

**EMERGING INTERIOR ARCHITECTURE AND
DESIGN PRACTICES ENABLED BY REMOTE
WORKING: OPPORTUNITIES AND
CHALLENGES**

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**EMERGING INTERIOR ARCHITECTURE AND DESIGN PRACTICES
ENABLED BY REMOTE WORKING: OPPORTUNITIES AND
CHALLENGES**

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**A project report submitted in partial fulfilment of the
requirements for the award of Master of Project Management**

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December 2023

DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

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ABSTRACT

Working from home became popular throughout the pandemic. Many people had work responsibilities that couldn't be done remotely. Adoption of the remote working left employers unable to transfer workstations to home or build effective digital communication channels. Work-life balance and personal-professional boundaries have changed since moving from work to home. Changes in risk landscapes and contextual factors have also altered the workplace and subsequently made employer duties difficult to establish. This research aims to look into the opportunities and challenges of remote working in interior architecture and design for employers and employees. During the pandemic, a significant number of people switched to remote work; nevertheless, it is important to note that this change was not uniformly applicable, particularly for those with work duties that could not be done remotely. Employers were caught off guard by the rapid popularity of remote work, posing issues in seamlessly transferring offices to home and developing effective digital communication methods. Moreover, limited studies are dedicated to the opportunities and challenges of remote working in the interior architecture and design industry. Therefore, the research is carried out to determine the opportunities and challenges of remote working. There were a total of 80 respondents from the interior architecture and design field through distributing the questionnaire. Through the mean ranking test, the top five of opportunities were: (1) investing more time in family, pets, and friends; (2) increasing digital skill development; (3) increasing autonomy, flexibility, and empowerment; (4) contributing to carbon footprint reduction; and (5) using new digital tools to boost team collaboration. The top five of challenges were: (1) using new information technology systems and seeking assistance; (2) learning new digital tools and skills; (3) balancing work productivity, effectiveness, and self-development; (4) shifting mindset and culture from office to remote working; and (5) managing cognitive overload and exhaustion from multiple meetings in a row. Subsequently, the factor analysis was carried out to determine the underlying components, which were increasing digital transformation and workforce empowerment; integrating nature and physical activities into workdays; improving personal development and productivity; and increasing sustainable life enrichment for opportunities. The components for challenges of remote working were changing work settings; adapting to new technologies; committing to increased workloads and

responsibilities; and adapting to remote dynamics. This research holds significant value for the interior architecture and design industry as it carefully examines and delineates both opportunities and challenges that arise during remote working, when the emerging practices. By focusing on these aspects, the findings of the research can provide valuable insights, guidance, and assistance to stakeholders within the industry, aiding in informed decision-making and fostering a proactive approach to navigating the evolving landscape.

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LIST OF SYMBOLS / ABBREVIATIONS

EFA	exploratory factor analysis
KMO	Kaiser-Meyer-Olkin
SEM	structural equation modelling
PCA	principal components analysis

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APPENDIX A: Questionnaire Survey

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Initially, the chapter provided an overview of the research proposal's background and issues that necessitate the initiation of the research. Additionally, it will further substantiate the importance of the study. Furthermore, the text addresses the research introduction, background, problem statements, aim and objectives, research scope and its limitation and the contribution of the study. This chapter will provide an outline and summary contents of each chapter.

1.2 Research Background

There is a possibility that the way COVID-19 has affected our way of working is the most dramatic and quick change in the world workforce since the end of World War II. (Felstead, 2022). As the COVID-19 pandemic hits worldwide, every industry has a major impact on their management, especially in the construction environment. In interior design projects, the implication of cloud software and remote working has become a trend during COVID-19.

During the pandemic, many people switched to working from home and this situation does not apply to everyone, as many people had work responsibilities that could not be done remotely. Employers were unprepared to move workspaces to home or create effective digital communication protocols due to the rapid implementation of remote work. The move from work to home has affected the separation of work and leisure, as well as personal and professional boundaries. The above changes have also affected the work environment, including risk landscapes and contextual factors, leads to define the employer's workplace responsibilities become harder (Swedish Agency for Work Environment Expertise., 2021).

According to Orzeł and Wolniak (2022), the pandemic has played a role in the industry's ongoing digitization trend, which has led to a preference for remote work among employees and project office owners. These benefits include flexibility in terms of scheduling, time savings, comfort at work, safety, and cost savings. As a result, workers in this sector are aware of the advantages of working remotely for the environment and the industry's sustainability.

According to Felstead (2022), even before COVID-19, the proportion of remote workers increased dramatically, with almost half of recruiting managers having some experience with remote talent. As of this moment, that percentage is 94%. Fully remote teams rose dramatically from 2.3% to 20% in the post-COVID survey; altogether, the survey's findings show that over half of workers are now remote, which is consistent with past studies. (Felstead, 2022).

As for the interior architecture and design industry, there were insufficient findings about worker preferences or the impact of remote work and environmental sustainability on the design and construction sector. (Orzeł and Wolniak, 2022). Since remote working in interior architecture and design industry has becoming a current practice, the opportunities and the challenges are important to the employers and employees for them to implement remote working in future.

1.3 Research Motivation

The research will provide the latest trends and emerging practices for the future interior design companies to implement remote working effectively. The data provided that how reliable, the efficiency and sustainability for the project management in the interior design industry.

Subsequently, the results will highlight the opportunities and challenges of the emerging interior architecture and design practices enabled by remote working for the employers and the employees in interior architecture and design industry. Identified these could let the interior architecture company owners to decide whether hybrid approach is the more effective way to solve the current issues, which is the COVID-19 pandemic.

There will be some suggestions made on the possible solutions to the problems that have been caused by the detrimental influence that remote working has had on project management in interior design.

1.4 Problem Statement

During the pandemic COVID-19 since 18th March 2020, Malaysia federal government has announced not to allow any non-critical physical activity for 1 month to prevent infection of COVID-19 to people. However, most employers started using variance software or meeting tools for employee able to have remote work at home. There are numerous studies to explore the benefits and disadvantages

of the remote working in many industries. Despite this, there are a number of consequences associated with working remotely, and these impacts existed before to the COVID-19 outbreak and have not been addressed.

In the interior architecture and design field, there were some research gaps to identify the opportunities and the challenges in emerging the remote working during COVID-19 pandemic. This is because when it comes to the management of projects, there has not been a significant amount of research conducted on the implementation of practises for remote working in interior architecture and design field. Therefore, this research attempts to investigate the opportunities and challenges in emerging interior architecture and design practices enabled by remote working.

1.5 Aim and Objectives

Hence, in order to continue working during the pandemic, project managers and interior designers will need to become accustomed to working from home or in different locations, despite the fact that this change may have some unfavourable effects.

The aim of this research is to investigate how remote working contributes to interior architecture and design during COVID-19 pandemic.

To achieve the aforementioned aim, the following objectives have been developed to facilitate progress towards:

1. To investigate the opportunities in emerging interior architecture and design practices enabled by remote working.
2. To investigate the challenges in emerging interior architecture and design practices enabled by remote working.

1.6 Scope and Limitation of the Study

The scope for this research is collecting data from interior design and architecture companies in Klang Valley, Malaysia. Subsequently, the gathered information is emphasised on the remote working during COVID-19. This research has limitation on the background of the participants, which they are from interior design and architecture background, but not limited to employees or employers.

In addition, the limitation of this study will be the literature reference must be between 2019 to 2022 as this period is where the pandemic happens. Lastly, the

research is focusing on the opportunities and the challenges of the remote working environment to the interior architecture and design during COVID-19 pandemic.

1.7 Research Justification

This study will contribute to provide valuable insights for companies and practitioners in the field of interior architecture and design, specifically in relation to improving remote working practises and enhancing their effectiveness in real-time applications. Therefore, this study will provide support for the examination of the opportunities and challenges associated with remote working. Consequently, the relevant professionals will offer strategies to overcome the challenges encountered and enhance the existing methodologies facilitated by remote working.

Moreover, the implementation of the aforementioned practise has the potential to make a substantial contribution to the long-term viability and environmental sustainability of a project. This research will contribute to the advancement of future studies by employing surveys that are substantiated by reputable journals and articles. This study aims to contribute to the advancement of knowledge by examining the challenges and opportunities associated with remote working that have emerged during the pandemic and seeks to identify new variables and update contextual issues in this area. In short, this study will identify how interior architecture and design companies evaluate the effectiveness of their projects, as well as their assessment of team performance and external collaboration, while working remotely.

1.8 Chapters Organisation

This research project will be structured into chapters that correspond to the various stages of the research process. The content can be succinctly summarised as follows:

Chapter 1 – Introduction

This chapter provides a concise overview of the research's contextual background about the remote working environment to the interior architecture and design during COVID-19, followed by a summary of the study's contents. Additionally, it is crucial to ascertain the significance of studying, as well as establish clear aims and objectives contribute to the research approach and methodology. This should be

accompanied by a comprehensive review of relevant literature to inform subsequent discussions.

Chapter 2 – Literature Review

This chapter is devoted to conducting a literature review, wherein published information pertaining to a specific area of study is examined and analysed. A literature review is an examination of scholarly papers that encompass authoritative sources and substantiated professional findings. This chapter aims to provide a comprehensive review of the existing literature on remote working and focus on various aspects such as the significance of remote working, the opportunities it offers, the challenges associated with remote working, and the tools, software, and practises commonly used in remote working. Synthesised and analysed data will be used in research methodology and data analysis. This study carefully identifies and critically explains several key definitions to clarify the research domain. Literature reviews will inform the research problem, which will be investigated to meet research objectives.

Chapter 3 – Research Methodology

This chapter provides a in depth description and illustration of the methodology and mechanisms employed to accomplish the objectives of this research. This chapter encompasses the procedures of research methodology, various types of research methods, the determination of sampling size, the method of data collection, and the process of data analysis.

Chapter 4 – Results and Discussions

This chapter will present the findings of the research, utilising the research methodology outlined in the preceding section, and drawing upon relevant literature sources. The aim is to ascertain the extent to which the identified research gaps align with the perspectives and experiences of industry practitioners. The results of the comprehensive research study will be summarised and synthesised through the collection, processing, analysis, and through presentation of the findings derived from the analysis of the data obtained through the administration of a questionnaire survey. These results are visually depicted in a suitable format. The interpretation and discussion of the research findings will be presented in this chapter.

Chapter 5 – Conclusion and Recommendations

This chapter will provide a comprehensive conclusion to the research study by presenting an in-depth analysis and interpretation of the research findings, thereby accomplishing the research objectives. Subsequently, the recommendations derived from the research findings will be examined in the circumstance of future research and the interests of practitioners. Additionally, the limitations of the research will be discussed here.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter intends to analyse the current theories and conduct a comprehensive review of the existing literature and research conducted by other scholars. This study aims to enhance comprehension of the opportunities and challenges associated with remote working in emerging interior architecture and design practises, specifically for employers and employees within the industry.

There are few sub-topics involved in this chapter which includes introduction, remote working, opportunities of remote working and challenges in remote working.

2.2 Remote Working

2.2.1 Overview of Remote Working

Modern technology's sophisticated improvements have considerably contributed to the blooming competitive environment of workplaces, providing seamless communication with a broad global reach and therefore extending prospects for strengthening human resources in the corporate sector (Flores, 2019). There were studies indicate that remote work brings advantages to a majority of employees, providing them with the flexibility to work from any location at any time (Adisa, Ogbonnaya and Adekoya, 2023). Besides, these advancements have created additional opportunities for employees, particularly those operating outside a conventional office environment or engaging in remote work (Flores, 2019). This flexibility not only enhances work-life balance but also contributes to increased job satisfaction and overall well-being, offering a potential paradigm shift in the traditional work environment.

