INHERENT SAFETY PRINCIPLE APLICATION FOR TELEWORKERS: A CASE STUDY

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RESEARCH REPORT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SAFETY HEALTH, AND ENVIRONMENTAL ENGINEERING

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INHERENT SAFETY PRINCIPLE APPLICATION FOR TELEWORKERS: A CASE STUDY

ABSTRACT

The concept of Teleworking has been the subject of discussion and global study theme by researchers in the past ten years. Still, this global phenomenon begins to emerge at the COVID-19 attack and becomes an alternative strategy for many organzation. Assessing how health risks and benefits of telework are affected by its sudden, large-scale uptake in the context of COVID-19 is critical to best preserving occupational health. Threats emerging from working environments could debilitate the well-being and prosperity of the laborers. By applying an Inherent safety such as substitution, minimization, moderation, and simplification where the overall goal is to minimize the risk associated with office hazards that can lead to better working conditions. Therefore, this study aims to explore current issue and challenge faced by teleworkers to work safely in Klang Valley Area, Malaysia during COVID-19 pandemic. The main objectives of this study are to identify measures and management practices to make working from home safer for teleworkers. To collect the data, this study used questionnaire and case study analysis, the questionnaires were distributed to random population to understand the issues and challenges faced by teleworkers during work from home. The data was analyzed using Pearson's Chi-square method with SPSS analytical tool software. Based on the analysis, the results shows that majority of the teleworkers didn't have a separate room for working and equipment such as ergonomic table and power surge protector. In addition, Majority of the respondents were having a noise distraction, overworked, and inadequate training from the company. Finally, based on the results obtained from the analysis, a checklist was developed to assist teleworkers and organization to improve their work from home conditions. Given that many countries consider COVID-19 to be an endemic and the worker will begin transitioning

to the office while still adhering to health protocol, this research will aid in the development of increased safety and health recommendations for teleworkers.

Keywords: Inherent Safety, work from home, Teleworking, COVID-19, Occupational Health and safety

APLIKASI PRINSIP KESELAMATAN INHERENT UNTUK TELEPEKERJA: KAJIAN KES

ABSTRAK

Konsep Teleworking telah menjadi subjek perbincangan dan tema kajian global oleh penyelidik dalam sepuluh tahun yang lalu. Namun, fenomena global ini mula muncul pada serangan COVID-19 dan menjadi strategi alternatif untuk banyak organisasi. Menilai bagaimana risiko kesihatan dan faedah telekerja dipengaruhi oleh pengambilan secara tiba-tiba dan berskala besar dalam konteks COVID-19 adalah penting untuk memelihara kesihatan pekerjaan dengan terbaik. Ancaman yang timbul daripada persekitaran kerja boleh melemahkan kesejahteraan dan kemakmuran pekerja. Dengan menerapkan keselamatan Inherent seperti penggantian, pengurangan, penyederhanaan dan penyederhanaan di mana matlamat keseluruhan adalah untuk meminimumkan risiko yang berkaitan dengan bahaya pejabat yang boleh membawa kepada keadaan kerja yang lebih baik. Oleh itu, kajian ini bertujuan untuk meneroka isu dan cabaran semasa yang dihadapi oleh pekerja telekerja untuk bekerja dengan selamat di Kawasan Lembah Klang, Malaysia semasa pandemik COVID-19. Objektif utama kajian ini adalah untuk mengenal pasti langkah dan amalan pengurusan untuk menjadikan bekerja dari rumah lebih selamat untuk pekerja telekerja. Bagi mengumpul data, kajian ini menggunakan soal selidik dan analisis kajian kes, borang soal selidik diedarkan kepada populasi rawak untuk memahami isu dan cabaran yang dihadapi oleh pekerja telekerja semasa bekerja dari rumah. Data dianalisis menggunakan kaedah Chi-square Pearson dengan perisian alat analisis SPSS. Berdasarkan analisis, keputusan menunjukkan bahawa majoriti pekerja telekerja tidak mempunyai bilik berasingan untuk bekerja dan peralatan seperti meja ergonomik dan pelindung lonjakan kuasa. Di samping itu, Majoriti responden mengalami gangguan bunyi bising, terlalu banyak bekerja, dan latihan yang tidak mencukupi daripada syarikat. Akhir sekali, berdasarkan keputusan yang diperoleh

daripada analisis, senarai semak telah dibangunkan untuk membantu pekerja telekerja dan organisasi menambah baik keadaan kerja dari rumah mereka. Memandangkan banyak negara menganggap COVID-19 sebagai endemik dan pekerja akan mula beralih ke pejabat sambil tetap mematuhi protokol kesihatan, penyelidikan ini akan membantu dalam pembangunan peningkatan cadangan keselamatan dan kesihatan untuk pekerja telekerja.

Kata kunci: Keselamatan inherent, kerja dari rumah, *teleworking*, COVID-19, Kesihatan dan Keselamatan Pekerjaan.

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As a special thank you to everyone who has ever wondered how I managed to complete my master’s degree at Universiti Malaya despite being someone who daydreams about sleeping the entire day long.

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LIST OF SYMBOLS AND ABREVIATION

DOSM	:	Department of Statistic Malaysia
SSPS	:	Statistical Package for the Social Sciences
WHO	:	World Health Organization
ILO	:	International Labor Organization
ICT	:	Information and Communications Technology
EPA	:	Environmental Protection Agency

LIST OF APPENDICES

CHAPTER 1: INTRODUCTION

1.1 Background

Factors such as air quality, lighting, temperature, humidity, and decoration all contribute to the definition of workplace environments (Skwarczynski et al., 2010). These elements must be maintained to maintain a pleasant and healthy work environment. Workers may come into contact with hazardous materials or participate in dangerous activities on the job, resulting in serious injuries or illness. A substance or circumstance that has the potential to cause injury or illness to humans, property damage, environmental damage, or a combination of these (Scheer et al., 2014). Hazards can also arise from the potential for harm or negative outcomes because of past, present, or future exposures. If, on the other hand, a hazard becomes active (as opposed to dormant or potential), the situation can rapidly deteriorate into an emergency. Occupational safety and health research has been concentrated on construction and manufacturing sites (Aksorn and Hadikusomo, 2008; Ismail et al., 2012).

While the traditional office is one type of workspace, there are also non-traditional workspaces in which employees can work in unusual settings and environments. Even though researchers and policymakers have debated and studied working from home for decades, the COVID-19 attack has accelerated its adoption as a strategy for many businesses and organisations (Mustajab et al., 2020). Telework's rapid and widespread adoption in COVID-19 necessitates an examination of its health risks and benefits. Workers and employers have been unable to ensure the safety of the home working environment because of the current pandemic's unexpected shift to remote work. Teleworking may reduce the risk of injury or pain associated with the home environment or musculoskeletal disorders associated with non-ergonomic workstations for some people, but this is likely to be a temporary solution for others (Montreuil and Lippel, 2003).

The abrupt shift by many associations from office-based to home-based work results in a lack of consideration for the well-being and security requirements inherent in how a business operates with straightforward jobs and obligations to ensure representatives' physical and mental wellbeing. On the other hand, the physical and environmental aspects of the home office, as well as associated work habits, are crucial to a worker's capacity to work remotely and profitably (ILO, 2020).

The arrangement of a workplace might range from typical private offices to open floor plans. Open workspaces come in a range of layouts and degrees of sophistication, ranging from the simple "bullpen" to the more complex "landscaped" (or Bürolandschaft) design. Open office workers are physically clustered together, with the layout reflecting the organizational structure of the many workgroups. Divide the numerous spaces using furniture, plants, low adjustable screens, cabinets, or other items (Sanders and McCormick, 1993). Additionally, there are new ways of working through the construction of open office space, collaborative workspace, or activity-based workspace. These facilities all share an open-plan style in which personnel from several teams collaborate in a common area. Additionally, new modes of working are giving a new perspective on office space utilization. With the advent of laptops, tablets, and smartphones, the aim of offices shifted to one of "meet the demands." Additionally, this means that employees can work from any location, such as their house or a cafe. This is referred to as telework (Pouwels, 2020).

Working from home has become ingrained in certain sectors, one of which is the information and communications technology (ICT) sector. While information and communication technologies have enabled people to connect with friends and family and work colleagues and supervisors – at any point in time – they have also facilitated the encroachment of paid work into spaces and times typically reserved for personal life (Messenger and Gschwind, 2016). Additionally, flexible work schedules have been

adopted in recent decades, driven by both the need for more flexible production on the part of businesses and workers' desire to better balance work and other, personal commitments – frequently related to family responsibilities. This trend has been fueled by the rise of dual-career families and the ongoing struggle to balance work and family obligations.

Apart from the well-known benefits to workers' well-being, the two most frequently recognized challenges for teleworkers' occupational health and safety are psychosocial risks and ergonomics. Working from home during the COVID-19 pandemic is distinct from teleworking under normal circumstances. Workers are required to work from home for an extended period under adverse external conditions. This situation results in higher levels of anxiety than usual among workers, possibly because of the crisis's health, social, and economic consequences. According to the Eurofound survey, which was launched on 9 April 2020, 18% of EU respondents reported feeling agitated most of the time over the last two weeks – up from just 11% in the 2016 survey (Eurofound, 2020).

As stated in most public laws and collective bargaining agreements governing OSH, the business is responsible for the health and safety of its employees, which generally applies to teleworking. Additionally, managers bear similar responsibilities for the well-being and security of locally established teleworkers as they do for other specialists in the association. These include identifying and addressing the dangers associated with the use of language by locally based teleworkers. Additionally, concerns about teleworkers' occupational health and safety must be addressed and preparations for the next worst pandemic.

Threats emanating from work environments can jeopardize laborer’s well-being and prosperity. Thus, risk minimization in relation to workplace hazards should be practiced. There are numerous ways to accomplish this through the principles of

substitution, minimization, moderation, or simplification, all of which are components of inherent safety. Inherent safety is primarily used in the industrial sector, where machinery, hazardous chemicals, and high-risk processes are involved. The process begins with the identification of hazards that will occur on the premises, with the goal of avoiding their occurrence, minimizing their severity, and minimizing their likelihood. Inherent safety is most advantageous early in the design phase and is a necessary first step in demonstrating "As Low As Reasonably Practical" (ALARP) risk probability reduction (Edwards et al., 2015).

Workplace hazards can jeopardize workers' health and well-being. As a result, it is critical to envision, perceive, assess, and control such hazards to enhance well-being and maintain a safe work environment. Applying inherent safety for the workers can determine whether the workers have an adequate place, equipment, and condition to start teleworking. If, the workers do not have the criteria needed the company can assist them by giving the employee adequate equipment, training, and access to several personal-care services. By doing so, the company are creating an inherently safer workspace for their teleworkers.

1.2 Problem Statement and Research Questions

Nowadays, workplace accidents are increasing annually, whether in industries or educational institutions, and approximately 270 million people worldwide suffer from occupational injuries, both fatal and non-fatal. Safety and health are critical considerations, even more so when high-risk jobs are involved, such as those in factories, construction, and other industries that utilize chemicals and machinery.

Workplace safety is a critical subject that cannot be taken lightly. To date, some instances can be attributed to workplace dangers that have been overlooked, including the following:

(i) Electrical problems - Frayed cords, missing ground pins, insufficient wiring, overloaded electrical outlets, unsecured electrical lines, and short circuits

(ii) Cleaning products, paints, acids, gases, solvents, sensitizers, and caustic chemicals are all examples of chemical concerns.

(iii) Inadequate housekeeping - Inadequate storage and filing systems, a rope that runs across the floor

(iv) Ergonomic safety - Improper posture, misaligned workstations and seats, frequent lifting, vibration, and repetitive movements

(v) Physical - Temperature extremes (too cold or too hot), excessive noise, unventilated photocopiers

(vi) Psychological - Workplace stress, shift work, interpersonal relationships, workplace violence, and workload requirements

(vii) Biological concerns - Exposed to virus, bacterium, and fungus transmitted via the air and blood

Despite increased mission and notice, the number of workplace accidents and injuries continues to rise. Thus, it is critical to understand the causes and effects of workplace hazards to raise risk awareness and implement preventative or corrective measures to create a more secure and beneficial work environment.

According to Bouziri et al. (2020), during Covid-19, the risk associated with the home working environment increased, including increased risk associated with house activities (fire, slip, trip, fall, hazards, and temperature conditions) and increased risk associated with a workstation (musculoskeletal pain), due to a lack of anticipation, unsuitable home working conditions, and decreased physical activity.

Therefore, the research questions are as follows:

(i) What are the current risks associated with current working conditions for teleworkers?

(ii) What are the measures applied by the employer to reduce the risk associated with the home working environment?

(iii) According to the inherent safety principle, what are the measures and management practices to minimize the risk related to the home working environment?

1.3 Aim and Objectives

This study aims to identify the current inherent safety principal application regarding the risk associated with the home working environment. This study uses a quantitative approach in assessing and analyzing hazards in the workplace with the main objectives as follows:

(i) To identify risks associated with current working conditions for teleworker

(ii) To identify employer measures to reduce the risk associated with the home working environment

(iii) To recommend measures and management practices to minimize the risk related to the home working environment.

1.4 Scope

This study was carried out on a selected teleworker in Klang Valley Area (Kuala Lumpur, Selangor, Putrajaya), Malaysia. The study results expected to apply inherent safety principles for teleworkers to reduce risk associated with the home working environment. In general, employers and employees can identify common causes of workplace risks, analyze their consequences, and take additional action to implement preventive measures and limit future risk connected with teleworking. Furthermore, to assist company/organizations and other stakeholders, there will be a guideline on how to make an inherently safer workspace for teleworkers.

1.5 Significant of the study

This research outlines the current state of concern regarding worker safety when working from home, which is inherently safer. At the moment, there are no guidelines requiring teleworkers to work in an inherently safe manner. The International Labour Organization (ILO) has issued a temporary basic guideline for organisations and businesses to use to determine the types of practises that could be implemented in light of the current pandemic situation.

The purpose of this research is to elicit feedback from teleworkers via a structured questionnaire regarding their perspectives and practises regarding current issues and challenges confronting teleworkers. This research is intended to assist all stakeholders in establishing a more favourable working environment for each individual in their company or organisation during the pandemic. There has been an increase in safety and health concerns for many teleworkers during this pandemic.

1.6 Dissertation Framework

The research project is divided into five chapters, as follows:

Chapter 1: Introduction to the research project's background. An overview of the teleworker issue and the strategies used to mitigate risk associated with teleworking. This chapter contains the problem statement, research objectives, and study scope.

