Chapter 1

Introduction

Background and Significance of Research Problem

The uneven development of Chinese cities in recent years has led to a huge difference in the cost of living between big and small cities (Guan, et al., 2018, pp. 97-109). Many businesses are looking to reduce costs by telecommuting or working from home (Picu & Dinu, 2016, pp. 194-202). And strike an optimal balance between cost and efficiency (Maghlaperidze, et al., 2021, pp. 337-348). The COVID-19 pandemic that has affected the world since 2019 has made telecommuting and working from home a must-support approach.

2022 Global Workplace Analytics study calculated that harmful greenhouse gas emissions from cars could be reduced by 54 million tons a year if telework-compatible US employees worked remotely half the time (Global Workplace Analytics, 2022). This highlights the potential of remote work to contribute to sustainability efforts. Moreover, remote work has been shown to increase productivity and efficiency, with a study by Stanford University finding that remote workers completed an additional day's work per week compared to their office-based counterparts (Bloom, et al., 2015, pp. 165-218). This increase in productivity is likely due to several factors, including fewer distractions and interruptions, reduced commuting time, and increased flexibility in work schedules.

In terms of space exploration and colonization, remote work may play a critical role in enabling humans to work and live in space for extended periods. NASA has already begun exploring the use of remote work for its employees and contractors, with some employees working remotely from their homes or other locations (IT Talk NASA's Mobile Workforce, 2020). Additionally, remote work technologies may be used to remotely operate and monitor equipment on space missions and in space habitats, reducing the need for humans to physically travel to and from these locations. In this case, to improve work efficiency, not only individual enterprises need to change, but also the entire industry needs to change. This has a positive impact on economic and social development (Nyberg, et al., 2021, pp. 1967-1976).

The development of remote work has the potential to address the problems of high cost of living and low efficiency and has become an increasingly popular option for organizations (Nyberg, et al., 2021, pp. 1967-1976). However, there are still many

challenges to overcome, including the management of remote workers and the maintenance of effective communication and collaboration (Franken, et al., 2021, pp. 1131-1149).

In the past decade, remote work has emerged as a popular trend in the workplace, with an increasing number of companies adopting this approach to work. According to the 2021 State of Remote Work report by Buffer, the number of remote workers in the U.S. has increased by 159% since 2005 (Buffer, 2021). This is a clear indication of the growing acceptance and popularity of remote work.

One trend in remote work is the flexibility it offers to employees. Studies have shown that employees who have flexible work arrangements are more productive and have a better work-life balance (Dizaho, et al., 2017, pp. 445-465). Remote work offers this flexibility by allowing employees to work from anywhere and at any time, thereby enabling them to better manage their work and personal responsibilities.

Another trend in remote work is the use of digital tools and technology to enhance communication and collaboration. In recent years, there has been a proliferation of tools and platforms designed to support remote work, such as Slack, Zoom, and Trello (Buffer, 2021). These tools enable remote workers to stay connected and collaborate with their team members, regardless of their physical location. Finally, remote work has become increasingly accepted and supported by employers. According to the State of Remote Work report, 97% of respondents stated that they would recommend remote work to others, and 95% of companies have reported that remote work has been successful for their team (Buffer, 2021).

In summary, remote work has become a popular trend in the workplace, offering employees flexibility, enhanced communication and collaboration, positive environmental impacts, and increasing acceptance and support from employers. As a result, remote work will likely continue to grow and evolve in the coming years.

From the perspective of the development of human society, telecommuting has significant advantages that traditional office workers do not have in many aspects, such as energy saving, time-saving, and location limitation. For example, telecommuting can save energy and reduce pollution by reducing the need for transportation to and from the office (Kylili, et al., 2020, pp. 1-16). In addition, telecommuting allows employees to use the time they would have spent commuting to work, which can lead to increased productivity (Pabilonia & Vernon, 2022, pp. 687-734; Mathew & Aranha 2023).

The high cost of living in big cities, such as Beijing and Shanghai, has led to an increase in the cost of employment for companies in these cities, which makes the cost of their products higher. At the same time, the commuting time in big cities can

be as much as 1 to 3 hours every day, which not only wastes time and energy but also reduces the quality of life (Han, et al., 2022, p. 573). Moreover, the traditional way of doing work is often limited by geography, which has resulted in unbalanced regional development (Zhu, 2003, pp. 485-502). The development of remote work can help overcome these problems by breaking down geographical barriers and allowing companies to tap into a larger pool of talent (Alkoud & Qatamin, 2023, pp. 2088-2101).

