly challenging. Due to these circumstances, P5 emphasized that he now believes more in work-life harmony than work-life balance.

P2 (Senior Consultant): [...] ***when working from home, there are no clear boundaries on professional life and personal life anymore****.*

P5 (Co-Founder): [...] there was a moment when ***I had to work while holding my daughter*** *[...]* ***work-life balance cannot be applied*** *[...] because* ***life itself has become part of the ecosystem*** *[...] so now I believe more in* ***work-life harmony****, where* ***work and personal life have blurred into one****.*

Despite the challenges, some participants expressed that at the same time, they were grateful to have their family members around while working. P2 shared that due to remote work, he could bring her mother to the hospital for surgery and managed to work from there. P4 also expressed that remote work allowed him to be more present for his family at home by helping his wife take care of his daughter during breaks.

The paradox of balancing blurred boundaries between work and personal life alongside the positive aspect of being surrounded by family members can be attributed to individuals'

boundary management preferences. Ashforth et al. (2000) argued that the level of boundaries between work roles and non-work roles can vary from highly segmented to highly integrated. Individuals with a preference for integration are more comfortable with removing boundaries between work and non-work (Allen et al., 2021; Ashforth et al., 2000) and thus more inclined toward remote work. In contrast, those who prefer segmentation may be less comfortable with remote work as it conflicts with their desire to maintain distinct boundaries between work and non-work roles (Allen et al., 2021).

While the boundary management preference theory is applicable when individuals have the freedom to choose, the pandemic presented different circumstances. During that time, Participants were compelled to stay home and work remotely, with no option to go out or work from the office due to the restrictions. Therefore, the paradox experienced by participants is attributed to not only their boundary management preferences but also the adjustments they made over time. This aligns with the adaptation theory, which suggests that after a longer period of time, individuals tend to adapt to their new situation and their well-being eventually returns (Brickman et al., 1978; Allen et al., 2021). As P2 noted during the interview, "*Once we get used to it, we adjust to it"*.

The shifting perceptions and preferences surrounding work and non-work boundaries as experienced by participants also reinforce the notion that boundaries are not fixed and predetermined, but rather socially constructed and subject to negotiation. This aligns with the boundary work theory by Gieryn (1983) and boundary theory by Zerubavel (1991), which posit that distinctions or demarcations in various aspects of life, such as scientific versus non-scientific activities and social domains, are socially constructed and negotiated. The pandemic necessitated a reassessment and renegotiation of existing boundaries between work and non-work, as illustrated by participants' new-found paradoxical experience of enjoying the presence of family members despite the associated challenges. This highlights the flexibility, adaptability, and socially constructed nature of boundaries, which evolve over time and across different contexts.

P5 (Founder/Software Developer/Head of Operation): [...] ***hybrid work*** *would be* ***the most ideal*** *[...] when there are too many* ***distractions at home****, I can* ***go to the office*** *to* ***regain my focus****. When I am too* ***stressed in the office****, I can just* ***go home and meet my child****. Honestly,* ***my child is my stress reliever****.*

Now that the pandemic has subsided, the majority of participants indicated a preference for hybrid work arrangements. They desire the flexibility to work remotely, yet they also value the

autonomy to determine when they choose to be present in the office. This approach allows them to maintain a balance between work and non-work boundaries, ensuring they can effectively manage both their professional and personal responsibilities.

6.2 Unveiling Regional Contrasts: Germany vs Indonesia

6.2.1 Work Culture and Ethics

From the interviews, the researcher observed a difference in work culture and ethics between Germany and Indonesia. For instance, one participant from Germany shared that remote work has caused him to work longer than before. He emphasized that since working remotely, he has frequently worked ten hours daily, which he believes is close to violating the legal working hours limit in Germany.

P3 (Senior Software Engineer): [...] I used to work no longer than eight or nine hours. ***The legal limit of working hours in Germany is ten hours*** *[...]* ***After starting to work from home, I have been working ten hours many, many times****.*

Participants from Indonesia also shared similar experiences of working longer hours due to remote work. However, the researcher observed a higher level of acceptance towards this situation compared to the participants from Germany.

During the interviews, none of the participants from Indonesia mentioned the legal working hours limit, and they implied that working outside business hours or on days off has become the norm. Most participants said they generally work nine hours daily, typically from 9 a.m. to 6 p.m., although they often work more than that. For instance, P8 shared that although his official working hours end at 6 p.m., he typically continues working from 8 p.m. until 10 p.m., which means he ends up working more than ten hours. P2 also mentioned that although he always tries to maintain his daily working hours limit, he is willing to shift the remaining work to the weekend rather than carrying it over to the business days of the following week.

P2 (Senior Consultant): [...] I tend to try to respond to any request from work as soon as I can…but once I realize that it is outside my working hours and not that urgent on that day, I try to put it for the next day and ***even during the weekend****.*

These participants further emphasized that although they work longer hours and sometimes even on weekends or public holidays, they see it as a tradeoff for greater flexibility. They value the freedom to decide when they are available to work.

Working time in Germany is mainly regulated by the Working Time Act or *Arbeitszeitgesetz* (ArbZG), which was generally stipulated to ensure the safety and protection of the health of the employees and improve the conditions for creating flexible work shifts (ArbZG §1, 1994). The ArbZG provides that the maximum length of employees' daily working time must not exceed eight hours and can only be extended to ten hours if the average daily shift (i.e., Monday to Saturday) within six months does not exceed the eight hours limit (ArbZG §3, 1994). However, according to §7, employers are permitted to establish a collective agreement containing provisions to extend work hours to more than ten hours on working days in cases of emergency work situations.

Moreover, the ArbZG stipulates that employees are not allowed to work on Sundays and public holidays, although some exceptions can be applied. If employees are required to work on Sundays or holidays, employers must provide a substitute day off, which should occur within two weeks after the work on Sunday and within eight weeks after the work on a public holiday. Additionally, the law also establishes minimum rest periods and breaks for employees during work. According to the ArbZG, employees must not work for more than six hours without a break (ArbZG §1, 1994), and they must have a minimum daily rest period of 11 consecutive hours after the end of their daily working time (ArbZG §5, 1994). Breach of obligations stipulated under the ArbZG, such as failure to provide minimum rest time, can be considered a criminal offense. Employers who intentionally commit these breaches may be held personally liable and face imprisonment or fines of up to €15,000 (fifteen thousand euros) (ArbZG §23; §22, 1994).

Meanwhile in Indonesia, working time is regulated under Article 81 point 23 of Government Regulation in Lieu of Law No. 2 of 2022 on Job Creation (Job Creation GRL) which amended Article 77 of Law No. 13 of 2003 on Manpower (Manpower Law). According to the Job Creation GRL, the maximum daily working hours for employees should not exceed seven hours if they work six days a week, and eight hours if they work five days a week. The regulation also stipulates the minimum rest periods and breaks. Employees must take a break of at least 30 minutes for every consecutive four hours of work and are entitled to a weekly rest period of one day if they work six days a week, and two days if they work five days a week.

Regarding overtime work, the Job Creation GRL amended the previous law by extending the overtime limit from three to four hours per day. This means that the maximum daily working hours for employees have increased from 10 to 11 hours per day to 11 to 12 hours per day. Article 187 and Article 188 of the Job Creation GRL stipulate that employers who fail to meet

the obligations related to working hours and overtime limits under this law may be personally held liable. They could face imprisonment for up to one year or fines of up to IDR 100,000,000 (one hundred million rupiahs), which is equivalent to €5,800 (five thousand eight hundred euros).

Despite these provisions, Indonesia's Job Creation GRL has had a problematic track record. The underlying law of this regulation is Law No. 11 of 2020 on Job Creation (Job Creation Law), also known as the Omnibus Law. Indonesia has been struggling with a hyper-regulation crisis - there are too many regulations in the country, but they lack proper coordination and effective enforcement (Argama, 2019). In an attempt to address this issue, the Omnibus Law was introduced, aiming to streamline the regulatory system in Indonesia by amending more than seventy existing national laws. The law also reflects the ambition of Indonesian President Joko Widodo to enhance foreign direct investment and economic growth by improving the ease of doing business in Indonesia. (Mahy, 2021). Unfortunately, the enactment of this law ignited nationwide protests from workers, students, and environmental groups, who claimed that the law weakens labor and environmental protections (Jakarta Post, 2022). The law was also widely criticized for having had no or limited public consultations as is formally required (Mahy, 2021). As a result, in 2021, the Indonesian Constitutional Court ruled that the law was flawed and ordered lawmakers to restart the process within two years (Constitutional Court of the Republic of Indonesia, 2021). In response to the ruling, the Indonesian government issued the Job Creation GRL in 2022 to evade the possibility of the law being fully annulled. However, the Indonesian government made only a few significant improvements, as many of the problematic provisions remained unchanged, and several sections were merely copies of the previous Omnibus Law.

While both Germany's ArbZG and Indonesia's Job Creation GRL provide protection for employees, the variations highlighted above underscore several differences between the two legislations. For instance, Indonesia's Job Creation GRL allows for a longer daily overtime limit (up to 12 hours) compared to the ArbZG which sets a limit of ten hours. Moreover, while Germany's ArbZG strictly prohibits employees from working on Sundays and public holidays except for certain occupations and under special conditions, Indonesia's Job Creation GRL and its implementing regulation (i.e., Regulation No. 35 of 2021) are generally silent on this matter. Some of the provisions even implicitly allow employees to work overtime on weekends or public holidays, provided that the employers compensate them in accordance with the law. These provisions, to some extent, explain why participants from Indonesia tend to be more accepting of overtime work. They consider it as a trade-off for greater flexibility and an opportunity to earn additional income.

Thus, these observations suggest that Germany's ArbZG provides a stronger and more straightforward legal framework to protect employees' rights and ensure safe working conditions. On the other hand, Indonesia's Job Creation GRL appears to be relatively weaker in this regard, as there is an indication of the prioritization of investors' and corporations' interests over the protection of employees' rights in the pursuit of national economic growth.

6.2.2 Startups and Flexibility

The interviews also uncovered a distinction between the work culture in large corporations and startups, particularly among participants from Indonesia. Unlike large corporations, participants working in startups shared that they have inherent flexibility as they are not bound by strict rules regarding working hours and the workplace. For example, P9 pointed out that while the sudden shift to full remote work during the pandemic posed practical challenges for him, it was not an issue administratively because his company does not implement any attendance or clocking system. Instead, all employees are granted the freedom to decide when and where they work.

However, despite the flexibility, P9 shared that he often works beyond normal working hours and his designated work scope. P9 mentioned that during the pandemic his company was exclusively tasked by the Indonesian government to manage the national vaccine administration project. P9 was specifically assigned to develop the registration system and oversee its implementation nationwide. Consequently, he was stationed in different cities every three consecutive months for a year. He admitted feeling tired and overwhelmed. Nonetheless, he did not receive any additional support from his company or the government, except for priority and an extra dose of vaccination similar to what health frontline workers received, as he was exposed to a higher risk of infection compared to the general population.

Similar testimonies and experiences were also shared by other participants working in startups. For instance, P1 noted that it would be a big lie to say that someone working in a startup only works from 9. a.m. to 5. p.m. as he regularly receives work emails or calls outside of normal working hours. Moreover, P8 pointed out that working in a startup also often involves doing tasks that are not included in the job description.

P8 (System Architect): [...] as you know, ***working in a startup company****,* ***you need to be able to handle different things*** *[...]* ***even if you are not being employed for that position*** *[...]* ***you have one expertise, but you still need to know other different aspects*** *of software engineering.*

Startups in Indonesia began to emerge in the 2000s, and the following decade saw a rapid increase in their number. It has steadily increased to 2,431 by 2022 (Bachtiar et al., 2023). The growth of the startup ecosystem in the country has been facilitated by factors such as digitalization and government policies (Bachtiar et al., 2023). In 2016, Indonesian President Joko Widodo set a goal to generate 1,000 technopreneurs by 2020 in Indonesia (Ministry of State Apparatus Utilization and Bureaucratic Reform of the Republic of Indonesia, 2016). A few years later, a study conducted by the Institute of Economic and Social Research at the Faculty of Economics and Business of the University of Indonesia, showed that the startup ventures in Indonesia, especially the major ones, significantly contributed to the country's economy by adding a value of 349 to 428 trillion rupiahs or equivalent to 1.8-2.2 percent of the GDP in 2022. Due to their significant contribution to national economic growth, startups have received special attention from the Indonesian government. They are frequently appointed as exclusive partners in various national programs, including the national vaccine administration program as mentioned by P9.

Despite their significant role, startups differ from conventional or established large corporations. Startups are typically new businesses characterized by breakthroughs and disruptive technological innovation (Mufida Ahmad et al., 2022). They are still in the early phase of their life cycle where they are still in the process of discovering and developing a business model, thus not yet reaching a stable financial situation that can guarantee their autonomy (Giglio et al., 2023). Due to this dynamic, startups utilize a distinct work environment where they offer their employees various perks including the freedom to so select their work hours and work location (Mufida Ahmad et al., 2022). Nevertheless, the research conducted by Mufida Ahmad et al. (2022) indicated that employees of startups in Jakarta, Indonesia, often neglect their personal needs in favor of work, resulting in an unhealthy work-life balance. They were required to continue working after returning home and even on weekends, due to the pressure to complete work rapidly (Mufida Ahmad et al., 2022). Moreover, these employees were also frequently asked to perform additional tasks (Mufida Ahmad et al., 2022).

These findings are consistent with the experiences shared by the participants during the interviews, who also reported working long hours and handling extra tasks despite the flexibility offered by their workplaces. Amidst the pandemic and the shift to remote work, the default flexibility policy created a situation where the distinction between working hours and personal time became unclear. This ambiguity also extended to the scope of their duties. These compromises often put employees in a position where they must also sacrifice their own health and personal interests.

6.2.3 Gender Roles and Household Management

The interviews also shed light on how gender roles influenced household management among the participants, especially during remote work. As mentioned in the previous section, most of the interview participants were male, and the majority were either married or married with children. These participants, from both Germany and Indonesia, indicated that their wives assume the majority of childcare and household responsibilities. One participant from Indonesia emphasized that during the pandemic, his wife experienced increased stress due to the growing childcare responsibilities at home, such as managing online schooling daily. In contrast, he did not encounter the same level of stress.

P1 (Head of Engineering): [...] ***my wife took on more childcare duties than I do*** *[...]* ***I saw that she was under a lot of stress*** *[...] while I did not directly experience the same level of stress, I felt it indirectly because* ***my wife often lashed out at me due to her increased stress.***

Participants from Germany also shared similar experiences where their wives generally take on more household and childcare responsibilities. For instance, P6 mentioned that during the pandemic, the situation at home became stressful as his wife was exhausted from constantly caring for and entertaining their daughter. The interview with P4 also indicated his wife's primary role in caregiving at home. He noted that working remotely during the pandemic allowed him to become more involved in household and childcare duties that were normally handled by his wife, thus giving her an opportunity to take a break.