Chapter 2: A review of the literature on various types of workspaces and the transition from traditional workspaces to working from home. Additionally, this chapter will discuss how COVID-19 alters the workspace, as well as the benefits and drawbacks of working from home. Furthermore, it will explain the inherent safety concept and how to apply it to teleworkers in order to overcome the limitations associated with teleworking.

The literature review summary will summarize the findings from the literature review.

Chapter 3: The study's methodology, which includes a survey and an interview with respondents to elicit data. The survey will be completed by a total of 146 participants. The data will be collected via an online questionnaire and analyzed using SPSS software.

Chapter 4: The gathered data and information were analyzed and reviewed. The data were presented in the form of tables and graphs. Additionally, the results of SPSS analysis will be presented in this chapter, along with information from journals. Furthermore, the information gathered during the interview will be used to develop recommendations and guidelines to assist in the creation of an inherently safer work environment for teleworkers.

Chapter 5: A research conclusion based on the summary findings and making a recommendation for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 Working Space and their transformation in last 50 years

Most full-time employees of a western workforce in 2012 spent 40% of their time in an office (Larsson, 2012). Workplace layouts can range from traditional individual offices to open floor plans. From the simple "bullpen" to the more complicated "landscaped" (or Bürolandschaft) design, open workplaces can be found in a variety of configurations and levels of complexity. People who work in open offices are physically grouped, with the layout mirroring the organizational structure of the various workgroups. Furniture, plants, low moveable screens, cabinets or other furniture can be used to divide the multiple spaces (SandersandMcCormick, 1993).

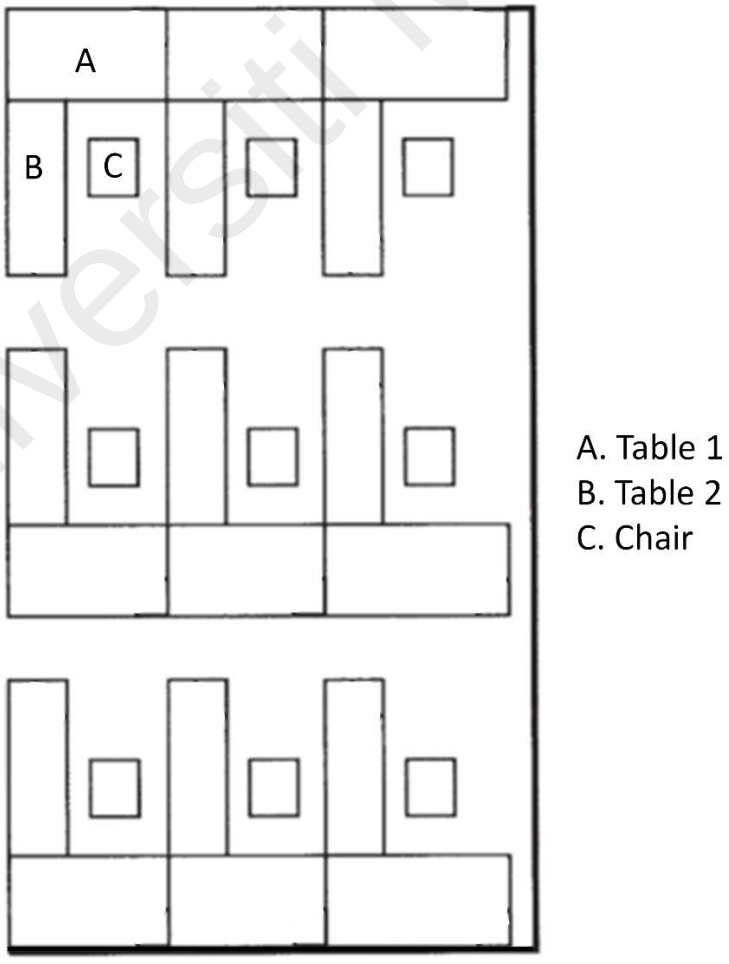

Figure 2.1: Floor Plans of the Bullpen

Figure 2.2: Example of Bürolandschaft office plan

As a result, even within a single style of open workplace, numerous variations exist. For instance, the number of partitions surrounding employees' workspaces, the amount of usable space per employee, openness (the office's overall transparency), and architectural accessibility (the extent to which an employee's workspace is accessible to external intrusions) can all affect a variety of variables. Marans and Yan (1989) classified their national offices into six distinct design categories based on the amount of walls and partitions enclosing employees' workstations. This study classified private closed offices, private shared offices, individual open plan offices, shared open plan offices, and bullpens.

Early in the 1970s, several organisations began to use open plan office designs as their primary method of communication. It was initially claimed that open office layouts could be more responsive to changes in organisational size and structure since they provided more flexible space. It is possible to change workstations at a low cost to accommodate changing requirements. Another belief was that removing internal physical barriers would increase morale and productivity by making it easier for employees to communicate with each other and entire departments. This type of office space also saves an estimated 20% of the costs of developing and maintaining it (Hedge, 1982). Even though open plan office designs have been touted as a way to boost productivity and communication, research findings have been mixed, with some studies reporting positive outcomes, such as increased communication between coworkers and supervisors, higher judgments of aesthetic value (Brookes and Kaplan, 1972; Riland, 1970), and more groggy employees (Allenand Gerstberger, 1973).

Work environment research has evolved from focusing on physical working conditions to focusing on the psychological work environment due to shifts in the labor market in past years (Karasek and Theorell, 1992). Advances in architecture, the fluorescent lamp, ventilation, and information and communications technology (ICT) have all significantly impacted how people work (Myerson, Bichard, and Erlich, 2010; Sundstrom, 1986). It is now possible to build larger workplaces with fewer bearing walls because of advancements in construction technology. Our reliance on natural light has diminished as a result of improved fluorescent bulbs. Cellular offices are no longer necessary, as it is now possible to build more open plan office spaces rather than just one person's cell (Sundstrom, 1986). When there are very few internal walls that support the weight of a building's occupants, new areas can be quickly developed or refurbished to meet the needs of new residents. Consequently, it is easier to adapt the working atmosphere to suit different purposes. Open-plan offices have been increasingly popular

in the corporate and public sectors in recent years because of these reasons, as well as the fact that they allow for more efficient use of space (Vos and van der Voordt, 2001) and communication benefits.

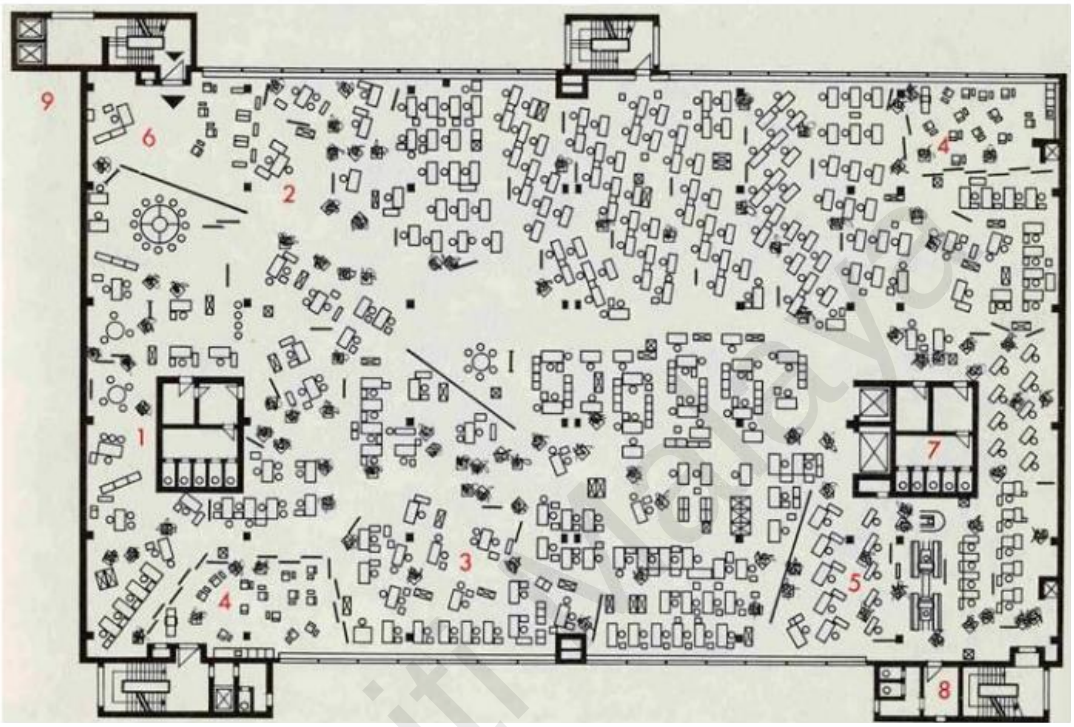

Figure 2.3: Example of open plan office floor plan

More and more employees are being affected by open-plan office environments and flexible working methods. Employee health and productivity have long been debated, but little is known about the impact of office type on employee health and productivity (De Croon, Sluiter, Kuijer, and Frings-Dresen, 2005). Two features of previous research are disappointing. Firstly, it does not differentiate and compare open-plan office environments to other forms of office environments. In earlier studies (Bodin Danielsson and Bodin, 2008), it has been found that the effect of an open-plan workplace might vary depending on the number of employees working there. There may be an issue with the less distinct classification if, for example, an open-plan workplace has an optimal number of people to share it. Having fewer or more people work in such a space is detrimental. Prior study has focused less on whether other

characteristics, such as individual differences and the concentration demands of work, may interact with office type to affect employee health and their ability to perform their task. More emphasis should be made on this area by utilising a more distinct definition of office kinds and evaluating variables that might lessen the significant influence on employee health and performance.

Worldwide adoption of the activity-based flexible office (A-FO) has been facilitated by mobile information and communication technologies (Appel-Meulenbroek et al., 2011; Seddigh et al., 2014; Wohlers and Hertel, 2016). A-FOs should be used to minimise expenses, increase flexibility, and boost employee satisfaction (de Bennet et al., 2015; Kim et al., 2016; Rolfö and Babapour Chafi, 2017). Additionally, they should promote interaction, increase creativity and efficiency, minimise environmental impact, and attract both internal and external clientele (Vos and van der Voordt, 2002). For approximately 70% of the workforce, the design typically accommodates a range of work environments (Appel-Meulenbroek et al2011). As a result, employees can pick where to work and share workstations and workspaces on a daily basis. Other terms for this concept include multispace office, flexible office, hot-desking office, non-territorial office, and activity-based office (Brunia et al., 2016; Kim et al., 2016; Ruohomäki et al., 2015). While the office concept is consistent, the real office environment (space arrangement and plan layout) and use vary between A-FOs (Rolfö and BabapourChafi, 2017). Physical office layout and utilisation are determined as part of the design and implementation process (Lahtinen et al., 2015; Rolfö and Babapour Chafi, 2017).

- 20 equipped work stations in interaction area (104)
- 12 equipped work stations in semi-quiet area (113)
- 3 back-up rooms for individual work (116, 117, 119)
- 2 Skype rooms (111-112)
- 2 meeting rooms (134, 118)
- 1 area for large meetings (133)
- 9 meeting places for 4 people in open areas (104, 108-110, 132)
- 1 kitchen and dining area (102, 139)
- 1 recreational area with games, television and sofa (139)
- 4 touch down areas which allow for quick access to information (102, 103, 105, 132)
- Informal meetings/Workshop area (132)

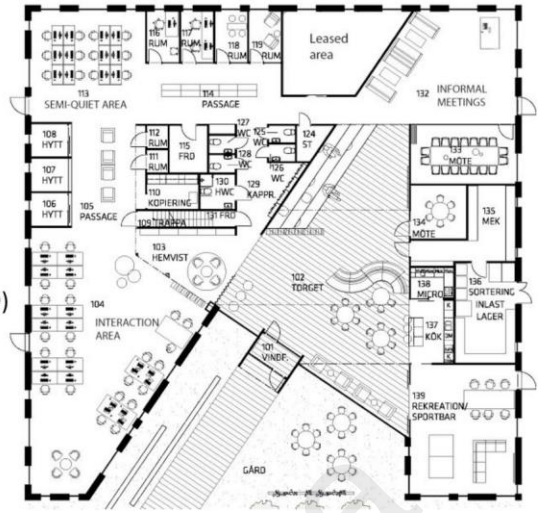

Figure 2.4: Example of activity-based flexible office (A-FO) floorplan

When it comes to workplace flexibility, it is not just about the design of the workplace. Because of advancements in information and communications technology (ICT), many professionals can now work from various locations outside of the office, including cafés, libraries, and even their own homes. Several factors can be used to determine how much of the office is filled on any given day, and these assessments suggest that occupancy in the entire office peak between 50% and 81%. (Davis and Nutter, 2010; Duarte, Van Den Wymelenberg, and Rieger, 2013; Mahdavi, 2009). Organisations are taking the concept of flexible working even farther because of the decrease in the number of people occupying separate desks. Today, many organizations have implemented various flexible working solutions that all have one thing in common: the employees do not have an assigned desk but instead choose a desk, frequently in an open-plan office environment, based on the task at hand. As an alternative to the dreary and sterile open-plan offices of the past, these flexible office settings are frequently bright and vibrant. They are designed to foster a creative work atmosphere for employees. To attract the younger workforce, many companies offer employeesx the opportunity to work from home and allow them to work from the office. Companies like Swedbank and Nordea (two of Sweden's top banks), Omega Pharma (which offers health and beauty goods), and the Swedish Social Insurance Agency are

all examples of organisations in Sweden that have implemented flexible working practices.

2.2 Covid-19 related working space transformation

Office design and reducing or minimising workplace problems were recently the focus of management, human resource, health research. To address some of the most pressing issues in today's workplaces, open-plan office design concepts have been defined as at least a basic solution. Since open workspaces allow for rapid organisational changes and technological advancements in the modern workplace, they are often recommended. New open-plan office designs must be considered in light of the recent spread of Coronavirus disease 2019 (COVID-19).

As the recommended and mandated social distancing becomes more pronounced, office workers prefer to return to traditional offices and private rooms as a result of the COVID-19 epidemic. Today, many businesses operate in a conventional office setting, or they may work from their homes as part of a remote team. Remote working or working from home (WFH) became popular in the early 2000s, when telecommuting technologies began to develop and workers could WFH to avoid commuting as well as provide more flexible schedules and better work/life balance (Bouziri et al., 2020). Since the start of COVID-19, the term "work from home" has become widely used to describe employees who work from their homes rather than their companies' offices. It has the following four basic features:. (1) a person employed by a company or an organisation; (2) actual work engagement with a company or an organisation on specific tasks; (3) work performed outside of the physical premises of the company; and (4) communication with the employer's office. Even though the terms "remote work" and "telecommuting" are frequently used interchangeably, they actually denote two distinct

approaches to the idea of working from home. It is worth defining them more precisely for the sake of precision. When an employee works from home, this is referred to as telecommuting. As a result, many people choose to conduct their business from the comfort of their own homes or nearby coffee shops, libraries, or coworking spaces. Working from home is a thing of the past. Instead of driving to the office, employees "travel" using technology to stay in touch with coworkers and bosses via cell phone calls, text messages, video chats, and other forms of online collaboration. On the other hand, he term "telecommuting" is often used interchangeably with the term "remote work." But there is a tiny distinction between the two. Remote work is distinct from telecommuting in that it involves an employee working from a location outside of the company's main headquarters.