2.2.2 Remote Working during COVID-19

The Covid-19 epidemic was an unprecedented challenge, affecting individuals' mental health and well-being and causing huge challenges for families and communities worldwide (Adisa, Ogbonnaya and Adekoya, 2023). During the COVID-19 pandemic, many companies implement remote working to sustain their businesses. The socioeconomic issues came up from nationwide lockdowns, stay-at-

home orders, and other social distancing procedures implemented to slow the spread of the illness, but these limits significantly reduced person-to-person transmission, they forced many people to make a sudden move to remote work (Adisa, Ogbonnaya and Adekoya, 2023). A significant proportion of the population underwent a transition from traditional office settings to remote work arrangements, conducting their work from the convenience of their personal residences, in response to the worldwide pandemic. It is crucial to note, however, that this circumstance does not apply to every individual, as a significant number of people had work obligations that could not be executed remotely. Employers found themselves unprepared to facilitate the transition of work environments to personal residences or establish efficient protocols for professional communication via digital platforms due to the unforeseen nature of the remote work implementation (Swedish Agency for Work Environment Expertise., 2021).

As a consequence of the shift from the workplace to employees' residences, the demarcation between work and leisure activities, as well as the personal and professional spheres, has been altered (Chafi, Hultberg and Yams, 2022). The previously mentioned modifications have also had consequences for the workplace, such as changes in the risk environment and contextual factors associated with work environment activities. Delineating the employer's responsibilities within the workplace is another difficulty introduced by the transition.

Architecture and interior design field are focus on Malaysia due to Malaysian are needs a better quality of lifestyle. However, COVID-19 pandemic has ruin whole world lifestyle into a new normal life. Remote work working mode has introduce to different industries including architecture and interior design field. According to Flores (2019), prospects for employees have improved as a result of these advances, especially for individuals who work remotely or outside of a traditional office setting. Additionally, it also describes a work arrangement where employees work from home or other convenient locations instead of travelling to a main office, connecting with clients and coworkers using information and communication technologies.

2.3 Opportunities of Remote Working

There were few research provided the opportunities of the remote working as ought to examine the experiences of knowledge workers during the initial weeks of

lockdowns while working from home (Ipsen et al., 2021). The opportunities were discussed below.

2.3.1 Using New Digital Tools to Boost Team Collaboration

During the COVID-19 pandemic since from year 2019, the uses of digital platforms have increase consequently. In addition, employees can work remotely and interact with coworkers from anywhere in the world by using virtual communication technologies like email, instant messaging, video conferencing, and other platforms. (Oppong Pephrah, 2023). For example, the digital platform Microsoft Teams, staff members can communicate via video, audio calls, audio teleconferences, messages, and file sharing, where these software or tools provide by digital platforms are free of charges to public (Yang et al., 2022). In addition, contrasting with conventional video meetings, contemporary breakthroughs like the metaverse and the expanded potential offered by VR-based environments are cited as effective solutions for fostering a sense of presence and enhancing team cohesion (Oprean, Simpson and Klippel, 2018). Subsequently, more than merely a consequence, it is easier to stay in touch over long distances these days than it was ten or so years ago. According to some writers, even for some collaborative tasks, the ability to share displays on a computer (or to share the same data simultaneously) may be able to give enough visual space to enhance communication (Klopotek, 2017). Therefore, this gave a great opportunity to many industries include architecture and interior design field. Subsequently, calendars are a fundamental scheduling tool used by interior architects and designers as well as project managers for meetings and alerts (Borissova, Dimitrova and Dimitrov, 2020).

2.3.2 Increasing Digital Skill Development

Next, employees who worked remotely were compelled to quickly learn how to master a wide range of online work tools and platforms, which accelerated the development of digital skills (Chafi, Hultberg and Yams, 2022). Therefore, during the COVID-19 outbreak, the majority of people were compelled to work from home, and as a consequence, there has been an increase in the use of digital platforms for personal purposes (Singh et al., 2022). Furthermore, augmented reality (AR) is a new technology that has several advantages for the domains of digital architecture design and construction, and it is also an innovative approach to interior design. (Phan and

Choo, 2010). For example, in an augmented reality (AR) environment, the virtual furniture can be depicted and adjusted in real-time on the screen, providing users with an communicating experience involving simulated fixtures within a real-world setting (Phan and Choo, 2010).

2.3.3 Increasing Autonomy, Flexibility, and Empowerment

Moreover, participants emphasized a key advantage of remote work which is the rising in autonomy and flexibility to tailor work schedules and procedures according to individual needs that will be contributed to increased empowerment and job satisfaction. (Chafi, Hultberg and Yams, 2022). Some research indicate that remote working create avenues for achieving an improved work-life balance, heightened job autonomy, and more efficient communication practices (ter Hoeven and van Zoonen, 2015). Hence, remote working presented a positive impact of flexible work structures on the professional landscape, emphasizing the potential benefits associated with the integration of flexible arrangements. For large organisations in particular, remote working can be quite useful because it allowed for more flexible scheduling of working hours while still maintaining productivity (Flores, 2019).

2.3.4 Increasing Self-Leadership Strategy Development

In the research of (Chafi, Hultberg and Yams, 2022), participants perceived the need to adopt a proactive approach and engage in self-leadership practices. This required them to acquire healthy habits, efficiently manage their workload, achieve mental and physical well-being, and create a long-term balance between learning and growth, production, and well-being. (Chafi, Hultberg and Yams, 2022).

2.3.5 Increasing Individual Productivity

Accordingly, the results in many respects indicate that working remotely facilitates achieving goals inside a workplace (Adisa, Ogbonnaya and Adekoya, 2023). Respondents expressed appreciation for the flexibility in determining the time and location of their work overall during remote working, acknowledged an improvement in their individual productivity as when limiting this flexibility may have adverse effects on both productivity and well-being (Chafi, Hultberg and Yams, 2022). Hence, people were able to boost their productivity through remote work (Chafi, Hultberg and Yams, 2022). Besides that, Oppong Pephrah (2023) mentioned because

of the long commute from home to office, people got exhausted by the time arrived at work and is consequently less productive than works from home, which was saving time and energy on the commute. Thus, a key new finding of this research is that remote working boosts individual productivity (Oppong Peparah, 2023).

2.3.6 Using The Time Saved from Commuting for More Reflection and Learning

One of the most significant advantages of remote working is the additional time that employees can save by not having to commute to the workplace. According to Ipsen et al. (2021), the biggest benefits of working remotely, according to those who have done so, include reduced social distancing, reduced risk of contracting and spreading disease, reduced commute times, and increased flexibility with regard to breaks and meals. Additionally, working remotely allows employees to complete other tasks that they would not typically have time to complete. Employees who were able to avoid commuting in the morning took opportunities to sleep longer, leading to increased energy and job satisfaction (Hallman et al., 2021). As a result, remote working enabled individuals to increase their productivity while also using the time saved from travelling for more reflection and learning (Chafi, Hultberg and Yams, 2022). This may reach a work life balance to those employees who remote working. However, according to dissertation data from David (2021), saving on the transport time is the main benefit for personal who remote working compare with office base working. Reduce the risk of spreading COVID-19 are also the main benefit of remote working (David, 2021).

2.3.7 Incorporating More Physical Exercises and Walks into Workdays

According to Chafi, Hultberg and Yams (2022), remote working encouraged physical activities in a natural manner by having workers move between various office sections and encouraging walking or travel to and from the workplace. Besides, remote work offers opportunities for the integration of physical activities into the workday, such as incorporating walking, jogging, or exercising during designated lunch breaks (Chafi, Hultberg and Yams, 2022). Besides, some employers mentioned that it was a good opportunity to break established habits and change my routines through the deliberate inclusion of increased physical activities and walks into the basis of my workdays (Ipsen et al., 2021). This practice not only promotes a more

active and health-conscious lifestyle but also contributes to overall employee well-being by recognizing the importance of incorporating movement into the remote work routine.

2.3.8 Working Outdoors in Nature

The remote work approach allowed for a greater allocation of work hours in outside locations, as demonstrated by new practises such as walk-and-talk meetings (Chafi, Hultberg and Yams, 2022). This also demonstrates a conscious recognition of the benefits of outdoor activities in the context of remote work, matching with current dynamics to improve not just professional engagements but also total employee well-being.

2.3.9 Investing More Time in Family, Pets, and Friends

In the social part, the aspects of more quality time with family, pets, friends also be the one of the opportunities of the remote working during the COVID-19 pandemics (Chafi, Hultberg and Yams, 2022). Employees in interior architecture and design field spent most of their time for exploring design during working hours, and this long working hours in the office caused them to have lesser time with their family and friends. Hence, one of the benefits of a hybrid workplace is the increase in family time, and according to some research, this shown that a hybrid work model can provide workers with more energy as it allowed for greater flexibility to spend quality time with loved ones (Oppong Peprah, 2023).

2.3.10 Contributing to Carbon Footprint Reduction

The most common environmental advantages that are brought up are the positive impact on the environment, which takes the form of a decrease in the amount of electricity that is consumed by large office buildings as well as a decrease in the release of harmful elements that are contained in car exhaust fumes (Orzeł and Wolniak, 2022). Some research implied that working remotely caused in a net decrease in energy consumption or emissions as the consequence of eliminating the commute, reducing traffic, therefore lowering auto emissions, and using less energy in offices (Hook et al., 2020). Subsequently, Hook et al. (2020) further proposed commensurate advantages of remote working, such as up to 30% fewer journeys, up

to 28% less time spent in traffic, in which might result in large energy savings because slow-moving traffic is inefficient, and similar drops in carbon emissions.

2.4 Challenges of Remote Working

An innovative working mode not only bring opportunities but also challenges. Being alone might be a problem for individuals. An employee may begin to feel socially isolated and lonely as a result of the lack of in-person interactions (Chafi, Hultberg and Yams, 2022). Below were the challenges in remote working by a few of researchers.

2.4.1 Managing uncertainty

One of the problems that the employees facing is an unclear work situation, causing inadequate decision-making support and feedback on job progression (Ipsen et al., 2021). Apart from being absent virtually, a considerable number of participants expressed concern over the possibility of losing their jobs that caused their levels of job uncertainty were higher and further drove them to put in more overtime and longer hours than usual (Adisa, Ogbonnaya and Adekoya, 2023). It is undeniable that a central challenge confronted by both managers and employees involved managing the doubts surrounding pandemic-related limitations, coupled with the ambiguity of not knowing the duration for which they would be required to continue working from home, thereby contributing to heightened organizational and individual complexities (Chafi, Hultberg and Yams, 2022).

2.4.2 Shifting Mindset and Culture from Office to Remote Working

According to Chafi, Hultberg and Yams (2022), individual productivity will decline with remote working, and there will be less incentive to return to the office, which there will also be difficulties in shifting the culture and mentality of office labour to remote work. Since the Covid-19 crisis forced an abrupt change in the way and location of work, our perception of the work environment has evolved, some workers found it more difficult to shift or keep up healthy practises when working from home. (Adisa, Ogbonnaya and Adekoya, 2023). In actuality, a lot of workers found it difficult to transform their houses into comfortable and specialised workspaces (Adisa, Ogbonnaya and Adekoya, 2023). Furthermore, the abrupt transition to remote working coupled with challenges such as insufficient ICT competencies, and

a lack of access to devices, has resulted in heightened anxiety, unforeseen mental health consequences, and depression, thereby influencing overall work productivity (Khan et al., 2022) .

2.4.3 Using New Information Technology Systems and Seeking Assistance

Excessive use of technology, in conjunction with the pressures and complications it creates for individuals, has been demonstrated to cause stress in both work and personal situations. (Tarafdar, Pullins and Ragu-Nathan, 2015). Individuals may experience stress in this scenario if they are unable to perform what is required of them employing technologies within a specific environmental context, or if self-imposed goals are not accomplished (Singh et al., 2022). Hence, interior designers by remote workings are having inadequate digital skills and many new devices to be trained as their challenges during COVID-19.