While participants from both Germany and Indonesia shared similar perspectives on the division of household and care responsibilities, the interviews uncovered a cultural distinction between the two countries, particularly regarding the involvement of non-family members. Participants from Indonesia, including P1, P5, and P9, noted that despite their wives assuming the primary responsibility for childcare and household chores, they employ live-in domestic helpers. They highlighted that the presence of domestic helpers living with them provides valuable additional assistance, especially when their wives are occupied with specific tasks. For instance, when their wives are busy overseeing online schooling for their children during the pandemic, the domestic helpers can help with cleaning and cooking in parallel. In some cases, live-in babysitters are also hired, typically when both parents work, to take over childcare duties while the parents are away. However, these practices are more prevalent in big cities like Jakarta, where higher income rates and modern lifestyles (e.g., mothers are also working) are more common.

While hiring live-in domestic helpers and babysitters is customary among Indonesians, it is less prevalent in Germany. The majority of German participants reported that they share childcare and household responsibilities solely with their spouses, although the majority of the tasks are still undertaken by the wives. For childcare, instead of hiring external helpers, they typically send their children to daycare or kindergarten. Consequently, they experienced significant stress during the pandemic due to the closure of daycares, kindergartens, and schools. Despite not having to handle online schooling like the wives of Indonesian participants, German participants' wives had to independently manage childcare and educational activities at home alongside their daily household chores due to the absence of external assistance.

Chauhan (2022) argued that the pandemic has created new types of unpaid work, including homeschooling/online schooling, catering to the needs of all family members who stay indoors, and maintaining sanitization and hygiene. These additional responsibilities have further increased the burden of existing unpaid domestic work. Chauhan (2022) further argued that remote work is not gender-neutral, as there are differences in outcomes for men and women. While remote work allows women – especially those who work outside the home - to keep their paid work instead of dropping out of the labor force entirely, evidence suggests that remote work pushes women more into unpaid household work, thus perpetuating gender inequality (Chauhan, 2022).

Germany has long been identified as a conservative welfare state regime that upholds a gendered division of care in the family (Naujoks et al., 2022). Consequently, most women in West Germany after World War II did not fully participate in the labor market (Naujoks et al., 2022). Therefore, gender inequalities in household responsibilities already existed even before the pandemic came (Hiekel & Kühn, 2023), with women typically bearing more duties than men. The Federal Statistical Office of Germany in 2016 reported that in Germany, women in their mid-thirties spend 110.6% more time than men of the same age in performing regular household and care work (Hiekel & Kühn, 2023). The same finding persisted when the pandemic came. During the early stage of the pandemic, the sudden withdrawal of the government as a provider of institutional childcare and schooling forced parents in Germany to find their own solutions. In this situation, the majority of partnered mothers in Germany reported that their caregiving roles remained unchanged or even increased as they became the sole care providers (Hiekel & Kühn, 2023).

Gender role stereotypes are integral to the attribution and distribution of gender roles within households. Ward & Grower (2020) defined this idea as the attributes that differentiate how women and men are or should be, and frequently address traits, physical characteristics, role behaviors, and occupations. In this regard, men are expected to prioritize their professional responsibilities over family matters, while women are expected to prioritize unpaid domestic and caregiving duties at home over their personal or professional interests (Chauhan, 2022). Moreover, Hiekel & Kühn (2023) also argued that how men and women perceive gender equality in household or care arrangements can vary depending on their individual *gender role attitudes*, which are divided into two types, i.e., (i) egalitarian and (ii) traditional or non-egalitarian (Boehnke, 2011). Individuals with egalitarian gender role attitudes believe that household, childcare, and breadwinning responsibilities as a shared duty between both parents. On the other hand, those with traditional or non-egalitarian gender role attitudes typically assign care responsibilities exclusively to the mother and breadwinning roles to the father (Hiekel & Kühn, 2023)

Nevertheless, gender role attitudes do not always align with actual care arrangements. In Germany, while 60 percent of parents with children under three prefer an egalitarian gender role attitude, only 14 percent achieve such an arrangement (German Federal Ministry for Family Affairs, 2017). This gap between the desired and actual realities is attributed to several factors, including (i) institutional constraints (e.g., childcare shortage), (ii) normative expectations, and (iii) pragmatic decisions (e.g., a tax system supporting the male breadwinner model) (Hiekel & Kühn, 2023).

In Indonesia, gender inequalities within households mainly stem from religious and cultural factors. Gender perspectives in Indonesia are rooted in the country's patriarchal, collectivist, and religious cultural identity (Riyani, 2016). They are mostly adopted based on the Javanese culture and Islam fundamentalism values (Ida, 2001). As a country with the largest Muslim population, many Indonesians uphold a patriarchal ideology shaped by their interpretation of Qur'anic teachings (Yunianti et al., 2023). They believe that Islam confers superiority to men over women, leading them to believe that leadership should belong to men (Yunianti et al., 2023). This belief further shapes the perception of men as primary breadwinners within the family structure. Following this belief, the term *housewifization* is dominant in the social construction of womanhood in Indonesia (Ida, 2001). Under this framework, women are expected to rely on their husbands' income and are not regarded as wage earners themselves (Mies, 1986). They are viewed as non-productive members of society and are thus tasked to provide unpaid domestic labor.

The patriarchal gender perspective in Indonesia is also a contributing factor to the high number of domestic helpers in the country. As of 2011, 2.6 million people were employed as domestic helpers in Indonesia, with 90 percent being women (Nur Hidayati, 2011). Many of them, particularly those from small villages with limited access to education, choose to work as domestic helpers in big cities to escape family pressure and domestic abuse (Nur Hidayati, 2011).

However, an increasing number of Indonesian women, especially those with better access to education, are embracing the concept of the *modern woman*. They are adapting to contemporary lifestyles and aligning with global movements that reflect western cultural values (Ida, 2001). Nonetheless, despite these changes, they are still confronted with a persistent dilemma due to the deeply ingrained patriarchal culture. They must navigate between the traditional role of women, which emphasizes prioritizing domestic duties and upholding traditional values, and the modern role, which involves pursuing their professional and personal interests.

Based on these observations, gender inequalities persist in both Germany and Indonesia, albeit due to different contributing factors and cultural contexts. Despite the varying degrees of burden experienced by wives in each country, insights from the interviews highlight the enduring reality that wives and mothers continue to shoulder a greater share of household and childcare responsibilities compared to husbands. Remote work has not altered this reality or improved gender equality, as household and childcare responsibilities still predominantly fall on women.

6.2.4 Job Security Amidst the Pandemic

Regarding job security, the interviews revealed that participants both from Germany and Indonesia managed to preserve their employment during the pandemic turmoil, with no significant impacts on their incomes. One participant from Indonesia (P7) noted that during the early phase of the pandemic, his bonus was reduced from half of his salary to a quarter. However, this reduction only lasted for a year, and his bonus returned to its normal amount in the second year of the pandemic. Another participant (P5), who owned a digital creative agency, noted that his business even grew during the pandemic due to the increasing demand for online events and conferences driven by lockdowns and physical distancing measures.

P5 (Co-Founder): [...] when the pandemic hit, ***a lot of companies needed our services*** *[...] event organizers* ***could not continue their in-person events****, so we provided them with*

virtual entertainment solutions *[...] thus, from a business perspective, the pandemic had a* ***very positive impact*** *on our company.*

Participants in Germany shared a similar perspective. While they all managed to maintain their jobs, some experienced reduced working hours during the early phase of the pandemic. Nonetheless, they expressed that they were not worried by the reduced working hours, attributing this to the *Kurzarbeit* scheme, under which the government compensated a portion of their lost wages. They further noted that the *Kurzarbeit* only lasted a few weeks or months, thereby having minimal impact on their financial situation.

P5 (Software Developer): [...] we had this ***Kurzarbeit*** *[...] my work was* ***reduced by 50 percent*** *and* ***income was a bit lower*** *than before [...] but* ***not so dramatically****.*

The pandemic's impact on the software engineering job market has elicited diverse opinions and perspectives. On the one hand, reports have highlighted a job crisis in the field, with thousands of software engineers worldwide being laid off due to the slowing of businesses following the pandemic (Carey, 2023). On the other hand, some reports suggested a less negative impact, with a survey conducted by Statista revealing that 37 percent of software engineers believe that the pandemic has not affected their work practices (Statista, 2023). In the United Kingdom (UK), the demand for software development roles even increased by eight percent in the early months of the pandemic (Randstad, 2020). This increase was driven by the evolving needs of many businesses seeking new ways to deliver products and services in remote settings, leading to a heightened demand for software engineers to address these challenges. Many organizations even started to explore international talent pools by hiring for remote positions (Mehrotra, 2022).

One participant from Germany (P10) confirmed the varied perceptions regarding the software engineering job market amid the pandemic. He noted instances where big technology companies, including his own employer, were laying off software engineers during the pandemic. However, in his personal opinion, the layoff trends are attributed not only to the pandemic but rather a chain reaction to global events.

P10 (Software Developer): [...] there were ***many layoffs*** *within the tech industry this year [...] all the* ***big companies*** *were* ***laying off engineers*** *[...] I guess it is a* ***chain reaction*** *[...] we now have a* ***tense situation*** *on the* ***global level*** *[...] there was* ***the pandemic****, and there was also* ***a war started*** *[...] but that also led to something else [...] during the pandemic everything*

went online, so there was ***a huge need for digitalization*** *[...] so* ***companies were also hiring a lot****.*

Despite expressing this perception, P10 stressed that he did not feel at risk of being laid off. This underscores the diverse perceptions and realities regarding the job stability of software engineers during the pandemic. Various analyses suggest that personal circumstances significantly influence software engineers' career trajectories amid the turmoil, with experience and seniority level being key factors (Carey, 2023; Randstad, 2020). One analysis mentioned that senior-level software engineers with four or more years of experience are generally secure in the current job market (Carey, 2023). In P10's case, having over six years of experience as a software developer likely contributes to his sense of security amid widespread layoffs.

Thus, despite the uncertainties brought by the pandemic, the job stability of software engineers remained generally robust. The accelerated shift towards digitalization and the increased reliance on technology for online services and remote work heightened the demand for software development skills. As the world continues to navigate the post-pandemic landscape, the adaptability of software engineers will remain a cornerstone of technological progress and economic recovery.

6.2.5 Post-Pandemic Crisis and Infrastructure Challenges

In light of the post-pandemic situation, the interviews illuminated the disparities between the experiences of the participants from Germany and Indonesia. While participants in Germany shared that the situation in the country has turned almost completely normal, participants in Indonesia, particularly in Jakarta, noted that they have been facing an air pollution crisis. Indonesian participants such as P5 and P9 shared that they and their families experienced persistent coughs because of the air pollution. As a result, they had to take certain measures to protect themselves and their families to reduce their exposure to air pollutants. Most participants mentioned that they have been reducing their outings and opting to stay home more frequently. Some of them also still wear masks whenever they leave their homes, although they often feel uncomfortable as most people now believe that the pandemic has ended and wearing masks is no longer necessary. One participant even went even further by purchasing air purifiers.

P1 (Head of Engineering): [...] I bought ***seven air purifiers*** *for my home and placed them in each room where my children usually play, as well as in my bedroom [...] I saw the air quality index on the devices matched the one in the mobile app [...]* ***I think they do not lie about the number****."*

Despite the persistent risks, participants emphasized that remote work has effectively aided them in minimizing their exposure to such risks effectively. P9 noted that due to his opportunity to maintain full-time remote work, he has managed to mitigate the health effects of air pollution as his outdoor activities have been limited.

Additionally, the interviews also revealed that the ability of participants to reduce exposure to air pollution risks is not solely a result of the opportunity of remote work but also of owning private cars. Participants such as P2 and P7 highlighted that they were fortunate to own private cars, as they have been able to reduce the risks of being exposed to air pollutants and the COVID-19 virus when the pandemic still occurred. P2 mentioned in the interview that individuals who rely on public transportation are particularly susceptible to the impacts of air pollution since they are unable to avoid breathing in the outdoor air. This increased exposure risk also extends to individuals who travel by motorcycle.

The pandemic, particularly during the full lockdown, had paradoxically contributed to improvement in Jakarta's air quality as it reduced people's mobilities, industrial activities, and mass transportation (Anugerah et al., 2021). However, the improved air quality was only temporary. Once the pandemic was over, the air quality deteriorated again (Rendana & Komariah, 2021). Many companies in Indonesia immediately mandated all employees to return to the office once the pandemic-related measures were lifted (Sadya, 2023). The return of employees to physical workplaces and the resumption of other fossil-burning activities (e.g., power plants) led to a sudden decline in Jakarta's air quality. Consequently, the city was promptly ranked as the world's most polluted city according to IQAir, a Swiss air quality technology company (Reuters, 2023).

Air pollution from transportation has long been a significant issue in Indonesia, especially in its capital city, Jakarta (Jafino et al., 2016). The concentration of toxic pollutants in the air has grown to alarming levels since 2008 (Jafino et al., 2016). The concentration of PM10, which has the most severe health impact on humans, has been highest among all types of airborne particulate matter (PM) (Asri & Hidayat, 2005). PM10 is known to cause various diseases including acute respiratory infections, chronic bronchitis, asthma attacks, eye and skin irritations, and even premature mortality (Firdaus, 2013; Haryanto & Franklin, 2011). 70% of toxic pollutants in Jakarta are attributable to vehicle movements, which are mainly caused by (i) growth in travel demand, and (ii) private transport ownership (Jafino et al., 2016). In 2022, there were approximately 21.9 million motor vehicles, including 3.7 million passenger cars and 17.3 million motorcycles in Jakarta (Indonesian Department of Statistics, 2022). The

Indonesian government has attempted to find solutions to the issue by rolling out various policies, such as the odd-even license plate scheme, progressive tax for private vehicle ownership, electronic road pricing (ERP), and public transportation expansion (Girsang, 2023). Despite these government efforts, the number of private vehicle owners keeps increasing.

The lack of success in government initiatives to control private vehicle numbers and air pollution is attributable to various factors (Girsang, 2023). Firstly, there is the presence of social and economic inequalities. Individuals with higher incomes tend to choose to own private vehicles as a means of showcasing their social status. Secondly, public transportation systems are insufficient to meet residents' needs. Users often have to switch between different modes of transportation every five to 45 minutes, as many locations in the city are not adequately connected and integrated into the public transportation network. Thirdly, there is a high crime rate in the city. Due to this concern, public transportation is frequently deemed unsafe.