During this work from home period digital transformations are accelerated because many organisations were more nimble than usual. Perhaps people who would not have been so quick to adapt to new technologies (e.g., technology in the home office) were forced to adapt more quickly because they were compelled to do so. Firms often use short-term adjustments and organisational changes to deal with environmental changes in the most efficient manner possible during times of crisis. When the survival and competitiveness of an organisation are at stake, this type of organisational change is more likely to take place (Men endez and Castro, 2002).

2.3 Advantages and limitations of working from home

With IT, we can alter the nature of time and space. In a nutshell, they shorten travel times and distances and open up new possibilities for simultaneous and rapid interleaving of activities. These options have been used to deal with the confinement. We suddenly found ourselves unable to move, so we turned to technology to free us from our physical shackles. It has been shown that these possibilities contribute to a

sense of speed in society (Aubert 2018; Rosa 2013). This rapid digital transformation can have both positive and negative outcomes (such as burnout). Many people who work from home are exhausted, nervous, and irritable as a result of this crisis's rapid and limitless use of technology. This acceleration has both positive and negative effects. Buomprisco et al. 2021 can summarise it all in table 2.1 and table 2.2 the benefits and challenges for both company and workers working from home.

Table 2.1 Advantages and disadvantages of telework for the company

ADVANTAGES	DISADVANTAGES
Increased productivity	Difficulty in managing distant workers
Reduction of cost and company size	Cultural reorganisation of business process
Increase employee motivations	Several employment contracts to manage
Reduction in the number and role of middle managers	Conflict with the middle leaders
Lower costs for the rental of properties	Higher expenses for telecommunication equipment and training
Greater organisational flexibility	Discussion of the business organisation

Table 2.2 Advantages and disadvantages of telework for the workers

ADVANTAGES	DISADVANTAGES
Reduction of the time dedicated to commute	Less visibility and career opportunities
Work according to own availability and Biorhythm	Isolation, reduction of external relational life
More of free time	Invasion of the private sphere
Control by objectives	Greater difficulties in participating in union activities
Increased closeness to family and friends	Unsecured safety and work standards
Free choice of where to live	Reduction of the spatial distinction between home and office

Based on the summary by Buomprisco et al. (2021) there are four important realms that encompass all the matters, Baruch and Nicholson (1997) explained:

1. Home-work interaction - family relationships, as well as the type of physical space and resources available, all play a role in the home/work interface.
2. The job - the nature of the job and the availability of technology that supports it
3. The worker - compatibility between working from home and one's unique set of personal characteristics
4. The company - What is the company's attitude toward working from home, including the willingness and ability of workplace-based management to put their trust in the homeworker?

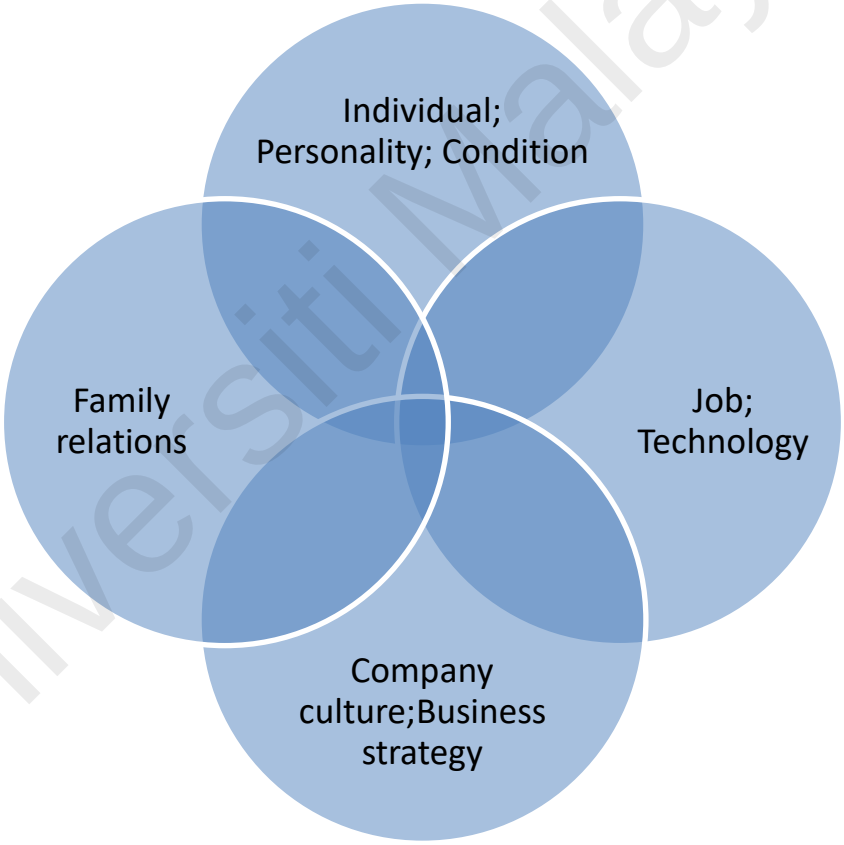

Figure 2.5: Four important realms home working

2.4 Negative effects of working from home

Assessing the safety risks and benefits of working from home in the context of COVID-19 is critical for preserving occupational health. The current pandemic context

is unique in various ways. To begin, because neither workers nor employers anticipated the unexpected transition to work from home, the safety of the home working environment is not guaranteed. However, because many people may choose telework on a transitory basis, a brief period of exposure may help decrease risks of injury or pain related with the home setting, as well as risks of musculoskeletal problems linked with unergonomic workstations (Montreuil and Lippel, 2003). Second, telework has briefly become the norm in many organisations. This may help mitigate the isolation concerns associated with social distancing in the workplace, which teleworkers encounter during normal business hours. On the other hand, extensive school closures have pushed many parents to telework while still caring for their children, including planning for home or online schooling. These overlapping obligations exacerbate the psychosocial dangers inherent in unstructured work time (Standen et al., 1999). Third, the present wave of telework adoption has occurred in an anxiety-inducing environment exacerbated by the epidemic. It has the potential to exacerbate teleworker situations linked with psychosocial and behavioural hazards, particularly those connected with addiction. Isolation may also result in personnel with psychological frailties decompensating with more demanding mental treatment. Fourth, each employee's equipment and internet access differs. In aggregate, these findings indicate that the COVID-19 pandemic may exacerbate occupational dangers beyond the more obvious instances of healthcare settings and other front-line jobs (Sim, 2020).

The circumstance highlights some issues when applying the teleworking for the conventional office workers that are transitioning to teleworking. They are Musculoskeletal problem, Psychosocial problem, Sick building syndrome, Electromagnetic exposure.

1. Musculoskeletal problem

A repetitive motion, static posture, extreme position of forearm and wrist and long exposure are risky behaviors that contribute to musculoskeletal problem in neck, shoulders, wrist, hand, and lumbar region (Montreuil and Lippel, 2003; and Crawford et al., 2011). Furthermore, the condition could be worsened due to lack of breaks and relaxation from long workhours (Sang et al., 2010).

2. Psychosocial problem

Long and continuous working hours can induce feelings of loneliness and isolation, due to lack of social interactions with their colleagues caused by telecommuting (Grant et al., 2013). Besides that, increased stress during working hours because some of the employees are faced with the family responsibilities, due to blurred line between work and private life when they are teleworking (Standen et al., 1999).

3. Sick building syndrome

Generally, health issues are classified as building-related diseases or sick building syndrome. Infectious disorders transmitted through building services, such as Legionnaires' disease, and diseases transmitted from worker to worker within a building, such as viral infections, are all examples of building-related sickness. The sick building syndrome is a collection of symptoms with an unknown cause. They are classified as mucous membrane symptoms affecting the eyes, nose, and throat; dry skin; and what are sometimes referred to as general symptoms of headache and lethargy (Burge, 2004).

4. Electromagnetic exposure

Significantly higher frequency electromagnetic fields (radio waves) are increasingly being employed for wireless communication between people and devices. We

communicate via GSM phones and a variety of locally established DECT (Digital Enhanced Cordless Telephony) systems. Computers interact wirelessly via Bluetooth technology, which enables rapid data transfer over short distances between the computer, mouse, keyboard, and printer, as well as between mobile phones and their peripherals (Sandström, 2006). The general population is exposed to electric fields at levels ranging from 5 to 50 V/m and magnetic fields at values ranging from 0.01 to 0.2 T. (Touitou and Selmaoui, 2012). The potential risks to health differ according on the study, ranging from decreased tumour treatment efficacy (Girgert et al., 2008) to a probable change in the spatial structure of the photoreceptor pigment rhodopsin (Touitou et al., 2003).

2.5 Inherent safety concept

When it comes to causing harm to people, the environment, or the economy, risk considers both the likelihood of an event occurring and the magnitude of the resulting loss or damage (CCPS, 2000; Crowl and Louvar, 2002). Risk-reduction strategies fall into four categories, depending on whether they reduce the frequency or severity of potential accidents (Hendershot, 1998a, b, 1999a, b). These categories, as described by Bollinger et al. (1996), are:

1. Inherent - Reducing or eliminating hazards through the use of safer materials and process conditions.
2. Passive - Equipment and process design features that reduce or eliminate hazards without the active functioning of devices are known as "passive" safety measures.

3. Active - Controls, safety interlocks, and emergency shutdown systems can be used to detect potentially hazardous process deviations and take action to prevent them from becoming a problem.
4. Proedural - Incidents can be prevented or minimised through the use of management approaches such as operating procedures; administrative checks; and emergency response.

Inherent and passive techniques are often viewed as more trustworthy and resilient due to their lack of reliance on technology or on people performing tasks correctly or interfering at the appropriate moment (Bollinger et al., 1996). Inherent safety, also known as primary prevention, is the act of eliminating a hazard, as opposed to secondary prevention, which aims to lessen the risk posed by a hazard. This can be performed by reducing the probability or severity of an unfavourable event, such as an accident in which the hazard becomes apparent (Hanson, 2010). Inherent safety (a.k.a. inherently safe design or inherently safer design) is a safety engineering principle founded on heuristic ideas such as fail-safe design, negative feedback, numerous safety barriers, diversity, redundancy, safety margin, and safety factors. Inherently safe design, according to Khan and Amyotte (2003), incorporates four guidewords for safety measures.

Table 2.3 Inherent safety guidewords

Guideword	Description
Minimise	When the use of hazardous materials cannot be avoided, use smaller quantities of these materials. Whenever possible, perform a risky procedure in the fewest number of instances possible.
Substitute	It is preferable to use a less hazardous material or process when substituting a substance. In place of a potentially hazardous procedure, choose a less risky one.
Moderate	To reduce the risk of exposure to hazardous materials, use them in their least hazardous forms or look for processing options that require less severe conditions.
Simplify	Remove unnecessary (engineered) safety features and protective devices from processes, equipment, and procedures to reduce the risk of human error.

At times, inherent safety has been viewed as a threat to probabilistic risk analysis (PRA). Both of these methods present a skewed view of the situation, as neither can reliably convey the full truth about risk and safety (Johnson, 2000). By paying close attention to the fundamental design and layout, a 'inherently safe' approach to hazard management aims to avoid or eliminate hazards or significantly reduce their magnitude, severity, or likelihood of occurrence. There is less reliance on 'add-on' engineered safety systems and features, as well as procedural controls, all of which have the potential to fail (Kletz et al., 1996)

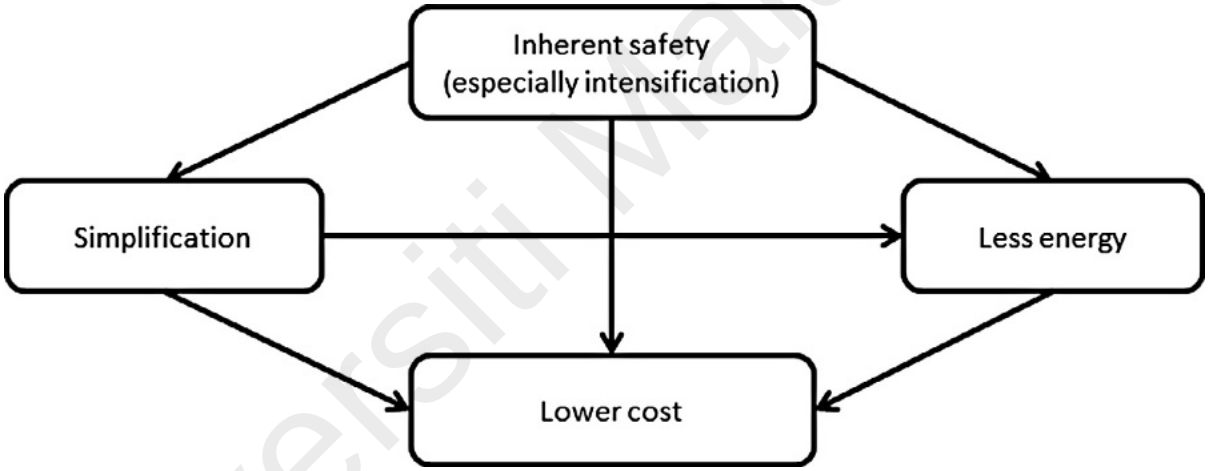

Figure 2.6: Inherent safety as a package of Improvements (Andy et al., 2021)

In Industry, Kletz (1984) summed up his views of the concept of inherent safety:

1. "What you do not have, can not leak"

The best way of preventing a leak of hazardous material is to use so little that it does not matter if it all leaks out, or to use a safer material instead.

2. "People who are not there can not be killed"

Achieved by keeping people away from hazardous areas, it can be very effective at reducing the consequences of any accidents that occur.

3. "The more complicated a system becomes, the more opportunities there are for equipment failure and human error"

Recognition that complexity can be a cause of problems, for example creating simpler, cheaper, and safer plants. While applying inherent safety to complex systems is particularly challenging, the most significant benefits can be realised here. It is not something that can be achieved alone, and hence it is vital to know who to involve. In most circumstances, due to their various degrees of knowledge and responsibilities, input from multiple discipline engineers will be required. There are three distinct approaches to enforcing inherent safety (Skinner, 2018):

1. Focus on high severity hazards

The greatest benefit of implementing inherent safety is that it eliminates or significantly reduces the likelihood of severe events (major accidents). The difficulty here is that these events infrequently occur, making it difficult for people to fully appreciate the benefits when dealing with more frequent low-impact events.

