



CHALMERS
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Work-Life Balance and Gender Equality in the Workplace

Case study: Design managers at NCC

Master's Thesis in Design and Construction Project Management

SOMAYEH KAVOUS

DEPARTMENT OF Architecture and Civil Engineering
CHALMERS UNIVERSITY OF TECHNOLOGY

Gothenburg, Sweden 2023

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Department of Architecture and Civil Engineering
Chalmers University of Technology
SE-412 96 Göteborg
Sweden
Telephone: + 46 (0)31-772 1000

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ABSTRACT

Co-working spaces have emerged as a symbol of the value of physical collocation, belongingness, and collaboration in shaping work identities. The shift toward online working highlighted the importance of providing employees with reasons to enjoy their physical workspace since non-collocated employees are less likely to form meaningful friendships, weakening information spread within organizations. This issue is particularly relevant in the post-COVID-19 era, as employers struggle to plan, communicate, and attract employees back to office environments. While remote work offers flexibility and work-life balance, it can also interfere with personal life and exacerbate gender inequalities. This thesis aims to achieve work-life balance, gender equality, and productivity through flexible working conditions, examining the interplay between physical collocation, work-life balance, and gender equality. The study utilized a combination of literature review, surveys, and semi-structured interviews. Some findings emerged as a result of the analysis of both surveys and interviews. A hybrid approach combining collocation and remote work can optimize project outcomes while addressing team members' needs. A supportive company culture and colleagues are essential for achieving a workload-to-family ratio. The construction industry can address gender imbalances and inequalities by promoting diversity, addressing wage gaps, and ensuring equal access to parental leave.

Key words: co-location, workplace environment, employees, work-life balance, gender equality, New Normal

Balansen mellan arbete och privatliv och jämställdhet på arbetsplatsen

fallstudie: designchefer på NCC

Examensarbete inom masterprogrammet design och byggprojektledning

SOMAYEH KAVOUSI

Institutionen för arkitektur och samhällsbyggnadsteknik

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SAMMANFATTNING

Co-working spaces har vuxit fram som en symbol för värdet av fysisk samlokalisering, tillhörighet och samarbete för att forma arbetsidentiteter. Övergången till onlinearbete betonade vikten av att ge anställda skäl att njuta av sin fysiska arbetsplats eftersom anställda som inte är samlokaliserade är mindre benägna att bilda meningsfulla vänskapsband, vilket försvagar informationsspridningen inom organisationer. Den här frågan är särskilt relevant i eran efter COVID-19, då arbetsgivare kämpar för att planera, kommunicera och locka tillbaka anställda till kontorsmiljöer. Även om distansarbete erbjuder flexibilitet och balans mellan arbete och privatliv, kan det också störa privatlivet och förvärra ojämlikheten mellan könen. Detta examensarbete syftar till att uppnå balans mellan arbete och privatliv, jämställdhet och produktivitet genom flexibla arbetsförhållanden, och undersöker samspelet mellan fysisk samlokalisering, balans mellan arbete och privatliv och jämställdhet. Studien använde en kombination av litteraturgenomgång, undersökningar och semistrukturerade intervjuer. Vissa resultat framkom som ett resultat av analysen av både undersökningar och intervjuer. Ett hybrid tillvägagångssätt som kombinerar samlokalisering och distansarbete kan optimera projektresultat samtidigt som teammedlemmarnas behov tillgodoses. En stödjande företagskultur och kollegor är avgörande för att uppnå ett förhållande mellan arbetsbelastning och familj. Byggbranschen kan ta itu med obalanser och ojämlikheter mellan könen genom att främja mångfald, åtgärda löneskillnader och säkerställa lika tillgång till föräldraledighet.

Nyckelord: *samlokalisering, arbetsplatsmiljö, anställda, balans mellan arbete och privatliv, jämställdhet, Ny Normal*

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Preface

As part of Chalmers University of Technology's master's program in "Design and Construction Project Management", this master's thesis comprising 30 higher education credits was completed in the summer of 2023. The research was conducted under the guidance of the Architecture and Civil Engineering Department.

Thank you to all those who actively participated in, supported, and guided this research endeavor, enabling the successful completion of this master's thesis.

I would like to acknowledge my dedicated supervisor from Chalmers University of Technology, Mattias Roupé. His unwavering availability, unwavering support, deep commitment, and valuable insights were pivotal throughout the entire process.

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It is my pleasure to express my gratitude to all those who generously contributed their time to my research through surveys and insightful interviews. It has been an honor to interact with and gain valuable insights from real-world experiences.

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Gothenburg, August 2023

Somayeh Kavousi

Notations

List of Abbreviations

ICE: Integrated Concurrent Engineering

IPD: Integrated Product Delivery

SD: Standard Deviation

WFH: Work from Home

WLB: Work-Life Balance

XC: Extreme Collaboration

1. Introduction and Background

In today's age dominated by information and communication technologies, the global and borderless nature of work has become increasingly evident. However, co-working spaces have emerged as a symbol of the renewed value placed on proximity a sense of belonging, and collaboration when it comes to shaping identities. This shift has been accompanied by an increase in job flexibility, highlighting the need to provide employees with reasons to remain engaged and satisfied in their work (Coleman, 2022).

Despite the prevalence of digital technologies, the importance of being physically present and working together in one location continues to thrive. There is evidence that individuals who are not located in close proximity to each other are less likely to form connections and share valuable organizational knowledge. This issue has become even more pertinent in the post-COVID-19 era, as employers grapple with the challenge of effectively planning, communicating, and attracting employees back to the office environments (Coleman, 2022).

In light of the COVID-19 pandemic and its profound effects on individuals and organizations, traditional approaches to work have become unsustainable, leading to the widespread adoption of remote work and the need for new strategies and practices (Franken et al., 2021). While remote work offers flexibility and the potential to enhance work-life balance for some, it can also present challenges that interfere with personal life (Stankeviciute & Kunskaia, 2022). Moreover, the pandemic has exacerbated existing gender inequalities and divisions within families, highlighting the need to address these issues within the workplace (Hjálmsdóttir & Bjarnadóttir, 2021).

Regarding these considerations, the workplace must adapt to support employees' well-being and foster an environment that promotes connection, idea-sharing, and community in shared workspaces. It is essential to meet the growing expectations of employees while simultaneously fostering a culture of work-life balance and promoting gender equality, all while aligning with the company's broader strategies.

This master's thesis aims to build upon previous research on collocation conducted by Tjell Janni from NCC, exploring the question of collocation from a fresh perspective that is highly relevant to the current context. The central focus of this research project is to examine how NCC can become a more attractive employer in the coming years, while simultaneously ensuring employees have the opportunity to maintain a sustainable work-life balance and promote gender equality within design projects. The hypothesis is that the physical collocation of project participants is beneficial for project success, fostering trust, understanding, collaboration, and the exchange of vital information among the various disciplines involved.

In the context of design projects, it is noteworthy that individuals involved often have parental responsibilities, necessitating a certain degree of parental involvement. Remote work offers conveniences in everyday life, but it raises some important questions: Should physical presence still be required when remote work is a viable option? How does remote work impact the work-life balance, both positively and negatively? Additionally, there are concerns about the potential gendered impact of remote work, with suggestions that women may utilize remote work more frequently to juggle work and family demands. If true, how does this affect overall gender equality in terms of career opportunities and advancement?

However, it is crucial to recognize the emergence of a new generation of workers, known as Generation Z, who are entering the labor market with distinct expectations compared to those who came before. In order to effectively attract and retain these individuals, companies have to

understand their preferred ways of working and provide the desired flexibility to fulfill their potential. This generation seeks high levels of flexibility and a strong desire to realize their individual aspirations, expecting work to align with these desires.

In view of the complexities and evolving dynamics surrounding work, this thesis seeks to explore ways to achieve a greater work-life balance, enhance gender equality, and maintain productivity within projects through flexible working conditions. By examining the interplay between physical collocation, work-life balance, and gender equality, this research aims to provide valuable insights and recommendations for organizations navigating the changing landscape of work in the years to come.

1.1 Research questions

Considering the purpose of this study, the following research questions were used and considered in order to fulfill its objectives.

RQ: How does the flexibility of collocation and distance working enhance the workplace?

- What is the importance of collocation and physical presence at the workplace?
- Should physical presence still be required when remote work is a viable option?
- How does remote work impact the work-life balance, both positively and negatively?
- How does working from home affect gender equality?

1.2 Limitations

The study conducted surveys targeting design managers employed by NCC or those with previous experience in the merged company. However, it should be noted that the number of respondents in both surveys was limited, and therefore, the findings derived from the survey results cannot be considered conclusive. Specifically, the survey had a total of 36 participants, which may not be representative of the entire population. Notably, there was a notable disparity in the gender distribution among the respondents in both surveys, indicating an unequal distribution of men and women within the organization. Thus, further research with a larger and more diverse sample size is necessary to obtain a more accurate and comprehensive understanding of the subject matter.

1.3 Structure of the Thesis

Following is a description of the structure of the thesis:

- Chapter 2: This chapter describes the methodology, including explaining the theoretical and empirical components.
- Chapter 3: This chapter presents a theoretical part. It includes information gathered from articles, textbooks, and other scientific sources.
- Chapter 4: The fourth chapter is divided into two parts. The first part is the empirical part, which contains the essential information collected from surveys and interviews. For this part, the most relevant information related to the research questions has been gathered through surveys and interviews in order to provide data for further discussion. A discussion section follows the first part and compares the literature with the empirical data. A key objective of this chapter is to identify connections, such as similarities and differences, so as to be able to draw any conclusions related to the research questions.
- Chapter 5: This chapter presents the conclusions as clear answers to the research questions. In addition, further suggestions related to the topic of this study are recommended.

2. Method

This section describes the methodology used in the study as well as why it was chosen. The research methodology employed in this study involved a combination of literature review, surveys, and semi-structured interviews. To ensure the achievement of the study's objectives and the nature of the data being investigated, the approach proposed by Creswell and Creswell (2017) was considered, which distinguishes between qualitative, quantitative, and mixed methods. Cadena-Iñiguez et al., (2017) identified two methods of data collection: qualitative and quantitative. Quantitative research aims to establish associations and correlations between variables, while qualitative research aims to identify reality, relationships, and dynamic structures. Qualitative methods are essential to impact assessment because they help to understand the processes underlying results and enhance survey-based quantitative assessments by generating hypotheses, enriching questionnaire design, and clarifying results. A combination of quantitative and qualitative research methods with semi-structured interviews has been chosen for this study.

2.1 Literature review

During this research, relevant literature was selected and reviewed in order to gain a fundamental understanding of the topic, as well as to analyze and compare the collected information with empirical data in order to obtain a deeper understanding of the topic (Bell et al., 2019). The initial phase of the research involved conducting a literature review to gather relevant theoretical insights and identify key themes and concepts related to the research topic. This provided a foundation for the subsequent empirical study.