2.4.4 Learning New Digital Tools and Skills

The sudden pressure to become proficient with an overwhelming number of new technologies and implement innovative remote working not only caused stress for a few but also highlighted a general awareness of people's general lack of digital abilities (Chafi, Hultberg and Yams, 2022). Employees also struggle with the complexities of using technology as a result of the sudden shift to remote work; some may even feel incompetent in their computer skills and find it necessary to invest time and energy in studying information and communication technologies (Khalid et al., 2023). Besides that, some research supported this as challenges due to inability and unwillingness to master new digital skills of employees (Orzeł and Wolniak, 2022)

2.4.5 Managing Cognitive Overload and Exhaustion from Multiple Meetings in a Row

The adoption of remote work prompted a transition towards more organized meetings, deviating from the previously spontaneous face-to-face check-ins typically occurring in office corridors, in which when comes to multiple meetings (Chafi, Hultberg and Yams, 2022). This change reflects an adjustment in communication dynamics within virtual workspaces. This, along with the accessibility of working remotely, led to a series of meetings without the usual pauses which occur in an

office environment when people move between meeting rooms, thereby caused participants found it difficult to cope with cognitive overload and fatigue from never-ending online meetings (Chafi, Hultberg and Yams, 2022). Furthermore, because of the increasing number of meetings, stress and burnout ranked as two of the top three issues for knowledge workers working remotely (Marzban and Mackey, 2021).

2.4.6 Maintaining Constant Availability and Catching Up on Notifications

Working remotely and connecting in real time via digital platforms complicated people's daily lives in a variety of ways which included maintaining constant availability, which showed in some study contributors, they felt forced to stay noticeable online, despite having 24-hour access to the Internet and digital platforms on their mobile devices, to demonstrate their value by putting in more time at work, demonstrating their commitment to their jobs, or persuading their bosses that they weren't skipping work even though they were working from home (Adisa, Ogbonnaya and Adekoya, 2023). Besides, Adisa, Ogbonnaya and Adekoya (2023) also found that "online presenteeism" as a potential disadvantage of working remotely during the epidemic although many employees benefit from it as it allowed them to work from anywhere at any time. Some research revealed that communication, coordination, and cooperation become more expensive in a virtual work context, creating a significant obstacle to working from home, particularly in professions where these features are critical, particularly for less-experienced individuals (Anakpo, Nqwayibana and Mishi, 2023). When teams or entire company divisions collaborate remotely, it can quickly lead to misunderstandings and a lack of clarity since isolation makes it difficult to determine who to contact about particular issues and when to do so, which can cause inefficiencies and delays (Bick et al., 2020).

2.4.7 Setting Limits on Working Hours

Subsequently, according to Boon et al. (2022), employee faces the unique problem of "Reduced Supervision and Direction" when attempting to work from home due to the nature of their employment. This may result to hard in setting boundaries in terms of work time for the employees especially to work remotely during COVID-19 pandemic. Hence, the boundary between paid employment and leisure time becoming more unclear is another possible challenges (Derndorfer et al., 2021).

Furthermore, in order to finish their work, many employees put in additional hours and completed more tasks, and this portrayed in many in interior architecture and design industry, while for individuals who had more family-related duties, such as regular housekeeping duties and teaching their kids, this scenario was more stressful (Adisa, Ogbonnaya and Adekoya, 2023).

2.4.8 Setting Up a Proper Workstation and Home Office

Lack the facilities to effectively work from home could be causes that leads to poor workstation ergonomics and home office preconditions (Nicholas Bloom, 2020). Employers did not have adequate space at home to set up an ergonomic workspace and often left to create their own workspaces, which may not be suitable or comfortable for long periods of work and led to negatively impact productivity and employee well-being (Oppong Peprah, 2023). Besides, the employer will facing a problem of the software tools provided by the company will use by an employee for personal purposes (Chafi, Hultberg and Yams, 2022). Remote working may have challenges due to insufficient access to digital technologies, limited home workspace, and disruptions caused by ambient noises within one's household or from adjacent neighbours (Adisa, Ogbonnaya and Adekoya, 2023).

2.4.9 Maintaining Self-Motivation in The Absence of Stimulation and Meaning

According to Adisa, Ogbonnaya and Adekoya (2023), remote may potentially lower work engagement levels in the event of a pandemic due to from being absent virtually. In light of the aforementioned statement, the challenges associated with remote working include the necessity for high levels of motivation and self-discipline (Chafi, Hultberg and Yams, 2022). Moreover, remote work is sometimes perceived as the sole viable career option for individuals facing physical incapacitation or those engaged in raising young children. Consequently, the selection of remote work is often driven by a combination of personal preferences and a limited availability of suitable alternatives. Some research found that the disadvantages of remote work include the possibility of working in a monotonous and uninspiring work place, and this contributes to the difficulties that individuals working from home experience, potentially impacting their overall job happiness and productivity owing to a lack of

different stimuli in their working environment (Anakpo, Nqwayibana and Mishi, 2023).

2.4.10 Obtaining Support While Making Decisions and Feedback on Work Progress

Lack of access to physical equipment at home to complete work-related tasks, such as data or documents, results from remote working. Employees face difficulties with outdated IT systems, stringent cybersecurity protocols, and difficulties acquiring new IT systems, which also contribute to a lack of technical support and digital tools (Ipsen et al., 2021). The absence of adequate technical support, infrastructure, and tools posed a significant impediment, leading to frustration and hindering the seamless adoption of remote working during pandemic (Chafi, Hultberg and Yams, 2022). Besides, remote work was criticised for being repetitious, lacking the variety of encouragement and input found in office settings, with some participants expressing feelings of isolation in ordinary decision-making and receiving limited feedback on their work (Chafi, Hultberg and Yams, 2022).

2.4.11 Developing Good Habits to Address a Lack of Breaks and Physical Activity

Physical health has a moderating effect on the productivity impact of working from home; muscle problems are frequently mentioned as a regular concern related to remote work (Anakpo, Nqwayibana and Mishi, 2023). According to Chafi, Hultberg and Yams (2022), the combination of the convenience of remote work and the lack of natural breaks, which are inherent in office settings where people travel between conference rooms, resulted in a never-ending series of back-to-back meetings. This situation arises from the challenges employees encounter in disengaging from a pervasive "always-on" culture and overcoming apprehensions about missing out, and the idea of the need to be constantly available, answering emails and getting messages throughout the day, contributed to a shortage of breaks during working hours (Chafi, Hultberg and Yams, 2022). In the research of Khan et al. (2022) studied four distinct dimensions includes mental, physical, financial, and social well-being incorporates due to the adverse impact of COVID-19 and specifically physical well-being encompasses the ability to enhance one's bodily functions, including

engagement in physical activities, physical strength, fitness, and control oversleep and weight were affected due to remote working.

2.4.12 Balancing Work Productivity, Effectiveness, and Self-Development

Furthermore, according to Nicholas Bloom (2020), full-time working from home is problematic causes hard to be creative at a distance and to be inspired and motivated at home, resulting the challenges for employee and employers to striking a balance between creativity, learning, and development and task-specific productivity. Because of the change in work arrangements, there are now less opportunities for effective mentorship, onboarding, and cultural training. This is especially true for younger generations, who may have less experience with self-management and work autonomy because they come from more social backgrounds (Marzban and Mackey, 2021). Therefore, participants believed that to skillfully manage their workload, cultivate positive habits, attain mental and physical well-being, and establish a sustainable equilibrium between productivity, well-being, and continuous learning and development, they must proactively enhance their self-leadership capabilities (Chafi, Hultberg and Yams, 2022).

2.5 Summary

In short, the literature review of this research has discussed about opportunities of remote working and challenges in remote working.

The opportunities of remote working have discussed few major benefits bring by remote working. The challenges of remote working have discussed few major impacts cause by remote working. Some digital tools and software used in industries are also discussed in this chapter.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The purpose of this research is to investigate the new ways in which remote work is being implemented in the project management of interior design fields in the Klang Valley during the COVID-19 pandemic. Hence, the data including the firm size, position in the firm, and the years of working experience are taken into consideration. For this research, quantitative research method will be utilised to collect data by distributing questionnaire to the interior designers and architects in Klang Valley area. Besides, a set of questionnaires for determine the potential beneficial effect and challenges of remote working during COVID-19 pandemic. Meanwhile, this chapter described the research methods, sampling requirements, data collection method, data analysis process and expected work schedule. Specifically, the Demographics of Respondents (Frequencies Test), Mean Ranking and Factor Analysis were applied in this research.

3.2 Research Design

Involvement in fieldwork when required, instruction in techniques for collecting data pertinent to particular issues, and instruction in the acquisition and organisation of materials are all fundamental aspects of research methodology. These components comprise guidance on the systematic documentation, organisation, and interpretation of evidence, as well as the application of statistical analysis and questionnaires (Kothari, 2004). Therefore, the development of a research design is imperative prior to embarking on scientific investigations. The establishment of a research design serves as the fundamental framework that supports the entirety of the research and the utilisation of a research design facilitates a more efficient and methodical approach in executing this research.

The research design is structured for descriptive and diagnostic research studies, hence the research design for this study referred to this structure. The framework of the research methodology and the research process was designed as follows, which was adopted from Kothari (2004):

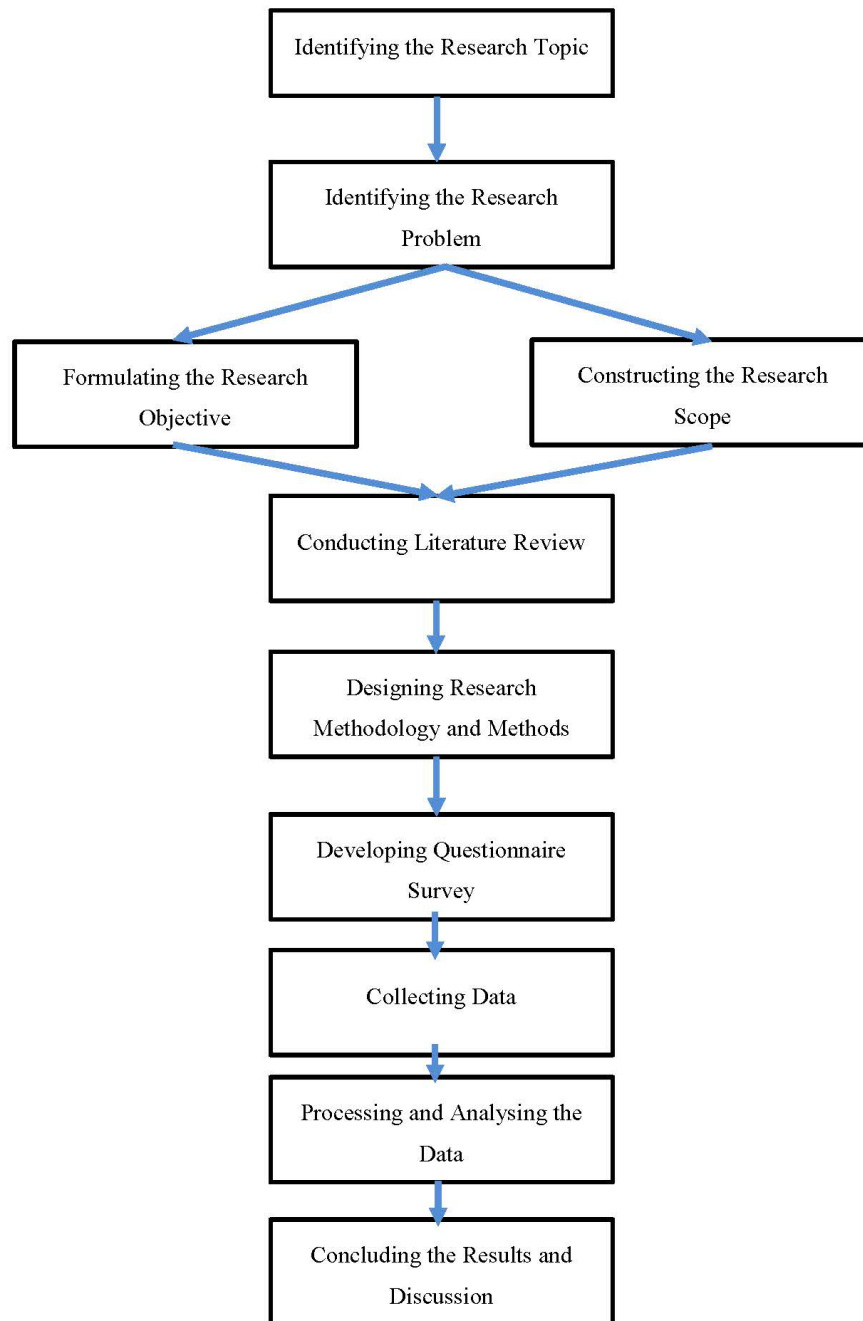


Figure 3. 1: Research Design and Process

3.3 Research Method

There are a few types of research methods to carry out research, normally either using quantitative or qualitative. The phrase "qualitative" denotes information that is described in detail orally, whereas "quantitative" pertains to data that are numerical in composition and can be assessed using standardised units (Baxter, Courage and Caine, 2015). In order to assign numerical values to qualitative data, such as responses from open-ended interviews, quantitative measures may be utilised. To

ensure a comprehensive investigation of research questions and provide answers to a wide range of inquiries, it is crucial to incorporate multiple approaches.