Overall, remote work has become an increasingly popular option for both employees and employers. By offering greater flexibility, telecommuting has the potential to improve work-life balance and reduce commuting-related stress, leading to increased job satisfaction and retention rates (Mathew & Aranha, 2023). Additionally, remote work can help companies reduce costs and increase efficiency by allowing them to tap into a larger pool of talent and reduce the need for physical office space (Ferreira, et al., 2020, pp. 1-44). While remote work has many benefits, it also presents several challenges that must be addressed. One of the most significant challenges is the lack of social interaction and face-to-face communication, which can lead to feelings of isolation and loneliness (Arakawa, et al., 2023, pp. 7-45). Additionally, remote workers may struggle with self-discipline and time management, as well as the blurring of work-life boundaries (Almeida & Silva 2022, pp. 9-15).

Furthermore, remote work may not be suitable for all types of jobs or industries, as some positions require in-person collaboration and interaction (Bloom, et al., 2015, pp. 165-218).

Several industries are not well-suited for remote work due to the nature of their work, work environment, and organizational culture. One of these industries is healthcare. healthcare professionals, such as nurses and doctors, face challenges in providing quality patient care and collaborating with other healthcare team members when working remotely (Okubo, 2022). The authors argue that the highly collaborative nature of healthcare work requires face-to-face interactions and teamwork, making it difficult to work remotely.

Similarly, the manufacturing industry is not ideal for remote work due to the hands-on nature of the work. In a study by Bloom, and colleagues (2015, pp. 165-218), the authors found that workers in the manufacturing industry who were required to operate machinery and work with tools were unable to work remotely. The authors suggest that remote work may be limited to non-production roles such as sales, marketing, and administrative functions.

Another industry that may not be suitable for remote work is hospitality. According to a study by Okubo (2020, pp. 1-25), hospitality workers, such as hotel and

restaurant staff, may find it difficult to work remotely due to the importance of in-person interactions with customers. The authors argue that remote work may lead to a decline in customer service quality and may negatively impact customer satisfaction. Additionally, the construction industry may not be well-suited for remote work due to the physical demands of the work and the need for on-site coordination. In a study by Mousa and Abdelgaffar (2021), the authors found that construction workers who were required to perform physical tasks and coordinate with other workers on-site were unable to work remotely.

Two study by Mills, and colleagues (2001, pp. 48-59) and Guimaraes and Dallow (1999, pp. 40-54) argues that the sales industry is not suitable for remote work. The author notes that sales require building strong relationships with customers, which is difficult to achieve through remote interactions. The lack of face-to-face communication and body language cues may hinder the salesperson's ability to establish trust and rapport with clients, resulting in lower sales performance. In addition, the author notes that sales often involve collaboration and support from colleagues, which may be difficult to achieve in a remote work setting, especially when communication technology is overused. The author suggests that sales managers should consider a hybrid approach that combines remote work with regular in-person meetings to balance the benefits of remote work with the need for face-to-face interaction and collaboration.

Most people believe that certain industries or professions are not suitable for remote work, such as sales, according to some studies. However, in China, live-streaming e-commerce has been on the rise in recent years. It has demonstrated that sales work can also be done remotely, and even better than before. Live-streaming e-commerce, which refers to the practice of using live video streaming to sell products, has become a booming industry in China. According to a report by iiMedia Research (2020), the market size of China's live-streaming e-commerce industry reached 961 billion yuan in 2020, a significant year-on-year increase of 121.5%.

The COVID-19 pandemic has also accelerated the growth of live-streaming e-commerce in China, as consumers increasingly turned to online shopping and social media for entertainment and shopping experiences. According to the 47th Statistical Report on China's Internet Development, released in February 2021 by China Internet Network Information Center (CNNIC), the number of livestream e-commerce users was 388 million by 2020, accounting for roughly 40% of the Chinese Internet population.

The rise of live-streaming sales owes to the rapid development of internet technology, particularly advancements in audio and video technology, which have made live-streaming sales a new type of e-commerce model (Lu & Siegfried, 2021, pp.

73-89). Without the leap forward in audio and video technology, live streaming sales would not have been born, and without live streaming sales, there would not have been a trend towards replacing offline sales with live streaming sales. Looking back at past developments and carefully observing our lives, we can see that autonomous driving technology can improve transportation efficiency and safety, reduce costs, and decrease carbon emissions. It is an important trend in future urban transportation (Alessandrini, et al., 2015, pp. 145-160). Self-driving taxis have already been piloted in some areas, and traditional drivers have been replaced by remote vehicle management personnel. The intelligent express cabinet system has improved delivery efficiency and reduced costs, bringing significant innovation to the express industry (Yang, 2021). Self-service settlement technology has changed the customer experience in the hotel industry and increased customer satisfaction (Gupta & Shama, 2021, pp. 236-251).