In the case of this study, the literature included mostly scientific articles through databases such as Google Scholar, Research Gate, Chalmers Library, and Scopus. Following are the keywords that were used to locate relevant literature: *co-location, co-working spaces, co-location after Covid Pandemic, work-life balance, work-life balance after Covid, co-location and work-life balance, gender equality in the workplace environment, hybrid workplace, work-from-home, well-being of employees, gender inequality, work-life conflict paradigm, new ways of working, new normal, remote work, sustainable future work, flexible working, virtual workspaces.*

2.2 Empirical approach

The empirical study consisted of two main components: two surveys along with semi-structured interviews. In the context of a semi-structured interview, a set of planned open-ended questions is posed to participants, allowing for informal discussion of relevant topics (Longhurst, 2003). The first survey was conducted by Tjell Janni from NCC, and the collected data from the survey was analyzed to gain initial insights. Building upon the findings from the first survey, the second survey was designed and distributed to the respondents. The aim was to gather additional data and further explore the research topic.

Following the analysis of the second survey, five semi-structured interviews with NCC Design Managers were performed. The initial interview was placed at the NCC office in Göteborg, while the last four were conducted online via Teams. The duration of interviews ranged in length from 40 to 60 minutes, with an average of roughly 50 minutes. The interview questions were organized into primary and sub-questions, with all major questions asked and sub-questions asked when a more precise picture was required or when the answer did not emerge from the major questions. Every

interview was recorded and transcribed so that there would be as little room for error as possible in terms of misinterpretation, losing important information, taking part in a conversation, and asking follow-up questions. The questions were not distributed early to the respondents to produce a less prepared response. The respondents were just provided a brief overview of the problem to ensure that a natural conversation with as many honest responses as possible would take place. Once all the interviews were done, the material was organized into different topics in order to compare the data in depth and finally extract the most essential information to present in the results section.

These interviews aimed to delve deeper into the experiences, perceptions, and insights of the participants, providing qualitative data to complement the quantitative findings obtained from the surveys. By utilizing both quantitative and qualitative research methods, this study sought to obtain a comprehensive understanding of the research topic, capturing both numerical data from surveys and rich contextual insights from interviews.

According to a study, by Bell et al. (2019) when conducting investigations it is important to consider four ethical issues; potential harm to participants, obtaining informed consent, protecting privacy, and avoiding deceit. Additionally respecting the rights of interviewees for anonymity, discretion and confidentiality is crucial in safeguarding their information and promoting honesty. To ensure the well-being of participants their identities were kept confidential throughout the research process. All interviews were conducted with the participants' consent. Their names have been replaced with abbreviations. Prior, to each interview respondents were fully informed about the topic and objective of the study, and permission was obtained from interviewees to record the interviews.

The selection of Design Managers at NCC as the target group for this research was based on their expertise and direct involvement in design projects within the organization. Their viewpoints and experiences were considered crucial in clarifying the research objectives. Given that all individuals who were interviewed held the position of design manager, the acronyms employed in this context range from D.M.1 to D.M.5. Following a brief description of their working tasks have been written.

- **Interviewee 1:** D.M.1 has been a design manager at NCC (Göteborg) for nine years and has worked there for 13 years (since 2014).
- **Interviewee 2:** D.M.2 has been with NCC (Uppsala) since 2011 and was just promoted to design manager (nearly one year).
- **Interviewee 3:** D.M.3 has been at NCC (Middle Sweden) since 2015 and has worked for the last three years as a design manager.
- **Interviewee 4:** D.M.4 has been at NCC (Uppsala) for about ten years and has been the design manager for nearly three years.
- **Interviewee 5:** D.M.5 has been a design manager at NCC (Stockholm) for one and a half years. D.M.5 previously worked for another construction company.

3. Theoretical framework

This section provides an in-depth review of the theories and concepts used in discussing the topic of collocation reimagination regarding enhancing work-life balance and gender equality in the workplace. Based on the literature review, the studies focus on different working methods regarding work-life balance, productivity, employee well-being, and gender equality. The change that has occurred as a result of the Covid-19 pandemic is critical for studying this issue. A comparison of the effects of different types of work during and after the pandemic is conducted in order to gain a deeper insight into the situation. It opens up further discussions regarding the creation of new workplaces or the "Next New Normal", which might impact the new rules of working at the workplace. It is crucial to comprehend the shifting landscape of the workplace and understand the potential implications of the pandemic on the job market. Doing so can facilitate the creation of more secure and adaptable work environments that align with the ever-changing needs of the workforce.

3.1 Collocation

Construction design is a complex process that crosses disciplinary and organizational boundaries. To ensure the success of a project, it is imperative that project participants coordinate, share information, and exchange knowledge. According to Tjell & Bosch-Sijtsema (2015), several concepts have been researched and tested that emphasize the importance of collaborating more closely. The benefits of collaborating on a building project include tackling the complexities of the project, minimizing misunderstandings, and increasing the quality and reliability of the final product. Thus, collocation has become a popular concept in the construction industry under the forms of the BIG Room concept, Extreme Collaboration (XC), Integrated Concurrent Engineering (ICE), and Integrated Product Delivery (IPD).

The phrase Big Room is derived from the Japanese word "obeya," which refers to a place where members of multidisciplinary teams can come together to solve problems as they arise. In the Toyota Product Development System, the obeya is where members of multidisciplinary teams meet to discuss and solve problems (Cohen, 2010).

Extreme Collaboration (XC) is a design environment in which co-located specialists use modeling, simulation, visualization, and analysis tools in concurrent design sessions. This social environment maximizes communication and information flow, with the collocation of team members and the utilization of information technologies playing a crucial role. In XC, designers physically collaborate, allowing for dynamic organization and adaptation to unanticipated decisions and predicted outcomes. This method permits the development of project ontologies and value realization (Garcia et al., 2004).

Evbuomwan & Anumba (1998) defined concurrent engineering in the context of construction industry as *“concurrent engineering attempts to optimize the design of the project and its construction process to achieve reduced lead times, and improved quality and cost by the integration of design, fabrication, construction and erection activities and by maximizing concurrency and collaboration in working practices”*. Integrated Concurrent Engineering (ICE) offers numerous advantages, including cost savings for clients, a formal framework for defining client requirements, reduced rework and duplication, improved teamwork, enhanced technical capability, early conflict resolution, and enhanced communication and coordination among project team members. This model also addresses the issue of fragmentation and assures seamless integration from initial project conception through decommissioning. In addition to improving team

dynamics, reducing delays, disputes, and claims, and enhancing collaboration and communication, and also improving team dynamics (Evbuomwan & Anumba, 1998).

Integrated Product Delivery (IPD) is a study that emphasizes the early involvement of key participants, shared risk and reward, multi-party contracts, collaborative decision-making, liability waivers, and jointly developed project goals. It also emphasizes mutual respect, trust, collaborative innovation, intensified early planning, open communication, Building Information Modeling (BIM), Lean principles, team co-location, and transparent financials. IPD aims to manage and mitigate risk for the owner, architect/engineer, and builder by aligning their goals and making each responsible for others' behavior. This increases certainty and reduces risk, ultimately benefiting all parties involved in the project (Cohen, 2010).

3.1.1 shifting from physical collocation to remote communication

Physical collocation correlates positively with the frequency of personal interactions, which has been linked to improved schedule performance. Lee Patti et al. (1997) suggested alternative approaches such as early collocation, part-time collocation, or a combination of both based on the project phase and communication requirements. Part-time collocation refers to a situation where team members work together for only part of the week rather than being fully collocated. Successful implementations of this approach have been observed in companies like Cincinnati Milacron and AT&T Bell Labs. In these cases, representatives from different departments work together for a few days a week before returning to their respective locations. Furthermore, it is important to note that even if a team is initially collocated, there may be circumstances later in the project where face-to-face meetings become necessary. These situations could arise due to ambiguity, significant project changes, or personnel transitions that require rebuilding trust. However, as the project progresses, face-to-face meetings become less frequent, and full-time co-location is not necessarily required to facilitate them (Lee Patti et al., 1997).

During the COVID-19 pandemic, workplaces were relocated to employees' homes, (Stankevičiūtė, Ž., & Kuskaja, S. 2022) leading to a large number of experiments with flexible work arrangements and a new relationship with centralized work environments. (Vyas, L., 2022). This shift required employees to quickly adapt to working remotely, and for employers to ensure their staff had the necessary tools and resources to do so (Stankevičiūtė, Ž., & Kuskaja, S. 2022).

The transition to remote communication during the pandemic had notable negative effects on various aspects such as mental and physical well-being, innovation, collaboration, and creativity due to the lack of interpersonal connections. A study conducted by Carmody et al., (2022) on the MIT campus demonstrated that the shift to fully remote work had a significant impact on the email communication network. Over time, weak ties between employees deteriorated, leading to network stagnation. When individuals are not collocated, the likelihood of forming connections decreases, thus weakening the network's ability to effectively disseminate information (Carmody et al., 2022).

3.2 Work-life balance

Work-life balance (WLB) is a priority matter for every organization as it addresses specific needs, serves various purposes, and solves certain challenges (Fleetwood, 2007). Achieving a balance, between work and personal life is an aspect within the realms of behavior human resource management and quality of life research. According to Sirgy & Lee (2018), this delicate equilibrium positively impacts performance, job satisfaction, and overall commitment to the organization.

Furthermore, work-life balance plays a role in well-being encompassing aspects such as health satisfaction, family contentment, and overall life fulfillment. As defined by Sirgy & Lee (2018) work-life balance is “*a high level of engagement in work life as well as nonwork life with minimal conflict between social roles in work and nonwork life*”. In order to attain a balance, between work and personal life people need to participate in both their professional and non-professional roles (Sirgy & Lee, 2018).

3.2.1 Factors Influencing work-life balance

Factors influencing work-life balance can include top management commitment, work-life programs, initiatives, and policies related to work/life, work schedules, employee responsibilities, leave and vacation time, and corporate benefits that are family-friendly (Stankevičiūtė, Ž., & Kunsakaja, S. 2022). Furthermore, company culture and supportive coworkers can play an essential role in assisting individuals in achieving a desirable balance between work and family duties. There may be several benefits to remote work models, including increased flexibility, more autonomy, a better work-life balance, and increased employee performance (Uçel, E, et al., 2022). Conversely, remote work can negatively impact employees due to the interference that it causes with personal time and places (Stankevičiūtė, Ž., & Kunsakaja, S. 2022). Abdullah et al. (2020) argued that working from home has negative consequences for employees because they cannot seek help from their colleagues and cannot interact verbally, socially, and personally with each other. Additionally, it can be common for employees to become unmotivated to work when they are exclusively focused on their work (Uçel, E, et al., 2022). Since people are more likely to focus on their work while working from home, this can negatively affect their productivity and health (Abdullah, et al., 2020).

Despite the fact that employees believe that working from home will result in a better work-life balance, research by Abdullah et al. (2020) indicated that it may lead to less happiness and higher levels of stress.

3.2.2 Well-being and work-life balance

Recent studies by Uçel et al. (2022) have shown that employee well-being is closely linked to work-life balance, which is a crucial factor in positive workplace behavior, performance, and efficiency. Well-being is determined by subjective evaluations of an individual's life, including emotions, reactions, and personal judgments. It encompasses psychological, mental, and emotional experiences. Stankevičiūtė & Kunsakaja, (2022) emphasized that recognizing the critical role of well-being in achieving successful workplace outcomes is crucial. Enhancing work-life balance improves employee motivation, commitment, job satisfaction, psychological well-being, and social life.

