REMOTE WORK ARRANGEMENTS AND PRODUCTIVITY

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Introduction

The rise of the internet changed life more than anyone could have imagined a mere 30 years ago. Society is more interconnected than ever before, being able to see and converse with relatives thousands of miles away, or order a handmade good from continents over and have it arrive by next week; however, in recent years as a side effect of the COVID-19 pandemic, the internet and the technological advancements in society have given way to a new supposed benefit of the modern age: remote working arrangements. At the onset of the pandemic in 2020, life came screeching to a halt for almost all, but in spite of an unknown disease ravaging the world, society couldn't stop forever. Many places of work reflected on their core processes, and with so much of their business being tied up online, they decided that their companies were able to function in a decentralized manner in order to work around the pandemic. As the pandemic raged on, remote work had become the status quo and enabled businesses to keep the lights on while keeping their employees safe.

Flash forward to 2024, where day-to-day life seems to resemble times prior to the COVID-19 pandemic. Sporting events fill up stadiums with tens of thousands of fans shoulder-to-shoulder, and people beam smiles at each other as they sit down beside one another on a bus. There are countless factors of life that have returned to their "rightful" state, and yet, remote working arrangements have somehow stuck around. Job boards are filled with openings that boast "100% Remote" at the very top of the listing, and traffic is noticeably lighter on the Mondays and Fridays when hybrid workers work from home. As of June 2023, around 13% of workers were engaged in a fully remote working arrangement, while an additional 28% were engaged in a hybrid arrangement of work (Haan, 2023). With 40% of the country working from home at least some of the time, it is clear that remote working arrangements are now a seemingly

permanent fixture in society, which prompts the efficacy of these working arrangements to be called into question and researched to understand the potential effects of the trend.

Methods

The focus of the research is to investigate the productivity implications of workers and companies as a result of the adoption of remote working arrangements. In approaching the topic, the social construction of technology (SCOT) will be a key framework to support the analysis. SCOT is a valuable theory to apply to this topic because it provides an excellent lens through which to view the ways that technology – in this case remote work arrangements – and society shape and influence each other. Proposed by three academics in the late 1980s, the social construction of technology is a framework designed to understand the interplay between people and the technologies they developed and how, "The social environment, for instance, shapes the technical characteristics of the artifact" (Bijker et al., 1987). Utilizing SCOT will help to better analyze the implications that the technology that is remote working arrangements has had on our society and the way that it operates, as well as the ways in which our society has molded the technology to fit our needs. This approach is particularly beneficial as SCOT not only considers how technologies emerge and evolve but also emphasizes the importance of social groups in influencing and interpreting these technologies. The current atmosphere surrounding remote work lends itself extremely well to being understood through the framework of SCOT because there are numerous factors involved in the ways that remote work has developed in recent years and looking into the effects – specifically on productivity – is crucial to know if it is viable to continue the arrangement.

In order to conduct the research and analysis of the topic, a literature review will first be used to focus the research and map out the current and past approaches that have been taken in

researching the topic. Following a literature review, multiple case studies and experiments regarding the impacts of remote work on employees and companies in recent years will be synthesized in order to work towards determining the efficacy of remote working arrangements based on their positive and negative impacts on productivity.

<u>Literature Review</u>

In drawing on existing literature, particularly the works of Brynjolfsson (1993) and Staples, Hulland, & Higgins (1999), this paper combines historical analysis with contemporary insights to understand the productivity of remote workers. Brynjolfsson's work sheds light on the historical trends in productivity concerning the adoption of technology in various sectors. Specifically, his review and assessment of the "Productivity Paradox" in the early 1990s provide a foundational understanding of how technology impacts productivity, especially in white-collar jobs. At the time Brynjolfsson was aware of many statistics circulating that seemed to suggest that the increasing prevalence of technology in white-collar jobs was actually causing a decrease in productivity. In his analysis, Brynjolfsson challenged and analyzed the literature surrounding the lack of productivity from technology, and decided on a list of four factors that help to explain the findings of his contemporaries, "1) Mismeasurement of outputs and inputs, 2) Lags due to learning and adjustment, 3) Redistribution and dissipation of profits, 4) Mismanagement of information and technology" (Brynjolfsson, 1993). This historical perspective sheds light on how technology's influence on productivity can be misunderstood. By incorporating SCOT, we can examine how societal perceptions shape the adoption and outcomes of remote work, revealing the intricate relationship between technology and society in shaping work practices.

