COVID-19 and Remote Working

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**Thesis:** The COVID-19 pandemic has significantly transformed the remote work industry, with profound impacts on employees, employers, and technology, influencing the way work is conducted and reshaping the future of work arrangements.

I. Remote Working During COVID-19 Impact on Employees

A. Employee Well-being and Productivity

1. Mental Health

a. Weak communication and Loneliness (Kurdy et al., 2022, p. 341)

b. Stress and Burnout (Galanti et al., 2021, p. 426)

2. Impact on Productivity

a. Remote Work Productivity (Elshaiekh et al., 2018, p. 4)

b. Technological Challenges and Efficiency

II. Impacts on Employers

A. Adaptation to remote work

1. Implementation of remote work

a. Various mechanisms(Alameeri et al., 2021,p.278)

b. Beginning to change

2. Changes in company strategies

a. Professional people(Alameeri et al., 2021,p.284)

b. Help from country

B. Cost savings and Productivity

1. Reduction in office-related expenses

a. Travel-expenses

b. Daily operating costs

2. Investments in technology and remote work infrastructure

a. Unique opportunity to see(Donthu et al.,2020,p.286)

b. Different approaches to handle(Gustafsson et al.,2020,p.285)

III. Impact on Technology

A. Technological Advancements for Remote Work

1. Evolution of remote work tools and platforms

a. Video conferencing software (Shi, 2021, pp. 154-158)

b. Project management and collaboration tools

2. Cybersecurity and data protection

a. Ensuring data security in a remote environment

b. Addressing remote work-related cyber threats

B. Future of Remote Work Technology

1. The role of artificial intelligence and automation

a. AI-driven productivity (Gao & Feng, 2023)

b. Remote work automation

2. Augmented and virtual reality in remote work

a. VR-based remote collaboration (Pidel & Ackermann, 2020, pp. 141-156)

b. Potential for AR in training and support

COVID-19 and Remote Working

COVID-19 is a virus that started in China and quickly spread to the world causing a global pandemic in the year 2020. In order to prevent this disease countries have applied restrictions in events that require human-to-human interactions. This led to serious changes in people’s lifestyles such as; the education method, shopping style, transportation, etc. Also one of the more significant changes as a result of the pandemic was the working style. Before the pandemic, there were two different workstyles, remote and on-site. Because of the pandemic, on-site working got out of options for companies due to the risks of the employees getting infected. Therefore companies grew interest in remote working and started to adapt their workflow in a compatible way. This caused the remote working industry to gain popularity and variety. Thus, the COVID-19 pandemic has significantly transformed the remote work industry, with profound impacts on employees, employers, and technology, influencing the way work is conducted and reshaping the future of work arrangements.

The primary impact of the change to remote work on employees was their well-being, mental health, and productivity. Important aspects of the effects on mental health are poor communication, social isolation and loneliness. Firstly, poor communication in remote work environments often leads to feelings of isolation among employees and the lack of face-to-face communication. As Kurdy et al. emphasize that remote working can sometimes make employees feel alone. The study found that when there is less human interaction, the number of people communicating at work will decrease, which can lead to feeling lonely. It can also damage team relationships, which are important for employee happiness and well-being (2022). According to that, it should be emphasized the importance of better communication methods in remote work to maintain team unity. Also, working from home can make people feel more stressed and burned out because it is more difficult to separate work time and personal time. Removing boundaries can lead to longer working hours and less free time, which increases the risk of stress and burnout. For example, research conducted by Galanti et al. revealed important information about the stress levels of those working from home during the COVID-19 pandemic. In particular, the study found that family-work conflict contributed to a 31% increase in stress levels, while social isolation even more impactful, contributed to a 48% increase in stress. Interestingly, other potential reasons like a distracting work environment did not show a statistically significant effect (2021). Apart from employee well-being and mental health, remote work has also had impacts on employee productivity. The flexibility in working hours and the environment that remote work provides often leads to a more focused and productive approach to work. According to Elshaiekh et al, remote workers reported an average job satisfaction and productivity rating of 8.1, compared to an average of 7.42 for all employees. Remote workers also reported feeling more valued at work, with an average rating of 7.75, compared to the average of 6.69 reported by all employees. The results of this study provide numerical evidence that in parallel with increased worker productivity, remote workers experience higher job satisfaction and feel more valued in their work (2018). In addition to the impacts of remote working, it is also important to be aware of the technological challenges that employees may face when moving to a remote work environment. The appearance of problems such as adaptation to new tools, technical failures and communication difficulties can disrupt workflow and reduce productivity. Reducing these challenges through training and support is crucial to minimize negative impacts on remote workers. The remote work that has emerged due to the COVID-19 pandemic has affected workers in a variety of ways. It has raised concerns about mental health, particularly stress and isolation. However, remote work has also shown potential for increased productivity and job satisfaction when managed well. It is essential to achieve the right balance between tackling the challenges and taking advantage of the benefits for a successful remote working environment.