During the COVID-19 pandemic, workers faced significant challenges in balancing their work and family responsibilities, particularly for parents with young children (D’Andrea, 2022). Finding effective strategies for managing time, tasks, and commitments became even more crucial (Stankevičiūtė & Kunsakaja, 2022). Employers had to demonstrate flexibility in adapting to new and demanding work arrangements. Balancing job and family commitments while maintaining a high level of happiness became increasingly difficult (Uçel et al. 2022).

The pandemic has led to organizations implementing remote work arrangements, social distancing measures, and staggered working hours to reduce employee presence. Flexible working hours have been introduced to accommodate family caregiving needs while maintaining productivity (Vyas, 2022). However, negative consequences have emerged, such as longer working hours, increased screen time, limited interaction with colleagues, and difficulties fulfilling work environment

responsibilities. Despite these challenges, individuals have adapted and discovered new ways to remain productive and supportive (Babapour Chafi et al, 2022).

3.2.3 Remote Work and work-life balance

It is now possible for many workers to work from home, from an office, or from a co-working space, depending on their profession (Vyas, 2022). Remote work offers several advantages, including reduced commuting time and expenses, flexible scheduling, and work-from-home opportunities (Stankevičiūtė & Kunskaia, 2022). Having the opportunity to work from home allows working parents to spend more than 40 hours per week with their children, which improves communication between both parties. Providing employees with flexibility in their work hours and places can enhance their performance by allowing them to work when and where they feel most productive (Abdullah et al. 2020).

On the other hand, working from home can cause uncertainty in the performance of employees, while supervisors may be concerned about the impact this may have on organizational and interpersonal trust as well as the likelihood that the employees will become socially and professionally isolated while working from home. A lack of supervision in the work process can also contribute to uncertainty in an employee's performance (Abdullah et al. 2020).

By making changes to the workplace environment, it is possible to maintain a good work-life balance. Furthermore, employees should maintain a balanced lifestyle by setting boundaries between their personal and professional lives and taking regular breaks throughout the day (Vyas, L., 2022). Therefore, it is important to practice healthy working habits and create a balance between work and life commitments. WLB policies in the future must include a range of objectives, including customizing hours under WFH, providing trust and support to WFH employees, and ensuring equal pay and the right to disconnect (Vyas, L., 2022). To achieve the new way of working, leaders need to define the goal, adapt to the new way of working, and provide clear guidelines for employees to follow (Bhatia, D., & Mote, A. 2021). Consequently, Vyas, L. (2022) recommended restructuring working processes and functions in order to perform work, identifying remote tasks that can be performed, reclassifying roles in order to determine whether employees are suitable for exclusively remote working or hybrid remote and on-site work, and redesigning workspaces (Vyas, L., 2022).

Achieving a good work-life balance requires implementing changes in the workplace environment and adopting healthy habits. Employees should establish clear boundaries between personal and professional lives, take regular breaks, and focus on customized work hours for remote work (Vyas, 2022). Leaders should define clear goals, adapt to changes, and provide comprehensive guidelines (Bhatia & Mote, 2021). Restructuring work processes, identifying remote tasks, classifying roles for exclusive remote work or hybrid models, and redesigning workspaces are recommended steps to achieve a balanced work-life environment (Vyas, 2022).

3.3 Gender Equality

Gender and gender norms are fascinating subjects from a number of perspectives. Societies that have successfully diminished the disparity in power between genders tend to exhibit superior social, health, and economic outcomes in comparison to societies where such efforts have not been undertaken. The disparity between the sexes is prevalent in numerous countries, where women and

"the feminine" are frequently disadvantaged, while males and masculine characteristics are praised. The distribution of power in decision-making processes frequently favors men, resulting in a lack of recognition or insufficient attention to women's demands and interests. In accordance with the concept of male dominance, women are placed in circumstances that are harmful to their physical and mental well-being. In comparison to societies that fail to address this issue, societies that attempt to minimize the disparity in power between genders tend to exhibit better social outcomes, health outcomes, and economic outcomes. An operational definition of gender equality is provided below (Rolleri, 2013).

Gender equality is a social condition whereby women and men share equal rights and a balance of power, status, opportunities, and rewards. Gender equality can be broadly operationalized by men and women having 1) equitable access and use of resources, 2) equitable participation in relationships, the household, the community, and political arenas, and 3) safety or freedom from violence (Rolleri, 2013).

3.3.1 Gender equality in the construction sector

There is a greater proportion of men than women in the construction industry both in terms of professional and operative roles (Conway, et al., 2018). There are some factors that contribute to this issue such as the lack of childcare facilities, inflexible work schedules, and discrimination which pose challenges for women in this field. Moreover, in the construction sector, there are obstacles for women such as informal recruitment networks, negative attitudes from employers, limited career development opportunities, and instances of harassment. Additionally, training continues to pose a challenge for women who want to enter the industry regardless of the country. Unlike their male counterparts, women often have to rely on training and qualifications to demonstrate their abilities. In contrast, men can often leverage networks for recruitment and even learn on the job, particularly in countries, like Britain (Michielsens, et al. 2001).

Entering women into the construction sector can bring a wide range of benefits, such as the ability to solve problems more innovatively; a higher level of effectiveness alongside a more cohesive working group; and the ability to alleviate the skills shortage within the sector (Conway, et al., 2018). Research by Michielsens, et al. (2001) emphasized that women were more attracted to the industry when the work conditions were favorable such as having secure employment, fixed shifts and salary, short commutes, and safety work environment. Some recommendations were ensuring working conditions, ensuring equal pay for equal work, providing designated spaces for women to connect with one another, offering training opportunities with other women, allowing women the chance to work in higher-level managerial roles, providing favorable conditions for requesting leaves of absence, preventing the isolation of female workers, and appointing women in trade union representative positions (Michielsens, et al. 2001).

3.3.2 The Covid-19 Pandemic and Gender Equality

The covid-19 pandemic caused both problems and opportunities, but not equally for men and women. Women have faced more serious challenges in business as well as in their personal lives (Uçel, E, et al., 2022). Minguez & Gaspar (2022) stated that the social consequences of Covid-19 have exacerbated the imbalance between private family life, family work, and gender relationships, particularly for women who are overburdened with caregiving responsibilities.

COVID-19 has caused significant changes in personal lives and family roles, which have exacerbated and exposed long-standing gender inequalities (Hjálmsdóttir & Bjarnadóttir, 2021; Foley & Cooper, 2021). The pandemic has caused a backlash in terms of gender equality and power

dynamics within households, exacerbating existing divisions and inequalities (Hjálmsdóttir & Bjarnadóttir, 2021).

It has historically been the case that women have suffered disproportionately from economic recessions, and the COVID-19 pandemic is no exception. Foley and Cooper (2021) found that women experienced a greater decline in hours worked, earnings, and left the labor force more frequently than men. According to Foley & Cooper (2021), the number of women in the labor force decreased by 5.9%, while the number of men in the labor force decreased by 4%. Additionally, Grespi and Lomazzi (2022) argue that female researchers faced greater challenges in their scientific performance during the pandemic, resulting in a negative impact on their career development.

It is also noteworthy that the pandemic significantly impacted the division of family work between men and women, particularly for women with young children (Minguez & Gaspar, 2022). In addition to a decline in women's participation rates in the labor force, families with children also experienced increased domestic work, exacerbating gender inequalities in household duties (Minguez & Gaspar, 2022; Foley & Cooper, 2021). Spending more time at home has increased conflict situations, particularly for women, who are more vulnerable to remote work's negative aspects (Minguez & Gaspar, 2022).

3.3.3 Gender Equality and Well-being

The COVID-19 pandemic had a significant impact on female employees, particularly in terms of online work, leading to various psychological changes, challenges with time management, and increased self-awareness (Uçel et al., 2022). Many women had to take on the role of household manager, organizing and planning their family's lives to ensure everything ran smoothly. Juggling professional responsibilities with household duties created a sense of apprehension and unease, which had implications for temporal organization, self-perception, and mental well-being. Consequently, women's overall well-being was affected, and their workload increased (Hjálmsdóttir & Bjarnadóttir, 2021).

Mothers who assumed the role of household manager and balanced work and family responsibilities often experienced an increased mental load and work-family guilt. Engaging in employment outside the home could lead to feelings of guilt due to limited time spent with children and difficulties in managing both professional and familial obligations. Diary entries from mothers working between 70% and 100% revealed significant stress in attempting to balance work and childcare responsibilities according to Hjálmsdóttir & Bjarnadóttir, (2021). Women described feelings of overwhelming frustration, fatigue, irritation, anger, and heightened stress levels. These mothers faced intense time pressure and were required to multitask more than ever before. Furthermore, some women reported concealing their stress and anxiety to maintain a calm environment for their children and family members (Hjálmsdóttir & Bjarnadóttir, 2021).

3.3.4 Remote Work and Gender Equality

The COVID-19 pandemic has brought about significant changes in workplace norms, with remote work becoming more prevalent and virtual communication platforms being widely adopted (Franken et al., 2021). Both employees and organizations have had to adapt to this new reality, which has implications for employees' home lives. Women, in particular, are likely to seek more flexible working arrangements and may consider working from home as a viable career option, since it allows them to provide care while working (Uçel et al., 2022).

While working from home and flexible hours can benefit both genders, there can be negative effects on women's careers (Hjálmsdóttir & Bjarnadóttir, 2021). This disparity may arise from societal expectations that place a greater burden on women to fulfill familial duties while also striving to match the professional achievements of their male counterparts. Remote workers, including women, may perceive fewer opportunities for career advancement and promotion due to their lack of physical presence in the workplace. This can further exacerbate the gender disparity in career progression, as women are more likely to opt for remote work to balance familial responsibilities, potentially leading to reduced career advancement opportunities. Managers may also have a more negative experience with remote workers compared to onsite employees, presenting new challenges in developing trust-based leadership styles and relinquishing traditional oversight and control (Babapour et al., 2022).

3.4 Future workplaces

The recent COVID-19 pandemic has forced a global reconsideration of work practices, particularly in terms of workplace location and practices. Working from home, a relatively new concept for many employees worldwide became a necessity (Vyas, 2022). Research by McKinsey indicates that 80% of respondents reported enjoying a better work-life balance while working remotely, and 41% felt more productive (Bhatia & Mote, 2021). Businesses have recognized that remote work allows them to access a larger talent pool with fewer geographical constraints, implement innovative processes to increase profitability and cultivate a more grounded organizational culture. It is the responsibility of each company to determine which positions are suitable for remote work and which are not. To maintain work-life balance for employees, companies need to redesign the workplace according to their organizational priorities, creatively resize their physical footprint, and develop robust remote work infrastructure (Bhatia & Mote, 2021).

Furthermore, future work-life balance (WLB) policies should encompass multiple objectives. These may include customizing work hours for employees working from home (WFH), providing trust and support to WFH employees, ensuring equal pay, and establishing the right to disconnect (Bhatia & Mote, 2021). As recommended by Vyas (2022), restructuring work processes and functions becomes crucial in order to identify tasks suitable for remote work, determine which roles can be performed exclusively remotely or in a hybrid remote and on-site manner, and redesign workspaces accordingly.