In terms of remote education, the popularization and development of remote education contribute to improving people's employment opportunities and vocational skills (König, et al., 2020, pp. 608-622). In addition, the development of remote education also provides more talent and skills for remote work, making remote work a more common way of working (Draghici, 2020, pp. 469-472). In remote healthcare, the application of remote medical technology can improve the utilization efficiency of medical resources, improve the overall level of medical services, and alleviate the work pressure of medical staff (Tripathi, et al., 2021, pp. 17606-17614). It also enables medical staff to work remotely, improving work efficiency and productivity (Oleksa-Marewska & Tokar, 2022, p. 14388). We can see that modern information technology has sparked a revolution in the vast majority of fields.

We have discovered that what we once thought required face-to-face interaction between people can now be completely reversed. Therefore, in-depth research into the various details of remote work is still of great significance. This can not only improve the challenges of remote work that have already formed trends but also promote the development of remote work in more industries and more ways.

Research Objectives

To investigate the factors affecting telework outcomes in information technology industry practitioners.

Research Hypothesis

Teleworker Characteristics, Job Characteristics, Communication, Management, Organizational Culture, Environment, Asynchronous Work, and Technology have a positive influence on telework outcomes, including Job Effectiveness, Work-Life Balance, and Well-being.

Scope of The Study

1. The study looked at just 12 information technology-related companies in four cities: Beijing, Shanghai, Shenzhen, and Qingdao. This study included a total of 500 participants, with a balanced gender distribution. The age range of the participants was 22 to 45 years, with a primary concentration between 25 and 35 years. The educational background mainly consisted of undergraduate and graduate degrees. The study focused primarily on research and development, maintenance, and testing personnel, with work experience predominantly spanning 2 to 10 years. Participants typically engaged in remote work for 3 to 5 days per week, working 4 to 8 hours per day. Additionally, a portion of the participants worked more than 5 days per week and more than 8 hours per day. The majority of the sample was employed in private enterprises, while some were working in foreign-funded enterprises. Most participants were married and had children.

2. This study primarily takes into consideration industry characteristics and individual traits and establishes connections with corporate features and organizational culture. Furthermore, it delves into factors such as work environment, societal context, interpersonal communication, and hierarchical management relationships. Additionally, the study incorporates the impact of technological support and asynchronous work methods. By comprehensively analyzing these factors, the research thoroughly investigates their combined influence on work efficiency, work-life balance, and overall well-being, while also probing the intricate interrelations among these aspects.

Conceptual Framework

This study is based on the X-efficiency theory, Scientific Management Principle, and Lean Production theory, combined with the findings of previous investigations and studies on telecommuting. After the analysis, the model and framework are obtained.

This conceptual framework will be used to study the pros and cons of Telecommuting and telework outcomes in information technology industry practitioners, analyze the factors affecting telework outcomes in information technology industry practitioners, including the independent and dependent variables as shown in Figure 1.1
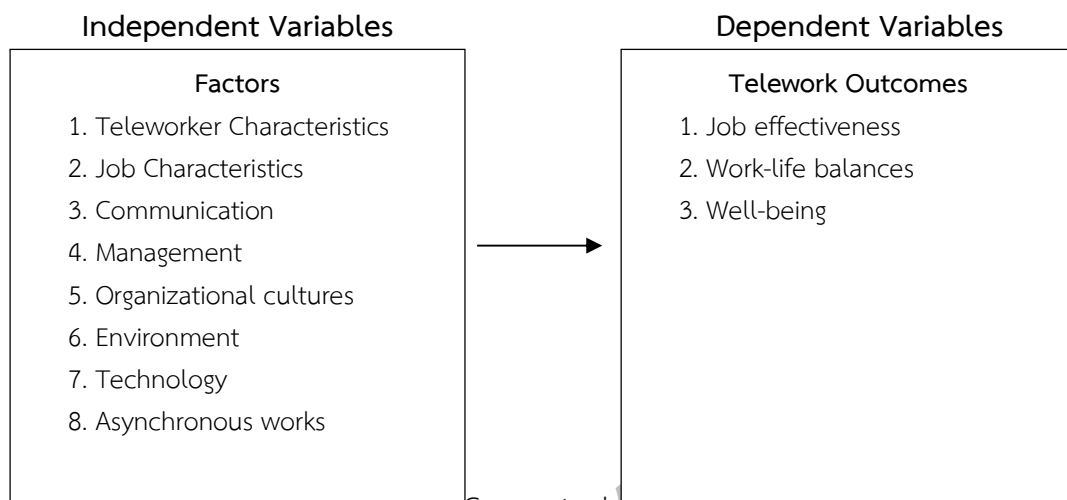
Independent Variables	Dependent Variables
Factors	**Telework Outcomes**
1. Teleworker Characteristics	1. Job effectiveness
2. Job Characteristics	2. Work-life balances
3. Communication	3. Well-being
4. Management	
5. Organizational cultures	
6. Environment	
7. Technology	
8. Asynchronous works	