2. Applying inherent safety during option selection

Numerous alternatives may be investigated throughout a project (including modifications of operating systems). The inherent safety of the preferred option should be a primary consideration. One way to accomplish this is by defining inherent safety objectives and incorporating them into the evaluation process. Conducting a structured and formal Inherent Safety Workshop is recommended to alter the fundamental demand

so that add-on safety measures are not relied upon as heavily (U.S Chemical Safety and Hazard Investigation Board, 2007).

3. Checklists during design reviews

One issue is that people do not have the opportunity to consider inherent safety on a regular basis formally. A checklist approach can prompt them to consider the options and prevent items being forgotten (HSE, 2012)

2.6 Application of inherent safety for teleworkers

Inherent safety is a proactive approach to process safety in which hazards are eliminated or mitigated to minimize risk without requiring additional engineering (add-on) or procedural intervention. To achieve an inherently safer design, four fundamental principles are available: minimization, substitution, moderation, and simplification. Inherent safety is not a self-contained concept. It reduces risk by utilizing a hierarchical structure in conjunction with engineered (passive and active) and procedural safety. The key to inherently safer design is to consider its four fundamental principles early and frequently. (Amyotte et al., 2009).

Based on the four principles of inherent safety, each principle has their own application in creating an inherently safer workplace for teleworkers.

Table 2.4 Application of inherent safety for teleworkers

Issue during teleworking	Example	Application for teleworkers
Musculoskeletal problem (Crawford et al., 2011)	Musculoskeletal problem in neck, shoulders, wrist, hand, and lumbar region	Minimization: regular pause to do some stretching (Gasibat et al., 2017)
Psychosocial Issue (Grant et al., 2013)	Stress, anxiety, and Isolation	Moderation: adjust and redistribute work assignments, arrange work schedules, access to psychiatrist (ILO, 2020)
Sick building Syndrome (Hosseini et al., 2020)	Noise pollution	Simplification: soundproofing workspace (Chen et al., 2019)

Issue during teleworking	Example	Application for teleworkers
	Inadequate lighting	Moderation: installing blind and using lamp, depending on the current light needed
	Insufficient ventilation and temperature	Moderation: installing fan or air conditioner to circulate air
Equipment (ILO, 2020)	Working on sub-par equipment and tools	Substitute: company provide necessary equipment by reimbursing the cost (ILO, 2020)

2.7 Summary of literature review

Overall, this literature review provides a brief overview of current working space evolution for the past 50 years from a simple bullpen to the current trend is teleworking or working from home. Teleworking or working from home for some type of jobs during the COVID-19 pandemic has become an alternative to keep company stay afloat.

Amidst rising trend of teleworking there will always an advantages and disadvantages for the trend. For the advantages, many workers have more family time and flexible working time. On the other hand, there is also disadvantages of teleworking where there is an increased in work overtime, stress and anxiety, lack of appropriate equipment, and lack of training.

To make telework safer, there is a principle that mostly used in industrial sector that rarely applied to other work sector, that is inherent safety. Inherently safer teleworking can be achieved by minimizing, substitute, simplify, and moderating the risk.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter will cover the procedures used to collect data and generate the stated conclusions, which will include the study's stages, data sampling, data collection method, and data analysis method.

3.2 Research Design

This study was conducted on a Klang Valley employee. This study consists of five (5) parts, each of which is carried out in numerous steps to ensure a successful outcome. The steps of the study are depicted in Figure 3.1, while the stages of the technique are listed in Table 3.1.

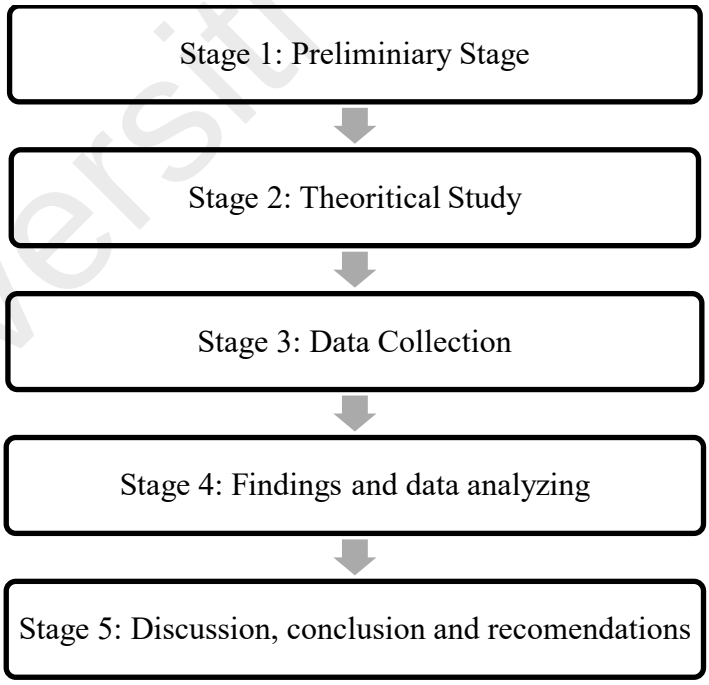

Figure 3.1: Stages of Study

Table 3.1 Methodology Stages of Study

Stage	Action	Descriptions
Stage 1: Preliminary Stage	(i) Problem identification (ii) Formulation of research objectives	(i) Identify the problem related to safety and health matter faced in any sectors or industries (ii) Determine the aims, objectives, the background of the study, the scope of the study as well as the limitation arisen in the study
Stage 2: Theoretical Study	Literature Review	Highlighting previous studies both local and international that further explains the field of study such as the Act, comprehensive definition, situation awareness, factors of accident, control management systems as well as passed the literature review that discussed the related field of study from various sectors and industries
Stage 3: Data Collection	(i) Selection of research instruments (ii) Collection of data	(i) Self-administrated questionnaire and observation through site visits were planned (ii) Distribute the self-administrated questionnaire to the staff through online Google form format and conduct the site visits
Stage 4: Findings and data analyzing	Data Analysis	(i) Analyze each section in the questionnaire by using SPSS (ii) Analyze the findings of site visits

Stage	Action	Descriptions
Stage 5: Discussion, Conclusion, and recommendations	(i) Discuss the findings and concluding the study (ii) Provide recommendations	(i) Discussion and Conclusion on the problems, methods, and findings (ii) Recommendations based on the suggestions by the respondents to improve the awareness of hazards in workplaces

3.3 Survey Questions

A self-administered questionnaire will be prepared and delivered online via Google Forms to one hundred (100) workers in the Klang Valley region. The questionnaire was divided into four sections: the first, the second, the third, and the fourth. Section 1 includes demographic questions on the respondent's background, such as gender, age, educational background, employment industry, and years of experience. Section 2 assesses fundamental and general understanding of workplace hazards, including their definition, classification, action, ergonomics, and labelling. Section 3 consists of questions designed to ascertain the frequency, importance, and quality of steps taken by the employer to mitigate risk connected with the home working environment. The questions were classified into four (4) subcategories: rules and procedures, work surroundings and equipment, information and training, and attitudes and commitments. The final portion, section 4, asks respondents to make comments or recommendations for reducing the risk associated with working from home. The questionnaire contains a total of 49 items; a sample of the questionnaire is included in Appendix a..

The questionnaire scoring method based on Likert Scale using multiple choice question with five-tier scoring. Scoring items of Likert Scale is in the Table 3.2

Table 3.2 Likert scale

Scale	Description of scale
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

3.4 Data Collection

The study is about safety; the scope includes existing working conditions for teleworkers, workers' awareness of hazards associated with working from home, and employer-taken efforts to mitigate risk associated with working from home.

This research employs a quantitative approach and is based on survey data. The data sources are primary and secondary. A self-administered questionnaire for the collection of mostly quantitative data, complemented by site visits for the collection of qualitative data, is one of several methods for gathering primary data. Meanwhile, secondary data sources included the internet, newspapers, and published materials such as journals and books that contained relevant content. Data collecting will take place between June and July 2021. The respondents' perceptions are based on their comprehension, knowledge, opinion, acceptance, and awareness of the study's contents. We built a self-administered questionnaire and disseminated it online via Google Forms.

3.5 Data Analysis

The Statistical Package for Social Science was used to examine the data (SPSS). The descriptive analysis methods of frequency and percentage are utilised to explain respondents' demographics and multiple-choice questions, whereas data relating to

opinions, suggestions, and observation are studied qualitatively using photographic evidence.

The response from the questionnaire will be analyzed using crosstabulation and Pearson's chi-square test via the SPSS tool. The Pearson's chi-square test used to test the relationship between two variables and it potential in influencing the data distribution. The findings are presented in table and bar chart format for display the summary of the findings. Furthermore, the data from the questionnaire will be gathered and later be used to develop an inherent safety guideline.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Introduction

This chapter Discuss the research findings of the data collected from the study conducted. The primary data sources for analysis are via questionnaire and followed by SPSS tool for analysis. The findings will be presented accordingly based on the study's research objectives.

4.2 Respondent's Demographic Analysis

A total of 146 respondents answered the provided questionnaire. Out of 146 respondents, 92 were female (63.01%), and 54 were male (36.99%). The age of respondents ranges from under 25 to over 50 years and above. The mean age for female respondents for both males and females is 36 years old. Table 4.1 provides a detailed summary of respondents' demographic profiles.

Based on the collected responses, most of the respondents are working in the Education sector, and the type of job they are working on varies from 8 different categories. The majority, with 37.67%, are working in Administrative and organizational style of work 77% of the workers are currently living with their family members. For ease of analysis, the age range of respondents split into two narrower different categories of under 35 years old and 35 years and older.

Table 4.1 Demographic of the respondents

Gender	Frequency	Percentage (%)
Male	54	36.99
Female	92	63.01

Age	Frequency	Percentage (%)
Under 25	6	4.11
25-34	49	33.56
35-44	81	55.48

45-54	5	3.42
55 and Over	5	3.42

Work Sector	Frequency	Percentage
Arts and Entertainment	3	2.05
Education	64	43.84
Enterpreneur or Self-Employed	11	7.53
Financial and Insurance	11	7.53
Health	2	1.37
Industrial	6	4.11
Information and Technology	9	6.16
Other	32	21.92
Real estate	3	2.05
Retail	3	2.05
Social Work	2	1.37

Type of work	Frequency	Percentage (%)
Administrative and organizational task	55	37.67
Programming and coding	8	5.48
Communicating with colleagues or clients	4	2.74
Training, teaching, and coaching	8	5.48
Creative thinking	3	2.05
Processing, analyzing, and interpreting information.	37	25.34
Selling or influencing others about a service/product.	7	4.79
Monitoring process, surroundings, or use of resources.	24	16.44

Living Arrangements	Frequency	Percentage (%)
Alone	18	0.13
Living in a shared house (rent a room)	15	0.10
Living with family	113	0.77

4.3 Challenges of Teleworkers

When the COVID-19 pandemic of 2020 came around unexpectedly, many workers have to work from home. As a result of this abrupt transition, the distinction between professional and personal life has become increasingly hazy. Due to a lack of designated

home office spaces, many people have to create improvised work setups in living rooms, kitchens, and bedrooms—anywhere there was space. As a result, many parents have to work while caring for their children due to school closures. Numerous employees have reported decreased productivity, decreased motivation, increased stress, and worsened mental health due to these changes.

Table 4.2 Current issue faced by the respondents during teleworking

Question	Yes	Percentage (%)	No	Percentage (%)
Room Availability				
I have a separate room for working	68	46.58	78	53.42
I have my room partitioned to act as a workstation	42	28.77	104	71.23
For the meeting, I have a Greenscreen or other alternative backdrops as a background	43	29.45	103	70.55
Noise				
Workstation is away from noise, distractions and is devoted to your work needs	68	46.58	78	53.42
Equipment				
I have an adjustable chair	74	50.68	72	49.32
I have an adjustable table	12	8.22	134	91.78
The computer screen is free from noticeable glare	93	63.70	53	36.30
Floors are clear and free from cable and box	97	66.44	49	33.56
Computer equipment connected to a surge protector	55	37.67	91	62.33
I use anti-glare screen filters	15	10.27	131	89.73
A backrest adequately supports my back	68	46.58	78	53.42
My feet are on the floor or adequately supported by a footrest	74	50.68	72	49.32
Ergonomics				
The top of the screen is at eye level	81	55.48	65	44.52
There is space to rest the arms while not typing	88	60.27	58	39.73
Electrical cords run in non-traffic areas, do not run under rugs, and are not nailed or stapled in place	109	74.66	37	25.34

I have experienced back pain	93	63.70	53	36.30
I have experienced neck pain	98	67.12	48	32.88
Sick Building Syndrome				
Lighting is adequate	134	91.78	12	8.22
Ventilation is adequate	140	95.89	6	4.11
Temperature is adequate	115	78.77	31	21.23
Humidity is adequate	121	82.88	25	17.12

As per table 4.2, we can observe that there are a lot of challenges faced by the respondents during their home working experience, there are several challenges:

4.3.1 Room Availability

According to the Department of Statistics Malaysia (DOSM), the room availability and size, the average household is 4.2 person, and the prominent type of household is nucleus family households. This data from the survey where most of the respondents live with their family members supports the statement. According to Ishak et al. (2018), in Kuala Lumpur, the average size is 700 ft2, consisting of 3 bedrooms and two bathrooms; with the family size of 4 people, the limited space makes partitioned room and alternative background not available.