3.4.1 The New Workplace and Productivity

There is a discussion regarding the effects of remote working on productivity and performance. Despite an increased workload according to (Franken, E, et al., 2021), employees have managed to maintain or even improve their productivity by balancing work with personal responsibilities. Remote work provides advantages such as increased focus due to fewer distractions, no commute time, and the flexibility to complete tasks at the most convenient times (Popovici & Popovici, 2020). Research by Popovici & Popovici, (2020) has shown that working from home can lead to a 13% increase in performance, attributed to fewer breaks, fewer sick days, and improved ability to concentrate.

However, some employees may struggle to work effectively from home due to interruptions from family members or children (Vyas, 2022). Remote workers may face challenges such as limited exposure to professional and training opportunities, and the potential for social isolation (Popovici & Popovici, 2020). Working from home may not be suitable for all employees, particularly those in manual or non-manual jobs. Some employees prefer returning to the office after the pandemic,

as they believe working from home hinders their ability to learn about their employer (Vyas, 2022). To address these considerations, the concept of "hybrid work" has emerged, suggesting that employers should offer remote work as an option without enforcing full-time remote work or full-time office work (Babapour et al., 2022).

3.4.2 The “Next Normal” Workplace

The labor market has undergone a major shift since the pandemic, with the widespread adoption of remote work and new technologies. Employees who have the flexibility to work remotely may have better job security in the future. Hybrid work, with a combination of remote and in-office work, is expected to become the "new normal". This shift towards remote and hybrid work is expected to have a positive impact on businesses, individuals, and work practices. However, it should be noted that not all jobs can be performed remotely, and some managers may find it challenging to manage remote employees (Vyas, 2022).

While remote working is becoming more popular, post-pandemic challenges may arise for organizations in terms of sustainability and human resource management. Balancing personal and professional lives in the "new normal" working model is not easy. Employers need to establish a trust-based working culture and support the well-being of their employees (Vyas, 2022). HR policies should focus on long-term solutions, adapting corporate culture, fostering employee collaboration, monitoring employee well-being, and aligning business goals with employee expectations. Data-driven analytical methods can help determine learning patterns, employee sentiments, and other relevant factors (Bhatia & Mote, 2021).

4. Empirical Data and Discussions

This chapter presents and discusses the findings of the two surveys, and the five interviews that were conducted, which were grouped into four categories of themes. These categories are as follows: collocation, work-life balance, gender equality, and the future workplace. A list of abbreviations is provided in the methodology section in order to facilitate the presentation of information in the interview part.

4.1. Surveys

An analysis of both quantitative questionnaires was conducted using SPSS statistics. The first survey was conducted via Tjell Janni, Lean Specialist from NCC. In the first step, the correlating responses and their relationships were identified. In this study, gender was an important factor, therefore the responses were categorized according to gender. In both surveys, respondents were selected from NCC design managers. A first survey was conducted in order to gain insight into how Design Managers view co-location as an essential component of project efficiency. The total number of respondents was 36 (22 men and 14 women). The results provide an insight into the perceptions of Design Managers in regard to collocation. In the next step, the second survey was conducted based on the type of work and its effect on the work-life balance and gender equality of NCC employees. the total number of participants was 36 persons (23 men and 13 women).

4.1.1 Analyzing co-location questionnaires

Initially, it is noteworthy that the majority of participants (63,9%) in Table 1 perceived collocation as a value creator in all types of projects regardless of their size.

Table 1: Do you think the co-location creates the most value for.

	Frequency	Percent	Valid percent	Cumulative percent
All types of projects; the size of the project does not matter, projects with many actors; projects with few actors.	1	2.8	2.8	2.8
Any types of projects; the size of the project does not matter	23	63.9	63.9	66.7
Mega Project;	3	8.3	8.3	75.0
Mega project; template project; project with many actors	2	5.6	5.6	80.6
Megaprojects: all types of projects- the size of the project does not matter.	1	2.8	2.8	83.3
Projects with many actors;	1	2.8	2.8	86.1
Projects with many actors; all types of projects-the size of the projects does not matter.	2	5.6	5.6	91.7
Projects with many actors; mega projects; template projects	1	2.8	2.8	94.4
Projects with many actors; template projects; mega projects.	1	2.8	2.8	97.2
Template projects; mega projects; projects with many actors; projects with few actors;	1	2.8	2.8	100.0
Total	36	100.0	100.0	

Although their perceptions of collocation differed, as shown in Table 2, most Design Managers (38.9%) agreed that physical and mental presence was important. In accordance with the survey results, 25% of respondents agreed that collocation provides physical availability, i.e., that people are physically available, even if they are engaged in other activities. A total of 30.6% of respondents agreed with all the options or a combination of the options. Only one person's perception of collocation included the possibility of individual teams, as shown in the table.

Table 2: How do you define co-location?

	Frequency	Percent	Valid percent	Cumulative percent
All options or a combination of the above	11	30.6	30.6	30.6
Availability, i.e., that people are physically available, even if they are working on other things.	9	25.0	25.0	55.6
Combination of physics and availability.if you have nothing to work on the project, you can work on something else but be there.	1	2.8	2.8	58.3
Physical and mental presence, with the possibility of teams for individual specialist consultants.	1	2.8	2.8	61.1
Physical and mental presence.	14	38.9	38.9	100.0
Total	36	100.0	100.0	

When asking respondents about their feelings regarding their presence in the project studio, which party prioritized collocation the most? The below tables show that collocation was most significant for client organizations Table 3 and consultants/Urs Table 4 with 63,9% (23 persons) and 83,3% (30 persons), respectively. However, NCC employees Table 5 do not perceive the importance of this relationship to the same extent, with 52,8% (19 persons) believing it to be important.

Table 3: Do you feel that presence at the project studio is prioritized by the client organization?

	Frequency	Percent	Valid percent	Cumulative Percent
No	13	36.1	36.1	36.1
Yes	23	63.9	63.9	100.0
Total	36	100.0	100.0	

Table 4: Do you feel that presence at the project studio is prioritized by consultants/UR?

	Frequency	Percent	Valid percent	Cumulative Percent
No	6	16.7	16.7	16.7
Yes	30	83.3	83.3	100.0
Total	36	100.0	100.0	

Table 5: Do you feel that presence at the project studio is prioritized by NCC employees linked to the project?

	Frequency	Percent	Valid percent	Cumulative Percent
No	17	47.2	47.2	47.2
Yes	19	52.8	52.8	100.0
Total	36	100.0	100.0	

4.1.1.1 Analyzing based on correlations

One of the methods for analyzing data can be seen in correlations to detect the relationship between variables and find which two variables are related together. As a tool for determining the level of correlation between linearly related variables, Pearson's correlation formula is one of the most commonly used statistics (<https://shorturl.at/ktvw9>).

There were 14 questions in Table 6 which it was necessary to see their connection together and found which factors engaged with collocation by a higher percentage. In Pearson correlation, the value of the correlation is between -1 and 1, where a value of -1 means a total negative linear correlation. A value of 0 means no correlation, whereas a value of 1 means a total positive correlation. A positive linear correlation means that when one variable increases, the other also increases. A negative linear correlation means that when one variable increases, the other decreases (Nettleton, 2014).

It can be seen in Table 7 that just correlation with * and ** are considered as one asterisk is used to indicate significant correlation coefficients at the level of 0.05, while two asterisks are used to indicate significant correlation coefficients at the level of 0.01. The use of asterisks is a visual way to quickly identify significant correlations in research data (IBM, 2021).

In accordance with the results shown in Table 7, it appears some questions have a greater connection to other questions than others. These questions include Q1, Q5, Q7, Q8, Q10, Q12, Q13, and Q14. In this way, collocation time and value generation have been directly related to a greater level of trust between actors, the facilitation of meeting planning, the effect on the foresight of the project, the evening out of the workload throughout the duration of the project, the improvement of collaboration, the improvement of the quality of the documents produced, and the reduction of the project's risk. There will always be an increase in all items mentioned above when the total collocation time increases. The Q1 results also have a direct connection with Q3 and Q4, as external consultants, UE, and clients have the same idea about the amount of time spent on the project studio and the amount of value generated from the studio.

Additionally, Q3, Q6, and Q11 have fewer connections with other questions. In the case of Q3, it only has a connection with Q1, Q4, Q5, Q8, and Q13. The view of external consultants and UE is highly correlated with clients' views regarding the amount of time spent in the project studio and the value generated. In addition, they view the relationship between co-location time and the value generated. Employee trust building, project foresight, and improved document quality are all enhanced by co-location time within the project studio. Q6 and Q11 have a common connection with Q5, Q7, and Q10. Both have a significant impact on the development of trust, facilitate the planning process, and ensure an even distribution of workload. Additionally, there is a significant correlation between Q6 and Q8, Q13 and Q14. The amount of email can be correlated directly with co-location and the ability to foresee future projects, which can lead to higher quality documents and reduced project risk. Furthermore, the direct connection between Q11 and Q12 makes co-location and time spent on the project important factors in increasing employee collaboration.

Nevertheless, some questions, such as Q2, Q4, and Q9, did not seem to be closely related to one another. Only Q2 is directly correlated with Q4 with a significant correlation coefficient of 0.05, which means that people who work in NCC have the same idea as clients about the connection between time spent in a project studio and value generation. UE and clients are in agreement on the co-location and generating value in Q4 and Q3, as well. There is no significant connection between Q9 and the other questions. This indicates that none of the questions mentioned above have a significant impact on respondents' weekly planning.

Table 6: List of the questions in co-location survey.

Q1: How do you perceive the relationship between the co-location time in a project studio and the value it generates?

Q2: How do you feel that other people within NCC's organization view the connection between time spent in a project studio and the value generated?

Q3: How do you feel that external consultants and UE view the relationship between time spent in a project studio and the value generated?

Q4: How do you feel that clients view the connection between time spent in a project studio and the value generated?

Q5: How much do you think that co-location itself, in relation to normal planning, increases trust-building between the actors involved?

Q6: How much do you think that co-location itself in relation to normal planning affects the amount of email?

Q7: How much do you think that the actual co-location in relation to regular planning facilitates the possibility of planning special meetings?

Q8: How much do you think that co-location itself in relation to normal planning affects the foresight of the project?

Q9: How much do you think that the actual co-location in relation to regular planning affects your own weekly planning?

Q10: How much do you think that co-location itself, in relation to regular planning, evens out the workload throughout the duration of the project?

Q11: How much do you think that the actual co-location in relation to normal planning affects the total time spent on carrying out the planning work?

Q12: How much do you think that co-location itself, in relation to normal planning, increases collaboration

Q13: How much do you think that co-location itself, in relation to normal planning, increases the quality of documents produced?

Q14: How much do you think that co-location itself, in relation to regular planning, reduces the risk that you, as a planning manager, will have to spend more time during production?

Table 7: Pearson Correlation for co-location survey.