Moreover, Staples, Hulland, & Higgins' study on self-efficacy theory in the management of remote workers offers valuable insights into the factors influencing success in remote work

arrangements (Staples et al., 1999). By examining factors such as technological experience, confidence, and physical working conditions, the study provides a framework for understanding the individual characteristics that contribute to productivity in remote settings. Integrating these insights with SCOT allows for a comprehensive analysis of how societal norms, technological advancements, and individual characteristics interact to shape the productivity outcomes of remote work arrangements.

Before beginning to analyze more modern findings regarding the effects of remote work on productivity, it is crucial to understand the current landscape and the relevant social groups affected by the technology to support the usage of SCOT. The primary relevant social group in regards to remote working arrangements is adults who have achieved higher levels of education. This is due to the fact that people who are more highly educated are more likely to hold jobs that would lend themselves to remote working environments. Individuals who have achieved lower levels of education are more likely to work jobs that rely more heavily on the physical contributions that workers are making and do not accommodate working off site. Early in the pandemic as the world was beginning to adjust to the rapidly changing ways of life, the U.S. Bureau of Labor Statistics released statistics that demonstrates the different levels of relevance of working from home regarding educational levels, with people who have earned a bachelor's degree or more boasting the ability to work from home in 65-70% of instances, while employees who have only achieved a high school diploma are only able to participate in remote work arrangements at rates in the 25-30% range (Sun et al., 2020).

Results and Analysis

Productivity is a relatively ambiguous concept, especially when researching productivity in regards to such a widespread phenomenon like remote working arrangements; however, this

difficulty in defining productivity makes it all the more important to research the topic and gain a lower level understanding of the impacts of the arrangement to help determine the viability.

In 2023, researchers from MIT and UCLA conducted a randomized controlled trial in India to assess the productivity of workers who were chosen to work from home and those who were required to work on-site (Atkin et al., 2023).. The researchers recruited participants from the community for data entry jobs that they would be shortly trained for and then they would perform those jobs for 8 weeks, with half of the participants being assigned to work from home and half assigned to work in the office. At the end of the 8 weeks, the researchers found "a large positive and significant treatment effect of 18% from working in the office. Two-thirds of the effect exists from the first day of working and the rest is due to quicker learning by office workers over the subsequent weeks" (Atkin et al., 2023). Additionally, the researchers had some interesting findings regarding those workers who said that they preferred to work remote: those with a preference to work remote have 12% better baseline performance but actually perform worse when they are allowed to work remote.

The impact of being in the office found by Atkin et al. ties in well with the study on remote work self-efficacy that was discussed in the Literature Review. Factors like "Information Technology Experience and Training" and "Modeling Best Practices by Managers" were two of the major factors that went into the researchers' model in trying to understand success factors for remote workers (Staples et al., 1999). By nature of being remote, those workers had less access to the expertise that managers provide to in-office workers as well as ability to observe the way that their managers conduct themselves. Furthermore, the discrepancy between the baseline performance and actual performance of workers with a preference for remote work raises questions about the role of self-efficacy in remote work settings. While these individuals may

possess higher levels of confidence in their ability to work remotely, the lack of face-to-face interaction and immediate feedback in remote work environments may hinder their ability to leverage their skills effectively.

Prior to the increase in prevalence of remote working arrangements as a result of COVID-19, studies were being conducted regarding remote work to explore the arrangement as a tool to improve the performance of businesses. Researchers conducted a study on a Chinese travel agency in 2015, where certain employees were selected to perform their work duties at home while the others were required to remain in office (Bloom et al., 2015). The results found that those who were selected to work from home were more productive in a few different ways: a 9% increase in the amount of time logged in for calls, a 4% increase in the number of calls handled during time worked, and many qualitative reports of increased satisfaction and ease of completing the job.

While the study by Bloom et al. was conducted prior to the current era of remote work, the results still support the efficacy of remote work. The study did, however, only require those who expressed a desire to work from home to do such (Bloom et al., 2015), unlike the experiment conducted by Atkin et. al. where all employees were randomly assigned a working environment (Atkin et al., 2023). This is an important factor to keep in mind as it places some limitations on the findings being applicable broadly, in addition to the simplicity of the industry limiting the findings as well due to the fact that the work performed by the company was primarily phone calls to customers. Additionally, one major difference between the Atkin study and the Bloom study is that the Bloom study was conducted on a pre-existing company where the workers were already familiar with their work, while in the Atkin study the participants were entirely new to the work. This difference in the findings of the two studies suggests that remote

working arrangements could be effective for groups making the move from in-person to remote, but not effective for those who are beginning their roles entirely remote.