Typically, quantitative studies begin with a description of the data, which includes fundamental information about univariate (Hollstein et al., 2020). In this chapter, the quantitative research is used as an approach to collect the data. This is because quantitative is based on the measurement of quantity or amount and it is applicable to occurrences that can be expressed in terms of quantity (Kothari, 2004). Consequently, quantitative research method will be used by creating a questionnaire as vast amounts of data may be collected quickly by distributing questionnaire surveys, as opposed to qualitative research methods such as interviews, which take time and money.

Besides, secondary sources also required for carrying out the research. All this information is already existed and can be found from books, journals, articles, internet resources, and also newspapers.

3.4 Data Collection Methods

The technique of collecting high-quality survey data is still a thriving area of research, despite the fact surveys have been one of the most important data sources in the quantitative social sciences for an entire century (Hollstein et al., 2020). Hence, a set of questionnaires will be distributed for the respondents who are from interior design background in Klang Valley to collect the survey.

Additionally, self-completed online questionnaires shared via email or social media platforms, computer-assisted telephone interviews (CATI), short messaging services (SMS), interactive voice response (IVR), and mobile phone surveys are examples of remote data collection methods for quantitative research (Hensen et al., 2021). This is because web surveys are another way that have been gaining popularity at a rapid rate over the past two decades. (Hollstein et al., 2020).

For this research, the collection of primary data involved the utilisation of two types of close-ended questionnaires, which are the physical copies and Google Forms. The Google Forms link was shared via email or social media platforms.

3.4.1 Survey Instrument: Questionnaires

The questionnaire used Google Form to design and collect data, which based on a conceptual framework. For the questionnaire, there were three (3) sections for the respondents to carry out the research, which consist of Section A, B and C.

The Section A was closed ended questions that related to the demographics of the respondents, which includes the firm size, position in the firm and the years of working experience and there were multiple choices options provided for the respondents. The data collected were the demographics of respondents, which the outcomes were used in Frequencies Test later.

As for Section B will be the opportunities of the remote working while Section C is the challenges of the remote working. There are ten (10) questions on Section B and twelve (12) questions on Section C, which are the variables. In order to examine the developing practices of interior architecture and design enabled by remote working, an initial literature review was conducted to explore the opportunities and challenges associated with remote working. Based on the findings of this review, variables were drawn and presented in Figure 3.1. Theses variables relating to the opportunities and challenges of the remote working, the respondents will indicate the extent to which they agreed that the variables were applicable to their recent situation using a five-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree.

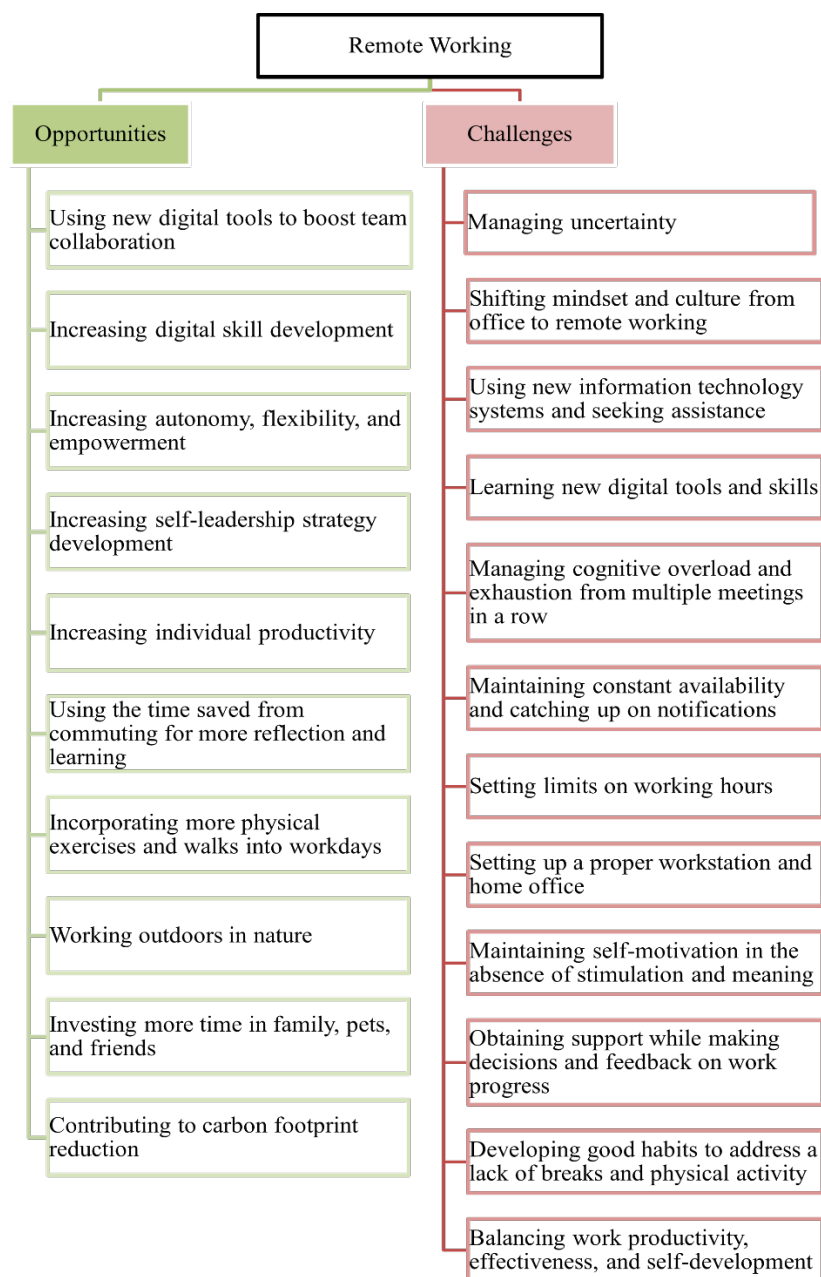


Figure 3. 2: Conceptual Model of Opportunities and Challenges of Remote Working

3.5 Sampling Design

A sample design refers to a precise and structured strategy for acquiring a representative subset from a specified population and it pertains to the technique or procedure employed by a researcher to select items for inclusion in a sample (Kothari, 2004). Instead of utilising a random sampling methodology to select participants from the entire population, the researchers choose to recruit participants from a conveniently accessible subset of the population (Baxter, Courage and Caine, 2015).

The population of this research is comprised of architect and interior designer that working in construction industry in Malaysia. In this research, the construction industry includes the architect and design consultant company will which are nearby Klang Valley area. Besides, this research aimed to examine the opportunities and challenges in emerging remote working practices in interior architecture and design field.

3.5.1 Sampling Strategies

Generally, there are two types of sampling: random sample and non-random sampling. According to Baxter, Courage and Caine (2015), industry user research often relies on convenience sampling or non-probability sampling. For this research, the convenience sampling was adopted, and it is a non-random sampling technique that involves selecting individuals who are easily accessible or have access at the time, rather than aiming for a truly representative sample of the community (Baxter, Courage and Caine, 2015). With this type of sampling, the researcher intentionally selected the items for the sample and involved the deliberate selection of certain units within the universe to create a sample, with the understanding that the small mass they choose from a big one will be typical or representative of the entire (Kothari, 2004). As a result, convenience sampling is utilised to reach huge populations swiftly.

3.5.2 Sampling Size

The choice of analysis method can influence a researcher's determination of the appropriate sample size and some existing scholarly literature has offered suggestions regarding the minimum sample size necessary for conducting specific analyses (Memon et al., 2020). Conversely, simple regression analysis necessitates a minimum of 50 samples and typically 100 samples in most research scenarios (Hair et al., 2019). It was typically considered to have good analysis of large sample sizes, with a minimum of $N = 50$ for exploratory factor analysis (EFA) being considered as reasonable for the purpose of this research (de Winter, Dodou and Wieringa, 2009). Besides that, some research explained that both hypothetical and actual research examples illustrate the effectiveness of subsample analysis in establishing that a sample size between 50 and 100 subjects is adequate for accurately representing and assessing the psychometric properties of measures pertaining to social constructs (Sapnas and Zeller, 2002). Hence the minimum sample size for this analysis was 50

respondents, and the total respondents collected is 80, which is fulfilled the requirement.

3.5.3 Pre-Test

Pretests and pilot surveys involved the systematic evaluation of different elements of survey design, protocol, instruments, analysis, and other related factors, using a limited sample from the target population, prior to conducting the primary survey and this set a purpose of pretests and pilot surveys is to ascertain the suitability and effectiveness of all components included in the intended survey (National Academies of Sciences Engineering and Medicine, 2007). Before distributing the questionnaire to the intended participants, a pre-test survey is conducted as a trial run. The main goal of this pre-test is to ensure that the data obtained from the sample population is reliable and appropriate. In total, 8 sets of questionnaires are given to the designers from interior architecture and design industry, which consist of 4 small-sized firms and 4 medium-sized firms The feedback and recommendations gathered from the pre-test are then utilized to make any necessary amendments to the main questionnaire before it is distributed to the targeted respondents. There were no comments on the questionnaire therefore no amendments needed.

3.6 Data Analysis Process

The data gathered from the questionnaire survey was analysed utilizing Statistical Package for Social Science (SPSS) version 23 software. The data gathered were analysed using tests like mean ranking and factor analysis on the outcomes of the respondents.

3.6.1 Demographics of the Respondents

To calculate all nominal variables, including the unique background information in Section A of the questionnaire, used total numbers and percentage counts.

3.6.2 Cronbach's Alpha Reliability Test

In this research, the Cronbach's Alpha test will adopted to test the research reliability. This Cronbach Alpha test is adopted to analyse the result of questionnaire that is designed using multiple Likert scale statements and thus to decide whether the scale is accurate. Based on Field (2005), the average of these numbers corresponds to

Cronbach's alpha, or α , the most widely used indicator of scale reliability. The Cronbach's alpha formula is shown as follows (M. Cotina, 1993):

$$\alpha = \frac{N^2 \times M(\text{COV})}{\text{SUM}(\text{VAR/COV})} \quad (3.1)$$

where,

N^2 = the square of the number of items in the scale

$M(\text{COV})$ = the mean interitem covariance

$\text{SUM}(\text{VAR/COV})$ = the sum of all the elements in the variance/co-variance matrix

3.6.3 Mean Ranking

To determine the ranking of the opportunities and challenges of remote working, a descriptive statistical analysis was used in the initial stage. The mean ranking in descriptive statistics to analyse the significance of the variables (Pallant, 2016). According to Osunsanmi et al. (2020), variable with a mean score greater than 3.5 was deemed significant. The highest mean will be ranked in the first place by sorting in descending sequence. The highest mean for the variable shows that the variable is impactful and is agreeable for most of the respondent. Based on Field (2005), the formula of mean and standard deviations is shown as follows:

$$\text{Mean, } \bar{X} = \frac{\sum_{i=1}^n X_i}{n} \quad (3.2)$$

$$\text{Standard Deviation, } S = \left[\sqrt{\frac{\sum_{i=1}^n (X_i - \bar{X})^2}{(n-1)}} \right] \quad (3.3)$$

where,

n = number of observations in the sample

$X_i = (x_1, x_2, \dots, x_n)$, the observed values of the sample

3.6.4 Factor Analysis

Exploratory factor analysis (EFA) is used to examine the relationships between many variables and explain them based on their shared fundamental dimensions and is a

way to compress data from multiple variables into a smaller set of factors while minimising information loss is the goal (Hair et al., 2019). In this research, the factor analysis, as one of the influential statistics, analysed the opportunities and the challenges in emerging interior architecture and design practices enabled by remote working. Exploratory factor analysis is not feasible when the sample size comprises fewer than 50 observations, although this requirement is contingent upon other influencing factors (Hair et al., 2019). Exploratory factor analysis (EFA) is typically considered suitable for analysing large sample sizes, with a minimum of $N = 50$ being considered reasonable (de Winter, Dodou and Wieringa, 2009).