PEARSON CORRELATIONS	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14
Q1			.446**	.467**	.586**		.481**	.608**		.611**		.580**	.525**	.533**
Q2				.353*										
Q3	.446**			.592**	.428**			.448**					.401*	
Q4		.353*	.592**											
Q5	.586**		.428**			.478**	.553**	.531**		.645**	.428**	.684**	.675**	.592**
Q6					.478**		.358*	.434**		.432**			.344*	.597**
Q7	.481**				.553**	.358*		.737**		.725**	.416*	.398*	.477**	.561**
Q8	.608**		.448**		.531**	.434**	.737**			.707**		.512**	.541**	.625**
Q9														
Q10	.611**				.645**	.432**	.725**	.707**			.479**	.510**	.617**	.698**
Q11					.428**		.416*			.479**		.342*		
Q12	.580**				.684**		.398*	.512**		.510**	.342*		.704**	.658**
Q13	.525**		.401*		.675**	.344*	.477**	.541**		.617**		.704**		.780**
Q14	.533**				.592**	.597**	.561**	.625**		.698**		.658**	.780**	

4.1.1.2 Analyzing based on the Mean number

According to Table 8, the means and standard deviations (SD) of the questions related to collocation are shown separately for men and women, as well as in total. To begin with, all responses can be analyzed as a whole, and then all answers can be analyzed according to gender. The purpose of this study is to determine whether women and men perceive collocation in the same way. Five possible answers were provided on a five-point scale, ranging from much lower to much higher. There was a majority of respondents who shared the same opinion regarding collocation. It is important to note, however, that their perceptions differed in some cases. There was wide agreement among respondents that collocation had many benefits, such as the ability to generate more value, facilitate collaboration and trust between the parties involved, and facilitate the possibility of planning special events. As can be seen in Table 8, the total mean numbers indicate a strong positive outlook in all cases, which is above 4. Furthermore, the majority of respondents expressed positive attitudes not only regarding the relationship between collocation and an increase in email volume and foresight in the project but also regarding its effects on improving the quality of documents produced and reducing project risk (the mean number between 3,75 and 3,94). Despite the fact that the Mean number for Q9 was the lowest, this indicates that the collocation had a smaller impact on managers' weekly planning. Respondents, however, reported that other individuals within NCC's organization had a negative view of collocation and its value in Q2 (with a mean number of 2,92).

The next step will be to analyze the responses according to gender. In accordance with Table 8, there are not many differences between the perceptions of men and women regarding co-location, except for a few items that will be discussed in more detail.

Q9 was a question that was viewed differently by women and men. *How much do you think actual collocation in relation to regular planning affects your own weekly planning?* Men accounted for 2.23 whereas women accounted for 3.29. These results indicate that actual collocation has a greater impact on women's weekly planning. Furthermore, in relation to Q10: *How much do you think that collocation itself evens out the workload throughout the duration of the project?* Female respondents believed that collocation would increase the evens out the workload during the project by a difference of .45.

Women, however, responded to some questions with a more positive attitude. Concerning Q1: *How do you perceive the relationship between collocation time and the value it generates?* Collocation is perceived as more valuable among women than among men, with a mean score of 4.36 compared to 3.86 for men. Secondly, in Q12, *how much do you believe that collocation itself, when compared to normal planning, increases collaboration?* There was a .32 difference between men and women with regard to collocation resulting in greater collaboration. The quality of the documents produced and collocation were also seen as more important factors by women in Q13.

Table 8: The means and standard deviations (SD) of the collocation questions based on genders.

	man			woman			Total		
	Mean	N	Std. Deviation	Mean	N	Std. Deviation	Mean	N	Std. Deviation
Q1: How do you perceive the relationship between the collocation time in a project studio and the value it generates?	3.86	22	.834	4.36	14	.842	4.06	36	.860
Q2: How do you feel that other people within NCC's organization view the connection between time spent in a project studio and the value generated?	2.95	22	.785	2.86	14	1.167	2.92	36	.937
Q3: How do you feel that external consultants and UE view the relationship between time spent in a project studio and the value generated?	3.64	22	.727	3.50	14	.760	3.58	36	.732
Q4: How do you feel that clients view the connection between time spent in a project studio and the value generated?	3.50	22	.802	3.71	14	.914	3.58	36	.841
Q5: How much do you think that collocation itself, in relation to normal planning, increases trust-building between the actors involved?	4.14	22	.774	4.21	14	.802	4.17	36	.775
Q6: How much do you think that collocation itself in relation to normal planning affects the amount of email?	3.77	22	.813	3.79	14	.802	3.78	36	.797
Q7: How much do you think that the actual collocation in relation to regular planning facilitates the possibility of planning special meetings?	4.09	22	1.019	4.14	14	1.231	4.11	36	1.090
Q8: How much do you think that collocation itself in relation to normal planning affects the foresight of the project?	3.91	22	1.019	3.93	14	.829	3.92	36	.937
Q9: How much do you think that the actual collocation in relation to regular planning affects your own weekly planning?	2.23	22	.922	3.29	14	1.267	2.64	36	1.175
Q10: How much do you think that collocation itself, in relation to regular planning, evens out the workload throughout the duration of the project?	3.27	22	.703	3.71	14	1.069	3.44	36	.877
Q11: How much do you think that the actual collocation in relation to normal planning affects the total time spent on carrying out the planning work?	3.36	22	.727	3.29	14	1.069	3.33	36	.862
Q12: How much do you think that collocation itself, in relation to normal planning, increases collaboration	4.18	22	.795	4.50	14	.519	4.31	36	.710
Q13: How much do you think that collocation itself, in relation to normal planning, increases the quality of documents produced?	3.86	22	1.037	4.07	14	.616	3.94	36	.893
Q14: How much do you think that collocation itself, in relation to regular planning, reduces the risk that you, as a planning manager, will have to spend more time during production?	3.73	22	.935	3.79	14	.699	3.75	36	.841

4.1.2 Questionary based on work-life balance and gender equality

The purpose of this survey was to investigate the work-life balance and gender equity among the design managers at NCC as well as other companies that are affiliated with NCC. This survey was completed by 36 respondents Table 9 (23 married males and 11 married females, as well as 2 single females) Table 10.

Table 9: Gender.

	Frequency	Percent	Valid percent	Cumulative Percent
Female	13	36.1	36.1	36.1
Male	23	63.9	63.9	100.0
Total	36	100.0	100.0	

Table 10: Married or Single?

	Frequency	Percent	Valid percent	Cumulative Percent
Married or have a partner	34	94.4	94.4	94.4
Single	2	5.6	5.6	100.0
Total	36	100.0	100.0	

Among the respondents, 77,8 % (28 persons) have children of different ages Table 11. In one of the questions, respondents were asked about their commute time to work Table 12; 69,4% (25 persons) of them live close to the company and their commute time is less than 30 minutes. The average commute time to work for 22,2 % (8 persons) of the population is between 30-60 minutes, whereas for 8,3 % (3 persons) of the population, it is over an hour.

Table 11: Have children?

	Frequency	Percent	Valid percent	Cumulative Percent
Yes	28	77.8	77.8	77.8
No	8	22.2	22.2	100.0
Total	36	100.0	100.0	

Table 12: Commuting from home to the office.

	Frequency	Percent	Valid percent	Cumulative Percent
Less than 30 minutes	25	69.4	69.4	69.4
Between 30-60 minutes	8	22.2	22.2	91.7
More than 1 hour	3	8.3	8.3	100.0
Total	36	100.0	100.0	

4.1.2.1 Workplace, Onsite, Online, or Hybrid Working

There was also a question regarding the percentage of design managers who require physical presence at their workplaces. The results of Table 13 indicate that 50% (18 people) believe their work requires physical presence between 40% and 80%, whereas 30.6% (11 people) believe it is less than 40%. In contrast, only 11,1% (4 individuals) believe that their work requires more than 80% physical presence, while 8,3% (3 individuals) do not see a need for physical presence at all.

Table 13: How do you perceive your work needs a physical presence at the workplace?

	Frequency	Percent	Valid percent	Cumulative Percent
No need	3	8.3	8.3	8.3
Less than 40%	11	30.6	30.6	38.9
Between 40%-80%	18	50.0	50.0	88.9
More than 80%	4	11.1	11.1	100.0
Total	36	100.0	100.0	

Following this, respondents were asked whether they would prefer to work online, onsite, or hybrid. According to Table 14 approximately 75 percent (27 persons) prefer hybrid working, 22,2 percent (8 persons) choose onsite working, and only 2,8 percent (1 person) prefer online working. Based on the findings it seems that a majority of individuals tend to favor a combination of onsite and online work. This preference could stem from the benefits associated with both working from home, which offers flexibility, and still having collaboration with colleagues.

Table 14: In the case of your work, what type of work do you prefer?

	Frequency	Percent	Valid percent	Cumulative Percent
Hybrid	27	75.0	75.0	75.0
Online	1	2.8	2.8	77.8
Onsite	8	22.2	22.2	100.0
Total	36	100.0	100.0	

In addition, respondents were asked how many days per week they worked online. According to the answers Table 15, 36,1 % (13 persons) work onsite every day of the week while only 8,3 % (3 persons) work online the whole week. 25,0 % (9 persons) work from home two days a week, while 16,7 % (6 persons) work from home one day a week. The percentage of people who work online three days a week and four days a week is 11,1 % (4 persons) and 2,8 % (one person). According to the findings, it appears that most participants have a preference, for working in an office than from home. However, the results also indicate that a noteworthy portion of individuals work from home at least once a week.

Table 15: How many days do you work from home in a week?

	Frequency	Percent	Valid percent	Cumulative Percent
1 day	6	16.7	16.7	16.7
2 days	9	25.0	25.0	41.7
3 days	4	11.1	11.1	52.8
4 days	1	2.8	2.8	55.6
5 days	3	8.3	8.3	63.9
No day	13	36.1	36.1	100.0
Total	36	100.0	100.0	

Furthermore, in other questions wanted to know their views on their ability to develop value through online or onsite work or both. Among respondents in Table 16, 61,1% (22 persons) believe that the value of online and onsite work is the same, while 38,9% (14 persons) believe that onsite work is more valuable. In terms of their workplace environment in Table 17, most respondents 83,3 % (30 people) like their workplace, and according to Table 18, 86,1 % (31 people) enjoy being in the workplace.

Table 16: Do you have the same ability to develop a value for the project in the case of working from home compare to working onsite?

	Frequency	Percent	Valid percent	Cumulative Percent
More value through onsite working	14	38.9	38.9	38.9
More value through online working	0	0.0	0.0	38.9
Yes, the value is the same	22	61.1	61.1	100.0
Total	36	100.0	100.0	

Table 17: Do you like your workplace environment?

	Frequency	Percent	Valid percent	Cumulative Percent
Yes	30	83.3	83.3	83.3
No	2	5.6	5.6	88.9
Maybe	4	11.1	11.1	100.0
Total	36	100.0	100.0	

Table 18: Are you satisfied with being in the workplace physically?

	Frequency	Percent	Valid percent	Cumulative Percent
Yes	31	86.1	86.1	86.1
No	1	2.8	2.8	88.9
Maybe	4	11.1	11.1	100.0
Total	36	100.0	100.0	

4.1.2.2 Gender Equality

A number of questions related to gender equality were included in the questionnaire, as gender equality is one of the main topics covered in the thesis. The results of the questionnaire showed that there are still areas that need improvement in terms of gender equality. The first question was who is the family manager? As can be seen in Table 19, 66,7% (24 persons) of respondents are both family managers. The number of women who are family managers at their homes is 27,8 %, or ten, while the number of men who are family managers is 5,5%, or two.

Table 19: Who is family manager?