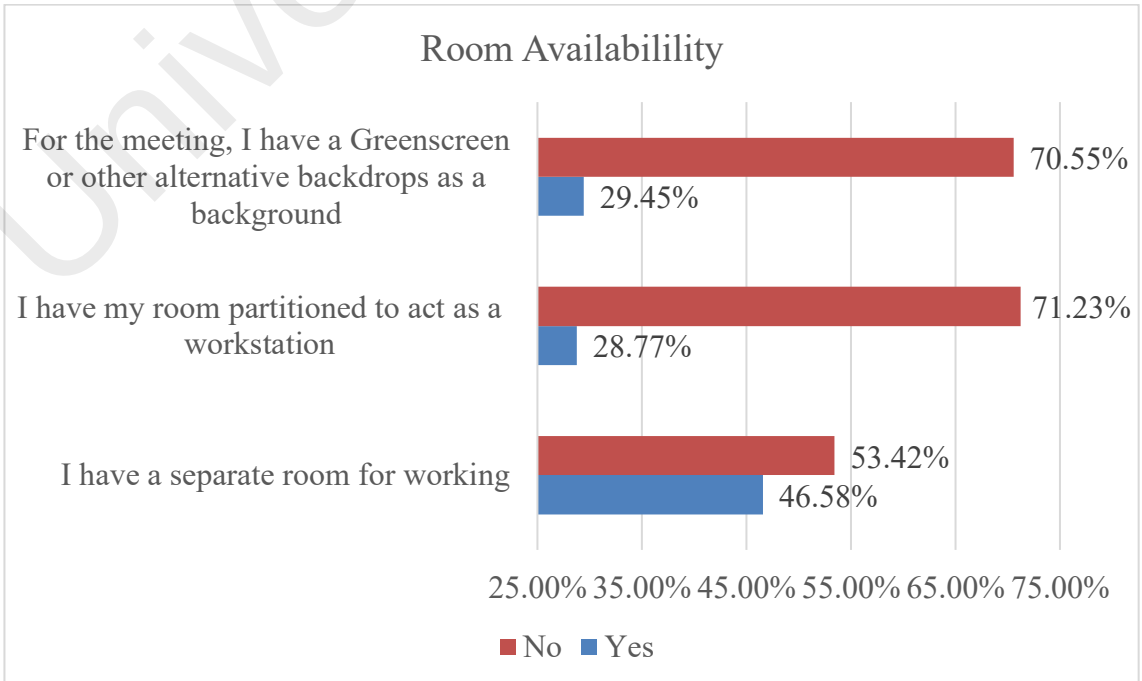

Figure 4.1 Room Availability challenges with working from home

Table 4.3 Chi-square analysis between working sector and separate room

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10,857	4	,028
Likelihood Ratio	11,016	4	,026
Linear-by-Linear Association	,249	1	,618
N of Valid Cases	146		

Table 4.4 Chi-square analysis between working sector and room partition

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17,062	4	,002
Likelihood Ratio	18,179	4	,001
Linear-by-Linear Association	3,301	1	,069
N of Valid Cases	146		

After Chi-square analysis, different working sectors have a significant association with separate rooms for working, partitioned spaces, for the meeting, as table 4.3 and 4.4, and shows below. ILO (2020) explained that Workers may become more anxious or stressed due to inadequate equipment and a poor working environment. Furthermore, Vischer (2008) found that Employees' productivity suffers because of the time and effort they must expend to deal with poor workspace design.

4.3.2 Noise distraction

The majority of those affected by the Pandemic are still working from home, and they'll likely continue to do so for the foreseeable future. As a result, many people find it difficult to stay productive when working from home. Distractions like noisy children, construction, or barking dogs can have a negative impact on productivity when working from home. A positive attitude and creating an ideal work environment can make all the difference in the world.

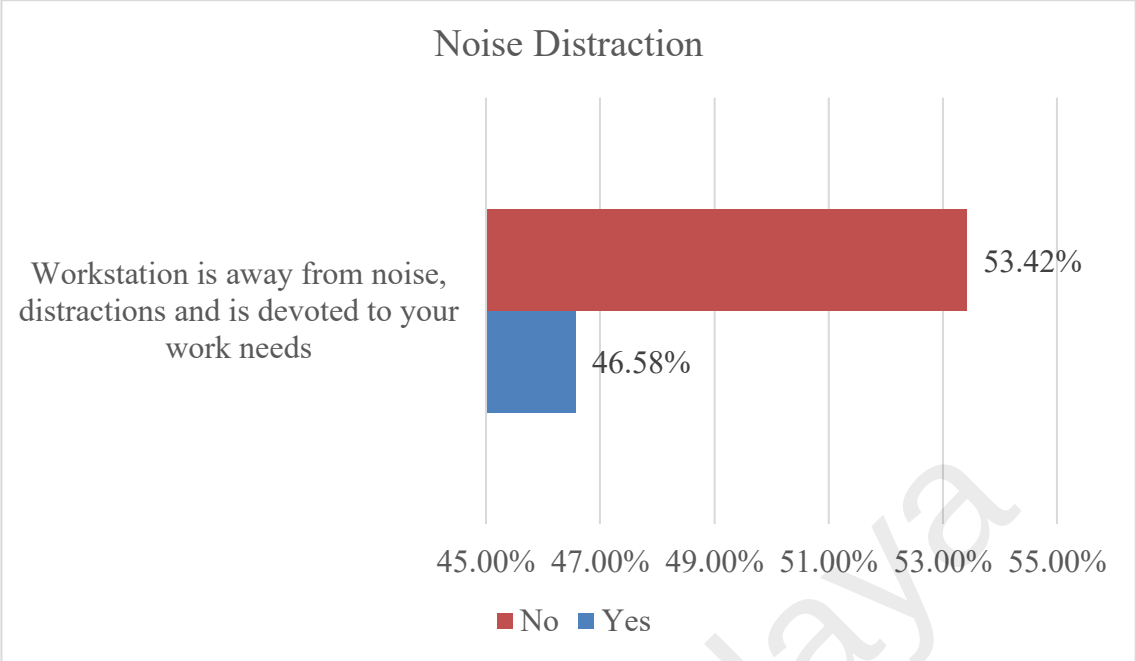

Figure 4.2 Noise distraction challenges with working from home

Table 4.5 Chi-square analysis between type of work and noise distraction

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7,851	2	,020
Likelihood Ratio	7,995	2	,018
Linear-by-Linear Association	6,100	1	,014
N of Valid Cases	146		

Table 4.6 Chi-square analysis between work sectors and noise distraction

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19,872	4	,001
Likelihood Ratio	22,479	4	,000
Linear-by-Linear Association	2,286	1	,131
N of Valid Cases	146		

The result summarized in the table 4.5 and 4.6 shows that the response from the respondent that there is a challenge with noise disturbance. Kazekami (2020) stated that the presence of young children or family members might cause distractions while working at home. Melamed and Fried (2001) found that Depending on the combination of favourable and unfavourable environmental conditions, job complexity can either

benefit or harm workers' well-being. It shows that, if the environment is favourable, the positive effects of job complexity can extend to health outcomes. In summary, this study found that workers who perform simple tasks may benefit from moderate noise exposure.

4.3.3 Equipment

The survey revealed that many respondents have challenges procuring this equipment, such as an adjustable chair, adjustable chair, power surge protection, anti-glare protection, back and foot support from the survey. ILO (2020) stated that Employees should not bear the cost of working from home. Employees have the right to work as efficiently, effectively, and comfortably as if they were at their regular place of employment by receiving from their employer the tools and equipment they need. There are many considerations for the company to buy the equipment for the employee

- The needs and resources for the employees for working from home
- The employees' level of skill in accessing and working with the equipment
- Technical support for their employee
- A reimbursement scheme for their employee to procure the equipment according to company specifications
- Company financial condition

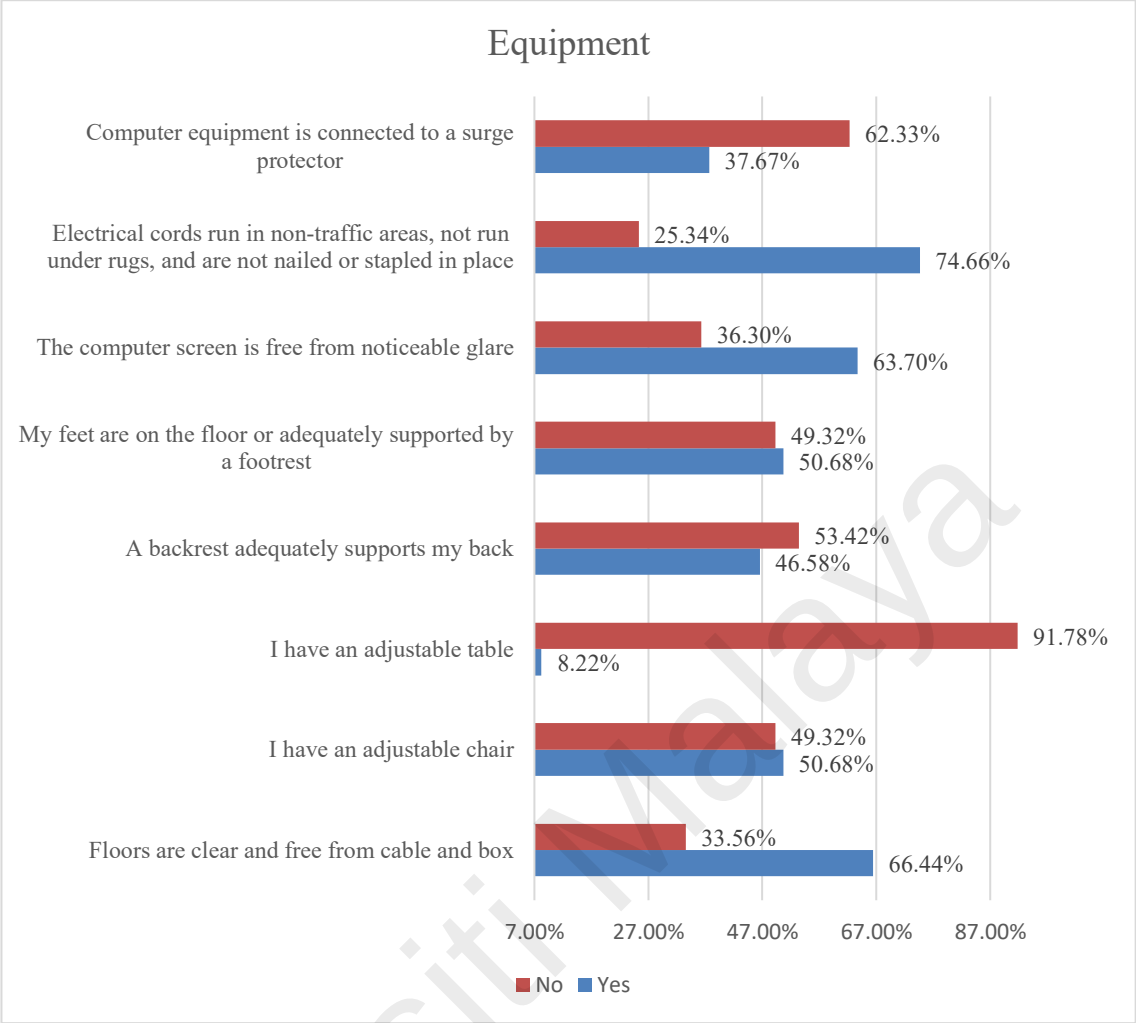

Figure 4.3 Equipment challenges with working from home

Table 4.7 Chi-square analysis between working Sector and backrest

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12,086	4	,017
Likelihood Ratio	13,018	4	,011
Linear-by-Linear Association	,126	1	,723
N of Valid Cases	146		

Table 4.8 Chi-square analysis between working sector and foot support

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	34,785	4	,000
Likelihood Ratio	36,724	4	,000
Linear-by-Linear Association	,026	1	,873
N of Valid Cases	146		

Table 4.9 Chi-square analysis between working sector and computer screen glare

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	25,543	4	,000
Likelihood Ratio	29,042	4	,000
Linear-by-Linear Association	1,332	1	,248
N of Valid Cases	146		

Table 4.10 Chi-square analysis between working sector and power surge device protection

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19,965	4	,001
Likelihood Ratio	22,295	4	,000
Linear-by-Linear Association	6,812	1	,009
N of Valid Cases	146		

Table 4.11 Chi-square analysis between working sector and use of antiglare

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	25,705	4	,000
Likelihood Ratio	28,371	4	,000
Linear-by-Linear Association	4,722	1	,030
N of Valid Cases	146		

Table 4.12 Chi-square analysis between working sector and clear floor

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	42,526	4	,000
Likelihood Ratio	58,107	4	,000
Linear-by-Linear Association	12,213	1	,000
N of Valid Cases	146		

Based on the respondent's response and after analyzed with Chi-square analysis as shown in the table 4.7 until table 4.12 there is correlation between equipment and working sector. According to Whitman and Dick (2006), corporate management is

concerned about the safety of company assets when employees are at home. In addition, telecommuting can lead to legal issues, such as when family members use company computers to download illegal or unethical material.

4.3.4 Ergonomics

Working from home has become the "new normal," which may increase ergonomic issues as the pandemic continues. Stiffness, back pain, sore neck, and eye fatigue can result from a computer or laptop (Thomas et al., 2021). Based on the survey, the majority of the respondents have experienced neck pain (67.12%) and back pain (63.7%). One of many causes is that the eye and the computer's screen must have the same level. Rodrigues et al. (2017) found that incorrect chair height and armrest positioning can cause musculoskeletal pain. Furthermore, Werth and Babski-Reeves (2012) explained that using a laptop while seated on a couch causes awkward wrist positions while typing or activating the touchpad, arms not supported, stressing the upper back, and neck flexed to look at the screen.

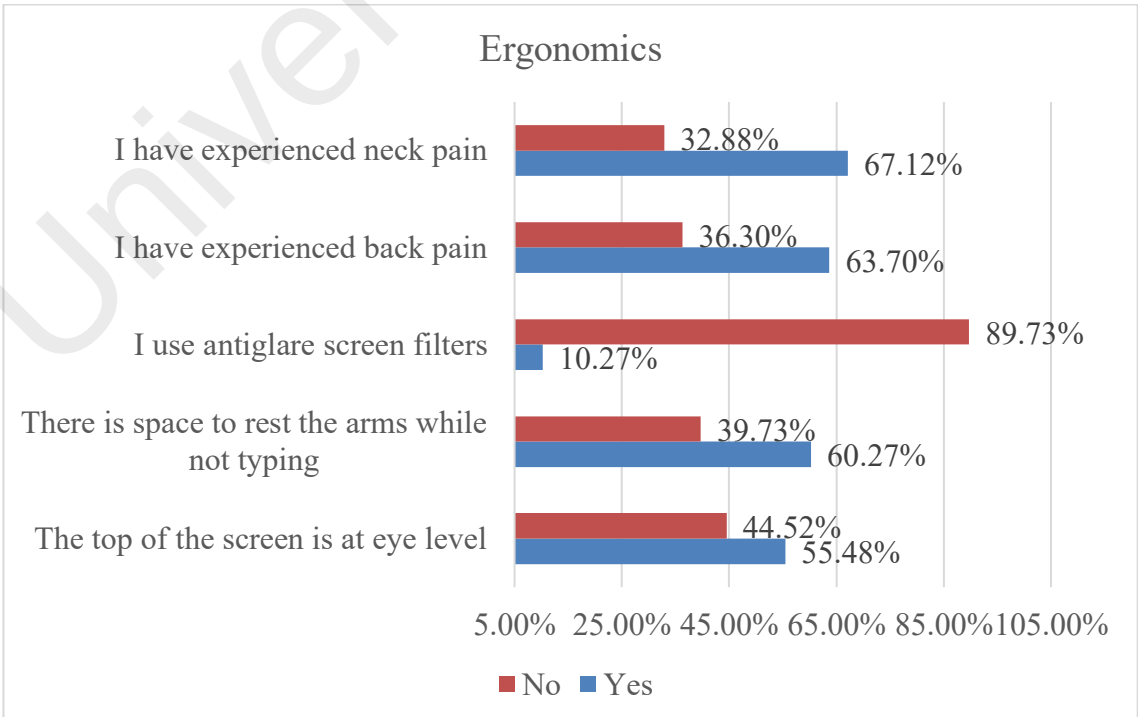

Figure 4.4 Ergonomic challenges with working from home

Table 4.13 Chi-square analysis between living arrangements and backpain

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4,268	1	,039
Likelihood Ratio	4,151	1	,042
Linear-by-Linear Association	4,239	1	,040
N of Valid Cases	146		

Table 4.14 Chi-square analysis between living arrangement and neck pain

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6,712	1	,010
Likelihood Ratio	6,426	1	,011
Linear-by-Linear Association	6,666	1	,010
N of Valid Cases	146		

Table 4.15 Chi-square analysis between working sector and neck pain

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	13,131	4	,011
Likelihood Ratio	12,857	4	,012
Linear-by-Linear Association	,330	1	,566
N of Valid Cases	146		

After collecting the respondent's response and analyze it, there are correlation between back and neck pain with working sector and living arrangements as shown in table 4.13 , 4.14, 4.15. Cagnie et al. (2006) found that there is psychosocial factor associated with neck and backpain. Furthermore, Xiao et al. (2021) stated that for some parents, balancing work and family schedules can be a challenge, as they may need to do housework and other tasks while attending to their work meetings. This can lead to a "porous" workday for some parents. Parental sacrifice may be necessary in some cases, as night or early morning hours are the only times when they can focus on work and avoid constant interruptions. Emotional exhaustion can result from long-term work-family conflict.