The excessive amount of privately owned vehicles in Jakarta not only leads to high levels of air pollution but also causes severe traffic congestion. This situation arises from the continuous growth in private vehicle ownership without corresponding improvements in infrastructure (Girsang, 2023) such as roads and public transportation systems. During the interviews, all participants from Indonesia expressed their disappointment regarding the persistent traffic congestion problem. For example, P1 noted that before the pandemic and the shift to remote work, he usually spent three hours driving to and from the office due to heavy traffic congestion.

P1 (Head of Engineering): [...] now I do not have to go to the office anymore [...] it significantly saves my time [...] ***I used to spend three hours driving to and from the office daily****.*

For this reason, participants who still have the opportunity to maintain remote work after the pandemic noted that they are fortunate as they can continue avoiding daily encounters with traffic congestion. Conversely, individuals like P7, who were required to return to the office full-time, must contend with traffic congestion again, which leads to the loss of both his work and personal time.

While all participant from Indonesia voiced their concerns about the traffic congestion issue, only one participant from Germany raised a similar complaint. P3 expressed that he feels grateful to be able to maintain remote work, as it allows him to avoid driving to the office daily.

He highlighted that driving a car to his office is too exhausting as the distance is unfortunately far and requires him to navigate through a congested *autobahn* route. The specific *autobahn* route referred to by P3 is the A8, which is currently undergoing large-scale construction work including bridge building and road expansion (Züblin, 2021). The construction project is expected to be completed by the end of 2026 (Züblin, 2021). Consequently, until its completion, traffic congestion along the A8 route is anticipated to persist.

In Germany, road infrastructure advancements date back to the country's turbulent 20th-century history, notably when the *autobahn* construction project became a central symbol of Adolf Hitler's National Socialist regime (Zeller & Dunlap, 2010). After World War II and Germany's liberation, the *autobahn* was reinterpreted as a central corridor of the economic reconstruction of Western democracy (Zeller & Dunlap, 2010). Since then, the construction of the *autobahn* has continued to be a national priority for Germany.

The continuous construction of the *autobahn* in Germany has resulted not only in traffic congestion but also in air pollution. For instance, in 2018, the city of Stuttgart recorded levels of 82 micrograms of nitrogen dioxide (NO2) per cubic meter of air – twice as much as the allowed threshold of 40 micrograms as regulated by the European Union (EU) (Osterath, 2018). Germany, as a member state of the EU, is subject to the EU's laws and regulations. Consequently, the EU Commission took Germany to the European Court of Justice (ECJ) for the infringement of the law (European Commission, 2018). In June 2021, the ECJ decided that Germany was guilty of excessive air pollution in multiple cities in the country (Court of Justice of the European Union, 2021). In response to the case, Germany has laid out various plans to curb emissions in the country such as the Immediate Action Programme for Clean Air 2017-2020, Climate Action Programme 2030, and Climate Action Act (*Klimaschutzgesetz*) (Bundesregierung, 2024).

Indonesia presents a significantly different scenario. The progress in road infrastructure development in Indonesia lags behind that of Germany. Infrastructure development in Indonesia has been sluggish due to several reasons. Firstly, as the largest archipelagic country in the world, Indonesia spans approximately 1,919,440 square kilometers and comprises 17,508 islands (Aswicahyono & Friawan, 2008). This area is more than five times larger than Germany, which covers only 349,390 square kilometers of land (World Bank, 2024). The vast size of Indonesia presents several main challenges that contribute to the slow pace of infrastructure development, including (i) a complicated and time-consuming process of land acquisition, (ii) ineffective collaboration between national and sub-national governments, (iii) overlapping regulations and authorities, (iv) financing challenges, and (v)

lack of public-private partnership and public awareness (Djajawinata et al., 2023). These unresolved challenges make it difficult to enhance Indonesia's road infrastructure and transportation system, thereby exacerbating air pollution, particularly in big cities like Jakarta.

Drawing from these observations, it is evident that both Indonesia and Germany contend with air pollution and traffic congestion issues. However, the severity levels and root causes of these problems are significantly different between the two countries. In Indonesia, these issues predominantly stem from insufficient infrastructure and longstanding socioeconomic factors, whereas in Germany, they arise primarily from the rapid and extensive expansion of its infrastructure.

Additionally, there is also a disparity in how both countries take accountability for their problems. Germany is a member of the EU, meanwhile, Indonesia is a member of the Association of Southeast Asian Nations (ASEAN). Both organizations are inherently different. While the EU is a supranational organization, ASEAN is an inter-governmental organization (Ministry of Foreign Affairs of Singapore, 2020). In the case of the EU, member states have pooled their sovereignty within the union for certain areas including trade and environment. It also has institutions such as a parliament, courts, and a single currency (Ministry of Foreign Affairs of Singapore, 2020). Meanwhile, ASEAN works unlike the EU and does not have any of those institutions.

Germany’s membership in the EU entails increased responsibility beyond its national sovereignty, as it is also subject to the EU’s laws and institutions. This led to Germany being taken to the ECJ in 2018 for breaching the NO2 legal limit set by the EU (Osterath, 2018). The country was found guilty in 2021 and was instructed to adhere to the ruling or face potential financial penalties (Bahgat, 2021). On the contrary, Indonesia lacks a comparable level of accountability both within its legal jurisdiction and within ASEAN, resulting in no repercussions for the ongoing air pollution and thus leaving the issues unresolved.

The recurring air pollution after the pandemic in Jakarta is a result of an unresolved deep-rooted problem. The pandemic had paradoxically offered temporary relief for the citizens of Jakarta with improved air quality However, as the pandemic subsided and economic activities returned to normal, the air quality deteriorated once again. The interviews revealed that remote work has helped participants to protect themselves against air pollution risks. Unfortunately, this privilege is not uniformly granted to them despite their roles as software engineers, as some have been required to return to the office, forcing them to contend with polluted outdoor

air again. Nonetheless, the interviews also revealed that owning private cars, which all participants fortunately have, can significantly minimize their risk of exposure to air pollutants.

7. DISCUSSION: ASSESSING THE APPLICABILITY OF THE GOOD WORK FRAMEWORK IN GERMANY AND INDONESIA

The central research question of this study is "*How has remote work during and after the pandemic been perceived and experienced by software engineers in Germany and Indonesia? How do they differ between the two countries?".* As reflected in the empirical findings, participants shared varied personal experiences of remote work as software engineers during and after the pandemic. From a professional perspective, the pandemic-induced remote work has prompted software engineers to rethink their preferred ideal working methods and setups. Although participants admitted to facing challenges during the initial phase of the pandemic (e.g., deteriorating team communication, poor mental well-being, blurred boundaries between professional and personal life), they eventually agreed that the benefits of remote work outweighed the drawbacks, emphasizing the notable increase in productivity and efficiency. Additionally, participants with families and children admitted that they began to appreciate working with their family members nearby, despite often grappling with blurred work-life boundaries at home.

Now that the pandemic has subsided most participants admitted that they prefer a hybrid work arrangement, meaning that they would still be able to maintain the remote work while also having the autonomy to come to the office when they feel needed. This preferred setup plays an important role in improving job performance and satisfaction for software engineers, which aligns with the vision of the Good Work concept.

This section delves deeper into the alignment of participants' remote work experiences with the WEF's Good Work Framework. It addresses the sub-research question of this study: "*How do the remote work experiences of software engineers in Germany and Indonesia align with the Good Work framework? How feasible is its implementation in each country?"*

Initially centered on employees' responsibility, the concept of Good Work has evolved to incorporate employers' responsibility as well, acknowledging that achieving *good work* must be reciprocated by employees' motivation (Gardner, 2010; Barendsen et al., 2011). As a result, the definition of Good Work has broadened to include employees' interests by considering all aspects of human performance at work and fostering prosperous working conditions (Fuchs, 2006; Pazell et al., 2020). In response to new trends and changes accelerated by the pandemic, the WEF introduced the Good Work framework to promote a healthy, equitable, resilient, and human-centric future of work that respects fundamental rights across all work setups—whether in-person, hybrid, or virtual — and applies to all workers (WEF, 2022). This framework serves as a new standard for Good Work.

Drawing from the empirical findings, the researcher presents a further discussion on the participants' remote work dynamics to determine if their experiences align with the objectives outlined in the WEF's Good Work Framework, which encompass (i) fairness on wages and technology, (ii) flexibility and protection, (iii) health and well-being, (iv) diversity, equity, and inclusion, and (v) employability and learning culture. Considering also the unique regional characteristics of Germany and Indonesia (e.g., work culture, gender roles, post-pandemic situation), the researcher further examines the extent to which the Good Work Framework can be applied in each country.

- *Fairness on Wages and Technology*

Under the WEF's Good Work framework, fairness in wages means that workers should receive a living wage that allows them to live with dignity and provide for themselves and their families. In Indonesia, during the pandemic, most participants experienced no salary reductions from their employers, with one mentioning temporary cuts to bonuses that were promptly reinstated once the pandemic situation improved. However, one participant reported a lasting salary reduction due to their employer's worsening business circumstances, which persisted even after the pandemic subsided. Consequently, he had to reduce his expenses and make adjustments to his personal finances. As for financial assistance related to the pandemic, only a few participants received support from their employers (e.g., extra health benefits, quarantine accommodations, and internet packages), but none of them obtained it from the government. Despite the Indonesian government implementing various recovery programs (e.g., electricity and internet quota subsidies, and direct cash assistance), participants mentioned that they were either not informed about or qualified for such support. For instance, one participant stated that he was not qualified to receive direct cash assistance because his salary exceeded the eligibility criteria.

In Germany, participants reported receiving support from both their employers and the government to safeguard their finances amid the pandemic. Most of them took part in the *Kurzarbeit* (short-time work) scheme, enabling them to retain their employee status and work reduced hours despite their employers' business activities being on hold. To compensate for the lost net income from the hours not worked, the German government provided a replacement rate of 60 percent, which may increase to 67 percent for employees with children. Unlike the support offered by the Indonesian government, which was limited to specific eligibility criteria, all employees in Germany contributing to the social security system were eligible for *Kurzarbeit.*

According to WEF, fairness in wages also encompasses fairness in working hours. The interview findings suggest that the work culture in Indonesia is more accepting of overtime work compared to that in Germany. This difference is reflected in the laws and regulations of both countries. While German laws impose shorter overtime limits and prohibit working on Sundays and public holidays, Indonesian laws set longer overtime limits and allow work on those days. Although working on Sundays and public holidays under Indonesian laws is only permitted if employers provide fair compensation, this can lead to unhealthy working conditions for the workers. Workers are compelled to work beyond their limits in pursuit of extra earnings, all under the guise of fair compensation by the employers. The situation contrasts with Germany's approach, where working on Sundays and public holidays is forbidden to safeguard workers' health and well-being, by ensuring they have adequate rest and time with their families.

As for fairness in technology, all participants both from Germany and Indonesia noted that they did not encounter any major technological issues - such as adapting to new technology or privacy concerns - with the transition to remote work during the pandemic. Despite differences in economic development, both countries continue to face challenges with internet issues, which participants identified as obstacles during remote work. To address these issues, most participants mentioned resorting to their mobile phone networks as backups when their home internet failed. This scenario underscores the need for increased internet quotas or even additional internet providers to ensure uninterrupted remote work. According to the interviews, only one participant from Indonesia mentioned receiving specific support from his employer regarding internet connection. Additionally, despite the Indonesian government's implementation of an internet quota subsidy program, none of the participants were aware or informed about it. A similar situation was also observed among the participants from Germany. They did not receive any particular assistance from their employers for their internet connectivity during the pandemic and remote work in general, except the default working mobile phone that they could use as backup.

- *Flexibility and Protection*

The interviews unleashed various perspectives regarding the flexibility of work, especially after the pandemic. According to WEF, flexibility means workers should be able to choose the place of work, the intensity of work, and the components of work. WEF further emphasized that this flexibility should not lead to inequality among workers regardless of their skill levels and contract type. In Indonesia, after the government lifted all pandemic-related measures in late 2022, numerous companies promptly ended remote work arrangements and required

employees to return to the office full-time. However, interviews showed that the majority of participants were still capable of working remotely, with one participant mentioning that he had to return to the office due to a non-negotiable company policy. In Germany, the interviews also revealed that there was no hard rule from employers or the government mandating employees to return to the office. Most participants indicated that they continued remote work after the pandemic, with their managers suggesting occasional office visits once or twice a month for team meetings. However, one individual mentioned that he had to return to the office due to the confidentiality of his work.

Despite the remote work opportunities that participants both from Indonesia and Germany have, it is important to acknowledge that such work setup may not always correspond with individual preferences or circumstances. Some participants expressed a preference for working from the office over remote work, as they feel more productive and connected with colleagues in that environment. There was also a participant who wished to work from the office but was compelled to switch to full-time remote work due to the closure of their physical office after the pandemic. As flexibility means having the freedom to choose the place of work, these experiences indicate that the definition of flexibility can vary for each individual.

Now that the pandemic has subsided, most participants expressed a preference for hybrid work. This arrangement allows them to retain the option of remote work while also having the autonomy to decide when to go to the office as needed. The interviews indicated that participants from both Germany and Indonesia have a strong possibility of implementing hybrid work arrangements, albeit to varying extents. However, it should be noted that all participants work in the software engineering field, which may confer them greater flexibility compared to other professions.

As for protection, none of the participants reported experiencing biased treatment from their employers due to their remote work practices. Furthermore, participants also indicated that they had no concerns about job security amidst the pandemic, despite some of their colleagues in different departments being affected and facing layoffs. Regarding this issue, the researcher observed a contrast between Indonesia and Germany, particularly concerning the role of works councils. Indonesian participants, while not feeling their job security was threatened, most of them mentioned being unaware of or not feeling the impact of works councils or labor unions. In contrast, all German participants were aware of the existence of works councils and unions. Some of them even emphasized that they felt protected by these organizations and never felt threatened about losing their jobs in any circumstances.

Indonesia does not recognize the works council (ADP Counsellors at Law, 2020). Instead, it depends on labor unions and bipartite cooperation institutions. Labor unions are established by employees both within and outside a company and represent employees' interests at the industry level. Meanwhile, bipartite cooperation institutions operate at the company level, typically for companies with a minimum of 50 employees, serving as a platform for communication and consultation on employment matters or disputes (ADP Counsellors at Law, 2020).

In Germany, employees' interests are represented by works councils and unions. Works councils or *Betriebsrat* are formed by employees within companies to represent their interests at the company level (Mohrenweiser, 2022) addressing issues such as workplace safety, hiring, and terminations. While works councils deal with company-specific concerns, unions engage in collective bargaining agreements on the sectoral or industry level (Berlin Tech Workers Coalition, 2024).