	Numbers	Percentage
woman	10 (2 single)	27,8 %
man	2	5,5 %
both	24	66,7 %

Secondly, it is interesting to know whether men and women receive the same salaries. Among the responses Table 20, 55,6 % or 20 men reported earning more than their partners, whereas only 8 women (2 single women) reported earning more than their partners. A total of 22.2% or eight persons have the same salary as their partners. This demonstrates a clear gender disparity in terms of salary, which could be attributed to the gender wage gap.

Table 20: Who earns more?

	Numbers	Percentage
woman	8 (2 single)	22,2 %
man	20	55,6 %
both	8	22,2 %

On the other hand, when it comes to parental leave, only 18,5 % or 5 persons had the same parental leave as their partners Table 21. As a result, women have the highest rate of parental leave at 81,5%

or 22 women compared to 0 (zero) men. This shows that there is a significant gender bias when it comes to parental leave, with women being the primary caretakers.

Table 21: Who had parental leave?

	Numbers	Percentage
woman	22	81,5 %
man	-	-
both	5	18,5 %

There were some respondents who did not have children or who had grown children who did not have to respond to the question regarding picking up their children from kindergarten. A total of 22 people answered this question, and as indicated in the Table 22, 72,7% of them (16 people) were both responsible for getting kids. The number of women who took children from kindergarten was twice as much as men with 18,2% (4 women) compared to 9,1% (2 men).

Table 22: Who is responsible for getting kids from kindergarten?

	Numbers	Percentage
woman	4	18,2 %
man	2	9,1 %
both	16	72,7 %

Regarding the meeting with children's teachers, 25 individuals were eligible to respond Table 23. 76% (19 people) of them, both men and women, meet their children's teachers together. The remaining 24% (6 women) is performed solely by women. The results suggest that most parents prefer to attend meetings with their children's teachers together. Women are more likely than men to attend the meetings alone.

Table 23: Who is responsible for meeting with kids' teacher?

	Numbers	Percentage
woman	6	24 %
man	-	-
both	19	76 %

There was also a question regarding which of the partners works most from home. As a result, Table 24, 41,7% or 15 men work from home compared to 25% or 9 women. A total of 19,4% or 7 respondents work both remotely, and 13,9% or 5 participants work only on-site. The results showed that men were more likely to work from home than women.

Table 24: Who mostly work online?

	Numbers	Percentage
woman	9	25 %
man	15	41,7 %
both	7	19,4 %
No one	5	13,9 %

In response to a question concerning which gender has a greater tendency to work from home, Table 25, 61,1% (22 persons) indicated that both men and women wish to work remotely. On the other hand, 16,7% (6 individuals) believed that no one liked working online. 7 women (19,4%) reported a tendency to work online compared with 1 man (2,8%). This indicates that the majority of participants prefer remote work, with women slightly more likely to prefer it.

Table 25: Who have more tendency to work online?

	Numbers	Percentage
woman	7	19,4 %
man	1	2,8 %
both	22	61,1 %
No one	6	16,7 %

4.1.2.3 Analyzing based on the Mean number

As can be seen in Table 26, the mean and standard deviations (SD) of the questions related to work-life balance and gender equality are displayed separately for men and women as well as the totals for both groups. The first thing that can be done is to analyze all of the responses as a whole, and then divide the responses according to gender. The purpose of this study is to determine whether women and men perceive work-life balance and gender equality in the same way. A five-point scale was used to provide possible answers, ranging from very low to very high.

Based on the total answers, Q2 and Q3 accounted for the Mean number of 4 and more. In Q2, we discuss the relationship between being physically present at the workplace and having an increased number of opportunities and potential influences at the workplace. Having a mean number of 4 indicates that the majority of respondents agree that it is important to be physically available to gain more opportunities. According to the gender-based rankings for this question, women ranked 0.48 higher than men. Therefore, women are more likely than men to recognize this connection. The next high-ranked question was Q3: *How does social connection with others in the workplace influence your well-being?* Clearly, both men and women agree that social connection at work contributes to well-being. In this question, men ranked 0.17 points higher than women. In Q1: *Does remote work contribute to greater diversity in the workplace, including gender diversity?* The overall view of respondents on this question was almost neutral. There is a significant difference between men and women regarding the connection between remote work and gender diversity, with women having 0.39 points fewer negative views than men.

The mean number for Q4 and Q5 indicates that the answers are near neutral, with Q4's mean number being lower than the neutral level, and Q5's mean number being greater than the neutral level. As indicated in question 4, respondents have some concentration difficulties while working onsite. Regarding question 5, they have a good understanding of the connection between work-life balance and working online. However, the answers to these two questions do not differ significantly between the sexes.

Table 26: The means and standard deviations (SD) of the second surveys based on genders.

	man			woman			Total		
	Mean	N	Std. Deviation	Mean	N	Std. Deviation	Mean	N	Std. Deviation
Q1: Does remote work contribute to greater diversity in the workplace, including gender diversity?	3.26	23	.619	2.85	13	1,144	3.11	36	.854
Q2: How do you perceive being physically present contribute to connecting with more given opportunities and potential influences of the workplace?	3.83	23	.717	4.31	13	.751	4.00	36	.756
Q3: How does social connection with others in the workplace influence your well-being?	4.17	23	.717	4.00	13	1,155	4.11	36	.887
Q4: How do you perceive the physical availability in the workplace affected your concentration on work?	2.83	23	1,072	2.77	13	1,092	2.81	36	1,064
Q5: How do you perceive work-life balance when you work from home?	3.70	23	1,020	3.62	13	1,325	3.67	36	1,121

4.2. Survey Discussions

This section discusses the findings of both surveys in light of the theoretical framework as well as survey questions. To do so, the chapter is divided into four subchapters. These subchapters cover topics such as collocation, work-life balance and well-being, gender equality, and future workplaces. A conclusion is drawn based on the findings of both surveys.

4.2.1 Collocation

According to Kahn & McDonough (1997), collocation refers to the physical gathering of personnel from diverse departments into a singular physical space with the objective of creating a new product. This facilitates the process of brainstorming, fosters knowledge exchange, and promotes teamwork among the development team in relation to the project. Furthermore, it promotes efficient decision-making and leads to enhance efficiency for the projects. According to the survey, the majority of respondents (63,9%) perceived collocation as a value creator in all types of projects. Additionally, the survey participants perceived a positive correlation between the duration of collocation and the generation of value. According to the survey results, the main effects of co-location were increased collaboration, trust-building, document quality, planning meetings, and foresight of the project.

Despite the advantages collocation brings to the project according to Kahn & McDonough (1997), like close collaboration between the actors, exchange of data, and effective problem-solving solutions, there is a perception among the survey respondents that physical presence at the workplace decreases their concentration on work.

The survey revealed interesting insights regarding the gender perspective on collocation. While men and women generally had similar perceptions in many aspects related to collocation, women's weekly planning was more significantly impacted. This is attributed to women's responsibilities as family managers and their role in childcare. However, women also perceived the importance of collocation toward value generation as higher than men and viewed the quality of documents produced and collocation as more significant factors compared to men.

The survey results indicate that individuals within NCC's organization do not see a strong connection between time spent in a project studio and the creation of value. This disconnection can

lead to a lack of motivation for collocation, causing some individuals to prefer working from their own place. This, in turn, can result in a decrease in productivity.

4.2.2 Work-life Balance and Well-being

The survey respondents had a positive outlook on work-life balance when working from home. However, research cited in Abdullah, N. et al., (2020) suggests that working from home may actually result in less happiness and increased stress levels. Additionally, inactive computer use during remote work can lead to physical health problems.

The well-being of employees is strongly connected to their social lives, as emphasized in Stankevičiūtė, Ž., & Kunska, S. (2022) and supported by the survey results. This indicates that employers should focus on creating an environment that encourages and facilitates social interaction among employees. Providing spaces for interaction, such as common areas, and organizing team-building activities can contribute to fostering social connections and overall well-being.

Working from home, as argued by Abdullah, N. et al. (2020), can have adverse effects on employees, including a lack of interaction, performance uncertainty, and potential concerns regarding interpersonal and organizational trust. Remote workers may perceive fewer opportunities for career advancement and promotion due to their physical absence from the workplace, as highlighted in Babapour Chafi, M., et al. (2022). Similarly, the survey also indicates a strong correlation between physical presence at the workplace and increased opportunities and potential influence.

4.2.3 Gender Equality

The lack of gender balance among respondents indicates a significant gender disparity in the workplace that needs to be addressed. The fact that men respondents were almost twice as many as women highlight the need for measures to promote gender equity in the construction sector and create a more balanced workforce. Accordingly, the construction sector is experiencing a shortage of female employees, as highlighted in Conway, Z, et al., (2018). This emphasizes the importance of promoting gender diversity and encouraging more women to pursue careers in the industry.

Hjálmsdóttir, A., & Bjarnadóttir, V. S. (2021) suggested that mothers have been forced to assume the role of household manager, planning and organizing their family's lives. This has created an atmosphere of apprehension and unease, leading to difficulties with temporal organization, changes in self-perception, and a decline in mental health. This has caused their standard of living to suffer and their responsibilities to increase. Accordingly, through the survey, gender inequalities are observed in various aspects, including family responsibilities. While 66% of respondents both men and women were family managers, the majority of those responsible for family management were women. This indicates an imbalance in the distribution of family responsibilities and suggests the need for measures to promote more equitable sharing of these responsibilities between men and women. Gender pay disparity is another significant issue, with only a small percentage of respondents (22.2%) reporting earning the same as their partners. The majority of men (55.5%) earned more than their partners, highlighting the existence of a gender wage gap within the surveyed population. Parental leave is also subject to gender inequality, with women taking a significantly higher rate of parental leave compared to men. This disparity indicates a need for policies and practices that promote equal access to parental leave for both genders.

4.2.4 Future Workplace

In various workplaces, according to Ucel, E. B. et al., (2022) employees have the option to work from home and/or in a hybrid setting. Consequently, employee productivity and health, and well-being are impacted. Accordingly, the majority of respondents (75%) on the survey prefer hybrid work, which combines both onsite and remote work. This indicates a preference for a flexible work arrangement that allows individuals to have a balance between working onsite and working from home. The results also indicate that while people generally prefer working onsite, there is still a significant number of individuals who take advantage of the flexibility provided by working from home at least one day a week. This highlights the importance of offering a hybrid work model to accommodate different preferences and needs.

Additionally, the impacts of remote work on productivity and performance are discussed in Franken, E. et al., (2021). It indicated despite an increase in the burden on work remotely like isolation, employees were able to maintain or increase their productivity. Working remotely afforded them several benefits, including more time to concentrate without interruptions, the ability to complete duties at a time that was most convenient, and no commute. Among the survey respondents, 61% believe that the value creation for the project is the same regardless of whether they work onsite or online. This suggests that respondents perceive similar productivity and project outcomes irrespective of the work location.

Some employees, however, found it difficult to complete their work at home due to interruptions from family members and/or children as mentioned by Vyas, L (2022). Notably, none of the respondents indicated that they saw the most value in the project in online working. This implies that while remote work may offer certain benefits, such as flexibility, there may be a perceived advantage to onsite work when it comes to project value creation.

4.3. Interviews

In this part, the findings from the five interviews will be presented. These findings have been divided into four categories: collocation, work-life balance and well-being, gender equality, and future workplaces. The information presented below utilizes the abbreviations outlined in the methodology section.