4.3.5 Sick Building Syndrome

In a sick building syndrome (SBS), people who live in a building for an extended period report symptoms of illness or discomfort that they attribute to their time in the building. It is impossible to pinpoint the source of this ailment or its cause (EPA, 1991). Factors responsible for SBS are chemical contamination, biological contamination, inadequate ventilation, poor and inappropriate lighting, psychological factors, and electromagnetic radiation. To avoid that, one of the preventions is by having adequate lighting, ventilation, temperature, and humidity, which most respondents have already achieved.

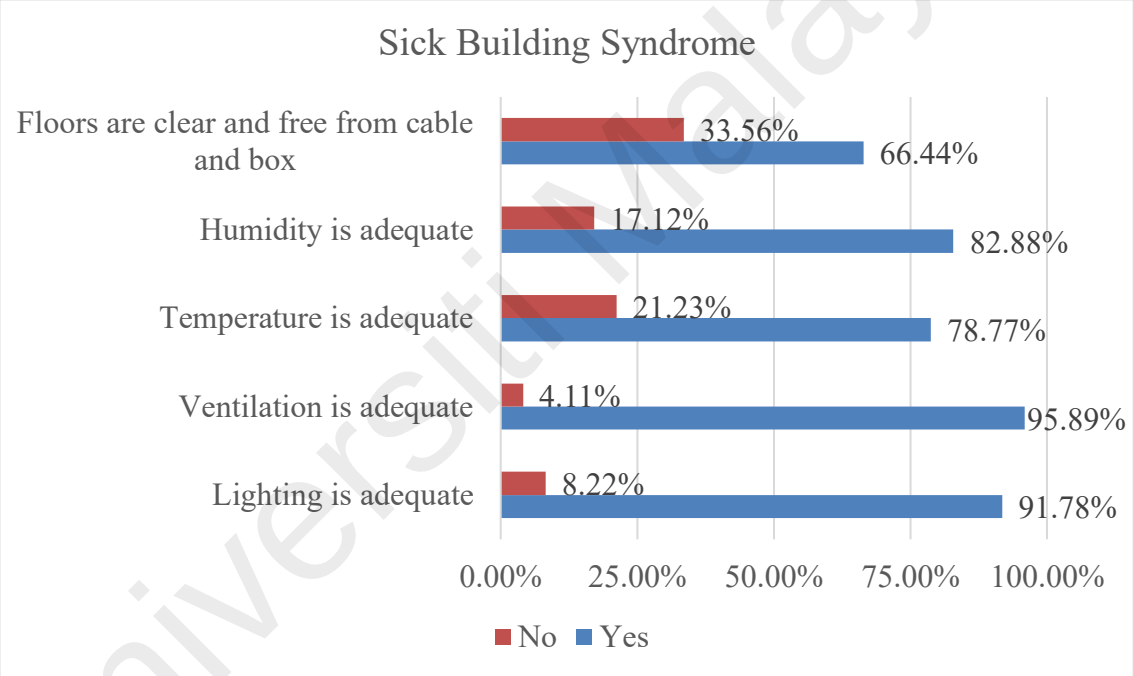

Figure 4.5 Sick building syndrome challenge challenges with working from home

Table 4.16 Chi-square analysis between working sector and room lighting

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22,105	4	,000
Likelihood Ratio	19,605	4	,001
Linear-by-Linear Association	3,693	1	,055
N of Valid Cases	146		

Table 4.17 Chi-square analysis between working sector and room ventilation

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17,125	4	,002
Likelihood Ratio	15,972	4	,003
Linear-by-Linear Association	5,856	1	,016
N of Valid Cases	146		

Table 4.18 Chi-square analysis between working sector and room temperature

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14,535	4	,006
Likelihood Ratio	18,762	4	,001
Linear-by-Linear Association	,300	1	,584
N of Valid Cases	146		

Table 4.19 Chi-square analysis between working sector and room humidity

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	24,570	4	,000
Likelihood Ratio	31,419	4	,000
Linear-by-Linear Association	,519	1	,471
N of Valid Cases	146		

As per table 4.16 – 4.19 there is correlation between working sector and the working environmental conditions. There are psychosocial factors contributing to sick building syndrome, Passarelli (2009) found that a stressful work environment, such as sitting at a desk all day using a computer, and the need to meet arbitrary deadlines, can all contribute to the development of SBS. Furthermore, Rostron (2008), found that it is linked to the need for each worker to take charge of his or her personal workplace surroundings. Self-control is closely associated with one's desire for independence and control over one's own actions from the control and restrictions imposed by others. To restore their sense of self-determination, people display symptoms of SBS ('psychological reactance').

4.3.6 Internet and data security

As a result of the massive quarantines and social isolation caused by the Covid-19 epidemic, the use of digital technologies has increased unavoidably. Globally, individuals and organisations have had to adjust to new modes of work and living. As the digital revolution accelerates, concerns about digital technologies and data security remain constant. Numerous public locations, including college campuses, public schools, shopping malls, religious institutions, offices, airports, and railway stations, have enacted lockdowns in reaction to the pandemic's outbreak. As a result of the lockdowns, the majority of individuals have turned to the internet and internet-based services to communicate, socialise, and do work obligations from home. Internet service consumption has surged from 40% to 100% in contrast to pre-lockdown levels. The use of content distribution and video conferencing services such as Zoom has expanded tenfold, while content consumption has climbed by 30%. (Branscombe, 2020).

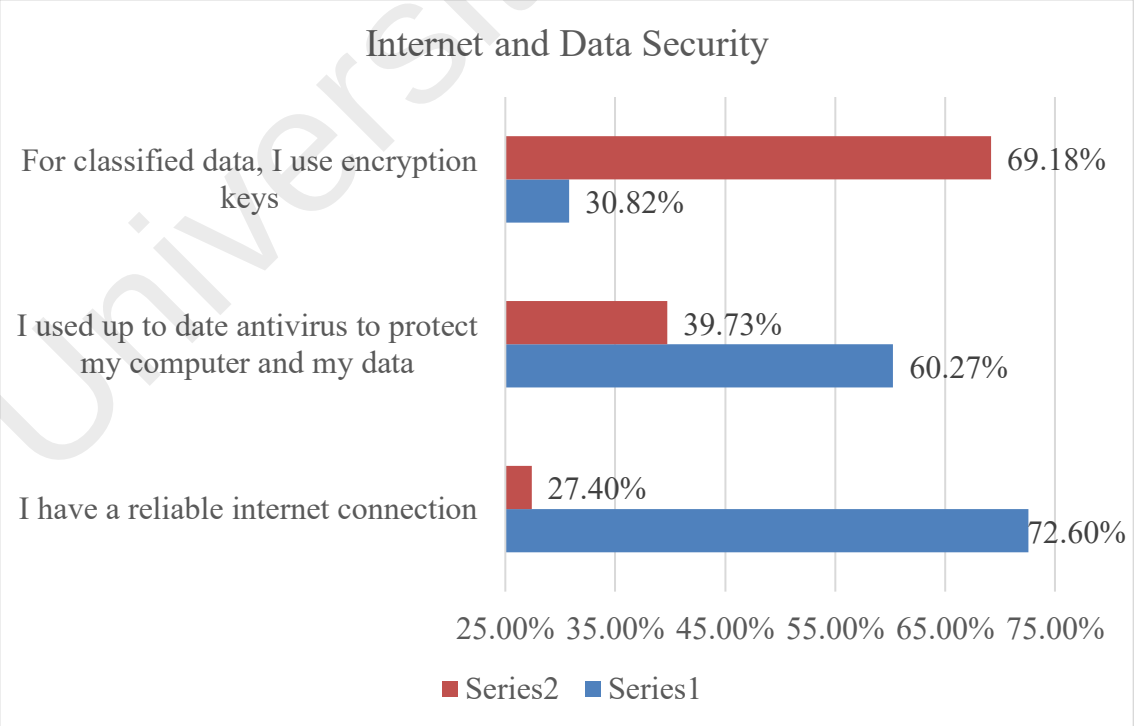

Figure 4.6 Internet and data security challenges with working from home

Table 4.20 Chi-square analysis between living arrangements and internet connection

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7,183	1	,007
Likelihood Ratio	8,437	1	,004
Linear-by-Linear Association	7,134	1	,008
N of Valid Cases	146		

Table 4.21 Chi-square analysis between working sector and internet connection

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	35,124	4	,000
Likelihood Ratio	43,127	4	,000
Linear-by-Linear Association	11,126	1	,001
N of Valid Cases	146		

Internet connection correlates with living arrangements and the working sector, as shown in table 4.20. This evidence supported by Budnitz and Tranos (2021), finding where the quality and reliability of digital services, particularly home Internet connection speeds, are also critical to successful telecommuting, as these ensure that work tasks can be completed with minimal delay or interruption. As network bandwidth becomes congested due to increased demand, decreased reliability and slower connection speeds are common side effects. Before the pandemic, broadband services were never put to the test in terms of how well they served telecommuters, as only a small percentage of workers were able to work from home and access office resources online. Furthermore, Mcclain et al. (2021) discovered that due to shared internet connection with their children for homeschooling, parents also faced issues with the internet connection when they had to work from home.

Table 4.22 Chi-square analysis between the working sector and usage of antivirus

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11,658	4	,020
Likelihood Ratio	14,440	4	,006
Linear-by-Linear Association	,289	1	,591
N of Valid Cases	146		

There is correlation between the working sector and usage of antivirus as seen in table 4.22. Different company have different priority in data security some organization choose not to use updated antivirus software. These results show some similarities with Georgiadou et al. (2021) research where several organizations more concerned with securing corporate network access than with protecting company assets.

4.4 Safety and health issues for home workers

4.4.1 Workplace Safety and Health policy

The work surroundings of teleworkers must be inspected to ensure their safety by detecting and correcting risk factors that could result in illness or injury. Numerous countries' health and safety agencies have produced criteria for evaluating the teleworker's home working environment. In this pandemic situation, it is critical to establish clear standards addressing regular in-situ reviews while adhering to physical distance rules and meeting an employer's legal obligations (ILO, 2020). According to the findings, the majority of organisations where respondents work has regulated working hours, a clear understanding of their obligations in order to avoid stress and sadness, and a clear policy. However, some businesses continue to withhold information about their emergency action plan from their employees. In general, the majority of businesses have a well-defined workplace safety and health strategy.

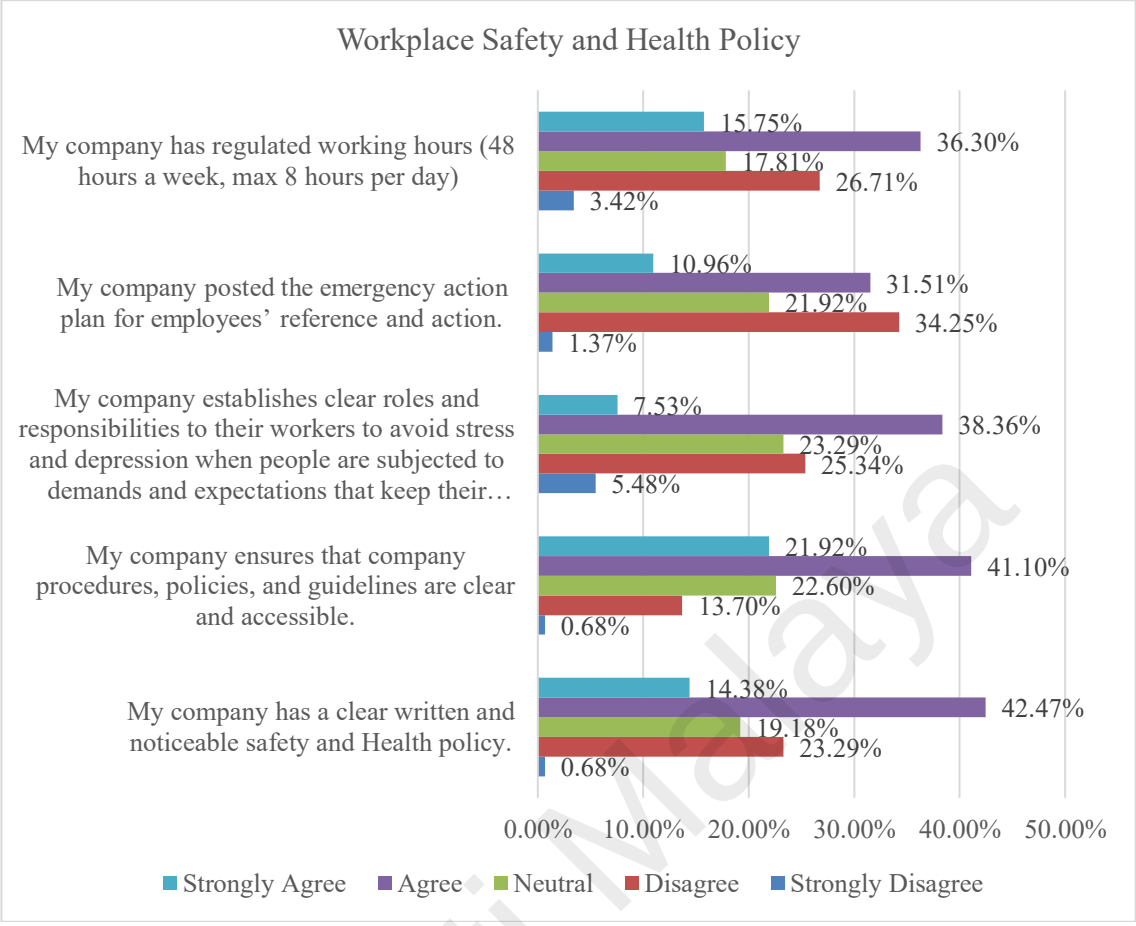

Figure 4.7 Workplace safety and health policy challenge faces by respondents

Table 4.23 Chi-square analysis between living arrangements and stress and depression

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14,479	4	,006
Likelihood Ratio	18,078	4	,001
Linear-by-Linear Association	10,601	1	,001
N of Valid Cases	146		

Table 4.24 Chi-square analysis between type of work and stress and depression

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16,573	8	,035
Likelihood Ratio	17,042	8	,030
Linear-by-Linear Association	2,108	1	,147
N of Valid Cases	146		

After analyzing the result with chi-square analysis there are significant correlation between company clear responsibilities to prevent stress and depression for their employee and living arrangement and the type of work as shown in table 4.23 and 4.24. ILO (2020) found that people who work from home face a variety of psychosocial risks, including isolation, blurred boundaries between work and home, and an increased risk of domestic violence. Due to these blurred lines their emotional pressure are increased. Furthermore, the type of work also worsening the employee's psychological pressure. Kivimäki et al. (2006) found that it has been shown that overworked employees are more likely to miss work, be absent due to mental illness, self-report health problems, suffer from depression and anxiety, experience burnout, have heart disease and have musculoskeletal complaints.