Several tests should be performed prior to factor extraction to determine the acceptability of the respondent data for factor analysis, including the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity (Williams, Onsman and Brown, 2010). When the cases-to-variable ratio is smaller than 1:5, the KMO index is especially suggested and has a value between 0 and 1, with 0.50 deemed adequate for factor analysis (Hair et al., 2019). In addition, for factor analysis to be appropriate, the Bartlett's Test of Sphericity must be significant in which $p < 0.05$ (Hair et al., 2019).

Furthermore, principal components analysis (PCA), principal axis factoring (PAF), image factoring, maximum likelihood, alpha factoring, and canonical are all methods for extracting factors (Tabachnick and Fidell, 2013). PCA was proposed to be adopted to develop preliminary solutions in EFA.

Furthermore, there are some research highlighted that most factor analysts commonly employ multiple criteria (Hair et al., 2019). Hair et al., (2019) classified these loadings according to a different guideline: ± 0.30 as minimal, ± 0.40 as important, and ± 0.50 as practically significant. A factorability of 0.3 demonstrated that the factors explain around 30% of the relationship in the data, means that about one-third of the variables have a significant amount of shared variance, making it difficult to determine if they are correlated with each other or with the dependent variable which also known as multicollinearity (Williams, Onsman and Brown, 2010).

3.7 Summary

In short, there are many ways to investigate the opportunities and challenges in emerging interior architecture and design practices enabled by remote working. In

this chapter, quantitative research as our chosen research method after the discussion. Detailed explanations were provided regarding the sampling design and research design to guide researchers in understanding the methodology employed. To ensure the reliability and appropriateness of the research questionnaire, a pre-test was conducted prior to its formal distribution to professionals in the construction field.

Furthermore, the firm size, position in the firm and the years of working experience of the respondents in the interior architecture and design industry will be study in this research by providing the frequencies of the data. Mean ranking and factor analysis were utilised for the data analysis as these enabled the researchers to analyse the data obtained from the survey, ensuring the reliability of the data and facilitating the subsequent analysis of results and discussion in the following chapter.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Introduction

The findings of the data analysis will be presented and discussed in this chapter. Initially, the brief explanation of the respondent demographics was discussed, and followed by the mean ranking and factor analysis for the questionnaire. There were numerous tests employed in analysing the data acquired and these were based on the Statistical Package for the Social Sciences (SPSS) software to explain the correlations between the variables derived from various statistical approaches. The discussion part explained the findings, compare the significance of the findings to the literature review and the research question. Besides, the justifications that support the overall research findings were shown in this chapter. Finally, at the end of this chapter, a brief conclusion will be provided.

4.2 Response Rate

Out of the 90 questionnaire surveys distributed, 88 individuals participated. However, after the pre-test has conducted, a total of 8 respondents were removed from the final data set, and this led to 80 questionnaires left.

As a result, the participation percentage of overall respondents was 97.8%, but the participation rate of qualified respondents was lowered to 88.8%. Nonetheless, the response rates are considered high because, according to Fincham (2008), the expectation for survey research response rates was 60% to reach the research goal.

4.3 Demographics of the Respondents

This section included the respondents' demographic data, which is displayed in Table 4.1 and included the information on the firm size, position in the firm and years of working experience. There are 80 questionnaire sets were received from respondents in the consultancy firm via Facebook, email, WhatsApp and other media which only focused on the interior architecture and design industry, mostly working in a building consultancy firm. The data collection process took about four weeks, and all surveys were delivered on schedule.

Furthermore, the Table 4.1 showed the frequencies and percentages of interior architects and designers on three major categories of attributes based on survey data. From the data, there were 48.8% from small size firm, 42.5% from medium size firm, and 8.8% from large size firm. Besides, there were 11.3% of respondents were from upper management, 40.0% were from middle management and 48.8% were from lower management. Additionally, most of the respondents, which carried 81.3% of the total respondents have working experiences less than 5 years while 18.8% of respondents have more than 5 years working experiences in interior architecture and design industry.

Table 4. 1: Demographic of the respondents

Profile	Frequency (n)	Percent (%)
<i>Firm size</i>		
Small	39	48.8
Medium	34	42.5
Large	7	8.8
<i>Position in the firm</i>		
Upper management	9	11.3
Middle management	32	40.0
Lower management	39	48.8
<i>Years of working experience</i>		
Less than 5 years	65	81.3
5 years and above	15	18.8

4.4 Cronbach's Alpha Reliability Test

As for this research, the reliability test for the opportunities of remote working and challenges of remote working are shown in Table 4.2 and Table 4.3 below accordingly.

Table 4. 2: Cronbach's Alpha Reliability Test on Opportunities of Remote Working

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.716	.723	10

Table 4. 3: Cronbach's Alpha Reliability Test on Challenges of Remote Working

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.791	.795	12

Cronbach's Alpha reliability test findings reveal a value of 0.716 for the final data set of 80 respondents with 10 items/variables on opportunities of remote working, while a value of 0.791 for the final data set of 80 respondents with 12 items/variables on challenges of remote working. The data shown above are reliable as according to Pallant (2016), which suggested that the minimum be 0.7 for the Cronbach alpha values in situations where the scale has few items.

4.5 Rank Analysis

The mean score method was utilised in this section to ascertain and examine the impact of variables on the opportunities and challenges in emerging interior architecture and design practices enabled by remote working.

The standard deviation is employed to identify cases when the occurrence of two items has the same mean value so that which one is more significant and should be given a higher ranking. According to Field (2005), stated that when variables have the same mean score, the variable with the lowest standard deviation is measured the most significant and is given the highest ranking.

4.5.1 Opportunities in Emerging Interior Architecture and Design Practices Enabled by Remote Working

The mean scores and ranking for the 10 variables are displayed in Table 4.4. This also showed the hierarchical order of 10 results pertaining to the opportunities in emerging interior architecture and design practices enabled by remote working based on the mean and standard deviation. The 80 respondents evaluated all the outcomes

using a 5-point Likert Scale, and the mean was calculated for each individual outcome.

According to Table 4.4, there are 3 variables where the mean value is greater than 4.000, and any variables with a mean value lower than 3 are deemed unimportant. Nevertheless, all the results displayed in the table below have an average greater than 3, so the majority of the respondents concurred that all of these items are the direct factors of opportunities of remote working.

Table 4. 4: Importance Ranking on Opportunities of Remote Working

Ref.	Variables	N	Mean	Std. Deviation	Rank
OP09	Investing more time in family, pets, and friends	80	4.2250	.95434	1
OP02	Increasing digital skill development	80	4.1125	.67494	2
OP03	Increasing autonomy, flexibility, and empowerment	80	4.0125	.73766	3
OP10	Contributing to carbon footprint reduction	80	3.9750	.82638	4
OP01	Using new digital tools to boost team collaboration	80	3.9250	.74247	5
OP05	Increasing individual productivity	80	3.9250	.89690	6
OP04	Increasing self-leadership strategy development	80	3.9000	.77296	7
OP06	Using the time saved from commuting for more reflection and learning	80	3.9000	.89443	8
OP07	Incorporating more physical exercises and walks into workdays	80	3.6125	.90699	9
OP08	Working outdoors in nature	80	3.5625	1.00434	10

The results showed that some of the variables carried same mean value, so the standard deviation was compared to distinguish between variables that possess identical mean scores. The table above showed the using new digital tools to boost team collaboration has the lower standard deviation (0.74247) compared to the standard deviation of increasing individual productivity (0.77296), it means that using new digital tools to boost team collaboration is more important therefore it

ranked number 5 in the Table 4.4. This applied to rank the variable of increasing self-leadership strategy development and the variable of using the time saved from travelling for more reflection and learning.

Investing more time in family, pets, and friends has the mean score of 4.2250 and standard deviation (σ) of 0.95434, ranked the first among of the variables for the opportunities of remote working. Andrzejak and Belz (2021) highlighted that the principle of second-place emphasises transforming remote work into a productive and energising activity, by engaging in quality time with family and friends to enhance their emotional energy during the COVID-19 pandemic. Interior architecture and design required a long working time to explore the creativity and also functionality of the interior space, which exhausted their energy to focus on design. Hence, they could recharge their emotional energy through remote working by sparing some time with their loved ones during the long exploring hours for designing. Employees who possess advantageous conditions for working from home, such as a designated workstation within their residence, accommodating family circumstances, and manageable household responsibilities, exhibit a greater propensity towards voluntary participation in work-from-home arrangements (Vilhelmson and Thulin, 2016). The adoption of work-from-home practices by employees is often a deliberate measure to reconcile their professional commitments with their personal lives (Hallman et al., 2021). As a result, work from home enabled the employees from interior architecture and design field to devote themselves with family, pets, and friends.

The variable of increasing digital skill development ranked second with the mean score and standard deviation of 4.1125 and 0.67494 accordingly. This is due to the rapid adoption of remote work, which has expedited the enhancement of digital competencies, requiring workers to quickly acquire proficiency in diverse digital tools and platforms (Chafi, Hultberg and Yams, 2022). As interior architecture and design field, most of the works involved designs using a sketching and rendering software such as SketchUp, AutoCad, Lumion and 3D Max before the pandemic occurs. During pandemic, more digital collaboration software was utilised such as Kujiale, Coohom and other online rendering software during the pandemic. Besides, with virtual communication tools which included email, instant messaging, video conferencing, and other platforms for cooperation, workers may collaborate with their colleagues from any location in the world while working remotely (Oppong

Peprah, 2023). As a result, individuals in leadership positions aggressively requested and disseminated information regarding the recently applied digital tools, while also encouraging the sharing of knowledge and the exploration of innovative meeting formats, rapidly increase the digital skill development of the employees (Chafi, Hultberg and Yams, 2022).

Subsequently, Table 4.4 showed the variable of increasing autonomy, flexibility, and empowerment with the mean score and standard deviation of 4.0125 and 0.73766 was ranked third. This is because by receiving adequate assistance and flexibility to coordinate remote work and share time with colleagues in the office the individuals anticipate a future where they can achieve an improved equilibrium between their professional and personal lives (Chafi, Hultberg and Yams, 2022). In addition to the more virtualised work tasks, jobs, and services, it is anticipated that they will become less geographically restricted and progressively more flexible and mobile (Vilhelmson and Thulin, 2016). In interior architecture and design field, the employees were given flexibility and autonomy to arrange their design works through remote working. Furthermore, Hesketh and Cooper (2019) found that there are advantages to working remotely, including increased accessibility, flexibility, and productivity. As a result, remote working has gained widespread recognition of its flexibility, empower, enhance productivity, promote worker independence, and foster employee engagement (Oppong Peprah, 2023).

The fourth opportunity of remote working referred to contributing to carbon footprint reduction which have the mean and standard deviation of 3.9750 and 0.82638 accordingly. Apart from the top 3 opportunities, working remotely was also linked to a lower carbon footprint because fewer people commuted, which the participants hoped that this practice could remain even when the pandemic ended would remain (Chafi, Hultberg and Yams, 2022). Besides, Hook et al. (2020) further explained that remote working includes the energy savings from fewer commuter trips as well as the unintended effects on energy use.

Using new digital tools to boost team collaboration ranked fifth, with the mean and standard deviation of 3.9250 and 0.74247 respectively. In contrast to traditional video meetings, current breakthroughs, such as the metaverse and the greater possibilities given by VR-based environments, are mentioned as viable treatments for building a sense of presence and team togetherness (Oprean, Simpson and Klippel, 2018).