Other than employees, the changes in the remote working industry during the pandemic created both challenges and opportunities for employers. This transformative period has required a rapid and comprehensive adaptation to remote work practices, profoundly impacting employers' strategies and operational dynamics. As highlighted by Alameeri et al., the implementation of remote work, as necessitated by the pandemic, has been a complex process involving various mechanisms (2021). Employers have had to adapt to the transition from traditional office environments to virtual ones, a shift that was not just a change in location, but a complete revision in the work culture and ethos. This adaptation stage marked the beginning of a significant change in the corporate world, laying the groundwork for a new era of work arrangements. The changes in company strategies have been remarkable, with a focus on leveraging the potential of professional people, as discussed by Alameeri et al. (2021). Employers have recognized the need to utilize the specialty and adaptability of their workforce, encouraging a culture of innovation and flexibility. This shift has also been supported by various countries through policies, helping companies in their transition to remote work environments. The pandemic has acted as a catalyst, accelerating the integration of remote work into mainstream business models and reshaping employer strategies towards a more quick and responsive framework. A significant impact of this transition has been observed in the fields of cost savings and productivity. Employers have reported a marked reduction in office-related expenses, particularly in areas such as travel and daily operating costs. The elimination of the daily commute and the reduced need for physical office spaces have translated into considerable financial savings for companies. Furthermore, there has been a noticeable investment in technology and remote work infrastructure, as discussed by Donthu et al. (2020). This investment has not only made the shift to remote work easier but has also provided a unique opportunity for companies to reassess and realign their operational strategies. The adoption of advanced technological tools and platforms has enabled employers to maintain, and in many cases, enhance productivity in a remote work setting. Moreover, the approach to handling remote work has varied significantly among different organizations, as indicated by Gustafsson et al. (2020). While some companies have embraced a fully remote model, others have adopted a hybrid approach, combining in-office and remote work. This variation, which has become main to modern work cultures, emphasizes flexibility and adaptability. Employers have had to be innovative and responsive, adapting their remote work policies to fit the specific needs and dynamics of their workforce and business objectives. In conclusion, the COVID-19 pandemic has not only converted the remote work industry but has also reshaped the role of employers within it. The shift to remote work has brought about significant changes in company strategies, operational models, and financial dynamics. Employers have had to adapt rapidly to this new reality, redefining the way work is conducted and setting the stage for the future of work arrangements. The pandemic has undoubtedly created challenges, but it has also opened up new doors for innovation, efficiency, and productivity in the world of work.

One of the other greatest impacts of the COVID-19 pandemic was on technology, especially in the remote working industry. Because no one knew how long the pandemic would last, companies started to work remotely. In order to satisfy the needs of remote working, companies started to develop remote working platforms. Existing video conferencing platforms gained popularity and increased in value. Some of the popular video conferencing software on this date are Zoom, Google Meet and Microsoft Teams. Some video conferencing platforms hold advantages over others. For example, one can be free to use while the other is a paid software. Some provide features that the other does not. According to Shi, the top features to be considered when choosing video conferencing software for remote teaching are being free of charge, screen sharing, meeting participants, whiteboard, recording meetings and having a mobile app (2021). For the remote working industry, price is not as much of a problem compared to remote education. Usually, companies pay the charge for the platform, however, the other features are as much as important. With the rise of remote working, there was a race between the video conferencing software to be the best. Because of this rivalry, each software released a new feature so that it could be the most popular one, this pushed the other companies to release more and more features. This caused these software to develop rapidly and become much more advanced than their initial states. Other than video conferencing software, collaboration tools also gained popularity such as Slack and Google Docs. These went through a similar process with video conferencing software and became much more advanced now than their state before the pandemic. With the working industry converting to remote working, a new issue occurred, cybersecurity. Ensuring the security of employees and employers was crucial. Companies would often encourage employees on not using public networks and provide them with a private network if necessary. Also, employees were informed on cyber threats like phishing attacks. More companies started to hire cybersecurity firms to ensure the security of the company. These improvements in technology raised curiosity about the future of remote work technology. COVID-19 also pushed firms to implement AI in order to replace humans in repetitive tasks. This attempt to implement AI into labor has the potential to increase productivity significantly. The study provided by Gao and Feng states that a mere 1% increase in AI usage can increase productivity up to 14% (2023). It is expected to see a considerable amount of increase in AI-driven automation with the advancements in AI in our day. One of the expected technologies for the future is augmented reality and virtual reality in remote working and collaboration. There are many types of collaborations, however, during the COVID-19 pandemic, on-site (face-to-face) collaborations were not possible and the best way to imitate on-site collaboration was using video conferencing software. These software were limited only to videos from the users’ cameras. To provide a more immersive and closer to real experience companies started to develop AR (Augmented Reality) and VR (Virtual Reality) environments. Pidel and Ackermann included one of the early adopters of this technology in their paper, Spatial. Spatial allowed joining a meeting with AR, VR or desktop. They promoted their product with realistic avatars and post-it notes. However, some did not share the same viewpoint as them and argued that it was not worth the price (2020). These collaborations in AI and VR could be used for training employees and technical support for customers. For example, it would be much easier if some AR avatar explained and showed a confused customer how to assemble a sofa. Overall, all these advancements display how the COVID-19 pandemic affected and pushed technology to improve and how it increased interest in remote working.

To conclude, the pandemic caused noteworthy changes in remote working along with influencing employees, employers and the technology. The migration to remote working generally led to an increase in productivity while causing a negative impact on employee mental health. Employers' transition to remote work has enabled companies to cut from company expenses. Additionally, this transition provided a way for companies to advance themselves rather than stopping work completely during the pandemic. Furthermore, technology companies kept improving remote working tools and developing new methods to collaborate. Although the pandemic has ended, its lasting influence on the remote working sector continues and the sector is open to novelties more than ever.

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