While both Indonesia and Germany have mechanisms for worker representation, German works councils and unions appear more formalized and powerful. Conversely, Indonesia's system of employee representation appears weaker, as evidenced by the decline in the number of labor unions in the country. Between 2005 and 2023, the number of labor unions in Indonesia declined from 1.8 million to 165,000 (Constitutional Court of the Republic of Indonesia, 2024). The enactment of the Job Creation law was argued to be the culprit, for encouraging more of temporary employment contracts instead of permanent ones. Since temporary workers are less likely to join labor unions, the existence of labor unions is weakening, resulting in an imbalance of power between workers and employers (The Constitutional Court of the Republic of Indonesia, 2024).

- *Health and Well-Being*

According to WEF, employers should safeguard employees' health and well-being by ensuring physical and psychological safety in the workplace, establishing predictability and boundaries around working time, and assuring that workers feel valued and find purpose in their work.

In light of the pandemic, participants expressed varied perspectives and experiences regarding their health and well-being. While most participants mentioned that they only experienced minor physical health issues (e.g., back pain), some of them experienced deteriorating mental well-being (i.e., stress from isolation and loneliness), especially during the lockdown. Participants both from Germany and Indonesia shared that they did not receive

any specific support from their employers or government to address these physical and mental health concerns, apart from assistance directly related to pandemic-related illnesses (e.g., vaccines, rapid tests, vitamins, medicines, quarantine facilities). Specifically in Indonesia, the support provided by employers even varied depending on the policies of the respective companies. One participant from Germany who experienced declining mental health during the lockdown, expressed a wish for greater support from her employer and the government. Unfortunately, this support was not forthcoming.

In the post-pandemic context, participants from Indonesia faced an additional health risk from air pollution. Although the nature of air pollution risk differs from that of the COVID-19 virus, the work arrangements that participants adopt may influence the degree to which they are exposed to these risks. Participants reported that they did not receive any specific support or recommendation from their employers or the government to address this issue. Although the Indonesian government reinstated measures like recommending mask-wearing (Souisa & Salim, 2023) and mandating a return to remote work (Chen, 2023), these were short-lived and targeted only certain occupations, excluding those of the participants. As a result, participants who could work remotely by default were unaffected by these measures and were fortunate to be still able to minimize their exposure to air pollutants. Conversely, those required to return to the office faced heightened risks.

The temporary nature of these reinstated measures amidst the air pollution emergency implies that economic considerations took precedence over safeguarding the health of the population. Consequently, with the absence of support and recommendations from employers and the government, the participants from Indonesia independently managed their situations using various strategies, such as purchasing air purifiers, using private cars for transportation, reducing outdoor activities even on weekends, and voluntarily wearing masks despite the absence of a mandate.

Aside from health concerns due to the pandemic and air pollution, the researcher noted that the disparity in work culture between Germany and Indonesia also contributes to differences in the levels of protection for workers' health and well-being in both countries. In Indonesia, longer overtime work limits and the allowance of work on Sundays and public holidays - despite being compensated fairly - could potentially result in unhealthy work conditions for employees. Workers might feel obligated to exceed their limits and sacrifice their rest and leisure time. This could cultivate a culture where prioritizing financial gain over personal well-being becomes normalized. Conversely, in Germany, overtime work is strictly limited and work on Sundays and public holidays are prohibited. This is because prioritizing workers' health

and well-being is paramount, where adequate rest time and opportunities for personal and family time are guaranteed.

- *Diversity, Equity, and Inclusion*

Furthermore, WEF suggests that employers should provide a work environment that welcomes different perspectives and experiences (e.g., gender, race, religion), accommodate different circumstances (e.g., socioeconomic, life-stage factors), and promote inclusion regardless of limitations and impairments. The field of software engineering is widely recognized as being male-dominated. This was evident in the researchers' experience while selecting interview participants for this study, where the majority were male and only a few were female. However, the interviews with female participants, all from Germany, revealed that they never felt disadvantaged by the situation. Despite working in a predominantly male environment, they never felt overtly singled out or marginalized, even with the emerging remote work practice due to the pandemic. One female participant, although not having started a family herself, expressed that the continuation of the remote work option is a positive development. She believed it helps women stay on track with their professional careers while managing childcare responsibilities at home.

Nevertheless, another female participant, a senior software developer, shared her personal observation - noting a distinction between female software engineers in pure technical roles (i.e., pure software engineers) and those in managerial roles (i.e., managerial software engineers). She highlighted that she had an impression that female managerial software engineers tend to be more open, confident, and assertive. In contrast, female pure software engineers are less likely to exhibit these traits and show less concern for the political dynamics within the company as they have to focus on their technical tasks. Consequently, they were often outshined by those holding managerial software engineering roles. Despite the good work performance, female pure software engineers often did not get the recognition they were supposed to get. Based on this observation, the participant hoped that the company and management would change their mindset and give more attention to female pure software engineers rather than just focusing on the managerial ones.

In recent years, gender equality in the workplace has seen improvements through various initiatives and policies. Governments have enacted laws to outlaw gender-based discrimination and promote pay equity, while many organizations have introduced diversity programs aimed at increasing women's presence in leadership roles. Despite these efforts, the actual implementation of these initiatives may encounter challenges and not always

proceed as seamlessly as envisioned. In many situations, efforts to improve gender equality may lead to tokenism - a policy or practice that is mainly symbolic in an attempt to fulfill one's obligations with regard to established targets (e.g., mandated gender quotas), with limited efforts in ways that will not change the organizational arrangements (European Institute for Gender Equality, 2024).

Concentrating solely on women holding managerial roles may serve the company's convenience, as they are more visible and can quickly enhance the appearance of inclusivity within the organization. However, this approach could potentially exacerbate disparities among women themselves, overlooking and undermining those who excel in less visible positions. Meanwhile, gender equality should instead ensure that all women are equally valued and recognized for their skills, abilities, and contributions alongside their peers.

Moreover, the narratives shared by male participants regarding gender inequalities within their households also highlight how professional opportunities are less favored for women. The prevailing norm that women assume a greater share of household and childcare duties while men primarily focus on professional and breadwinning activities, reinforces the notion that women are often expected to prioritize family responsibilities over career advancement. Although gender inequalities persist in both Germany and Indonesia, there are differences in the magnitude of career opportunities available to women, particularly from a legal perspective.

In Germany, the *Bundeselterngeld und Elternzeitgesetz* (BEEG) or the Parental Allowance and Parental Leave Act provides that all parents both mothers and fathers are entitled for parental leave. Each parent is entitled to take up to three years of leave per child starting from the child's birth. This leave can be taken either simultaneously or consecutively by both parents (Federal Ministry for Family Affairs, Senior Citizens, Women and Youth of the Federal Republic of Germany, 2021). Once the parental leave period ends, parents have the right to return to their previous job or find another job according to their skill sets. Especially for mothers, the Maternity Protection Act or *Mutterschutzgesetz* guarantees that pregnant employees are entitled to maternity leave for a total of 14 weeks, starting six weeks before delivery and ending eight weeks after delivery (Federal Ministry for Family Affairs, Senior Citizens, Women and Youth of the Federal Republic of Germany, 2020). Consequently, their parental leave can commence after the conclusion of their maternity leave.

In contrast, in Indonesia, the Manpower Law grants parental leave exclusively only to mothers, allowing a maximum leave period of three months with full wages (International Labour

Organization, 2023). These are fully funded by employers and not based on national social security. Moreover, fathers are generally not entitled to parental leave, but depending on their employer's policy, they may take up to two days of leave during the child's birth. As a result, some women choose to sacrifice their careers in order to prioritize caring for their newborns. Additionally, there is no assurance that these mothers will be able to return to their previous jobs even after their children have grown up. Hence, despite persistent gender inequalities in both countries, the legal framework in Germany indicates significantly greater opportunities for women to maintain their professional careers compared to Indonesia.

- *Employability and Learning Culture*

Within this objective, workers should be able to maintain their employment status based on their skill and knowledge, while also being encouraged to engage in continuous learning. During the interviews, none of the participants from either Germany or Indonesia mentioned being threatened with job loss due to the pandemic, despite mass layoffs occurring in certain sectors. They all managed to retain their jobs and, in some cases, even expanded their career opportunities during this period. Software engineers were fortunate as their jobs were one of those that remained stable during the pandemic turmoil. While some people lost their jobs, the demand for software engineers has been steadily increasing and showing no signs of slowing down (Mehrotra, 2022). This growth is driven by the significant transformation of the digital landscape, which was further accelerated by the pandemic as activities such as shopping, meetings, events, conferences, and hiring had to be conducted remotely.

While the field of software engineering at the global level generally offers higher job security, the prevailing legal frameworks in Germany and Indonesia exhibit significant discrepancies. In Germany, although many businesses and workers were impacted during the pandemic, the country had long implemented *Kurzarbeit as* a robust mechanism to mitigate extensive job losses. The *Kurzarbeit* scheme allowed companies to reduce their employees' working hours instead of resorting to immediate layoffs, with the government compensating a portion of their lost wages. This scheme is not available in Indonesia. The only legal framework protecting employees against layoffs there is the Manpower Law. This legislation allows companies to terminate employees only under specific circumstances including employees' misconduct, business efficiency measures, and company closure (Yasin, 2021). However, following the recent amendment of the Manpower Law by the controversial Job Creation Law, these provisions are becoming less stringent. For instance, layoffs can now be initiated by companies without the need for decisions from industrial relations dispute settlement bodies (Ady Thea, 2022).

In Germany, under the Protection Against Unfair Dismissal Act or *Kündigungsschutzgesetz* (KSchG), layoff is also permissible to be conducted by companies in certain circumstances such as company operational reasons, employees' misconduct, or employees' incapability to resume work (Maron et al., 2022). However, it is important to note that these layoffs are subject to more stringent conditions, as the KSchG puts significant emphasis on protecting employees against unfair terminations. In addition to this stringent law, the *Kurzarbeit* scheme also prevails. These discrepancies in laws and mechanisms explain that Germany provides a more robust mechanism to protect employees against layoffs compared to Indonesia.

With regard to learning culture, participants from both Germany and Indonesia indicated that their employers lacked specific programs to promote the reskilling and upskilling of employees. The majority of participants mentioned that they took it upon themselves to pursue upskilling, often by seeking out free online courses, obtaining certifications, and engaging in self-directed learning at home. While some participants acknowledged their employers offering access to a company portal with free course materials, they emphasized that participation in learning activities was entirely voluntary. For some participants, the shift to remote work has enabled them to improve their upskilling. One participant highlighted how the flexibility afforded by Remote work enabled him to utilize short breaks between tasks to read software engineering books - a practice he admitted he would not engage in at the office due to potential awkward reactions from colleagues. Employees are often put in a position where they must choose rigidly between engaging in upskilling activities and completing the assigned tasks. When employers do not explicitly encourage upskilling, employees may feel guilty when observed dedicating time to such pursuits rather than focusing solely on their assigned tasks. Conversely, to achieve Good Work, the WEF explicitly recommends that it is the employer's responsibility to foster a culture of continuous learning within the workplace.

Drawing from the foregoing discussion, although there is still room for improvement among employers and governments, software engineers generally have significant opportunities to achieve all objectives encompassed in the Good Work framework. This is evident from participants' experiences, which included minimal impact on job security and wages, minimal technology obstacles impacting daily tasks, the opportunity to maintain remote work post-pandemic, minimal health concerns and risks, the absence of gender disparities in the workplace, and the ability to maintain job stability and find opportunities for further skill development.

Nevertheless, in the broader context of the general workforce, the preceding discussion reveals disparities between Germany and Indonesia in how each nation protects workers through laws and regulations. While Germany's case demonstrates a strong enforcement of legal frameworks and mechanisms to safeguard workers' rights (e.g., equal rights to parental leave, strict laws on layoffs, *Kurzarbeit* scheme), Indonesia's case reflects weaker worker protections which is mainly due to economic and political instability. The lack of good governance practices in Indonesia has led to loopholes in its legal framework intended to protect workers' rights. This is exemplified by ever-changing regulations that tend to weaken workers' rights. As a result, workers' rights in Indonesia are increasingly compromised, sometimes under the guise of boosting the national economy. In light of these contrasts, this study suggests that Germany may have greater opportunities than Indonesia for implementing the Good Work Framework, as it provides a more conducive environment for protecting workers' rights and promoting a fair work environment.

8. CONCLUSION

This study offers a unique perspective on the dynamics of remote work among software engineers in Germany and Indonesia in light of the pandemic. Lockdowns and mandatory remote work during this period have significantly transformed the work landscape, as they have accelerated digitalization and shifted various sectors to the online sphere. Although software engineering is widely recognized as a field with lower risks and greater opportunities for remote work due to the nature of the job, software engineers were not exempt from encountering challenges with the abrupt transition to this new way of working as evidenced by the diverse experiences of participants shared during the interviews. These experiences illuminated various dimensions, including professional perspectives, regional disparities, and their alignment with the principles of Good Work.

From a professional point of view, the pandemic-induced shift to remote work has led software engineers to reconsider their preferred ideal working setups. Initially, participants faced challenges such as deteriorating team communication, poor mental well-being, and blurred work and non-work boundaries. However, they eventually agreed that remote work's benefits, notably increased productivity and efficiency, outweighed these drawbacks. Participants with families and children also came to appreciate the ability to work close to their loved ones, even while struggling with blurred boundaries between work and personal life.

The experiences of participants demonstrated that boundary management preferences are not universally applicable in all circumstances. The pandemic presented an unprecedented scenario where individuals could no longer strictly adhere to their boundary management preferences, forcing them to adapt to the new situation. Interviews revealed that most participants successfully adjusted to the sudden shift to remote work despite the challenges. This aligns with the adaptation theory (Allen et al., 2021), which suggests that although shock events can negatively impact individuals' well-being in the short term, they can adapt to the new situations and their well-being eventually returns.

The shifting perceptions and preferences surrounding work and non-work boundaries experienced by participants during the pandemic highlight that boundaries are not fixed or predefined but rather socially constructed and continuously negotiated over time across different circumstances. Activities like childcare, once considered strictly outside the scope of work, are now accepted as integral parts of working hours. This perspective is supported by Gieryn's (1983) boundary work theory and Zerubavel's (1991) boundary theory, which suggest

that demarcations in various contexts of life, such as scientific versus non-scientific activities and social domains, are socially constructed and subject to negotiation.

In addition to the evolving preferences in boundary management among participants, the interviews uncovered that different types of software engineers (i.e., managerial, pure, and combined roles) encountered varying degree of remote work possibility. Among the three types, pure software engineers are perceived to have the highest degree of remote work possibility, as their tasks require fewer direct interpersonal interactions and mainly rely on the computer and devices they have at home. Nevertheless, this opportunity does not always align with personal preferences or external factors such as mandatory attendance policies, company circumstances, or confidentiality requirements. The interviews revealed several instances where participants experienced discrepancies between their preferred working setups and their actual conditions.