Table 4.25 Chi-square analysis between type of work and working hours

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	24,678	8	,002
Likelihood Ratio	25,275	8	,001
Linear-by-Linear Association	6,332	1	,012
N of Valid Cases	146		

Table 4.26 Chi-square analysis between working sector and working hours

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	17,606	8	,024
Likelihood Ratio	20,652	8	,008
Linear-by-Linear Association	1,615	1	,204
N of Valid Cases	146		

As per table 4.25 and 4.26 the result with chi-square analysis, there is a significant correlation between working hours and the working sector. The result aligns with ILO (2020) findings that workers in industries such as manufacturing, education, health care,

and finance who are affected by the COVID-19 pandemic are being forced to work excessive overtime hours and already heavy workloads.

4.4.2 Equipment

Workers have the right to work efficiently, effectively, and comfortably as if they were working in their regular workplace by receiving the tools and equipment they need from their employer, according to ILO (2020). From most of the respondents always protect their data after they are finished with their work. However, not everyone is able to have proper work conditions with a good ergonomic furniture.

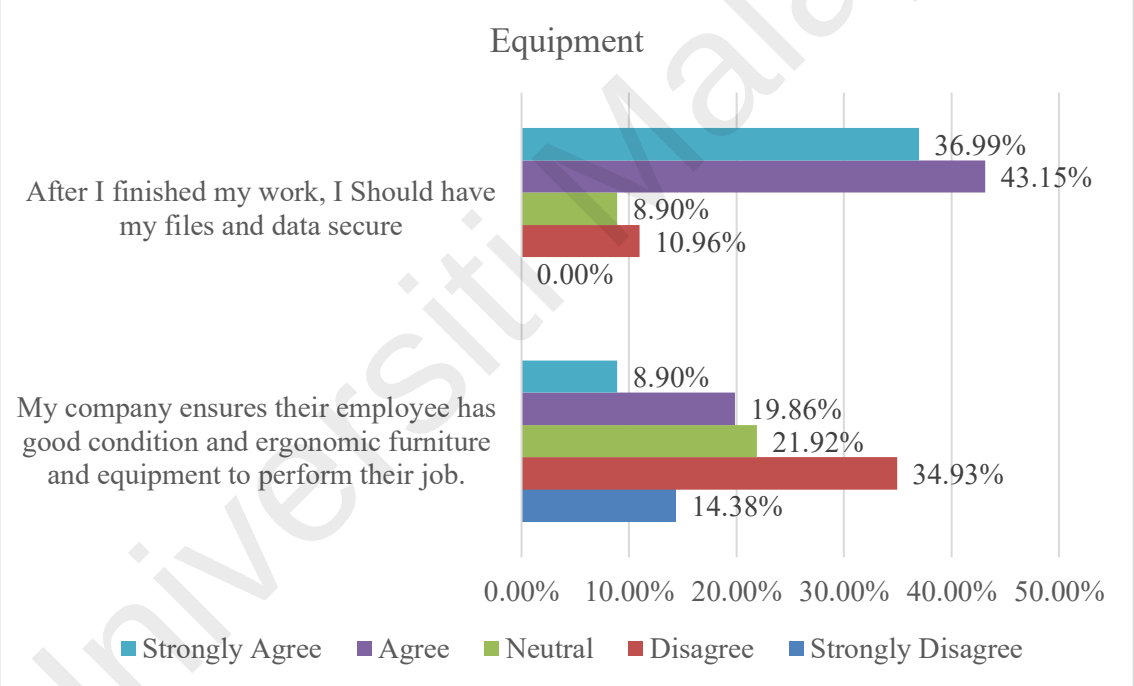

Figure 4.8 Equipment challenges faced by respondents

Table 4.27 Chi-square analysis between Working sector and ergonomic Furniture

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	40,167	8	,000
Likelihood Ratio	38,896	8	,000
Linear-by-Linear Association	,279	1	,598
N of Valid Cases	146		

Table 4.28 Chi-square analysis between Working sector data security

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	32,614	8	,000
Likelihood Ratio	39,695	8	,000
Linear-by-Linear Association	,030	1	,863
N of Valid Cases	146		

Based on the analysis as shown in table 4.29 and 4.30 that there is significant correlation between working sector and ergonomic furniture and data security. ILO (2020) stated found that the procurement of ergonomic equipment in some companies are limited due to several factors such as:

- The needs and resources for the employees for working from home
- The employees' level of skill in accessing and working with the equipment
- Technical support for their employee
- A reimbursement scheme for their employee to procure the equipment according to company specifications
- Company financial condition

Moreover, data security for each working sector is different because each sector has their own concern regarding their data. For example, respondents working in education sector need to keep their students score data in secret, in health sector and their patient health information.

4.4.3 Psychosocial

Extensive hours, a lack of or ambiguous boundary between work and home, and a lack of organisational support can all have a detrimental effect on an individual's mental and physical health. Due to the complexity of the required Work from Home situation, an

in-depth investigation of the effects of organisational, physical, environmental, and psychosocial aspects on employees' mental and physical health is important. According to the survey results, respondents are unable to concentrate while working due to personal life issues and struggle with work-life balance. On the other side, by working from home, most respondents' families are able to spend quality time together.

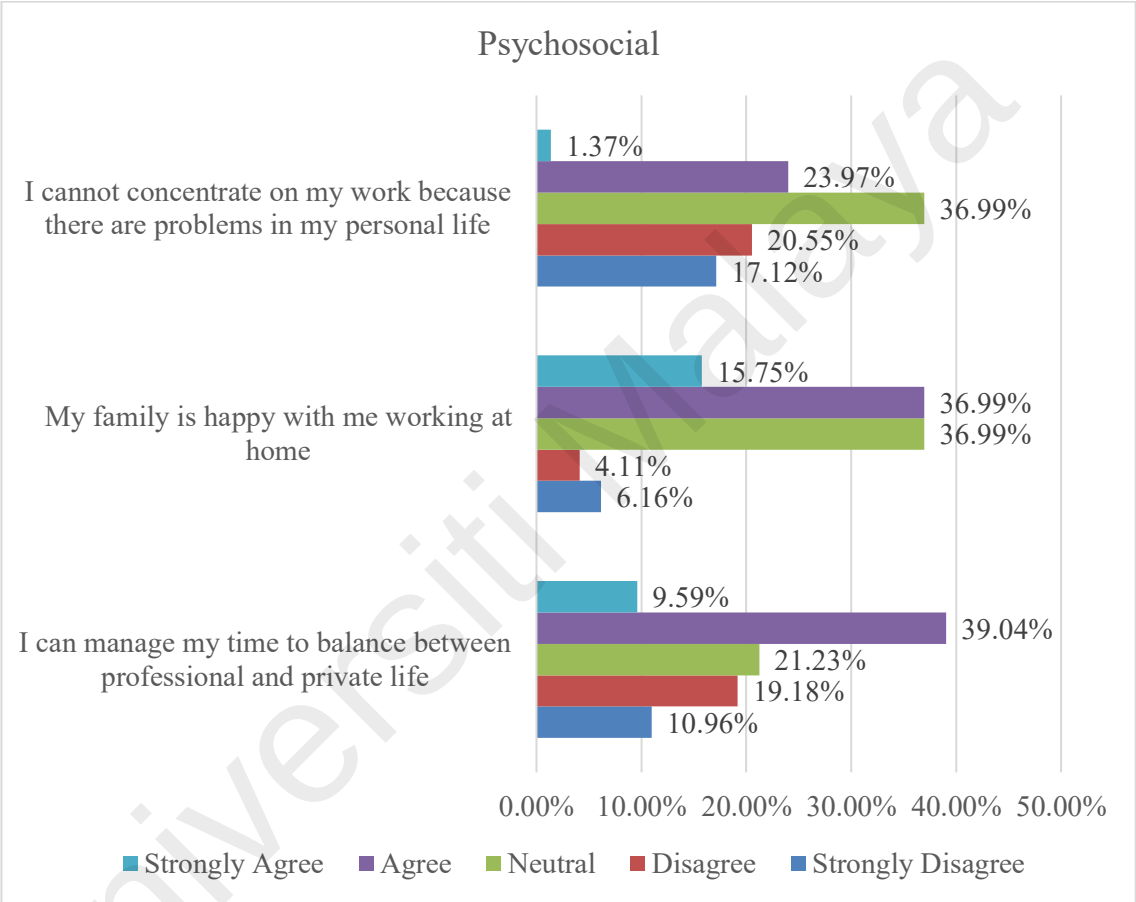

Figure 4.9 Psychosocial challenges faced by respondents

Table 4.29 Chi-square analysis between living Arrangement and work-life balance

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	32,614	8	,000
Likelihood Ratio	39,695	8	,000
Linear-by-Linear Association	,030	1	,863
N of Valid Cases	146		

Table 4.30 Chi-square analysis between Working sector and work-life balance

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21,929	8	,005
Likelihood Ratio	29,233	8	,000
Linear-by-Linear Association	,296	1	,587
N of Valid Cases	146		

Based on the chi-square analysis both work sector and living arrangements there are significant correlations with work-live balance. Each work sector demands more attention than other work. For example, in health sector, someone life depends on the continuous relay of information thus the employee work-life balance will be disrupted. Furthermore, when living with family member respondents will have emotional support from their family but besides family as supported by Campo et al. (2021) findings with similar results. Besides family life, there is also the private life for everyone with different needs.

Table 4.31 Chi-square analysis between living arrangements and concentration

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7,654	2	,022
Likelihood Ratio	8,007	2	,018
Linear-by-Linear Association	,595	1	,440
N of Valid Cases	146		

As per table 4.33 the chi-square analysis shows living arrangements there are significant correlations with concentration. When the respondents living with their family member due to a blurred line between work and personal life when employees are teleworking, some employees experience increased stress during working hours as supported by Standen et al. (1999) findings, the increased amount of stress will lower the concentration level of the workers.

4.4.4 Information and Training

Managing a telework team has its own unique set of challenges and opportunities as with full-time telework. For both workers and managers alike, this new situation necessitates an assessment of old habits and the acquisition of new skills to better manage the situation, protect employee well-being, and maintain agreed-upon metrics. Survey showed that majority of the respondents didn't receive proper training in first-aid treatment and fire emergency. On the other hand, more than half of total respondents are trained in finding emergency exit and route.

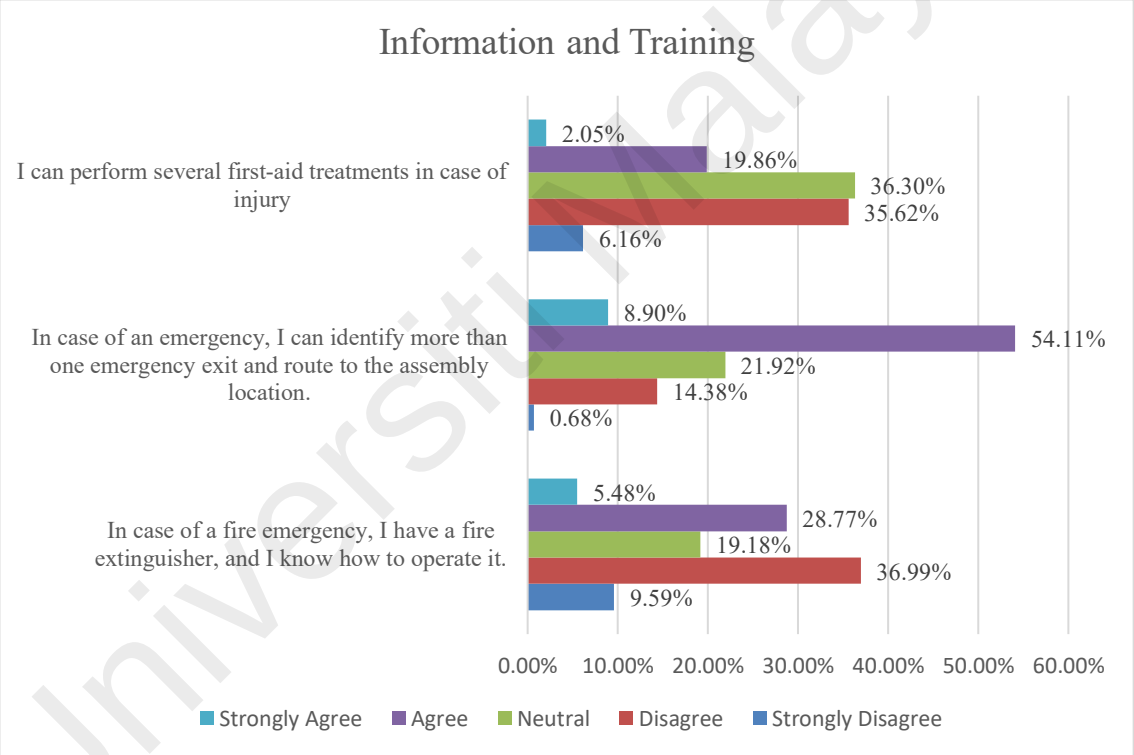

Figure 4.10 Information challenges faced by respondents

Table 4.32 Chi-square analysis between living arrangements and fire emergency training

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	10,547	2	,005
Likelihood Ratio	10,218	2	,006
Linear-by-Linear Association	9,705	1	,002
N of Valid Cases	146		

Based on the chi-square analysis as shown in table 4.34 there are significant correlation between living arrangements and fire emergency training. The result shows that majority of the respondents are not trained for fire emergency. These results are also supported by Akashah et al. (2017) findings that most residents in low-cost high rise residential buildings in Kuala Lumpur are not trained for fire safety.