4.3.1 Collocation

Interviewees were first asked about their thoughts on collocation from their perspective. Through interviews, D.M.1's view about the collocation was a must for the projects as D.M.1 found the advantages greater than anything else. D.M.2 stressed the importance of collocation because it allows those involved in the project to communicate directly and clearly about their activities. Furthermore, it would be easier to access needed information by being physically present. D.M.3 highlighted the fact that collocation is valuable when someone wants to establish connections and interact socially. This type of interaction allows for more effective collaboration and helps ideas flow more easily. D.M.4 has had positive experiences with collocation, especially before the Pandemic, when everyone should be collocated at the same site. After the Covid period, a Teams meeting replaced the physical meeting. It was also mentioned by D.M.4 that there are a lot of problems and challenges associated with doing the project without collocation, regardless of how large or small it is. D.M.5 had a great positive attitude towards collocation to facilitate communication, get better relationships, and better results in the project. As a result of collocation,

many challenges during the projects will be solved in a short amount of time, and employees will be able to gain from others' experiences as well.

Through interviews, D.M.2, D.M.3, and D.M.4 had the idea that collocation especially at the beginning of the project is necessary. Even D.M.3 emphasized that it is critical to have collocation during the project, through detailed design, or when someone new is added to the project. This supports the idea that physical presence is essential for successful collaboration. Additionally, D.M.4 stated that since the customers' attitudes change during the project, it is necessary to have at least one day a week of physical meetings to resolve the challenges they face. D.M.5 stressed that co-location is important in all phases, especially at the beginning of the project. As coworkers can get to know each other much better and make a lot of difference for work continuing. Therefore, frequent face-to-face interaction should be encouraged to ensure effective communication and problem-solving.

Regarding the interviewees' experiences during the Covid, D.M.1 was on parental leave and didn't have experience from that moment. D.M.2 emphasized that her attitude toward collocation changed after the pandemic as everyone could share their screen and all could see what was being discussed. However, D.M.3 continued to work onsite even during the Covid as social interactions were important to him. D.M.3 highlighted the importance of social interactions and noted that continuing to work onsite was beneficial to him, even during the pandemic. Since social interaction and meeting people are also important to D.M.4, he works remotely just one or two days per week. D.M.5 prefers to work remotely just one day a week as communication and social interaction is important to him also.

4.3.2 Work-life Balance and Well-being

It was asked if it is possible to maintain a balance between work and private life while working from home. According to interviews, D.M.1 was satisfied with her work-life balance as her schedule was such that she could work online on some days and be more productive both at work and at home. D.M.2 was also satisfied with having a flexible schedule to have some days working remotely to spend more time with the kids. In addition, D.M.4 expressed a positive opinion of the possibility of combining online work with onsite work or hybrid work in order to achieve a better work-life balance. However, D.M.3 prefers to work onsite every day as he finds it easier to focus and has more opportunities for social interactions. D.M.5 mentioned that today's type of working (hybrid) is more productive as everyone has the flexibility to work both online and onsite. Almost all interviewees have valued the flexibility of working remotely, while D.M.3 prefers the structure of an in-person work environment.

D.M.1 mentioned that as she had a woman manager, she understood her completely and was proud of working in the company. However, she highlighted that she knows some educated women that because of struggling with their work-life balance, they have to choose to leave the business until they will be ready.

In the interview, D.M.1 expressed a concern about commuting time of three hours per day, and that working from home would allow her to be more productive. Additionally, D.M.2 stated that she would be able to spend a greater amount of time with her children by working remotely. Furthermore, she noted that being always physically available increases the company's expenses. In spite of this, D.M.2 believes that having more productivity through onsite work is what makes the difference. D.M.3 did not experience any difficulties with commuting time since he lives ten minutes away. Moreover, he is unable to concentrate on working from home since he has a small

child and prefers to work in an office setting. D.M.4 and D.M.5 would greatly benefit from the option of choosing which days they would be online and which days they would be on site since they could better manage their time and plan for their lives. D.M.4 can pick up his daughter from preschool earlier even on days when he works remotely. Additionally, D.M.4 stated that his productivity varies depending on the type of work he does whether he works online or onsite. It largely depends on the environment and what is going on in life as to whether some days are more productive at work than others at home.

4.3.3 Gender equality

In interviews, it was mentioned by more interviewees that their offices are generally dominated by males. According to D.M.2, there is not an equal distribution of gender in the office, and there are three times more men than women in the office. In addition, D.M.3 mentioned that there are 15 people in their office and only three women were out of the 15. D.M.4 mentioned that the office's gender diversity is almost equal. However, almost 30% of the people working on the project in production are women. D.M.5 mentioned that if he looks at the place he is working, it's almost equal, or maybe more women. But the whole office is mostly male dominated. This is concerning, as it suggests significant gender inequality in the industry.

According to interviews, D.M.1 and D.M.2 tended to work from home two or three days a week since they could better balance their work and life. They could also take care of the kids and be more available for them at home. D.M.4 and D.M.5 also wanted to have the flexibility to choose some days for working remotely. D.M.3 prefers to work onsite to have more social interaction and could not focus on home because of his kid. It is clear that women design managers had more tendency to work from home since could pay more time with their kids. Also, D.M.1 mentioned that she might even change employer if the employer asks her to work in an office all the time. This indicates that workplace flexibility and support are essential to retaining female engineers.

The points also mentioned by D.M.1, D.M.2, D.M.4, and D.M.5 was that people who mostly work onsite have more chances of getting job promotions. As mentioned before, women mostly have a tendency to work online, which means they have fewer opportunities to interact with their managers and colleagues, which could lead to a lack of visibility and recognition for their work. As a result, they may not have the same chance to showcase their skills and get career advancement as onsite employees.

4.3.4 Future Workplace

It was mentioned by D.M.1, D.M.2, and D.M.4 that they had never considered working from home prior to the pandemic. However, after trying this method, D.M.1 and D.M.2 found it interesting and more productive. According to D.M.4, productivity is almost the same and is affected by the projects and the environment in which you work. D.M.5 works remotely just one day a week as social interaction is important for him. He emphasized that it mostly depended on what kinds of tasks he had to do. For instance, when he had project studios or colocation days, he always is available at the office. Despite this, D.M.3 could not adapt to working from home and worked in the office even during the covid despite the fact that even before Covid, D.M.3 experienced Teams collaboration because of the location of their office. They all agreed that the most effective approach was to keep a flexible work schedule that allowed for both in-person and remote work. As a result, they accepted a hybrid system that allowed employees to benefit from the advantages of both work styles.

There was an idea shared by most of the interviewees regarding the New Normal. As they mentioned, working from home is dependent upon the phase of the project that you are in. As design managers, collocation at an early stage of the project is imperative because it allows them to get to know each other better. D.M.1, D.M.2, and D.M.3 mentioned that it may be possible to work from home in other phases of the project. However, D.M.4 highlighted that it is necessary to have a physical meeting at least one day a week because of the changes that may occur during the project.

A representative of D.M.4 mentioned that they had some fika days at the office before the pandemic, during which all of the staff gathered and exchanged valuable information. Covid, however, eliminated these types of events. D.M.4 suggested that it would be beneficial for both the company and its employees to return to the office, have similar meetings, and create an atmosphere that would encourage more employees to work on-site. D.M.5 appreciates the location of his office to have enough space for a parking area. Another positive aspect would be to have a gym and the possibility of taking a shower in his workplace. He proposed that it would be easier for employees to go to work if the company prepared something for their commuting like a bus or ... as the commute is an important issue for many of them. It is also important to have a good office culture, a good team, and a good environment to absorb more people.

4.4. Interview Discussion

This section discusses the topic based on findings from theoretical studies and interviews. The information is divided into four subsections (following a structure as previously mentioned), highlighting the correlation between data collected from the interviews and literature studies.

4.4.1 Collocation

Collocation has several advantages for project teams, as highlighted by the literature and interviews. It fosters close collaboration, promotes the exchange of ideas and information, enhances problem-solving capabilities, and cultivates a sense of teamwork (Kahn & McDonough, 1997). The interviewees expressed positive attitudes towards co-location, emphasizing its importance for effective communication, clear coordination, access to information, establishing connections, and facilitating social interaction. They highlighted the benefits of collocation in terms of resolving challenges, gaining from others' experiences, and achieving better project results.

It is suggested by Lee Patti, et al., (1997) that combining early, and part-time collocation techniques can improve the effectiveness of new projects. The interviewees also supported this idea, stating that collocation, especially in the early stages of a project or when someone new is assigned to it, is necessary for successful collaboration.

According to Carmody, D. et al (2022) the COVID-19 pandemic and the subsequent shift to remote communication had adverse effects on various aspects, including mental and physical well-being, innovation, collaboration, and creativity due to the lack of connectivity. However, the interviewees had varied experiences during this period. Some found remote communication effective, while others emphasized the importance of social interactions and continued to work onsite.

Overall, the findings suggest that while collocation is highly valued for effective communication, problem-solving, and social interactions, the COVID-19 pandemic forced a shift to remote work, which had both positive and negative impacts. Balancing the advantages of collocation with the

flexibility offered by remote work is crucial for ensuring effective collaboration and addressing the challenges associated with both onsite and remote working environments.

4.4.2 Work-life Balance

Ucel, E. et al., (2022) suggested that supportive company culture and colleagues play a significant role in enabling individuals to achieve a desirable workload-to-family ratio. Benefits associated with supportive work models include increased flexibility, autonomy, work-life balance, and employee performance. Employee well-being is closely tied to work-life balance, which encompasses subjective evaluations of one's life and includes emotions, reactions, and personal judgments. Also, Stankevičiūtė, Ž., & Kunsakaja, S. (2022) mentioned that prioritizing employee well-being is crucial for successful workplace outcomes and taking proactive actions to provide emotional and physical support is important. The interviews with D.M.1, D.M.2, D.M.3, D.M.4, and D.M.5 reflect varying perspectives on work-life balance and the benefits of remote work. Some interviewees expressed satisfaction with flexible schedules, the ability to work remotely, and spending more time with family. Others preferred working onsite for increased focus and social interactions.

In addition, Stankevičiūtė, Ž., & Kunsakaja, S. (2022) stressed that Remote work has several advantages, including reduced commute times and expenses, flexible scheduling, and the opportunity to work from home. It allows employees, especially working parents, to spend more time with their children and can enhance productivity as described by Abdullah, N. et al (2020). However, individual preferences and work demands may influence the perceived benefits of remote work. The interviewees highlighted the importance of flexibility in work arrangements, including the option to combine online and onsite work or adopt a hybrid approach. This flexibility allows for better time management and planning, leading to improved work-life balance.

4.4.3 Gender Equality

The construction industry has a significant gender imbalance, with a greater proportion of men than women in both professional and operative roles. This lack of gender equality is concerning and indicates the need for greater diversity in the industry (Conway, Z, et al., 2018). The interviews with D.M.2, D.M.3, D.M.4, and D.M.5 highlighted that many offices within the industry are male-dominated. The unequal distribution of gender in the workplace is a cause for concern, as it perpetuates gender inequality and limits the industry's potential for diverse perspectives.