The remote work experiences of participants further revealed several key differences between Germany and Indonesia, particularly in work culture and ethics, distinctions between startups and established companies, gender roles within households, job security, and post-pandemic situations and infrastructure challenges. With regard to work culture and ethics, participants from Indonesia exhibited more acceptance towards working outside normal business hours compared to participants from Germany. It was revealed that legal working hours limits in Germany and Indonesia are differently regulated; Indonesia permits longer overtime limits and is more lenient regarding working on Sundays and public holidays.

Moreover, the interviews – particularly with the participants from Indonesia - uncovered a paradox of flexibility in startup companies. Participants mentioned that they often worked beyond normal working hours and their designated work scope despite the flexibility policy from their employers and the pandemic situation. As a result, startup employees felt they were compelled to sacrifice their health and personal interests.

Additionally, there was a noticeable disparity in gender roles within households. Male participants from both Germany and Indonesia reported that their wives handled most childcare and household duties. This division of duties remained unchanged despite the pandemic and remote work. In Germany, this is often due to institutional constraints such as childcare shortages and the male breadwinner tax model. In Indonesia, the disparity is largely influenced by religious and cultural norms.

Regarding job security, the interviews revealed that participants both from Germany and Indonesia managed to preserve their employment during the pandemic turmoil, with no significant impacts on their incomes. However, there have been mixed opinions on the impact of the pandemic on the software engineering job market. Various analyses suggest that personal circumstances significantly influence the job stability of software engineers amidst the pandemic, with experience and seniority level being key factors. Senior-level software engineers are believed to be more secure in the current job market.

Another notable difference observed between Germany and Indonesia was the experiences reported by participants in the post-pandemic period. Participants from Germany noted that the situation had returned to normal. In contrast, those in Jakarta, Indonesia, reported an air pollution crisis immediately after pandemic restrictions were lifted, leading to Jakarta being ranked as the world's most polluted city. Participants from Indonesia reported experiencing respiratory issues, prompting them to resume protective measures such as mask-wearing and limiting outdoor activities. In Indonesia, inadequate transportation infrastructure has been a persistent issue contributing to air pollution and traffic congestion problems. In Germany, while air pollution is a concern as well, it is less severe and managed differently by the government. Unlike Indonesia, where the problems are long-standing and primarily due to infrastructure deficiencies, Germany's air pollution and traffic congestion issues are temporary and mainly stem from the rapid and continuous expansion of infrastructure.

Considering these remote work experiences and perspectives, most participants viewed hybrid work as the most ideal arrangement. This allows them to maintain remote work while also having the autonomy to come to the office when they feel needed. Allowing workers to choose their preferred setup plays an important role in improving job performance and satisfaction, aligning with the vision of the Good Work concept.

When evaluated through the lens of the WEF's Good Work Framework, software engineers typically possess substantial opportunities to meet all the framework's objectives. This is evidenced by participants' experiences, which highlight minimal impacts on job security and wages, minimal technological obstacles affecting daily tasks, the continuation of remote work post-pandemic, minimal health concerns, the absence of gender disparities in the workplace, and the ability to sustain job stability while accessing opportunities for further skill development. However, in the broader context of the general workforce, disparities between Germany and Indonesia in worker protection through laws and regulations were observed. Germany's case demonstrates strong enforcement of legal frameworks safeguarding workers' rights, such as equal parental leave, strict laws for layoffs, and the *Kurzarbeit* scheme. In

contrast, Indonesia's case reflects weaker worker protections – exacerbated by the ever-changing laws that undermine workers' rights – which largely stem from economic and political instability.

This study contributes to the current body of knowledge on the dynamics of remote work among software engineers, with a focus on improving our understanding of potential enhancements for a better future of work, especially through the lens of the Good Work concept. By examining and comparing the experiences of software engineering professionals in Germany and Indonesia during the pandemic, this study provides detailed and nuanced insights into the challenges, benefits, and preferences associated with remote work in these distinct regions. This enhances our comprehension of remote work practices across diverse settings, offering valuable insights for policymaking, organizational strategies, and future research aimed at promoting Good Work standards.

Furthermore, this study also contributes to the STS and sociology literature, particularly on boundary dynamics. It builds upon theoretical perspectives put forth by scholars such as Gieryn (1983) and Zerubavel (1991), emphasizing how current changes in work practices are transforming and redefining existing boundaries between work and non-work. This examination provides additional insights into how these shifts affect individuals and organizations, offering a more comprehensive understanding of boundaries within modern work environments.

Nevertheless, it is crucial to acknowledge the limitations of this research, especially concerning the size of the sample. This study's findings are based on a specific subset of the software engineering community, which may not fully encompass the diversity and complexities present across the entire global landscape of the software engineering field, as well as varying regional contexts within Indonesia and Germany. The size and composition of the sample used in this study restrict the ability to generalize the findings beyond the specific demographics and conditions represented.

Therefore, future research should aim to broaden the scope by including more diverse samples encompassing various genders, age groups, regions, organization types, as well as socio-economic backgrounds to further capture important phenomena such as gender inequalities, job stability, and inclusivity. Additionally, given that this study identified different types of software engineers (i.e., managerial, pure, and combined roles), future research should further refine their sampling approach by focusing on specific types of software engineers. This approach is essential to uncover further findings as the experiences and

perceptions of remote work may differ based on software engineers' individual tasks and responsibilities. By addressing these limitations and bridging the gaps, future studies can contribute more comprehensive insights that reflect the broader realities of the software engineering field globally.

REFERENCES

Adisa, T. A., Aiyenitaju, O., & Adekoya, O. D. (2021). The work–family balance of British working women during the COVID-19 pandemic. Journal of Work-Applied Management, 13(2), 241-260. https://doi.org/10.1108/JWAM-07-2020-0036

ADP Counsellors at Law. (n.d.). overview of Employment Law in Indonesia. https://www.adplaws.com/publication/article/Overview%20of%20Employment%20Law%20in%20Indonesia. (last accessed on 5 July 2024).

Ady Thea, DA. (2022, March 29). *4 Prinsip PHK Menurut UU Cipta Kerja.* https://www.hukumonline.com/berita/a/4-prinsip-phk-menurut-uu-cipta-kerja-lt624281128ebf7/. (last accessed on 5 July 2024).

Aiyar, S., & Dao, M. (2021). The Effectiveness of Job-Retention Schemes: COVID-19 Evidence From the German States. IMF Working Papers, 2021, 1. https://doi.org/10.5089/9781513596174.001

Allen, T.D., Cho, E., & Meier, L.L. (2014). Work–family boundary dynamics. Annual Review of Organizational Psychology and Organizational Behavior, 1, 99–121. https://doi.org/10.1146/annurev-orgpsych-031413-091330.

Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How Effective Is Telecommuting? Assessing the Status of Our Scientific Findings. Psychological Science in the Public Interest, 16(2), 40–68. https://doi.org/10.1177/1529100615593273.

Allen, T. D., Merlo, K., Lawrence, R. C., Slutsky, J., & Gray, C. E. (2021). Boundary management and work-nonwork balance while working from home. Applied Psychology: An International Review, 70(1), 60–84. https://doi.org/10.1111/apps.12300.

Alipour, J.V. (2023, May 10). German Employees Reluctant to Return to the Office. Ifo Institut. https://www.ifo.de/en/facts/2023-05-10/german-employees-reluctant-return-office. (last accessed on 5 July 2024).

Anugerah, A., Muttaqin, P., & Purnama, D. (2021). Effect of Large-Scale Social Restriction (PSBB) during COVID-19 on Outdoor Air Quality: Evidence from Five Cities in DKI Jakarta Province, Indonesia. Environmental Research, 197, 111164. https://doi.org/10.1016/j.envres.2021.111164.

Argama, R. (2019, May 9). Can Jokowi clean up Indonesia's legal mess? Indonesia at Melbourne. https://indonesiaatmelbourne.unimelb.edu.au/can-jokowi-clean-up-indonesias-legal-mess/. (last accessed on 5 July 2024).

Ashforth BE, Kreiner GE, Fugate M. (2000). All in a day's work: boundaries and micro role transitions. Acad. Manag. Rev. 25:472–91. https://doi.org/10.2307/259305.

Asri, D. U., & Hidayat, B. (2005). Current Transportation Issues In Jakarta And Its Impacts On Environment, Vol. 5, 1792 – 1798.

Aswicahyono, H. and D. Friawan (2008), 'Infrastructure Development in Indonesia', in Kumar, N. (ed.), International Infrastructure Development in East Asia – Towards Balanced Regional Development and Integration, ERIA Research Project Report 2007-2, Chiba: IDE-JETRO, pp.131-165. https://www.eria.org/uploads/media/Research-Project-Report/RPR_FY2007_2_Chapter_5.pdf.

Bachtiar, N. K., Setiawan, A., Prastyan, G., & Kijkasiwat, P. (2023). Business resilience and growth strategy transformation post crisis. Journal of Innovation and Entrepreneurship. https://doi.org/10.1186/s13731-023-00345-5.

Badaru, K. A., & Adu, E. O. (2022). Platformisation of Education: An Analysis of South African Universities' Learning Management Systems. Research in Social Sciences and Technology, 7(2), 66-8. https://doi.org/10.46303/ressat.2022.10.

Bahgat, F. (2021, June 3). Germany broke EU law with pollution levels, top court rules. dw.com. https://www.dw.com/en/germany-broke-eu-law-with-pollution-levels-top-court-rules/a-57766089. (last accessed on 5 July 2024).

Bao, L., Li, T., Xia, X., Zhu, K., Li, H., & Yang, X. (2022). How does working from home affect developer productivity? - A case study of Baidu during the COVID-19 pandemic. Science China Information Sciences, 65(4), 142102. https://doi.org/10.1007/s11432-020-3278-4.
Barendsen, L., Csikszentmihalyi, M., Damon, W., Davis, K., Fischman, W., Gardner, H., James, C., Knoop, H. H., Nakamura, J., & Verducci, S. (2011). The GoodWork Project®: An Overview. Good Work Project Trustees. https://static1.squarespace.com/static/5c5b569c01232cccdc227b9c/t/5ea1a5cdbb5a64785198eb7c/1587652045656/GW_Overview-08_11.pdf.

Basri, M., & Fitrania, S. N. (2022). The Indonesian Economy in the time of COVID-19. In (pp. 12-45). https://doi.org/10.4324/9781003243670-2.

Becker, W. J., Belkin, L. Y., Tuskey, S. E., & Conroy, S. A. (2022). Surviving remotely: How job control and loneliness during a forced shift to remote work impacted employee work behaviors and well-being. Human Resource Management, 61(4), 449–464. https://doi.org/10.1002/hrm.22102.

Berlin Tech Workers Coalition. (n.d.). *What is a Works Council*. https://techworkersberlin.com/works-councils/what-is-a-works-council. (last accessed on 5 July 2024).

Bernhardt, J., Recksiedler, C., & Linberg, A. (2022). Work from home and parenting: Examining the role of work-family conflict and gender during the COVID-19 pandemic. The Journal of social issues, 10.1111/josi.12509. Advance online publication. https://doi.org/10.1111/josi.12509.

Biddle BJ. (1986). Recent developments in role theory. Annu. Rev. Sociol. 12:67–92. https://doi.org/10.1146/annurev.so.12.080186.000435.

Boehnke, M. (2011). Gender Role Attitudes around the Globe: Egalitarian vs. Traditional Views. Asian Journal of Social Science, 39(1), 57–74. http://www.jstor.org/stable/43500538.

Bourque, P. and Fairley, R., Eds. (2014) SWEBOK 3.0: Guide to the Software Engineering Body of Knowledge. IEEE Computer Society Press. http://www.computer.org/portal/web/swebok.

Breckenridge, J. & Jones, D. (2009). Demystifying Theoretical Sampling in Grounded Theory Research., Grounded Theory Review, vol. 8, 2, pp. 113-126. https://eresearch.qmu.ac.uk/handle/20.500.12289/883.

Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? Journal of Personality and Social Psychology, 36, 917–927. https://doi.org/10.1037/0022-3514.36.8.917.

Bryman, A. (2001). Social Research Methods. Oxford University Press. https://books.google.de/books?id=3ulxQgAACAAJ.

Buthe, T., Messerschmidt, L., & Cheng, C. (2020). Policy responses to the coronavirus in Germany. Social Science Research Network. https://doi.org/10.2139/ssrn.3614794.

Carey, S. (2023, July 20). Where are all the laid-off software developers going? LeadDev. https://leaddev.com/team/where-are-all-laid-software-developers-going. (last accessed on 5 July 2024).

Carter, A. (2022, March 18). *Home working rule to end in Germany with transitional period until May 25*. IamExpat.de. https://www.iamexpat.de/career/employment-news/home-working-rule-end-germany-transitional-period-until-may-25. (last accessed on 5 July 2024).

Casey, B. H., & Mayhew, K. (2023). Kurzarbeit/Short Time Working: Experiences and Lessons from the COVID-induced Downturn. National Institute Economic Review, 263, 47–60. https://doi.org/10.1017/nie.2021.46.

Centers for Disease Control and Prevention (CDC). (2020, July 6). Social Distancing: Keep a Safe Distance to Slow the Spread. https://stacks.cdc.gov/view/cdc/90522. (last accessed on 5 July 2024).

Charmaz, K. (2006). Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis. SAGE Publications. https://books.google.de/books?id=v1qP1KbXz1AC.

Chauhan, P. (2022). "I Have No Room of My Own": COVID-19 Pandemic and Work-From-Home Through a Gender Lens. Gender Issues, 39(4), 507-533. https://doi.org/10.1007/s12147-022-09302-0. (last accessed on 5 July 2024).

Chen, H. (2023, August 16). Jakarta is the world's most polluted city. And Indonesia's leader has the cough to prove it. CNN. https://edition.cnn.com/2023/08/16/asia/indonesia-pollution-jokowi-cough-intl-hnk/index.html. (last accessed on 5 July 2024).

Chun Tie, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. SAGE Open Medicine, 7, 2050312118822927. https://doi.org/10.1177/2050312118822927.

Cisco. (2022). My Location, My Device: Hybrid work's new cybersecurity challenge. https://www.cisco.com/c/dam/global/en_id/assets/pdfs/cisco-cybersecurity-index.pdf.

Clarke, A. E. (2005). Situational analysis: Grounded theory after the postmodern turn. Sage Publications, Inc. https://doi.org/10.4135/9781412985833.

Constitutional Court of the Republic of Indonesia. (2021, November 25). *MK: Inkonstitusional Bersyarat, UU Cipta Kerja Harus Diperbaiki dalam Jangka Waktu Dua Tahun*. https://www.mkri.id/index.php?page=web.Berita&id=17816. (last accessed on 5 July 2024).

Constitutional Court of the Republic of Indonesia. (2024, January 25). *Ahli Sebut Pentingnya Serikat Pekerja dalam Keseimbangan Hubungan Industrial.* https://www.mkri.id/index.php?page=web.Berita&id=19956. (last accessed on 5 July 2024).