4.4.5 Attitudes and Commitments

Every business has a unique way of doing things. In an office, there are a variety of ways to get things done. This means that a hybrid system that is both unique to the team and compatible with its members and prevailing cultural norms is an absolute necessity. In the past, remote work was extremely uncommon, and employers feared that employees working from home would be more easily distracted. Employers were concerned about a decrease in productivity. The survey shows that the respondents are understand that good housekeeping, quick stretching, ergonomically adjusted chair and desk, and avoiding push and pull a heavy object is very important. Additionally, consistent working schedule, safety, and health training, and frequency of drinking water still concurring challenge for some respondents. On the other hand, more than half of the respondents are still work overtime.

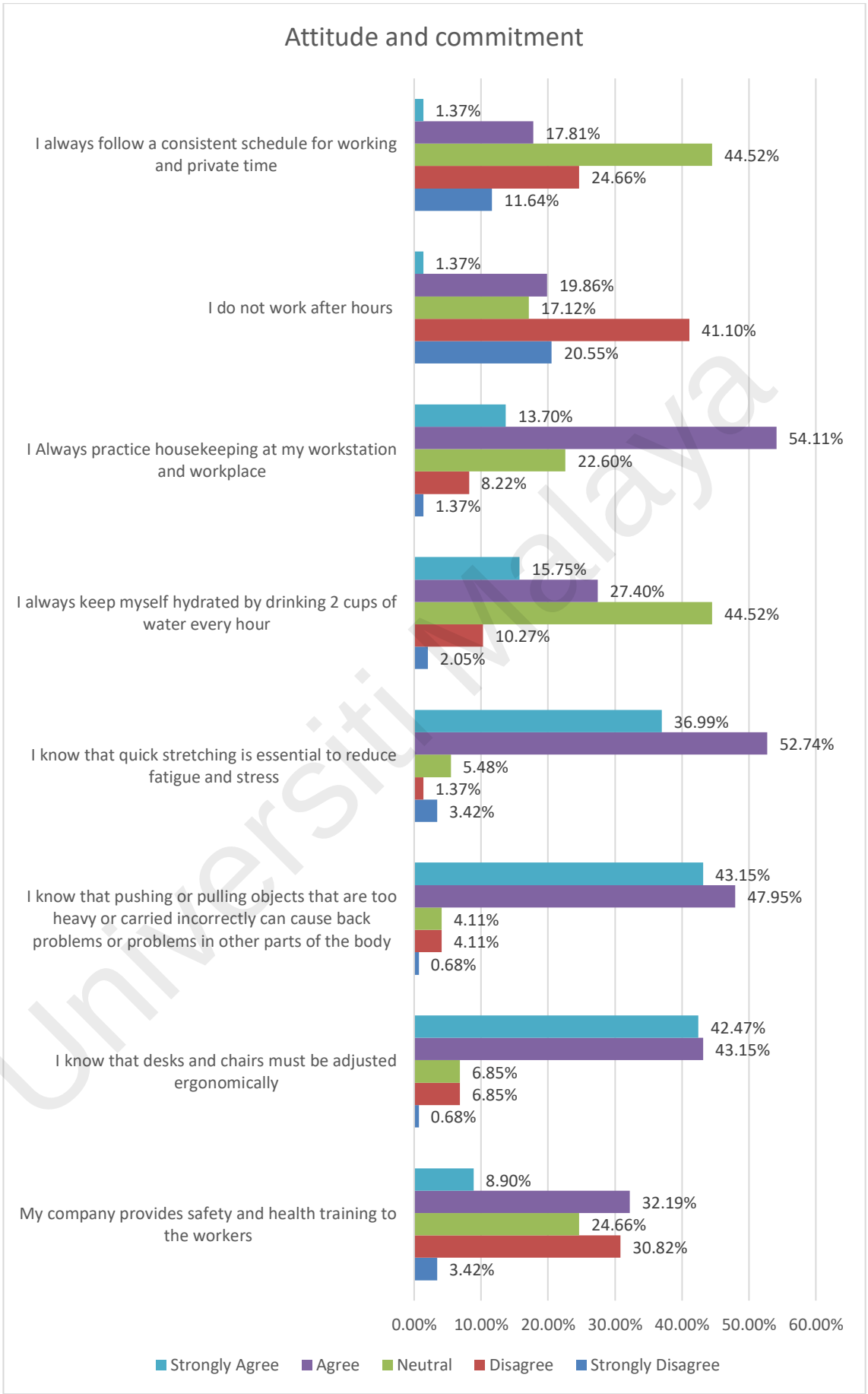

Figure 4.11 Attitude and commitment challenges faced by respondents

Table 4.33 Chi-square analysis between working sector and stretching to reduce stress

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	31,148	8	,000
Likelihood Ratio	26,631	8	,001
Linear-by-Linear Association	15,018	1	,000
N of Valid Cases	146		

Table 4.34 Chi-square analysis between type of work and stretching to reduce stress

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	18,604	4	,001
Likelihood Ratio	18,926	4	,001
Linear-by-Linear Association	11,309	1	,001
N of Valid Cases	146		

Table 4.35 and 4.36 showed that working sector and type of work shows significant correlation with stretching to reduce stress. Michie and Williams (2001) found that work overload and pressure is one of many contributing factors in causing stress. Furthermore, ILO (2020) also found that the workload of many employees is increased during this pandemic.

Table 4.35 Chi-square analysis between working sector and drinking water

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	18,719	8	,016
Likelihood Ratio	20,589	8	,008
Linear-by-Linear Association	3,109	1	,078
N of Valid Cases	146		

As per table 4.37 after analyzing with chi-square analysis, there is a significant correlation between the working sector and drinking water. Different working sector

have different attention needed sometimes the worker will forget to drink water. A person must have access to water, keeping hydrated has been a necessity for life on land. Because, water is a vital component of all living organisms, whether they be infants or the elderly, making up 75 percent of their body weight in infants and 55 percent in the elderly (Nicolaidis, 1998).

4.5 Inherent safety checklist for teleworkers

After compiling and analyze the data collected from the 146 respondents, majority of the respondents have an issue during working from home from equipment issue, family boundaries, overwork, stress and many more. To assist multiple level of stakeholders on an end-to-end process of creating inherently safer workspace for teleworkers a checklist with a comprehensive framework will be developed. Using the references from valid sources and based on a case studies and response from the questionnaire conducted with general community in Klang Valley area, Malaysia to understand the issue and challenges faced by teleworkers.

The checklist for the inherent safety for teleworkers is split into 4 different sections according to inherent safety principal guideword, namely as minimize, substitute, moderate, and simplify. Each of this section describe the minimum requirement for the stakeholder whether an individual house is suitable for teleworking or not.

First Section (minimize), stakeholders go through the process of Maintaining a lower concentration level of hazardous conditions at any given time, when hazardous conditions occurred, it should be produced and treated in situ. Based on the research findings, noise distraction, dehydration, musculature pain, stress, stiff motion, and screen glare are the type of hazards that can be minimized. Second section (substitute), substitution achieved by using safer equipment where the hazard will occur. The research room availability, alternative background, ergonomic equipment, internet

connection, antivirus software, and power surge protector are among the types of hazards that can be prevented using suitable tools or equipment. Third section (moderation), by going up against the hazard when it has a lesser impact. The research found that sick building syndrome, proper training, and family distraction are among hazards that can be moderated. The last section (simplification) helps the stakeholder reduce the opportunities for hazard from happening by using different tools or equipment. To determine whether the individual suitable for teleworking or not at least 75% or more of the checklist need to be achieved.

Table 4.36 Inherent safety Checklist

Inherent safety Checklist for teleworkers		
Minimize	Yes	No
Is it possible to have the workstation far away from noise to avoid distraction?		
Is it possible to have a near ready to drink water supply to avoid dehydration?		
Is it possible to have a regular pause during work for quick stretching to avoid neck pain and back pain?		
Is it possible to have a hotline to psychological therapist to reduce stress?		
Is it possible to have backrest and footrest to reduce the pressure from stiff motion?		
Is it possible to use anti-glare screen filter for the computer to reduce from screen glare?		
Substitute	Yes	No
Is it possible to have a modified workspace if there are no other room available?		
Is it possible to have an alternative background for meeting?		
Is it possible to use an ergonomic chair?		
Is it possible to use an ergonomic table?		
Is it possible to have a reliable internet connection?		
Is it possible to use an up-to-date antivirus software for the computer?		
Is it possible to use power surge protector to protect your computer?		
Moderate	Yes	No
Are the temperature for workspace between 23°C - 26°C?		
Are there enough light for workspace?		

Are there enough humidity for the workspace?		
Are there enough air circulation for the workspace?		
Are the individuals have adequate safety and health training?		
Is it possible to have a regular working hour?		
Is it possible to have a focus during work hours without a distraction from family members?		
Is it possible to clear the floor under the workstation where there is no electrical cord or boxes scattered?		
Is it possible to have workspace regularly cleaned?		
Simplify	Yes	No
Are there separate room for teleworking?		

4.6 Summary of findings

In summary, based on the analysis findings, it is understood that the current teleworking conditions in Klang Valley have a lot of issue. From the room availability, noise distraction, sick building syndrome, equipment, and ergonomics. On the other hand, the company are trying their best to make their workers have a proper working condition even though it is not the same as in traditional office. By understanding the issue faced by the workers and how the company tries to manage it. Using the information obtained from the workers and how the company manage the concern, in the future the company will be able to create a proper working condition by making a guidelines or procedure to ensure their workers conditions is much better than before. Furthermore, the guidelines or procedure created will be able to tackle similar situation for the teleworkers to be able working in a good condition.

Despite issue and challenges faced by most of the respondents, many respondents are happy to have their family with them when they are working from home. In addition to that, several respondents' companies are trying their best in providing clear policies and guidelines for their workers during work from home.

This study doesn't reflect the whole Klang Valley area conditions regarding of the conditions faced by the teleworkers, due to limited number of respondents. Furthermore,

inherent safety can be applied to other work sector and does not limited to industrial sector only. Because in principle the concept of inherent safety can be applied in many different situations, work setting, or condition. The teleworking is only one of many applications that can be to apply inherent safety and also due to the unexpected pandemic of COVID-19 where humanity are forced to be in isolation.

CHAPTER 5: CONCLUSION

5.1 Conclusion

Research objectives 1: *To identify risk associated with current working conditions for teleworker*

From research analysis, the current risk associated with current working conditions for teleworkers are vary from noise distraction, room availability, equipment, and ergonomics. Noise distraction are occurred majority to everyone living with their family. Furthermore, room availability becomes an issue because most of the respondents live with their family where the number of rooms is limited. Additionally, equipment procurement is an issue because every company is transitioning to teleworking economically affected by the current pandemic situation, thus only essential equipment that some company can distribute to their workers. Finally, ergonomic is an issue because a house usually used only as a place to rest now has another function, a workplace.

In contrast most of the respondents are able to be avoided by making sure the workstations have an adequate lighting, temperature, humidity, and ventilation.

Research objective 2: *to identify employer measures to reduce the risk associated with the home working environment*

Based on study conducted, the employer's measures to reduce the risk associated with home working environment are updating the safety and health policy for teleworking, procure an equipment, create a suitable work environment, and check the psychosocial condition of every worker.

First, most of the company are committed to make their employee are work safely during work from home. Yet, there are several companies that are still make their workers work overtime and caused stress and depression, the reasons are that the company are having economic instability thus making their employee work overtime. Second, majority of the organization can procure the equipment necessary for the workers. The problem is that only essential equipment that several companies can procure for their workers. Some of the equipment that the company isn't able to are ergonomic furniture due to the high price tag. Third, workers that are currently working from home are not fully trained for emergency event, it is reflected by more than half of the respondents didn't know what to do in case of emergency and performing basic firs-aid treatment. Fourth, because most of the respondents live with their family, they are prone to disturbance from their family members and can easily distract. Fifth, the workers psychosocial conditions majority are happy that their family member is able to work from home, during this pandemic, family comfort becomes an essential need.

Research Objective 3: *To recommend measures and management practices to minimize the risk related to the home working environment*

Based on the finding, there are 4 important keywords to apply inherent safety to minimize the risk related with home working environment, there are minimize, substitute, moderate and simplify.

To minimizing the risk related to home working environment there are several ways to avoid that by ensure the workstation far from noise, a water to supply to have a water ready to drink, pauses during work to do some stretching, a hotline to psychological therapist, a backrest and footrest, and using anti-glare screen filter. Furthermore, while examining the potential for minimization there is a substitution where the use of room that modified into a temporary workspace, an alternative background for meeting, an

ergonomic furniture, changing internet provider, updating the antivirus, and using power surge protector. Additionally, moderation is an alternative to substitution, it is achieved by making sure the individual has enough training, workspace have enough light, ventilation, temperature, and humidity, and a regular housekeeping. Finally, the last keywords is simplify, by changing the whole condition to prevent hazard from happening, there are by having a separate room for work

5.2 Recommendation for future study

This study analysis and questionnaire responses are not obtained from a general population in Malaysia; thus, it does not represent the current condition of teleworking in Malaysia. It is a moderate sample size as it is smaller than the targeted community and there are limitations to how the generalization been made during the study. Therefore, in the future, the sample size from a specific community can be obtained to create detailed information and a larger sample to analyze.

The motivation of this study is to understand the underlying issue with teleworking in Malaysia during the COVID-19 pandemic. To widen the perspective of the issue, it is recommended to take the economic point of view. It provides more insight into the teleworking conditions faced by many individuals, whether it is happening during the pandemic or non-pandemic.

Because of the niche of this study done during the pandemic, there might be a robust process in managing teleworkers' safety and health in Malaysia. Hence, the research objective could be digger deeper into safety and health management issues in Malaysia

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