Beyond measuring productivity directly with output metrics, there are other factors to consider regarding remote working arrangements and the effect that they have on companies and their production as a whole. After the onset of the pandemic, tech-giant Microsoft mandated all of their non-essential employees to shift from in-office work to remote work. Almost ⅙ of the company was working remote prior to the pandemic, and all of the other non-essential employees began their transition. A team of researchers decided to study the 61,182 employees in the United States to understand the impact of the change on the company; however, these researchers did not set out to measure the direct effects of the shift on the productivity of the workers. The researchers instead focused their efforts on understanding the implications on the level of employee connectedness within the company as coworkers were no longer able to work with each other face-to-face. Analyzing communications such as emails, instant messages, and calls, the researchers found that while the number of other coworkers that employees interacted with did not decrease, they did find an, "overall decrease in the number of cross-group interactions and the fraction of attention paid to groups other than one's own" (Yang et al., 2023).

The findings of this study do not directly outline a decrease in the raw productivity of the workers at the company, but the findings of a decreased level of interconnectedness of the company can surely have negative implications on the productivity of the company as a whole. The relationships of those coworkers that employees interacted with the most were not largely impacted, which is a good sign for the work that those teams are doing within themselves (Yang et al., 2023). When thinking further and thinking about progression and innovation for the company as a whole, however, these findings are concerning as the connection to other teams

with diverse work and skill sets is what supports innovation. The importance of access to alternative perspectives and expertise has long been understood and studied as one of the principal components of the cultivation of new ideas, and in 1990 researchers Cohen and Levinthal investigated the concept of "Absorptive Capacity" in the workplace. The concept is focused around the ability to discover and assimilate external knowledge and apply it to your own purposes. They proposed that, "An organization's absorptive capacity will depend on the absorptive capacities of its individual members" (Cohen & Levinthal, 1990). The findings of the study, coupled with the framework proposed by Cohen and Levinthal on absorptive capacity, underscore the importance of maintaining interconnectedness and cross-group interactions within organizations for fostering innovation and productivity. This emphasizes the relevance of Social Construction of Technology (SCOT) themes, as it highlights how social structures and relationships shape technological outcomes and organizational dynamics.

Beyond the stress that remote working arrangements can put on the relationships between business groups within a company, there are also implications of the arrangement on the relationship between managers and the employees that they oversee. In a separate study conducted by Microsoft itself in 2022, researchers administered a company wide survey to gain a better understanding of the employees' feelings surrounding remote working arrangements. The survey had many important findings unrelated to productivity, such as the figure that 76% of employees would stay with their company if they were provided more opportunities to learn new still and sharpen the ones they already possess, and relating to remote working arrangements that 73% of employees "need a better reason to go into the office than just company expectations" (*Hybrid Work Is Just Work. Are We Doing It Wrong?*, 2022). The most importanting finding in

the survey is that 85% of supervisors reported that they lacked faith in the fact that their remote employees were being productive during the workday.

The survey conducted at Microsoft does not include information regarding how managers who work at companies with in-office working arrangements suspect their employees are performing, but the number is likely much lower than what was found in the survey (*Hybrid Work Is Just Work. Are We Doing It Wrong?*, 2022). When in the office, managers are able to physically see what employees are working on and can notice if people are wasting their time, and while there are some ways to track if employees who are remote are actually working, those means are not accurate due to people using methods like mouse-jiggling programs to feign being online and active. Regardless of whether or not the employees that these managers are overseeing are actually being productive, these managers must now dedicate extra time and effort out of their normal duties to worry about their employees and make sure people are getting their work completed when they are supposed to be. This shift in managerial oversight highlights the intricate relationship between technology, workplace culture, and social interactions, demonstrating how these factors influence perceptions of productivity and managerial practices in remote work settings.

Discussion

Technological advancements and changing societal situations have long influenced how people conduct their work, and remote working arrangements seem to be the most recent and most pressing shift society has seen in quite some time. The transition into this new era of work cannot be taken without extreme scrutiny and careful consideration of its implications on productivity and social dynamics within organizations. If remote work is hindering the ability of

workers to complete their duties day-to-day and inhibiting their employers from success in the long run, we must become aware now before it is too late to make the necessary corrections.

Overall, the findings of the literature covered in this paper are a mixed bag, and it is imperative that the context surrounding the findings of all of the research that was presented be analyzed in order to form a cohesive understanding of the phenomena that has been observed. The literature surrounding the raw productivity measurements of remote workers is pointing in both directions, with some studies suggesting an increase in productivity while others indicate a decrease. The experiment conducted by Atkins et al. India found a significant benefit in regards to productivity for those who worked in-office when compared to those who worked from the comfort of their homes (Atkin et al., 2023); however, the study conducted by Bloom et al. on the Chinese travel company found that workers who were allowed to conduct their work from home performed their duties more efficiently than their in-office counterparts during working hours (Bloom et al., 2015).