According to Conway, Z, et al., (2018), increasing the number of women in the construction industry can bring several benefits, including enhanced problem-solving, improved efficiency, and addressing the skills shortage. Encouraging gender diversity is crucial for the industry's development and success. Also, Ucel, E. et al., (2022) emphasized that workplace flexibility and support are essential for retaining female engineers. Lack of flexibility, such as being required to work in the office full-time, can lead to dissatisfaction and potentially cause women to leave the field. Providing flexible work arrangements, including remote work options, can help address the work-life balance needs of female employees. Accordingly, as mentioned by one of the female interviewees, she might even change employer if the employer asks her to work in an office all the time. This indicates that workplace flexibility and support are essential to retaining female engineers.

Babapour Chafi, et al., (2022) described that remote work, while offering benefits such as work-life balance and increased availability for family responsibilities, may present challenges for career advancement and promotion. Remote workers, including women who opt for remote work, may face limited visibility and recognition for their work, which could hinder their chances of career advancement compared to employees working onsite. The interviewees also mentioned that being physically available at the workplace is the key point for getting promotions.

4.4.4 Future Workplaces

The COVID-19 pandemic forced companies around the world to adopt remote work practices and rethink their work strategies (Vyas, L. 2022). This led to a shift in mindset among employees, including D.M.1, D.M.2, and D.M.4, who initially had never considered working from home but found it interesting and more productive after trying it out. D.M.5 also acknowledged the benefits of remote work but emphasized the importance of social interaction and highlighted the task-dependent nature of remote work. The hybrid work model, which combines in-person and remote work, was found to be the most effective approach by the interviewees. This flexibility allows employees to benefit from the advantages of both work styles and adapt to the different phases and requirements of projects.

While remote work has its advantages, it may not be suitable for all tasks and industries. As Vyas, L (2022) mentioned that some managers and organizations have faced challenges in managing remote employees and transitioning to remote work. According to interviewees, the phase of the project and the need for face-to-face collaboration, especially in the early stages, were mentioned as factors that may require in-person work. The return to the office and the re-establishment of in-person meetings and events, such as the fika days mentioned by D.M.4, were seen as beneficial for creating a positive office culture, encouraging collaboration, and fostering a sense of community among employees. Accessible amenities like parking, a gym, and commuting support were also valued by employees.

5. Conclusion and suggestions

In summary, based on the evidence presented, collocation emerges as a valuable strategy for project development, promoting collaboration, trust, and efficiency. These findings support the adoption of collocation as a beneficial approach for enhancing project outcomes and teamwork in various settings. In addition, collocation is perceived as valuable for project teams, particularly in the early stages, to facilitate effective communication, collaboration, and social interactions. The COVID-19 pandemic highlighted the importance of connectivity and social interaction but also demonstrated that remote communication can be effective in certain situations. Employing a hybrid approach that combines the benefits of collocation and remote work can optimize project outcomes while addressing team members' needs and preferences.

However, these findings highlight potential challenges and considerations related to collocation. While collocation offers benefits such as collaboration and problem-solving, there are concerns regarding decreased concentration and its impact on work quality, efficiency, and productivity. Additionally, understanding the gender perspective and addressing women's unique planning needs can contribute to maximizing the benefits of collocation. Moreover, addressing the disconnection between time spent in a project studio and value creation, as well as motivating individuals to embrace collocation, can be crucial for ensuring its effectiveness and productivity within organizations.

While working from home may offer perceived benefits in terms of work-life balance, it can also lead to challenges such as reduced happiness, increased stress, physical health problems, and limited career advancement opportunities. Balancing the advantages and disadvantages of remote work is crucial for both employees and employers. Providing an environment that supports social interaction, trust-building, and career development can help mitigate remote work's negative effects and optimize employee well-being and success.

Furthermore, a supportive company culture and colleagues are essential for achieving a desirable workload-to-family ratio. Work-life balance contributes to employee well-being and has positive effects on work satisfaction, psychological well-being, and social life. Remote work offers benefits such as reduced commute time, flexible scheduling, and increased time with family, but individual preferences and work demands should be taken into account. Providing employees with options for flexible work arrangements, including hybrid models, can help them better manage their time, improve productivity, and achieve a healthier work-life balance.

The findings suggest the urgent need to address gender imbalances and inequalities in the workplace. Promoting gender diversity, addressing the wage gap, promoting equitable sharing of family responsibilities, and ensuring equal access to parental leave are important steps toward creating a more inclusive and fair work environment in the construction sector. Addressing the gender imbalance in the construction industry requires efforts to promote diversity and inclusion. This requires efforts to provide workplace flexibility and support and ensure equal opportunities for career advancement and recognition. Embracing diverse perspectives and creating an inclusive environment can contribute to a more equitable and successful industry.

The findings suggest a preference for hybrid work, where individuals can work both onsite and remotely. While the majority prefer working onsite, the flexibility of working from home is valued, albeit not seen as the most valuable for project outcomes. Providing a balance between onsite and remote work options can meet employees' preferences and needs while ensuring effective project value creation.

The COVID-19 pandemic has accelerated the adoption of remote work practices and highlighted the importance of flexibility in work arrangements. Hybrid work models, combining in-person and remote work, are seen as a preferred approach. However, the suitability of remote work varies depending on the nature of tasks and projects. The return to the office and the cultivation of supportive office culture can contribute to employee satisfaction and collaboration. Companies should consider individual and task-specific needs when designing work arrangements in the future.

6. References

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7. Appendix

7.1 Second Survey: Work-life balance and gender equality at the workplace

Welcome and thank you for taking the time to contribute to this study concerning the future workplace. By participating in this study, we can make a better workplace for you and other members together.

The estimated time to answer all questions is less than 10 minutes. The following questions concern your thoughts about having a work-life balance and gender equality in the workplace.

Remember that you will remain anonymous; no one will ever know how you responded to the questions.

This survey is part of the research project "Exploring innovative methods toward optimization of physical co-location environments after the pandemic era" that is conducted by a team of researchers from NCC and the Chalmers University of Technology. If you want to leave some feedback, it is possible to do that at the end of the survey.

Thank you for your help!

* Indicates required question

General information

1. Gender *

Mark only one oval.

- Female
- Male
- Prefer not to say
- Other

2. I'm *

Mark only one oval.

- Married or have a partner
- single

3. Children? *

Mark only one oval.

Yes

No

4. what age do your children have?

Check all that apply.

under 2 year

between 2 - 6 year more

than 6 year

Work-life balance and Gender equality

5. Which company do you represent? *

6. Commuting time from home to the office *

Mark only one oval.

Less than 30 minutes

between 30-60 minutes

more than 1 hour

7. How do you perceive your work needs a physical presence at the workplace? *

Mark only one oval.

- No need
- Less than 40%
- Between 40% - 80%
- More than 80%
- 100%

8. How do you perceive the need to be physically present at the workplace? *

Mark only one oval.

- No need
- Less than 40%
- Between 40% - 80%
- More than 80%
- 100%

9. In the case of your work, what type of work do you prefer? *

Mark only one oval.

- Onsite
- Online
- Hybrid

10. How many days do you work from home in a week? *

Mark only one oval.

- 1 day
- 2 days
- 3 days
- 4 days
- 5 days
- No days

11. How do you perceive work-life balance when you work from home? *

Mark only one oval.

Much worse

1

2

3

4

5

Much better

12. Do you have the same ability to develop a value for the project in the case of working from home compared to working onsite? *

Mark only one oval.

- Yes, the value is the same
- More value through onsite working
- More value through online working

13. Who is the family manager in your household? *

Mark only one oval.

- Me
- My partner, husband or wife
- Both

14. Who is responsible for getting kids from kindergarten? *

Mark only one oval.

- Me
- My partner, husband or wife
- Both
- Other: _____

15. Who is responsible for meeting with the children's teacher? *

Mark only one oval.

- Me
- My partner, husband or wife
- Both
- Other: _____

16. In your family, which one earns the most? *

Mark only one oval.

- Me
- My partner, husband or wife
- Same

17. Who did take the majority of parental leave in your family? *

Mark only one oval.

- Me
- My partner, husband or wife
- Same

18. Does remote work contribute to greater diversity in the workplace, including gender diversity? *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

19. How do you perceive being physically present contribute to connecting with more given opportunities and potential influences of the workplace? *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Workplace

20. Do you like your workplace environment? *

Mark only one oval.

- Yes
- No
- Maybe

21. Are you satisfied with being in the workplace physically? *

Mark only one oval.

- Yes
- No
- Maybe

22. Who mostly are working from home after Covid-19? *

Mark only one oval.

- Me
- My partner, husband or wife
- Same
- No one

23. Do you see if women or men have more tendency to work from home? *

Mark only one oval.

- More women
- More men
- Same
- No one

24. How does social connection with others in the workplace influence your well-being? *

Mark only one oval.

Much worse

1

2

3

4

5

Much better

25. How do you perceive the physical availability in the workplace affected your concentration on work?

*

Mark only one oval.

Much worse

1

2

3

4

5

Much better

26. Do you have any idea to have a more productive workplace?

27. Your feedback for the survey

28. If you want to be notified about future results from the research, please enter an e-mail address that we can contact
-

7.2 Interview Questions

- 1- Could you present yourself and your position and how many years have you worked at NCC?
- 2- What is your idea about co-location and its importance in the proceed of projects?
- 3- What is the importance of co-location and physical presence at the workplace? In which part of your job, having co-location is necessary?
- 4- How has the pandemic impacted your perceptions of co-location and remote work?
- 5- How many days a week do you work from home? why do you prefer to work from home? or the office? What is your commuting time to the office?
- 6- Could you please tell me how the transition from co-located work to remote work has affected your productivity? Have you noticed any differences in your ability to focus or complete tasks? Does the productivity the same or different?
- 7- What has been the impact of working remotely on your work-life balance? In your experience, have you found it easier or more challenging to maintain a separation between your work and your home lives?
- 8- Are you satisfied with your work-life balance? Does the company culture help you to have a balance between work and life?
- 9- Could you have the concentration to focus on your job in the office?
- 10- Who is the family manager in your home? Do you have kids? Who got more parental leave? Who is responsible for taking and picking up kids from kindergarten? Who is responsible for meeting teachers?
- 11- Which one prefers to work from home? you or your partner or wife? What's the reason? What's the benefit of working from home?
- 12- In your office, what's the rate of women compared to men? Is your office male-dominated or not?
- 13- In your experience, have you noticed any differences between how men and women are able to adapt to remote work?
- 14- do you feel that which gender is more likely to struggle with work-life balance while working remotely? Women or men?
- 15- As you mentioned that more women tend to work from home, does this type of working remotely increase gender inequality in the workplace?
- 16- Which group has more chance of getting a job promotion? onsite people or online ones? Why?
- 17- Have you enjoyed working in the office? Which characteristics of your office have that you are satisfied with?
- 18- What do you think about the next new normal office in the future? What changes do you think will be necessary to create a more equitable and balanced workplace?
- 19- What will happen in future workplaces if employees mostly work from home?

- 20- In your opinion, what is the most significant barrier to achieving gender equality in the workplace, and how can it be addressed?
- 21- What advice would you give to companies looking to create a more balanced and equitable workplace in the post-pandemic era?
- 22- How can companies be attractive enough to absorb the new generation?

DEPARTMENT OF Architecture and Civil
Engineering
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