Court of Justice of the European Union. (2021). Judgment in Case C-635/18 Commission v Germany. Press Release. https://curia.europa.eu/jcms/upload/docs/application/pdf/2021-06/cp210094en.pdf

Creswell, J. W., & Clark, V. L. P. (2011). *Designing and Conducting Mixed Methods Research*. SAGE Publications. https://books.google.de/books?id=YcdlPWPJRBcC.

Crnkovic, G. D., & Feldt, R. (2009). Professional and Ethical Issues of Software Engineering Curricula Experiences from a Swedish Academic Context. Conference on Object-Oriented Programming Systems, Languages, and Applications.

Daria, D. (2011). Towards educating 'Good work' – communicators at a 'Turning point'. Procedia - Social and Behavioral Sciences, 11, 97-101. https://doi.org/https://doi.org/10.1016/j.sbspro.2011.01.041.

Dicicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. Medical education, 40(4), 314–321. https://doi.org/10.1111/j.1365-2929.2006.02418.x.

Dion, D. (1998). Evidence and Inference in the Comparative Case Study. Comparative Politics. 30 (2): 127-45. https://doi.org/10.2307/422284 .

Djajawinata, D.T., A.Permana and M.H. Yudhistira (2023), 'The Challenges of Infrastructure Development in Indonesia', in Indrawati, S.M., T.Anas, C.F.Ananda and F. Zen (eds.), Infrastructure for Inclusive Economic Development Vol.1: Lessons Learnt from Indonesia. Jakarta: ERIA and Ministry of Finance, pp. 53-78. https://www.eria.org/uploads/08-PSN-Book-vol_1-ch_3.pdf.

Eaton, S. (2003). If you can use them: Flexibility policies, organizational commitment, and perceived per- formance. Industrial Relations, 42, 145–167. https://dx.doi.org/10.2139/ssrn.266687.

European Commission. (2018, May 17). Air quality: Commission takes action to protect citizens from air pollution. Press Release. https://ec.europa.eu/commission/presscorner/detail/en/IP_18_3450. (last accessed on 5 July 2024).

European Institute for Gender Equality. (2024, June 19). Tokenism. https://eige.europa.eu/publications-resources/thesaurus/terms/1261?language_content_entity=en. (last accessed on 5 July 2024).

Fatimah, H. S., Sriningsih, S., Pascayanti, Y., & Yusuf, F. (2023). Digital Divide Solutions and Public Service Policy Implementation in Indonesia after the Covid-19 Pandemic. Journal of Economics, Finance and Management Studies, 06(08). https://doi.org/10.47191/jefms/v6-i8-30.

Federal Government of Germany - *Bundesregierung*. (n.d.). What is the government doing for the climate?. Climate policy, the energy transition and mobility. https://www.bundesregierung.de/breg-en/issues/climate-action/government-climate-policy-1779414. (last accessed on 5 July 2024).

Federal Ministry for Family Affairs, Senior Citizens, Women and Youth Youth of the Federal Republic of Germany. (2017). *Family report 2017: Benefits, effects, trends*. https://www.bmfsfj.de/resource/blob/123200/c5eed9e4f3242f9cfe95ee76ffd90fa6/familienreport-2017-englisch-data.pdf

Federal Ministry for Family Affairs, Senior Citizens, Women and Youth of the Federal Republic of Germany. (2020). Guide to Maternity Protection. https://www.bmfsfj.de/resource/blob/191576/beddabe131e1d1c8e67c55b2c44b73f7/leitfaden-zum-mutterschutz-englisch-data.pdf.

Federal Ministry for Family Affairs, Senior Citizens, Women and Youth of the Federal Republic of Germany. (2021). Parental Allowance and Parental Leave. https://www.bmfsfj.de/resource/blob/139908/72ce4ea769417a058aa68d9151dd6fd3/elterngeld-elterngeldplus-englisch-data.pdf.

Firdaus, R. (2013). Benefits of Green Space for Air Quality Improvement and GHG Emissions Reduction in Jakarta. Netherlands: Erasmus University Rotterdam. https://thesis.eur.nl/pub/16017.

Filisetti, L. and Fives, H. (2003). The French Connections: Examining the Links among Epistemological Beliefs, Goal Orientations and Self-Efficacy. Paper presented at the annual meeting of the American Educational Research Association, in H. Fives (Chair) Internationalizing the study of Epistemology, Goal orientations, and Self-efficacy. Symposium, April 2003, Chicago.

Ford, D., Milewicz, R., & Serebrenik, A. (2019). How remote work can foster a more inclusive environment for transgender developers. In Proceedings - 2019 IEEE/ACM 2nd International Workshop on Gender Equality in Software Engineering, GE 2019 (pp. 9-12). Article 8819552 Institute of Electrical and Electronics Engineers. https://doi.org/10.1109/GE.2019.00011.

Ford, D., Storey, M.-A., Zimmermann, T., Bird, C., Jaffe, S., Maddila, C., Butler, J. L., Houck, B., & Nagappan, N. (2021). *A Tale of Two Cities: Software Developers Working from Home during the*

COVID-19 Pandemic. ACM Trans. Softw. Eng. Methodol., 31(2), Article 27. https://doi.org/10.1145/3487567

Fowel, A. (2023, April 30). From software engineer to software engineering manager. *Medium*. https://medium.com/@slemfowel/from-software-engineer-to-software-engineering-manager-447a7049101b. (last accessed on 5 July 2024).

Frey, L. R., Botan, C. H., Friedman, P. G., & Kreps, G. L. (1992). Interpreting communication research: A case study approach. Englewood Clifs, NJ: Prentice Hall.

Fuchs, T. (2006). Was ist gute Arbeit?: Anforderungen aus der Sicht von Erwerbstätigen ; Konzeption und Auswertung einer repräsentativen Untersuchung (2. Aufl.). Bremerhaven : Wirtschaftsverl. NW, Verl. für Neue Wiss. 9. https://www.inqa.de/SharedDocs/downloads/webshop/was-ist-gute-arbeit-anforderungen-aus-der-sicht-von-erwerbstaetigen.pdf;jsessionid=7C4E533E7D5A5BF04FEEDAA76AD5269C.delivery1-master?__blob=publicationFile&v=2.

Gajendran, R., & Harrison, D. (2007). The Good, the Bad, and the Unknown About Telecommuting: Meta-Analysis of Psychological Mediators and Individual Consequences. The Journal of applied psychology, 92, 1524-1541. https://doi.org/10.1037/0021-9010.92.6.1524.

Gardner, H. (2010). GoodWork: Theory and Practice, Project Zero. United States of America. https://policycommons.net/artifacts/4430339/goodwork/5226957/.

Gardner, H. (2008, April 9&10). What is Good Work? & Achieving Good Work in Turbulent Times. The Tanner Lectures on Human Values. Tanner Humanities Center. The University of Utah. https://tannerlectures.utah.edu/_resources/documents/a-to-z/g/Gardner_08.pdf.

Gardner, H. E., Csikszentmihalhi, M., & Damon, W. (2008). Good Work: When Excellence and Ethics Meet. Basic Books. https://books.google.de/books?id=gforDaQFRSoC.

Gibbs, M., Mengel, F., & Siemroth, C. (2021). Work from Home & Productivity: Evidence from Personnel & Analytics Data on IT Professionals. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3841567.

Gieryn, Thomas F. (1983): Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists. In: American Sociological Review 48 (6), S. 781–795. https://doi.org/10.2307/2095325.

Giglio, C., Corvello, V., Coniglio, I. M., Kraus, S., & Gast, J. (2023). Cooperation between large companies and start-ups: An overview of the current state of research. European Management Journal. https://doi.org/https://doi.org/10.1016/j.emj.2023.08.002.

Girard, Y., Mattes, A., & Michelsen, C. (2018). Gigabit access: Germany lags behind in international comparison but demand is low [Article]. DIW Weekly Report, 8–25/26, 219–229. https://www.econstor.eu/bitstream/10419/180683/1/1025142470.pdf.

Girsang, L. W. P. (2023). Analysis of The Factors That Contribute To The High Rate of Private Vehicle Ownership In DKI Jakarta. Mahadi: Indonesia Journal of Law, 2(2), 105-114. https://doi.org/10.32734/mah.v2i2.12348.

Glaser, B. G., & Strauss, A. L. (1967). The Discovery of Grounded Theory: Strategies for Qualitative Research. Aldine. https://books.google.de/books?id=oUxEAQAAIAAJ.

Glaser, B. G. (1978). *Theoretical Sensitivity: Advances in the Methodology of Grounded Theory*. Sociology Press. https://books.google.de/books?id=73-2AAAAIAAJ.

González Ramos, A. M., & García-de-Diego, J. M. (2022). Work–Life Balance and Teleworking: Lessons Learned during the Pandemic on Gender Role Transformation and Self-Reported Well-Being. International Journal of Environmental Research and Public Health, 19(14), 8468. https://www.mdpi.com/1660-4601/19/14/8468.

Government of the Federal Republic of Germany. ARbZG - *Arbeitszeitgesetz*. (1994). https://www.gesetze-im-internet.de/arbzg/BJNR117100994.html.

Government of the Republic of Indonesia. (2022). Government Regulation in Lieu of Law No. 2 of 2022. https://peraturan.bpk.go.id/Details/234926/perpu-no-2-tahun-2022.

Government of the Republic of Indonesia. (2020). Law no. 11 of 2020 on Job Creation. https://faolex.fao.org/docs/pdf/ins206548.pdf.

Government of the Republic of Indonesia. (2003). Law No. 13 of 2003 on Manpower. http://www.flevin.com/id/lgso/translations/Laws/Law%20No.%2013%20of%202003%20on%20Manpower%20(BKPM).pdf.

Government of the Republic of Indonesia. (2021). Government Regulation No. 35 of 2021 on Employment Agreement for a Specified Period of Time, Outsourcing, Working Time and Rest Time, and Termination of Employment. https://indolabourdatabase.wordpress.com/wp-content/uploads/2021/05/government-regulation-no.-35-of-2021-on-non-permanent-work-agreement-english-version.pdf.

Haryanto, B., & Franklin, P. J. (2011). Air pollution: A tale of two countries, 53–59. https://doi.org/10.1515/reveh.2011.008.

Hashim, R., Bakar, A., Noh, I., & Mahyudin, H. (2020). Employees' Job Satisfaction and Performance through working from Home during the Pandemic Lockdown. Environment-Behaviour Proceedings Journal, 5, 461-467. https://doi.org/10.21834/ebpj.v5i15.2515.

Hiekel, N., & Kühn, M. (2023). Gender inequality in childcare and parental mental health during the Covid-19 pandemic in Germany. Do gender role attitudes matter?. MPIDR Working Papers WP-2023-007, Max Planck Institute for Demographic Research, Rostock, Germany. https://www.demogr.mpg.de/papers/working/wp-2023-007.pdf.

Ida, R. (2001). The Construction of Gender Identity in Indonesia: between Cultural Norms, Economic Implications, and State Formation. Masyarakat, Kebudayaan dan Politik, Th XIV(No 1), 21–34. https://journal.unair.ac.id/filerPDF/02-ida.pdf.

Indonesian Department of Statistics. (2022). *Transportation Statistical Data.* https://www.bps.go.id/en/statistics-table?subject=560&title=transport.html. (last accessed on 5 July 2024).

Indra, R. (2023, August 14). *Jakarta pollution blamed for respiratory.* Asia News Network. https://asianews.network/jakarta-pollution-blamed-for-respiratory-problems/. (last accessed on 5 July 2024).

International Labour Organization. (2023). Maternity leave in metropolitan Indonesia. In International Labour Organization. International Labour Organization. https://www.ilo.org/media/361876/download.

Ipsen, C., Van Veldhoven, M., Kirchner, K., & Hansen, J. P. (2021). Six Key Advantages and Disadvantages of Working from Home in Europe during COVID-19. International Journal of Environmental Research and Public Health/International Journal of Environmental Research and Public Health, 18(4), 1826. https://doi.org/10.3390/ijerph18041826.

Jafino, B., Soltani, P. og Pruyt, E. (2016). Saving Lives and Time: Tackling Transportation Induced Air Pollution in Jakarta. https://proceedings.systemdynamics.org/2016/proceed/papers/P1251.pdf.

Jakarta Post. (2022, December 30). Indonesia issues emergency regulation to replace controversial job creation law. The Jakarta Post. https://www.thejakartapost.com/business/2022/12/30/indonesia-issues-emergency-regulation-to-replace-controversial-job-creation-law.html. last accessed on 5 July 2024).

Jakpat. (2023, June 9). Post-Pandemic Workplace Preference - JAKPAT Survey Report 2022 - JAKPAT. Jakpat. https://blog.jakpat.net/post-pandemic-workplace-preference-jakpat-survey-report-2022. last accessed on 5 July 2024).

Jasanoff, S., Hilgartner, S., Hurlbut, J. B., Özgöde, O., Rayzberg, M. (2021). Comparative Covid response: crisis, knowledge, politics. Interim Report. Harvard Kennedy School. https://compcore.cornell.edu/wp-content/uploads/2021/03/Comparative-Covid-Response_Crisis-Knowledge-Politics_Interim-Report.pdf.

Juárez-Ramírez, R., Navarro, C. X., Licea, G., Jiménez, S., Tapia-Ibarra, V., Guerra-García, C., & Perez-Gonzalez, H. G. (2022). How COVID-19 Pandemic affects Software Developers' Wellbeing, and the Necessity to strengthen Soft Skills. Programming and Computer Software, 48(8), 614-631. https://doi.org/10.1134/S0361768822080047.

Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., & Rosenthal, R. A. (1964). Organizational stress: Studies in role conflict and ambiguity. John Wiley.

Kalliamvakou, E., Bird, C., Zimmermann, T., Begel, A., Deline, R., & German, D. (2017). What Makes a Great Manager of Software Engineers? IEEE Transactions on Software Engineering, PP, 1-1. https://doi.org/10.1109/TSE.2017.2768368.

Katz, D., & Kahn, R. L. (1978). *The Social Psychology of Organizations*. Wiley. https://books.google.de/books?id=8RRHAAAAMAAJ

Khor, L. K., & Tan, C. L. (2022). Workforce management in the post-pandemic era: Evidence from multinational companies using grounded theory. Global Business and Organizational Excellence, 42(4), 93–104. https://doi.org/10.1002/joe.22174.

Koh, T. & Lay Hwee, Y. (2020, October 16). ASEAN and EU: The Untold Story. Ministry of Foreign Affairs of Singapore. https://www.mfa.gov.sg/Overseas-Mission/Ministry-of-Foreign-Affairs---Permanent-Mission-of-the-Republic-of-Singapore/Recent-Highlights/2020/10/ASEAN-and-EU-The-untold-story#:~:text=THE%20DIFFERENCES,such%20as%20trade%20and%20environment.