Apart from the top 5 of the mean ranking, increasing individual productivity ranked the sixth with mean value of 3.9250 and standard deviation of 0.89690 in the data. According to Chafi, Hultberg and Yams (2022), participants valued the flexibility in work timing and location, noting increased productivity because limiting this flexibility may negatively impact in productivity. Next, increasing self-leadership strategy development ranked the seventh with mean value and standard deviation of 3.9000 and 0.77296 respectively. Participants recognized the importance of proactively adopting self-leadership practices, which involved actively managing tasks, fostering positive habits, and taking responsibility for their own professional development (Chafi, Hultberg and Yams, 2022). Subsequently, using the time saved from commuting for more reflection and learning ranked the eighth with mean value and standard deviation of 3.9000 and 0.89443 respectively. Employers who could skip morning commutes seized the chance to sleep longer, resulting in having better energy levels and job satisfaction, with good productivity (Hallman et al., 2021).

The second lowest mean score was incorporating more physical exercises and walks into workdays with mean value and standard deviation of 3.6125 and 0.90699 accordingly. Remote working encouraged physical activity in a natural manner (Chafi, Hultberg and Yams, 2022). The last variable for the mean ranking was working outdoors in nature with mean value and standard deviation of 3.5625 and 1.00434 respectively.

4.5.2 Challenges in Emerging Interior Architecture and Design Practices Enabled by Remote Working

The mean scores and ranking for the 12 variables are displayed in Table 4.5. This displayed the hierarchical order of 12 results pertaining to the challenges in emerging interior architecture and design practices enabled by remote working based on the mean and standard deviation. The 80 respondents evaluated all the outcomes using a 5-point Likert Scale, and the mean was calculated for each individual outcome.

According to Table 4.5, there are 6 variables where the mean value is greater than 4.000, and any variables with a mean value lower than 3 are deemed unimportant. Nevertheless, all the results displayed in the table below have an average greater than 3, so the majority of the respondents concurred that all of these items are the direct factors of challenges of remote working.

Table 4. 5: Importance Ranking on Challenges of Remote Working

Ref.	Variables	N	Mean	Std. Deviation	Rank
CH03	Using new information technology systems and seeking assistance	80	4.1250	.73562	1
CH04	Learning new digital tools and skills	80	4.1125	.79546	2
CH12	Balancing work productivity, effectiveness, and self-development	80	4.1125	.81121	3
CH02	Shifting mindset and culture from office to remote working	80	4.0375	.84858	4
CH05	Managing cognitive overload and exhaustion from multiple meetings in a row	80	4.0250	.91368	5
CH06	Maintaining constant availability and catching up on notifications	80	4.0000	.94132	6
CH09	Maintaining self-motivation in the absence of stimulation and meaning	80	3.9125	.79863	7
CH01	Managing uncertainty	80	3.9125	.91671	8
CH11	Developing good habits to address a lack of breaks and physical activity	80	3.8875	.79546	9
CH10	Obtaining support while making decisions and feedback on work progress	80	3.8750	.75263	10
CH07	Setting limits on working hours	80	3.8125	1.29355	11
CH08	Setting up a proper workstation and home office	80	3.7625	.87502	12

The results showed that some of the variables carried same mean value, so the standard deviation was compared to distinguish between variables that possess identical mean scores. The table above showed learning new digital tools and skill has the lower standard deviation (0.79546) compared to the standard deviation of balancing work productivity, effectiveness, and self-development (0.81121), it means that learning new digital tools and skill is more important therefore it ranked number 2 in the Table 4.5. This applied to rank the variable of maintaining self-motivation in the absence of stimulation and meaning and the variable of managing uncertainty.

Using new information technology systems and seeking assistance was ranked first with the mean value of 4.1250 and standard deviation of 0.73562 in the

data. This could be explained as individuals may suffer stress in this scenario if they are unable to complete the tasks that are expected of them while using technology in a certain environmental context, or if intentional goals are not met (Singh et al., 2022). As a result, interior designers working remotely face obstacles such as limited digital abilities and a plethora of new tools to acquire during COVID-19.

The second rank of the challenges in remote working was learning new digital tools and skills, which had the mean value of 4.1125 and standard deviation of 0.79546 in the data above. The necessity to master a multitude of new technologies and implement innovative remote work practices induced stress for some individuals and emphasised a broader recognition of people's overall deficiency in digital skills (Chafi, Hultberg and Yams, 2022). Employees, grappling with the intricacies of technology use due to the sudden transition to remote work, may experience feelings of inadequacy in their computer skills, prompting a need to invest time and effort in acquiring proficiency in information and communication technologies (Khalid et al., 2023). Hence, the designers would face challenges in learning new technologies and software when remote working during pandemic.

The third rank of the challenges in remote working was balancing work productivity, effectiveness, and self-development, which the mean value and standard deviation were 4.1125 and 0.81121 respectively. This is because the challenges of full-time remote work include difficulties in fostering creativity and maintaining inspiration and motivation at home, posing a balance challenge for employees and employers between task-specific productivity and broader aspects like creativity, learning, and development (Nicholas Bloom, 2020).

Shifting mindset and culture from office to remote working has the mean and standard deviation of 4.0375 and 0.84858 respectively, ranked fourth in the mean ranking analysis. Since the Covid-19 crisis forced an abrupt change in the way and location of work, our perception of the work environment has evolved. While some workers adjusted well, others (especially those who had worked remotely before the pandemic) found it more difficult to shift or keep up healthy practises when working from home. In actuality, a lot of workers found it difficult to transform their houses into comfortable and specialised workspaces (Adisa, Ogbonnaya and Adekoya, 2023).

Managing cognitive overload and exhaustion from multiple meetings in a row has the mean and standard deviation of 4.0250 and 0.91368 respectively, ranked fifth

in the data above. Due to the increasing number of meetings, stress and burnout were identified as issues in remote working across all knowledge worker groups (Marzban and Mackey, 2021). Hence, The combination of the convenience of remote work and an increase in uninterrupted meetings, unlike the natural breaks found in traditional office environments, presented challenges for participants contending with cognitive overload and tiredness due to prolonged online meetings. (Chafi, Hultberg and Yams, 2022).

Apart from the top 5 of the mean ranking, maintaining constant availability and catching up on notifications ranked sixth with the mean and standard deviation of 4.0000 and 0.94132 respectively. This is because the employees felt pressured to maintain online visibility round the clock, using digital platforms on laptops and mobile phones, aiming to demonstrate dedication, job commitment, and avoid any perception of neglecting duties while working from home (Adisa, Ogbonnaya and Adekoya, 2023). Next, maintaining self-motivation in the absence of stimulation and meaning ranked seventh with the mean and standard deviation of 3.9125 and 0.91671 respectively. This is due to remote working encompass the potential for a monotonous and uninspiring work environment, impacting job satisfaction and productivity due to a lack of diverse stimuli (Anakpo, Nqwayibana and Mishi, 2023). Furthermore, managing uncertainty ranked eighth with the mean and standard deviation of 3.9125 and 0.91671 respectively. Undoubtedly, navigating uncertainties related to pandemic restrictions and the indefinite duration of remote work poses a challenge for both managers and employees, leading to increased complexities at both organizational and individual levels. (Chafi, Hultberg and Yams, 2022). Subsequently, developing good habits to address a lack of breaks and physical activity ranked ninth with the mean and standard deviation of 3.8875 and 0.79546 respectively. Besides, obtaining support while making decisions and feedback on work progress ranked tenth with the mean and standard deviation of 3.8750 and 0.75263 respectively.

The second lowest mean score was the setting limits on working hours, which has 3.8125 and the standard deviation would be 1.29355. This is because the boundary between paid employment and leisure time becoming more unclear (Derndorfer et al., 2021). The last variable for the mean ranking was the setting up a proper workstation and home office which the has the mean and standard deviation of 3.7625 and 0.87502 accordingly.

4.6 Factor Analysis

By compressing data from numerous variables into a smaller number of factors, exploratory factor analysis (EFA) is used to analyse the interactions between variables and explain them based on their shared underlying features in this research.

4.6.1 Kaiser-Meyer-Olkin (KMO) Test and Bartlett's Test

Kaiser-Meyer-Olkin (KMO) Test and Bartlett's Test metric for sampling by dividing the total squared correlations by the total squared correlations plus the total squared partial correlations, the adequacy is determined, where the value tends towards 1 when the partial correlations are small and values equal to or greater than 0.6 are necessary to achieve satisfactory for Factor Analysis (Tabachnick and Fidell, 2013). The KMO test for both of the opportunities and challenges of remote working are above 0.6 that showed the data is appropriate to conduct factor analysis, which the value is 0.657 and 0.694 accordingly. Bartlett's test for both of the opportunities and challenges of remote working are less than 0.001, which considered significant for factor analysis to be appropriate, as according to Hair et al. (2019), the Bartlett's Test of Sphericity must be significant in which $p < 0.05$.

Table 4.4 showed the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity are used to assess the pertinence of the data for conducting factor analysis for opportunities of remote working.

Table 4. 6: Results of KMO test and Bartlett's test for Opportunities of Remote Working

Parameter	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.657
Bartlett's Test of Sphericity	
Approx. Chi-Square	217.154
df	45
Sig.	.000

Table 4.5 showed the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity are used to assess the appropriateness of the data for conducting factor analysis for challenges of remote working.

Table 4. 7: Results of KMO test and Bartlett's test for Challenges of Remote Working

Parameter	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.694
Bartlett's Test of Sphericity	
Approx. Chi-Square	303.675
df	66
Sig.	.000

4.6.2 Factor Loading and Variance Explained

The 10 items of the opportunities of remote working were subjected to principal components analysis (PCA) using SPSS version 23. The suitability of the data for factor analysis was evaluated before PCA was conducted (Pallant, 2016). Referring to Table 4.6, four components with eigenvalues greater than 1 were found using principal components analysis, which accounted for 29.81%, 18.63%, 11.92%, and 10.13% of the variance respectively.

Meanwhile, the 12 items of the challenges of remote working were subjected to principal components analysis (PCA) using SPSS version 23. The suitability of the data for factor analysis was evaluated before PCA was conducted (Pallant, 2016). Referring to Table 4.7, four components with eigenvalues greater than 1 were found using principal components analysis, which accounted for 31.45%, 16.02%, 10.83% and 9.88% of the variance respectively.

Table 4.6 and Table 4.7 showed the total variance explained of opportunities of remote working and challenges of remote working, which all the 22 variables as analysed in previous sections. The opportunities were grouped into 4 components from 10 variables, while the challenges were grouped into 4 components from 12 variables. Typically, the number of components can be determined using the principal component analysis (PCA) cut-off criterion, where for which it can be seen that the 4 factor components account for 70.482% for opportunities, and 68.181% for challenge of the variance. Another area where the factor analysis technique is with

the cumulative percentage of variation, where the explained variance is commonly as low as 50-60% in humanities (Williams, Onsman and Brown, 2010).

To aid in comprehension, the variables are arranged and categorised according to the size of loading and zeros are used in place of loadings below 0.45 (20% of variance) as it explained as weakly linked to the factor (Tabachnick and Fidell, 2013). Consequently, only loadings greater than 0.4 are reported in Table 4.6 and Table 4.7 below.

Table 4. 8: Total Variance Explained of Opportunities of Remote Working

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	2.981	29.806	29.806
2	1.863	18.633	48.439
3	1.192	11.917	60.356
4	1.013	10.126	70.482

Extraction Method: Principal Component Analysis (PCA)

Table 4. 9: Total Variance Explained of Challenges of Remote Working

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	3.774	31.447	31.447
2	1.923	16.022	47.469
3	1.300	10.830	58.300
4	1.186	9.881	68.181

Extraction Method: Principal Component Analysis (PCA)

Rotation was used in applying post-extraction, seeks to optimize correlations between factors and variables. Varimax, a widely used method, aims to maximize factor loading variance by adjusting high loadings higher and low loadings lower for each factor (Tabachnick and Fidell, 2013).

The Table 4.8 and Table 4.9 below showed the rotated component matrix of the opportunities and challenges of remote working, with principal component analysis (PCA) as extraction method, and Varimax with Kaiser Normalization as rotation method.