Figure 1.1 Conceptual framework

Each factor has a direct or indirect impact on the others. From an objective point of view, we don't know which one has the biggest impact and which one has the smallest impact. In the past work, we may have made efforts in some aspects but did not get the desired benefits, so we need to further analyze and find out more correlation between them so that we can better improve efficiency.

Definition of Terms

1. Company refers to the Internet company in Beijing, Shanghai, Shenzhen, and Qingdao, China.

2. Employees refer to project managers, programmers, designers, and other employees of information technology-related companies who can work independently of the company environment.

3. Telecommuting refers to a model where employees work remotely while communicating with their colleagues through telephone, email, or video conferencing. Telecommuting involves employees performing their daily tasks from a location other than a traditional office, such as a home office or a coffee shop. Teleworkers may also work in company buildings outside of the main office, such as in another branch.

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Telecommuting allows individuals to work either at home, at a local cafe with WiFi, or a local telework center for one or more days each week, or full-time.

4. Teleworker Characteristics refer to the traits, skills, and qualities of individuals engaged in remote work, including factors such as self-discipline, communication abilities, and adaptability.

5. Job Characteristics refer to the essence and attributes of a job, including task content and scope of responsibilities.

6. Communication refers to the exchange and sharing of information to facilitate effective teamwork and information flow.

7. Management refers to organizational coordination, resource allocation, and task supervision to achieve work objectives.

8. Organizational cultures refer to shared values and behavioral norms within a company or team.

9. Environment refers to the workplace and external conditions, such as facilities and policies.

10. Asynchronous works refer to It is not required that all members of the team be in the same place or online at the same time.

11. Technology refers to the information and communication technologies associated with remote work, along with the technical assistance and support provided for it.

12. Job effectiveness refers to Achieving more output with less input or the same input

13. Work-life balances refer to the equilibrium between work and personal life, allowing individuals ample time for both work and personal activities.

14. Well-being refers to encompasses an individual's mental and physical health, as well as their overall sense of happiness and contentment in both work and life.

Expected Benefits

1. Enterprises can use this study to decide whether to implement telecommuting and how to continuously improve the productivity of telecommuting.

2. Employees can use this study to decide whether to telecommute and how to continuously improve their productivity.

3. All companies in the upstream and downstream industries of telecommuting can improve their products through this study.

Conclusion

Remote work has become a widely accepted mode of work in recent years, especially in the information technology industry. Remote work has multiple dimensions of positive impact on the development of human society in the long term. This mode of work requires certain skills and traits that are inherent to the information technology industry. Most professionals in the industry possess the necessary technical abilities and sensitivities to adapt to remote work. As they work remotely, they gain an in-depth understanding of the various aspects involved in remote work, including communication, collaboration, time management, and remote team management, among others.

Remote work involves various technological issues, most of which are supported by the information technology industry. As more and more information technology professionals shift to remote work and gain experience, they can use this experience to create new technological products and features to facilitate remote work. As a result, remote work will accelerate in other industries, thereby promoting the growth of remote work as a mainstream mode of work.

The information technology industry can play a vital role in promoting remote work and driving its growth. Information technology companies can create and improve technological tools and products that facilitate remote work. They can also set an example by implementing remote work policies in their organizations, promoting remote work as a viable and effective mode of work. The growth of remote work can also lead to the creation of new job opportunities, especially in the technology industry, and facilitate the development of new business models that leverage the benefits of remote work.

In conclusion, the rise of remote work in the information technology industry has several positive implications for the development of human society. The industry's technological prowess and the experience gained by information technology professionals working remotely can promote the growth of remote work as a mainstream mode of work. Remote work can also promote better work-life balance, reduce costs, increase productivity, and create a more diverse and inclusive workplace. It is essential to capitalize on these benefits by embracing remote work and driving its growth in various industries.

Telecommuting will become one of the most important ways to reflect the competitiveness of the country, enterprises, and groups, promote consumption, solve the problem of big cities, eliminate regional inequality, improve social production efficiency, energy conservation, and emission reduction. The traditional way of doing work will be revolutionized because of the progress of The Times. In the future, the traditional way of doing work may be like carriage travel in today's society. It is of great significance for the continuous research on Telecommuting.