Kong, X., Zhang, A., Xiao, X., Das, S., & Zhang, Y. (2022). Work from home in the post-COVID world. *Case Studies on Transport Policy*, *10*(2), 1118-1131. https://doi.org/https://doi.org/10.1016/j.cstp.2022.04.002.

Kossek, E. E., Lautsch, B. A., & Eaton, S. C. (2006). Telecommuting, control, and boundary management: Correlates of policy use and practice, job control, and work–family effectiveness. *Journal of Vocational Behavior*, *68*(2), 347-367. https://doi.org/https://doi.org/10.1016/j.jvb.2005.07.002.

Kossek, E., Lautsch, B., & Eaton, S. (2009). "Good Teleworking": Under What Conditions Does Teleworking Enhance Employees' Well-being? https://doi.org/10.1017/CBO9780511635373.007.

Kovaleva, Y., Happonen, A., Kasurinen, J., & Kindsiko, E. (2024). State-of-the-Art Review on Current Approaches to Female Inclusiveness in Software Engineering and Computer Science in Higher Education. IEEE Access, 12, 1360-1373. https://doi.org/10.1109/ACCESS.2023.3346767.

Kraft, M. A., & Simon, N. S. (2020). Teachers' Experiences Working from Home During the COVID-19 Pandemic.https://f.hubspotusercontent20.net/hubfs/2914128/Upbeat%20Memo_Teaching_From_Home_Survey_June_24_2020.pdf.

Lapierre, L. M., Van Steenbergen, E. F., Peeters, M. C. W., & Kluwer, E. S. (2016). Juggling work and family responsibilities when involuntarily working more from home: A multiwave study of financial sales professionals. Journal of Organizational Behavior, 37(6), 804–822. https://doi.org/10.1002/job.2075.

Lovelace, B., Kim, J., & Feuer, W. (2020, June 9). WHO scrambles to clarify comments on asymptomatic coronavirus spread, says much is still unknown. CNBC; CNBC. https://www.cnbc.com/2020/06/09/who-scrambles-to-clarify-comments-on-asymptomatic-coronavirus-spread-much-is-still-unknown.html. (last accessed on 5 July 2024).

Lund, S., Madgavkar, A., Manyika, J., Smit, S., Ellingrud, K., Meaney, M., & Robinson, O. (2021). The postpandemic economy: The future of work after COVID-19. https://www.mckinsey.com/ch/~/media/mckinsey/featured%20insights/future%20of%20organizations/the%20future%20of%20work%20after%20covid%2019/the-future-of-work-after-covid-19-report-vf.pdf.

Lurie, Y., & Mark, S. (2016). Professional Ethics of Software Engineers: An Ethical Framework. Science and Engineering Ethics, 22(2), 417-434. https://doi.org/10.1007/s11948-015-9665-x.

Magaldi, D., Berler, M. (2020). Semi-structured Interviews. In: Zeigler-Hill, V., Shackelford, T.K. (eds) Encyclopedia of Personality and Individual Differences. Springer, Cham. https://doi.org/10.1007/978-3-319-24612-3_857.

Mahy, P. (2021). Indonesia's Omnibus Law on Job Creation: Reducing Labour Protections in a Time of COVID-19. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3772526.

Maron, C., Groh, B., & Burger L. (2022). Dismissal law and termination procedure under German law. Taylor Wessing. https://www.taylorwessing.com/-/media/taylor-wessing/files/germany/2022/10/tw_2022_dismissal-law-and-termination-procedure-under-german-law.pdf.

Mehrotra, A. (2022, February 16). Impact of COVID 19 pandemic on software developer jobs. Netsmartz | Just Another WordPress Site. https://netsmartz.com/blog/pandemic-impact-on-software-developer-job-prospects/.

Meraj, J., Wahid, A., Haroon, H., Ali, Z., Ahmed, M., Ismahil, M. (2024). Assessment of remote work in Pakistan: Factors Contributing to Pakistan's Lag in Remote Work Adoption [Journal-article]. Journal of Xi'an Shiyou University, Natural Science Edition, 20(01), 831–845. https://www.xisdxjxsu.asia/V20I01-70.pdf.

Mies, M. (1998). Patriarchy and Accumulation On A World Scale: Women in the International Division of Labour. Bloomsbury Academic. https://books.google.de/books?id=bFIHuJFGDgcC.

Miller, C., Rodeghero, P., Storey, M.-A., Ford, D., & Zimmermann, T. (2021). *How Was Your Weekend? Software Development Teams Working from Home During COVID-19.* Proceedings of the 43rd International Conference on Software Engineering, Madrid, Spain. https://doi.org/10.1109/ICSE43902.2021.00064.

Ministry of State Secretariat of the Republic of Indonesia. (2022, December 30). Pemerintah Resmi Cabut Kebijakan PPKM Mulai Hari Ini. Ministry of State Secretariat of the Republic of Indonesia. https://www.setneg.go.id/baca/index/pemerintah_resmi_cabut_kebijakan_ppkm_mulai_hari_ini. (last accessed on 5 July 2024).

Ministry of State Apparatus Utilization and Bureaucratic Reform of the Republic of Indonesia. (2016, February 18). Presiden Jokowi: Indonesia Akan Ciptakan 1000 Technopreneurs. https://www.menpan.go.id/site/berita-terkini/berita-daerah/presiden-jokowi-indonesia-akan-ciptakan-1000-technopreneurs. (last accessed on 5 July 2024).

Mirela, B. (2020). The impact of working from home on productivity. A study on the pandemic period. ideas.repec.org. https://ideas.repec.org/a/ora/journl/v1y2020i2p267-275.html.

Mirza, H., Bellalem, F., & Mirza, C. (2023). Ethical Considerations in Qualitative Research: Summary Guidelines for Novice Social Science Researchers. 11, 441-449.

Misran, R. (2023). Efficacy of Subsidy Quota Usage to Support Learning in the Covid-19 Pandemic. Proceedings of the International Joint Conference on Arts and Humanities 2022 (IJCAH 2022). https://doi.org/10.2991/978-2-38476-008-4_81.

Mohajan, Haradhan. (2018): Qualitative Research Methodology in Social Sciences and Related Subjects. Published in: Journal of Economic Development, Environment and People , Vol. 7, No. 1, 31 March 2018. pp. 23-48. https://mpra.ub.uni-muenchen.de/85654/1/MPRA_paper_85654.pdf.

Morse, J. M. (2008) "What's your favourite colour?" Reporting Irrelevant Demographics in Qualitative Research. Qualitative Health Research, 18, 299-300.

Mohrenweiser, Jens (2022) : Works Councils, GLO Discussion Paper, No. 1103, Global Labor Organization (GLO), Essen https://www.econstor.eu/bitstream/10419/259295/1/GLO-DP-1103.pdf.

Mufida Ahmad, A., Handaru, A. W., & Usman, O. (2022). The Effect of Workload, Work Stress and Work-Life Balance on Employee Performance (Case Study On Startup Employees In Jakarta). Devotion Journal of Community Service. https://doi.org/10.36418/dev.v3i14.336.

Müller, K., Koch, C., Riehle, D., Stops, M., & Harutyunyan, N. (2023). *Challenges of Working from Home in Software Development During Covid-19 Lockdowns*. ACM Trans. Softw. Eng. Methodol., 32(5), Article 111. https://doi.org/10.1145/3579636.

Naderifar, M., Goli, H., & Ghaljaie, F. (2017). Snowball Sampling: A Purposeful Method of Sampling in Qualitative Research. Strides in Development of Medical Education, 14, e67670. https://doi.org/10.5812/sdme.67670.

Nakamura J. (2010). Defining and Modeling Good Work. In Gardner, H. (2010). GoodWork: Theory and Practice, Project Zero. United States of America. https://policycommons.net/artifacts/4430339/goodwork/5226957/.

Nallanagula, P. R. (2023). Impact of Work from Home on Developers' Working Habits, Perceived Productivity, and Team Dynamics during the COVID-19 Pandemic. (Dissertation). Retrieved from https://urn.kb.se/resolve?urn=urn:nbn:se:bth-24308.

Naujoks, T., Kreyenfeld, M., & Dummert, S. (2022). The division of child care during the coronavirus crisis in Germany: How did short-time work affect fathers' engagement?. Journal of Family Research, 34(1), 67–98. https://doi.org/10.20377/jfr-717.

Neto, P. A. d. M. S., Mannan, U. A., Almeida, E. S. d., Nagappan, N., Lo, D., Kochhar, P. S., Gao, C., & Ahmed, I. (2022). A Deep Dive into the Impact of COVID-19 on Software Development. IEEE Transactions on Software Engineering, 48(09), 3342-3360. https://doi.org/10.1109/tse.2021.3088759.

Nilles, J. M. (1998). Managing telework: Strategies for managing the virtual workforce. New York: Wiley.

Nippert-Eng, C.E. (1996). Calendars and keys: The classification of "home" and "work". Sociological Forum, 11, 563–582.

Noaks, L., & Wincup, E. (2004). Criminological research. SAGE Publications Ltd, https://doi.org/10.4135/9781849208789.

Nur Hidayati, M. (2011). *Upaya Perlindungan Pekerja Rumah Tangga Sebagai Kelompok Masyarakat yang Termarjinalkan di Indonesia.* Jurnal Al- Azhar Indonesia Seri Pranata Sosial, Vol . 1, No. 1, Maret 2011. https://jurnal.uai.ac.id/index.php/SPS/article/download/8/7.

Orb, A., Eisenhauer, L., & Wynaden, D. (2001). Ethics in qualitative research. Journal of nursing scholarship : an official publication of Sigma Theta Tau International Honor Society of Nursing, 33(1), 93–96. https://doi.org/10.1111/j.1547-5069.2001.00093.x.

Osterath, B. (2018, May 18). EU takes Germany to court over air pollution. dw.com. https://www.dw.com/en/eu-takes-germany-to-court-over-air-pollution/a-42351552. (last accessed on 5 July 2024).

Pangaribuan, M. T., & Munandar, A. I. (2021). Analisis Stakeholder Dalam Kebijakan Pembatasan Sosial Berskala Besar (PSBB) Jakarta Periode Tahun 2020. *Jurnal Pemerintahan Dan Politik*, *6*(2). https://doi.org/10.36982/jpg.v6i2.1630.

Pazell, S., Karanikas, N., Wright, A., Crawford, E., Johnson, S., Elford, W., Antonovsky, A., Hehir, S., Hamilton, An., Strother, M., Girle, A., O'Keefe, V., Narimoto, L., Gien, B., & Egan, T. (2020). Good Work Design. https://www.researchgate.net/publication/343150746_Good_Work_Design.

Pfizer. (n.d). Understanding Social Distancing: How Far is Enough?. https://www.pfizer.com/news/articles/understanding_social_distancing_how_far_is_enough#:~:text=Keeping%20at%20least%20six%20feet,lower%20your%20chances%20of%20infection.&text=Due%20to%20limited%20evidence%2C%20further,better%20understand%20these%20protective%20measures. (last accessed on 5 July 2024).
Posaner, J., & Nöstlinger, N. (2020, October 28). *Germany approves major new restrictions to curb coronavirus.* Politico. https://www.politico.eu/article/german-partial-coronavirus-lockdown/. (last accessed on 5 July 2024).

Purnama, S. & Reyta, F. (2021). *Economic Stimulus Policies Implementation and Their Role in Empowering Indonesian SME's During Covid-19 Pandemic: The Urgently VS Threat*. https://doi.org/10.2991/assehr.k.210312.026.

Quartavista. (n.d.). New Quality of Work initiative. https://www.quartavista.de/en-gb/new-quality-of-work. (last accessed on 5 July 2024).

Ralph, P., Baltes, S., Adisaputri, G., Torkar, R., Kovalenko, V., Kalinowski, M., Novielli, N., Yoo, S., Devroey, X., Tan, X., Zhou, M., Turhan, B., Hoda, R., Hata, H., Robles, G., Milani Fard, A., & Alkadhi, R. (2020). Pandemic programming: How COVID-19 affects software developers and how their organizations can help. *Empirical software engineering*, *25*(6), 4927–4961. https://doi.org/10.1007/s10664-020-09875-y.

Ramdani, T., Hidayat, S., Ibnu, F. A., Sfenrianto, S., & Kaburuan, E. R. (2019). The Role of High Throughput Satellite as Sky Highway Infrastructure to Support the Acceleration of Internet Entry into Villages in Indonesia. International Journal of Mechanical Engineering and Technology (IJMET) Volume 10, Issue 03, March 2019, pp. 1447-1455. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3453086.

Randstad. (2020, June 12). Demand for Tech Talent Amid COVID-19. https://www.randstad.co.uk/about-us/reports/demand-tech-talent-amid-covid-19/. (last accessed on 5 July 2024).

Reuters. (2023, August 9). *Indonesia's capital named world's most polluted city.* Reuters. http://www.reuters.com/world/asia-pacific/indonesias-capital-named-worlds-most-polluted-city-2023-08-09/. (last accessed on 5 July 2024).

Rendana, M., & Komariah, L. (2021). The relationship between air pollutants and COVID-19 cases and large-scale social restriction's impact on the air quality in Jakarta, Indonesia. Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan (Journal of Natural Resources and Environmental Management), 11, 93-100. https://doi.org/10.29244/jpsl.11.1.93-100.

Riesch, H. (2010). Theorizing Boundary Work as Representation and Identity. Journal for the Theory of Social Behaviour, 40, 452-473. https://doi.org/10.1111/j.1468-5914.2010.00441.x.

Rigby, J., & Steenhuysen, J. (2023, August 24). *Highly mutated COVID variant found in new countries but pandemic in 'a different phase'.* Reuters. https://www.reuters.com/business/healthcare-pharmaceuticals/highly-mutated-covid-variant-found-new-countries-pandemic-a-different-phase-2023-08-24/. (last accessed on 5 July 2024).

Riyani, I. (2016). The Silent Desire: Islam, Women's Sexuality and the Politics of Patriarchy in Indonesia. [Doctoral Thesis, The University of Western Australia]. https://research-repository.uwa.edu.au/en/publications/the-silent-desire-islam-womens-sexuality-and-the-politics-of-patr.

Russo, D., Hanel, P. H. P., Altnickel, S., & van Berkel, N. (2023). Satisfaction and performance of software developers during enforced work from home in the COVID-19 pandemic. Empirical software engineering, 28(2), 53. https://doi.org/10.1007/s10664-023-10293-z.

Sadya, S. (2023, January 31). *Mayoritas Perusahaan di Indonesia Kembali WFO pada 2022/2023*. Dataindonesia. https://dataindonesia.id/tenaga-kerja/detail/mayoritas-perusahaan-di-indonesia-kembali-wfo-pada-20222023. (last accessed on 5 July 2024).