Table 4. 10: Rotated component matrix of Opportunities of Remote Working

Ref	Variables	Component			
		1	2	3	4
OP02	Increasing digital skill development	.823			
OP01	Using new digital tools to boost team collaboration	.819			
OP04	Increasing self-leadership strategy development	.625		.431	
OP03	Increasing autonomy, flexibility, and empowerment	.592			
OP08	Working outdoors in nature		.927		
OP07	Incorporating more physical exercises and walks into workdays		.899		
OP06	Using the time saved from commuting for more reflection and learning			.816	
OP05	Increasing individual productivity	.446		.666	
OP10	Contributing to carbon footprint reduction				.857
OP09	Investing more time in family, pets, and friends		.449		.696

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Table 4. 11: Rotated component matrix of Challenges of Remote Working

Ref	Variables	Component			
		1	2	3	4
CH10	Obtaining support while making decisions and feedback on work progress	.760			
CH07	Setting limits on working hours	.702		.338	
CH08	Setting up a proper workstation and home office	.694	.352		

Ref	Variables	Component			
		1	2	3	4
CH11	Developing good habits to address a lack of breaks and physical activity	.572			.457
CH09	Maintaining self-motivation in the absence of stimulation and meaning	.554	.546		
CH04	Learning new digital tools and skills		.858		
CH12	Balancing work productivity, effectiveness, and self-development	.359	.678		
CH03	Using new information technology systems and seeking assistance		.643		.563
CH06	Maintaining constant availability and catching up on notifications			.881	
CH05	Managing cognitive overload and exhaustion from multiple meetings in a row			.831	
CH02	Shifting mindset and culture from office to remote working				.836
CH01	Managing uncertainty			.432	.637

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

4.6.3 Extraction of Underlying Factors for Opportunities

Components 1: Increasing Digital Transformation and Workforce Empowerment

This component consists of four variables which were increasing digital skill development; using new digital tools to boost team collaboration; increasing self-leadership strategy development; and increasing autonomy, flexibility, and empowerment as portrayed in Table 4.8 above. The four critical variables under this component focus on increasing digital transformation and workforce empowerment. This component accounts for 29.80 percent of the total variance explained among all of the critical variables shown in Table 4.6 above.

With remote work, employees can work from anywhere in the world and still stay connected with their colleagues through virtual communication tools such as video conferencing, instant messaging, email, and other collaboration platforms (Oppong Pephrah, 2023). For instance, the company managed the teamwork and communication management via Microsoft Teams, staff members can communicate

via video and audio calls, video and audio teleconferences, instant messaging, and file sharing (Yang et al., 2022). Hence, this increased the managing teamwork, competence, autonomy, and leadership skills in this digital era during pandemic.

Component 2: Integrating Nature and Physical Activities into Workdays

This component consists of two variables which were incorporating more physical exercises and walks into workdays; and working outdoors in nature in Table 4.8 above. The two critical variables under this component focus on integrating nature and physical activities into workdays. This component accounts for 18.63 percent of the total variance explained among all of the critical variables shown in Table 4.6 above.

Through remote working, it had promoted to increase physical activity organically by facilitating employees' movement between different office areas and encouraging walking or commuting to and from work (Chafi, Hultberg and Yams, 2022). Moreover, some employers highlighted the advantageous prospect of breaking established habits and altering routines by consciously incorporating elevated physical activities and walks into the framework of workdays during remote working (Ipsen et al., 2021). This approach not only fosters a healthier lifestyle but also contributes to overall well-being, enhancing employees' physical and mental health.

Component 3: Improving Personal Development and Productivity

This component consists of two variables which were using the time saved from commuting for more reflection and learning; and increasing individual productivity in Table 4.8 above. The two critical variables under this component focus on improving personal development and productivity. This component accounts for 11.92 percent of the total variance explained among all of the critical variables shown in Table 4.6 above.

According to Hallman et al. (2021), employees that do not need to commute to the workplace in the morning will take the opportunity to sleep longer as the extra time to rest helped workers feel more refreshed and energized, allowing them to tackle their tasks with more enthusiasm. This led to greater job satisfaction, increased motivation, and a more positive outlook on their work. In addition, while expressing appreciation for the flexibility in determining the time and location of their work and acknowledging an improvement in individual productivity,

respondents contend that limiting this flexibility may have adverse effects on both productivity and well-being (Chafi, Hultberg and Yams, 2022). Therefore, remote working allowed for increased individual productivity and the use of time saved from commuting for additional reflection and learning.

Component 4: Increasing Sustainable Life Enrichment

This component consists of two variables which were investing more time in family, pets, and friends; and contributing to carbon footprint reduction in Table 4.8 above. The two critical variables under this component focus on improving personal development and productivity. This component accounts for 10.13 percent of the total variance explained among all of the critical variables shown in Table 4.6 above.

According to Oppong Peprah (2023), remote working can lessen carbon footprint, which is now a big worldwide concern, making it imperative to investigate this topic. Consequently, the research suggested that remote work may yield environmental benefits, such as lower air pollution, reduced fossil fuel consumption, and decreased gas emissions and this underscores the significance of conducting further academic inquiries into the concept of remote working (Oppong Peprah, 2023). Besides that, Orzeł and Wolniak (2022), suggested that promoting remote work and making efforts to decrease paper paperwork for environmental concerns, eventually will increase the sustainable life enrichment.

4.6.4 Extraction of Underlying Factors for Challenges

Component 1: Changing Work Settings

This component consists of five variables which were obtaining support while making decisions and feedback on work progress; setting limits on working hours; setting up a proper workstation and home office; developing good habits to address a lack of breaks and physical activity; and maintaining self-motivation in the absence of stimulation and meaning in Table 4.9 above. The five critical variables under this component focus on changing work settings. This component accounts for 19.55% of the total variance explained among all of the critical variables shown in Table 4.7 above.

The challenging factor of balancing support, boundaries, and well-being was identified as employees had limited ability to setting up a proper workstation and home office. The employees that was lacked of an ergonomic workplace and

appropriate technology for workers working remotely (Oppong Peprah, 2023). Thus, employers must prioritize creating a work environment that promotes employee well-being and productivity during remote working.

Companies must ensure that their remote workforce has the appropriate technologies accessed to perform their job effectively which includes access to high-speed internet, adequate software and hardware, and cybersecurity measures to protect sensitive company data (Ipsen et al., 2021). Many participants were concerned about the possibility of losing their employment in addition to being absent from online presentations that will further drove them to put in more overtime and unusually lengthy workdays (Adisa, Ogbonnaya and Adekoya, 2023). Therefore, in Adisa, Ogbonnaya and Adekoya (2023) research indicated that working remotely may also lower levels of work involvement in the event of a pandemic. Another potential challenges in remote working as the changing in working settings is that the line between paid work and leisure time may become increasingly blurred (Derndorfer et al., 2021).

Component 2: Adapting to New Technologies

This component consists of five variables which were learning new digital tools and skills; balancing work productivity, effectiveness, and self-development; and using new information technology systems and seeking assistance in Table 4.9 above. The three critical variables under this component focus on adapting to new technologies. This component accounts for 17.52% of the total variance explained among all of the critical variables shown in Table 4.7 above.

Thus, the organisation faces a significant challenge when employees are unable to locate appropriate and supportive tools and equipment to use when working remotely (Oppong Peprah, 2023). Besides, the sudden shift to remote work has left employees dealing with the complexities of technology usage, and some may feel inadequate in their computer skills, prompting an investment of time and effort in studying information and communication technologies (Khalid et al., 2023). Some study mentioned that integration of organisational structure among new digital and old traditional modes during transition was one of the factor when adapting new technologies in remote working (Orzeł and Wolniak, 2022). Therefore, it appears that companies need to quickly adopt new digital platforms, modify their business and communication procedures, and provide technical and infrastructure support to

their employees in response to new regulations and/or stringent advise to "stay home" or go into quarantine (Singh et al., 2022).

Component 3: Committing to Increased Workloads and Responsibilities

This component consists of two variables which were maintaining constant availability and catching up on notifications; and managing cognitive overload and exhaustion from multiple meetings in a row in Table 4.9 above. The two critical variables under this component focus on committing to increased workloads and responsibilities. This component accounts for 16.16 percent of the total variance explained among all of the critical variables shown in Table 4.7 above.

There were several ways in which the interior architects and designers were complicated by working remotely and interacting in real time through digital platforms as remote working enables workers to work from anywhere at any time during the pandemic. Many study participants felt that they had to maintain their online presence even though they had access to the Internet and digital platforms on their laptops and mobile phones, as they felt that they needed to prove their worth by working extra hours, showing greater dedication to their jobs, or proving to their employers that they were working seriously from home (Adisa, Ogbonnaya, and Adekoya, 2023). Remote collaboration within teams or entire business divisions can quickly give rise to confusion and a lack of clarity, as isolation fosters uncertainty about whom to consult regarding specific concerns and the appropriate manner and timing for such interactions, leading to bottlenecks and delays (Bick et al., 2020).

Component 4: Adapting to Remote Dynamics

This component consists of two variables which were shifting mindset and culture from office to remote working; and managing uncertainty in Table 4.9 above. The two critical variables under this component focus on adapting to remote dynamics. This component accounts for 14.95% of the total variance explained among all of the critical variables shown in Table 4.7 above.

The component of adapting to remote dynamics was shown in the analysis as among them are role ambiguity, diminished interpersonal contact, miscommunication, and isolation during COVID-19 (Ipsen et al., 2021). The cultural transitions is that some employees just refused to work from any other location than the official premises as it was challenging to shift mindset and culture from office to

remote working (Oppong Peprah, 2023). Consequently, the most challenging aspect of remote work was the difficulty in separating work and home life (Flores, 2019).

4.7 Summary

In summary, the data and answers received from the 80 respondents working in the interior architecture and design industry were used to develop the research's findings. The statistical methods used for the data analysis were factor analysis and mean ranking.

Based on the mean ranking test, the top five opportunities of remote working included investing more time in family, pets, and friends; increasing digital skill development; increasing autonomy, flexibility, and empowerment; contributing to carbon footprint reduction; and using new digital tools to boost team collaboration. Furthermore, the top five challenges of remote working were using new information technology systems and seeking assistance; learning new digital tools and skills; balancing work productivity, effectiveness, and self-development; shifting mindset and culture from office to remote working; managing cognitive overload and exhaustion from multiple meetings in a row.

Subsequently, the factor analysis was used to identify and extract the 4 underlying components from 10 variables of opportunities of remote working, while 4 underlying components from 12 variables of challenges of remote working. The components for opportunities of remote working were increasing digital transformation and workforce empowerment; integrating nature and physical activities into workdays; improving personal development and productivity; and increasing sustainable life enrichment. The components for challenges of remote working were changing work settings; adapting to new technologies; committing to increased workloads and responsibilities; and adapting to remote dynamics

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

In this chapter, the findings and discussions of the study are wrapped up in consideration of the earlier-stated research aim and objectives. Additionally, the chapter discussed the implications and limitations of the research. By the end of the chapter, various recommendations were put forward for enhancing future studies on related research topics.

5.2 Achievement of Research Objectives

The achievement of the research objectives was provided in the subsequent sections. These accomplishments will serve as a foundation for the conclusions drawn in the following paragraph.

5.2.1 Objective 1: To investigate the opportunities in emerging interior architecture and design practices enabled by remote working

The first objective of this research aims to investigate the opportunities in emerging interior architecture and design practices enabled by remote working. To fulfil this objective, the study was thoroughly explored and analysed the potential opportunities within the realm of emerging interior architecture and design practices enable by remote working. This involves an in-depth investigation into how the dynamics of remote work have influenced design approaches in the field of interior architecture through the mean ranking and factor analysis. From the data, the top five opportunities of remote working included:

- (i) Investing more time in family, pets, and friends.
- (ii) increasing digital skill development.
- (iii) increasing autonomy, flexibility, and empowerment.
- (iv) contributing to carbon footprint reduction.
- (v) using new digital tools to boost team collaboration.

The study seeks to uncover specific insights and opportunities that have arisen as a result of the evolving work landscape and the intersection with interior architecture and design, in which there are 4 components underlying. The 4 components were as follows:

- (i) Increasing digital transformation and workforce empowerment.
- (ii) Integrating nature and physical activities into workday.
- (iii) Improving personal development and productivity
- (iv) Increasing sustainable life enrichment

5.2.2 Objective 2: To investigate the challenges in emerging interior architecture and design practices enabled by remote working

Second objective of this study is to examine the challenges faced by emerging interior architecture and design practices in the context of remote working. To achieve this, the study thoroughly analysed potential challenges, employing mean ranking and factor analysis to delve into how remote work dynamics influence design approaches in interior architecture. From the data, the top five challenges of remote working were:

- (i) Using new information technology systems and seeking assistance.
- (ii) Learning new digital tools and skills.
- (iii) Balancing work productivity, effectiveness, and self-development.
- (iv) Shifting mindset and culture from office to remote working.
- (v) Managing cognitive overload and exhaustion from multiple meetings in a row.