Both of these studies provide sound evidence regarding the topic and are very clear regarding the methodology that was utilized. One of the major differences between the studies was that in the case of the Atkins experiment, employees were randomly assigned to work from home, regardless of their preference to work remote or in-office (Atkin et al., 2023). On the other hand, the Bloom study was conducted only on participants who expressed a desire to work from home and fit a certain criteria regarding their situation at home (Bloom et al., 2015). When analyzing the results of both studies in this context, the results seem to point in a more cohesive direction, one that suggests that for the correct employees who possess a desire to work from home and can do so in a home environment that is conducive to success, remote work can be a tool to increase productivity. These findings together point to a level of efficacy regarding remote

work that is particularly evident for voluntary arrangements, where employees opt for remote work based on their preferences and circumstances rather than being required to do so. Examining the mixed findings of remote work studies through the lens of SCOT illuminates the interplay between technological advancements, societal perceptions, and organizational practices. While some studies suggest an increase in productivity, others indicate a decrease, reflecting the varied ways in which remote work arrangements are socially constructed and interpreted.

The comprehensive body of evidence regarding remote work at Microsoft is extremely illuminating on the impact of the arrangement, especially at one of the largest and most influential companies in the world. The Yang study of Microsoft and the interconnectedness of their employees following the transition to remote work does not seem to have positive implications for the arrangement. As mentioned earlier, the connections that suffered were not necessarily the ones between employees who worked closely together, but were the connections with employees outside of one's direct coworkers (Yang et al., 2023). Aside from overall suggesting that remote working arrangements do not support a progressive and innovative work environment due to the harm done to diverse interactions for employees, the results of the study have some implications in regards to the ways that remote work could be effective. The fact that close relationships that already exist were not negatively impacted to a large degree provides some support for the usage of a shift to remote work for some companies, but only after said relationships have been developed in-office first. This instance is most closely related to what the reality was with the shift to remote work in the pandemic; coworkers who had known each other and seen each other daily for years now interacting with the people they know and trust over the internet. If those relationships are in place, remote work has a better chance of being fruitful, but

the results of the study point to an undesirable outcome for roles that offer strictly remote options to new hires.

In addition to the existing challenges, the findings of the survey conducted by Microsoft contributes even more hurdles to jump over when trying to have a productive and efficient remote work environment. The issue of the lack of trust from managers to employees is one that can not easily be overcome (*Hybrid Work Is Just Work. Are We Doing It Wrong?*, 2022). The most obvious solution to dissuade the worries of managers would be to increase levels of employee tracking; however, the distrust felt by employees, knowing that their managers are constantly watching over their shoulders, can significantly erode morale and foster a culture of micromanagement. Employees who do not feel empowered in their work are likely to perform their duties to a lower level, or have controversy arise over issues with management.

As a whole, the body of research that currently exists surrounding remote work suggests that there are negative implications on productivity regarding the implementation of the arrangement. In-office workers have increased levels of access to learning and assistance from their managers and their peers, more opportunities to bond with their coworkers and build relationships that improve the quality of work, and a boosted level of trust with their managers. While the body of work leans in favor of in-office work arrangements, remote working arrangements have no glaring issues, and in the correct context can be effectively applied for certain employees.

With existing relationships and a strong understanding of the duties of the role, remote workers are not at a major disadvantage to their peers who work in the office; however, concerns arise with this arrangement when thinking about the reality of most companies, where new employees arrive all the time and tenured ones leave for different prospects. A once strongly

connected employee could realize one day that they are not close with the new faces at their company and as has been shown, relationships are what breed increased innovation and productivity. In considering the findings of the existing research on remote work, it becomes evident that the dynamics between technology and social structures play a crucial role in shaping productivity outcomes.

In regards to future research on the topic, this analysis of remote working arrangements did not cover the benefits that the arrangement has for employees. This study was focused primarily on productivity and the efficacy of the arrangement for the company, but if there is an extreme benefit to remote workers in their personal lives, there is a potential that said benefit could have positive long term benefits for the company in regards to morale and potentially productivity.

Remote work arrangements seem to be here to stay, and the overall public opinion seems to view the arrangements in a positive light and focus on the supposed benefits for employees in their day-to-day lives; however, it is important to understand that remote working arrangements have been shown to have a negative influence on productivity in a few ways, and while that impact is not large in magnitude, it is still a factor that must be considered when weighing the effectiveness of the arrangement.

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