Somasundram, K. G., Hackney, A., Yung, M., Du, B., Oakman, J., Nowrouzi-Kia, B., & Yazdani, A. (2022). Mental and physical health and well-being of canadian employees who were working from home during the COVID-19 pandemic. BMC public health, 22(1), 1987. https://doi.org/10.1186/s12889-022-14349-5.

Smite, D., Moe, N. B., Hildrum, J., Gonzalez-Huerta, J., & Mendez, D. (2023). Work-from-home is here to stay: Call for flexibility in post-pandemic work policies. Journal of Systems and Software, 195, 111552. https://doi.org/https://doi.org/10.1016/j.jss.2022.111552

Skaggs, R. (2024). Socially distanced artistic careers: Professional social interactions in early, established, and late career stages during COVID-19. Poetics, 103, 101769. https://doi.org/https://doi.org/10.1016/j.poetic.2023.101769

Souisa, H., & Salim, N. (2023, August 24). *Government urges Jakarta's residents to wear masks and work from home as air pollution worsens.* ABC (Australian Broadcasting Corporation) News. https://www.abc.net.au/news/2023-08-25/air-pollution-in-jakarta-worsens-sending-people-to-wfh/102756220. (last accessed on 5 July 2024).

Suryahadi, A., Al Izzati, R., & Suryadarma, D. (2020). The Impact of COVID-19 Outbreak on Poverty: An Estimation for Indonesia. SMERU Research Institute. https://smeru.or.id/sites/default/files/publication/wp_covid19impact_draft.pdf.

Sumarto, M., & Ferdiansyah, F. (2021). Indonesia's Social Policy Response to Covid-19: Targeted Social Protection under Budget Constraints. (CRC 1342 Covid-19 Social Policy Response Series, 28). Bremen: Universität Bremen, SFB 1342 Globale Entwicklungsdynamiken von Sozialpolitik / CRC 1342 Global Dynamics of Social Policy. https://doi.org/10.26092/elib/834.

Spark, R. (2017). Accessibility to Work from Home for the Disabled: The Need for a Shift in Management Style. https://doi.org/10.1145/3058555.3058577.

Statista. (2023, March 24). COVID-19 impact on software developers' work or study worldwide 2021. https://www.statista.com/statistics/1241928/worldwide-coronavirus-impact-software-developers-work-study/. (last accessed on 5 July 2024).

Stewart, D. W., & Kamins, M. A. (1993). Secondary Research: Information Sources and Methods. SAGE Publications. https://books.google.de/books?id=Oe3MrNsOjkkC.

Strauss, A., & Corbin, J. M. (1990). Basics of qualitative research: Grounded theory procedures and techniques. Sage Publications, Inc.

Tagesschau. (2023, July 11). *Homeoffice-Quote ist nach Pandemie kaum zurückgegangen.* Tagesschau. https://www.tagesschau.de/wirtschaft/unternehmen/homeoffice-deutschland-100.html. (last accessed on 5 July 2024).

Tagesschau. (2023, July 24). *61 Prozent der Unternehmen gestatten Homeoffice.* Tagesschau.de. https://www.tagesschau.de/wirtschaft/unternehmen/homeoffice-ifo-104.html. (last accessed on 5 July 2024).

The Local. (2023, March 1). *Germany peels away most of remaining Covid-19 measures.* Thelocal.de. https://www.thelocal.de/20230301/germany-peels-away-most-of-remaining-covid-19-measures. (last accessed on 5 July 2024).

Tobing, H., Muhyiddin, M., Sari, A., Rizki, F., & Ayubbi, S. (2022). Improving the Distribution Policy of the Wage Subsidy Assistance Program (Bantuan Subsidi Upah/BSU). *Bappenas Working Papers*, *5*, 226-240. https://doi.org/10.47266/bwp.v5i2.170.

UNICEF, UNDP, Prospera, & SMERU. (2021). Analysis of the social and economic impacts of COVID-19 on households and strategic policy recommendations for Indonesia. Jakarta. https://smeru.or.id/en/publication/analysis-social-and-economic-impacts-covid-19-households-and-strategic-policy

United Nations. (n.d.). Program Kartu Prakerja. Department of Economic and Social Affairs. https://sdgs.un.org/partnerships/program-kartu-prakerja. (last accessed on 5 July 2024).

Verma, P. (2022). Transitioning from Software Engineer to Engineering Manager (A Journey of Paradigm Shift). International Journal of Computer & Organization Trends, 12, 11-14. https://doi.org/10.14445/22492593/IJCOT-V12I1P303.

Vollstedt, M., & Rezat, S. (2019). An Introduction to Grounded Theory with a Special Focus on Axial Coding and the Coding Paradigm. In (pp. 81-100). https://doi.org/10.1007/978-3-030-15636-7_4.

Walia, R. (2015). A Saga of Qualitative Research. Sociology and Criminology-Open Access, 04. https://doi.org/10.4172/2375-4435.1000124.

Ward, L., & Grower, P. (2020). Media and the Development of Gender Role Stereotypes. Annual Review of Developmental Psychology, 2, 1-23. https://doi.org/10.1146/annurev-devpsych-051120-010630.

World Bank. (2021). Harnessing digital technologies for inclusion in Indonesia. https://documents1.worldbank.org/curated/en/321071627050744463/pdf/Beyond-Unicorns-Harnessing-Digital-Technologies-for-Inclusion-in-Indonesia.pdf.

World Economic Forum. (2022). The Good Work Framework: A new business agenda for the future of work. White Paper. https://www3.weforum.org/docs/WEF_The_Good_Work_Framework_2022.pdf.

World Health Organization. (2020, March 11). WHO Director-General's opening remarks at the media briefing on COVID-19. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020. (last accessed on 5 July 2024).

Xiao, Y., Becerik-Gerber, B., Lucas, G., & Roll, S. C. (2021). Impacts of Working From Home During COVID-19 Pandemic on Physical and Mental Well-Being of Office Workstation Users. Journal of occupational and environmental medicine, 63(3), 181–190. https://doi.org/10.1097/JOM.0000000000002097.

Yasin, M. (2021, February 19). *Dinamika PHK Karena Alasan Efisiensi Perusahaan.* https://www.hukumonline.com/stories/article/lt602e4c4468f40/dinamika-phk-karena-alasan-efisiensi-perusahaan. (last accessed on 5 July 2024).

Yilmaz, M., & O'Connor, R. (2015). Understanding personality differences in software organisations using Keirsey temperament sorter. IET Software, 9, 129-134. https://doi.org/10.1049/iet-sen.2014.0071.

Yulantias, A., Rosyadah, A., & Herawati, A., & Kismartini. (2022). Analisis Kepuasan Masyarakat Jenangan Terhadap Kebijakan Subsidi Listrik di Masa Pandemi. Jurnal Kebijakan Pemerintahan, 5(1), 39-45. https://doi.org/10.33701/jkp.v5i1.2140.

Yunianti, E., Mulya, T. W., & Nanik, N. (2023). Traditional to egalitarian: A literature review of fatherhood from the gender role perspective. In Tamansiswa School of Thought, Proceedings of the 1st International Conference on Indigenous Psychology & Culture (ICIPC) 2023 (pp. 27–37). https://seminar.ustjogja.ac.id/index.php/icipc/article/download/689/406/1508.

Zeller, T., & Dunlap, T. (2010). Driving Germany: The Landscape of the German Autobahn, 1930-1970 (1st ed.). Berghahn Books. http://www.jstor.org/stable/j.ctt9qdf4q.

Zerubavel, E. (1993). The Fine Line. University of Chicago Press. https://books.google.de/books?id=Tz-lTcjT6YYC.

Zito, M., Ingusci, E., Cortese, C. G., Giancaspro, M. L., Manuti, A., Molino, M., Signore, F., & Russo, V. (2021). Does the End Justify the Means? The Role of Organizational Communication among Work-from-Home Employees during the COVID-19 Pandemic. International Journal of Environmental Research and Public Health/International Journal of Environmental Research and Public Health, 18(8), 3933. https://doi.org/10.3390/ijerph18083933.

Züblin AG Newsroom. (2021, August 9). Contract for large-scale A8 Enz Valley crossing motorway project. https://newsroom.zueblin.de/news-contract-for-large-scale-a8-enz-valley-crossing-motorway-project?id=156543&menueid=28175&l=english. (last accessed on 5 July 2024).

APPENDIX

Questions	
01 WORK AND ORGANIZATION	
1.1	Can you please share your name, where you are working at, position, and the project you are currently working on?
1.2	Can you please tell me more about your specific role in the project?
02 THE PANDEMIC AND REMOTE WORK	
2.1	Can you describe the early pandemic situation (i.e., between 2020-2021) in the place where you live and work?
2.2	Did the pandemic cause you to work remotely, hybrid, or maybe other work arrangements?
Impacts on Personal Life	
2.3	Can you describe your personal and household situation?
2.4	How did remote work affect you personally in terms of personal health, financial, and social relationships?
2.5	Do you think boundaries between work and life important to you? how did remote work affect your preference?
2.6	Do you have any special situation that remote work actually helped you in that matter? If yes, how?
Impacts on Job Security	
2.7	Did remote work affect your job stability and security? If yes, how?
2.8	Did your company/organization or government provide any supports during the situation? If yes, how did it help you? If no, why?
2.9	Was the remote work option available to everyone in the company?
Impacts on Professional Work	
2.10	In your opinion, what is a good and high-quality software engineer?
2.11	How did remote work affect your work practice specifically as a software engineer?
Impacts on Digitalization	
2.12	Did the pandemic and remote work cause you to use new tools or technology? What and how?
2.13	Did you face any technological problems during remote work?
2.14	Did you have all the equipment you need to work properly when working remotely?
03 POST-PANDEMIC SITUATION	
3.1	Can you describe how the pandemic situation has changed so far?
3.2	Are there any pandemic related countermeasures that are still enforced? If yes - which one and why?
3.3	Do you still work remotely, or do you work in a new arrangement (e.g., hybrid, full in-office work, full remote)? Can you tell me more about it?
3.4	With the current work arrangement, what are specific changes that you have experienced so far regarding your personal and professional life, in comparison to the situation during early pandemic? Is it improving or deteriorating?
3.5	Based on your personal experience, which one do you prefer: full remote work, hybrid, or full in-office work? why?

Table 3. Illustrative Guideline for the Semi-Structured Interviews

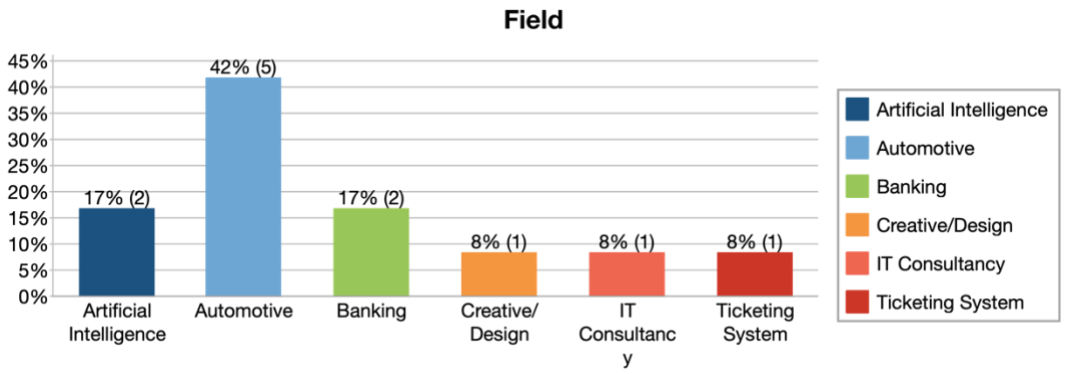

Figure 4. Participant Demographics - Software Engineering Fields

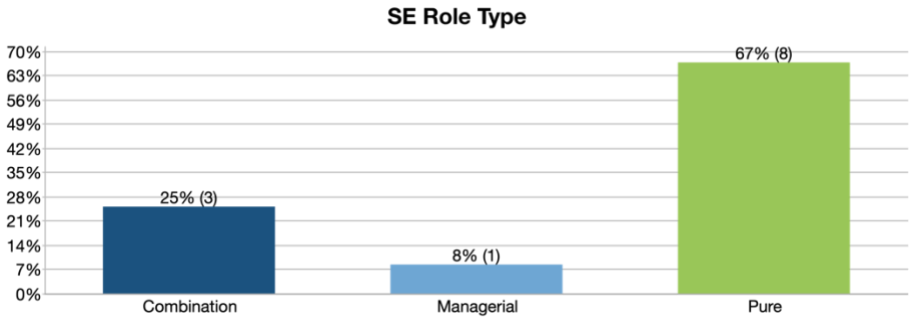

Figure 5. Participant Demographics - Software Engineering Archetypes

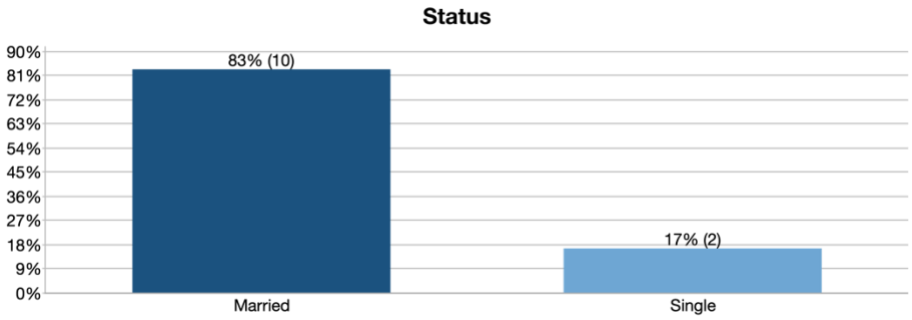

Figure 6. Participant Demographics - Marital Status

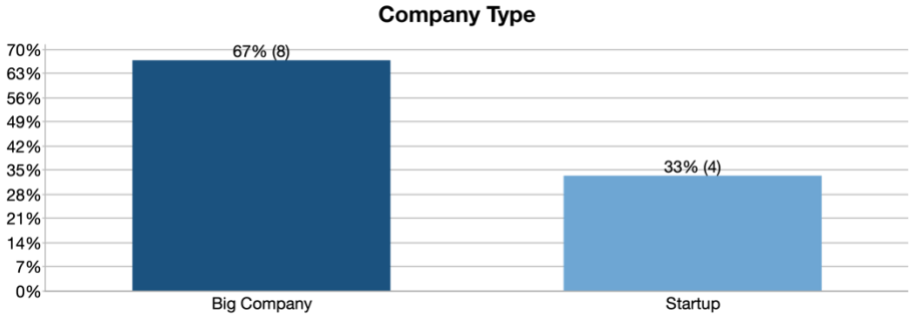

Figure 7. Participant Demographics - Company Types