The research aims to unveil specific insights and challenges emerging from the interior architecture and design with remote working, involving four underlying components. The 4 components were as follows:

- (i) Changing work settings.
- (ii) Adapting to new technologies.
- (iii) Committing to increased workloads and responsibilities.
- (iv) Adapting to remote dynamics.

5.3 Research Implication

Identification of opportunities and challenges in interior architecture and design practices of remote working

The research on opportunities and challenges of remote working has crucial implications for interior architects and designers, determined and identified through mean analysis and factor analysis.

By recognizing the challenges, including using new information technology systems and seeking assistance; learning new digital tools and skills; balancing work productivity, effectiveness, and self-development; shifting mindset and culture from office to remote working; managing cognitive overload and exhaustion from multiple meetings in a row, interior architects and designers can use these insights to develop flexible practices that align with opportunities and challenges in remote working. The study showed the potential benefits of remote working because of investing more time in family, pets, and friends; increasing digital skill development; increasing autonomy, flexibility, and empowerment; contributing to carbon footprint reduction; and using new digital tools to boost team collaboration. Overall, these implications inform strategies to optimize remote work practices, benefiting organizational productivity and employee well-being.

Implication in performance of employees

As remote working increased independence, flexibility, and empowerment of an individual, employers should further enhance the good qualities of the employees when they are working remotely.

In order to motivate and continuously develop team members, their job satisfaction is important to know where the improvement could be done to enhance the human resource of the company through the Google Form questionnaire. Some possible rewards and recognition for the employees could motivate them to be more independent when they are working remotely. In the results above, remote working allowed interior architect and designers to investing more time in family, pets, and friends, which is the opportunity to motivate them.

From the aspects of software tools and technologies, employers could conduct online training, subscribes the software's online learning materials to improve the rendering skills of the interior architecture and designer. From the

analysis of this research, employers could monitor and manage the interior architect and designers effectively.

Implication in aspects of satisfaction of employees

Using new information technology systems and seeking assistance is one of the critical challenges to overcome when emerging interior architecture and design practices enabled by remote working. From the results stated, since the remote working is hard in setting boundaries in terms of work time, employers might investigate the solutions to overcome this main challenge if the company wishes to continue implement the remote working practices in the interior architecture and design settings. One of the possible solutions would be setting up a clear Team Development Plan through virtual team software such as WhatsApp, Zoom, and also Google Meet. In the team development plan, the time allocate for each task is clear and the aim and objective is notified to every project team member in the interior architecture and design field.

5.4 Research Limitation

There were few limitations in this research, initially the questionnaire surveys are mostly distributed in the Kuala Lumpur and Selangor state regions. It is necessary to note that the results obtained from these surveys may not be a thorough representation of the whole Malaysian construction industry, thus interpretation and generalisation of the data should be done with caution.

Besides, the research was conducted in quantitative method, in which the outcomes were depended on the numbers. While quantitative methods have the advantage of broad coverage and statistical precision, it is important to recognise that they may fall short of capturing the subtle nuances and complex insights that qualitative approaches excel at presenting within the research context. The breadth and amount of information gained by qualitative data gathering methods frequently provide a more complete understanding of the topic matter.

5.5 Proposed Framework for Emerging Practices

The statistical model family known as structural equation modelling (SEM) aims to explain the correlations between several variables (Hair et al., 2019). Thus, the

structural equation modelling could be utilised for further analysis. A set of statistical techniques known as structural equation modelling (SEM) examined the interactions between one or more independent variables and one or more dependent variables, which the variables may be continuous or discrete (Tabachnick and Fidell, 2013).

The framework in Figure 5.1 was proposed to understand the correlation between the variables in the research for future research. This framework which based on structural equation modelling (SEM), adopted from Hair et al. (2019) to developed the relationship between a construct and multiple measured variables. This framework in Figure 5.1 would assist the employer of interior architecture and design industry to developing practices enable by remote working.

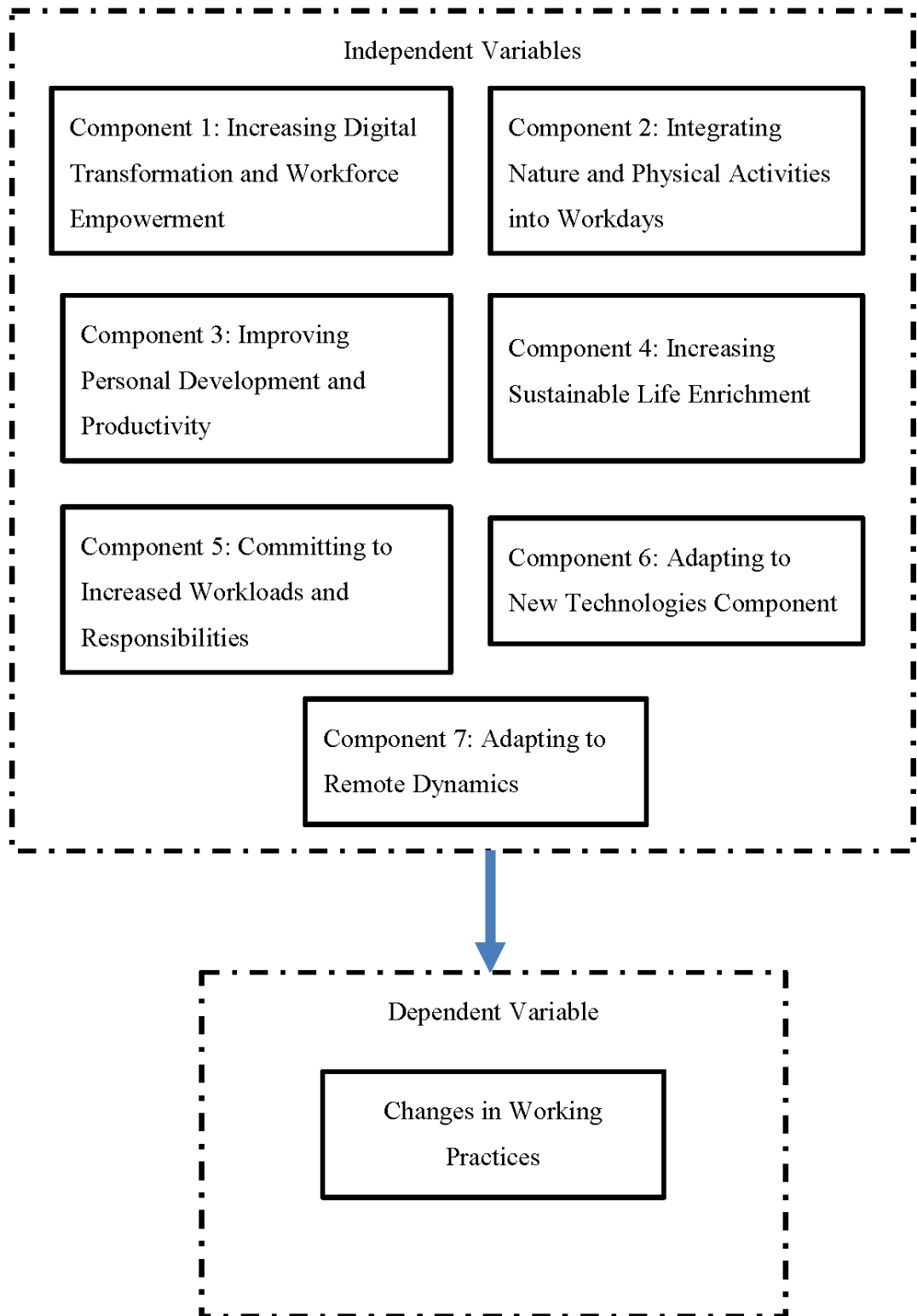


Figure 5. 1: Proposed Framework for Emerging Practices

5.6 Recommendations for Future Research

This research presents several recommendations in this section, which can serve as valuable guidance for future researchers in the interior architecture and design industry.

The research title is currently being studied for the opportunities and challenges in emerging interior architecture and design practises enabled by remote working. In light of this research, a few recommendations for future research are made, which the future researcher could refer to these recommendations, which may be useful and beneficial to the interior architecture and design sector:

- Use a qualitative approach by interviewing competent and experienced interior architects and designers who can provide reliable and comprehensive information based on their actual specialisation.
- Expand the research to other big cities in Malaysia and determine the factors of emerging practices in other industries such as engineering and quantity surveying.
- Further the analysis in Structure Equation Modelling for in depth research.

In the future research, it can expand the area of research for remote working can get deeper. However, we can focus to other field or industries but not only in interior architecture and design industries because remote working practices allows in most of the industries. Besides, remote working practices could make our life easier and better.

5.7 Conclusion

Based on the data collected from questionnaires, it was determined that, in the architecture and interior design industries of Malaysia, remote work was adapted into current working environment, despite the negative effects associated with remote work. In the comparison from remote work opportunities and its challenges, architecture, and interior designer could analysed clearly and practiced the remote working in future to seek for a work life balance and have more flexible time to work. In addition to this, the most agreeable of the opportunity of remote working practices in interior architecture and design environment is that remote working had investing more time in family, pets, and friends. Nonetheless, many of the respondents agreed that using new information technology systems and seeking assistance as the main

challenges of remote working practices in interior architecture and design environment during Covid-19 pandemic.

In short, this chapter provides a summary of the approaches employed to attain the research objectives. This further into the implications and constraints of the research, offering insights and explanations. Lastly, the chapter suggested research recommendations that can be advantageous for future studies.

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APPENDICES

APPENDIX A: Questionnaire Survey

EMERGING INTERIOR ARCHITECTURE AND DESIGN PRACTICES ENABLED BY REMOTE WORKING QUESTIONNAIRE

Section A: Demographic Information

Please select only one answer for each item.

DI01) Firm size:

- 1) Small
- 2) Medium
- 3) Large

DI02) Position in the firm:

- 1) Upper management
- 2) Middle management
- 3) Lower management

DI03) Years of working experience:

- 1) Less than 5 years
- 2) 5 years and above

Section B: Opportunities of Remote Working

To what extent do you agree or disagree that the following opportunities of remote working are important for the emerging interior architecture and design practices in your organisation?

- 1) Strongly disagree
- 2) Disagree
- 3) Neither agree nor disagree
- 4) Agree
- 5) Strongly agree

- OP01) Using new digital tools to boost team collaboration
- OP02) Increasing digital skill development
- OP03) Increasing autonomy, flexibility, and empowerment
- OP04) Increasing self-leadership strategy development
- OP05) Increasing individual productivity
- OP06) Using the time saved from commuting for more reflection and learning
- OP07) Incorporating more physical exercises and walks into workdays
- OP08) Working outdoors in nature
- OP09) Investing more time in family, pets, and friends
- OP10) Contributing to carbon footprint reduction

Section C: Challenges of Remote Working

To what extent do you agree or disagree that the following challenges of remote working are critical for the emerging interior architecture and design practices in your organisation?

- 1) Strongly disagree
- 2) Disagree
- 3) Neither agree nor disagree
- 4) Agree
- 5) Strongly agree

- CH01) Managing uncertainty
- CH02) Shifting mindset and culture from office to remote working
- CH03) Using new information technology systems and seeking assistance
- CH04) Learning new digital tools and skills
- CH05) Managing cognitive overload and exhaustion from multiple meetings in a row
- CH06) Maintaining constant availability and catching up on notifications
- CH07) Setting limits on working hours
- CH08) Setting up a proper workstation and home office
- CH09) Maintaining self-motivation in the absence of stimulation and meaning
- CH10) Obtaining support while making decisions and feedback on work progress
- CH11) Developing good habits to address a lack of breaks and physical activity
- CH12) Balancing work productivity, effectiveness, and self-development