

**The impact of remote work on collaboration and knowledge sharing among
workers**

Student number: 21819484

A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

Abstract

The adoption of remote work increased since the COVID-19 pandemic, with many organisations not prepared for the shift. The growing interest for organisations to sustain remote work policies called for an understanding of the impact on collaboration and knowledge sharing. The study aimed to understand the influence remote work has on collaboration and knowledge sharing by investigating the relational-social factors that provides a social presence for collaborators online. A qualitative study based on 14 semi-structured interviews was conducted with majority of individuals from the financial services industry in Johannesburg, South Africa. The findings of the study revealed that the shift to remote work brought benefits as well as challenges for collaborators, people that formed relationships and had a history of working together before remote work, collaborated better than those without. Individual with no history of working with member in the team (new joiners) struggled to build relationships, thus feeling isolated. The research contributes to the body of knowledge by developing a conceptual model that aim to aid other researcher interested in relational-social factor to improve virtual collaboration. The research provides a contribution towards improving social presence to achieve successful collaboration and knowledge sharing.

Keywords: Remote work, virtual collaboration, knowledge sharing, social capital, interpersonal ties, social factors

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Nonkululeko Eufrazier Maphakela

01 November 2022

Contents

Chapter 1: Introduction to research problem	1
1.1 Introduction and description of the problem	1
1.2 Research purpose.....	2
1.3 The rationale for the research	3
1.4 Benefits of the research	4
1.5 Scope of the research	4
1.6 Research report structure	5
Chapter 2: Theory and literature review	6
2.1 Introduction	6
2.2 Definition of research variables	6
2.3 Theoretical perspective	7
2.3.1 Weak tie theory	7
2.3.2 Structural hole theory.....	8
2.3.3 Social capital theory	10
2.4 Remote work.....	11
2.5 Virtual collaboration	13
2.5.1 Interpersonal ties	14
2.5.2 Social structures	17
2.6 Knowledge sharing	19
2.6.1 Trust.....	19
2.6.2 Reciprocity.....	20
2.6.3 Identification.....	21
2.7 Conceptual model based on literature.....	22

2.8 Conclusion	24
Chapter 3: Research questions	25
3.1 Research question 1: How does remote work affect collaborative networks and social interaction?	25
3.2 Research question 2: How do social factors contribute to the relationships within collaboration teams working remotely?	25
3.3 Research question 3: How do social networks contribute to knowledge sharing in teams working remotely?	25
Chapter 4: Research methodology	26
4.1 Introduction	26
4.2 Choice of methodology	26
4.2.1 Philosophy	26
4.2.2 Approach	27
4.2.3 Methodological choices	27
4.2.4 Strategy	27
4.2.5 Time horizon	28
4.3 Research design	28
4.3.1 Population	28
4.3.2 Unit of analysis	29
4.3.3 Sampling method, criteria, and size	29
4.3.4 Data collection tool	30
4.3.5 Data collection process	32
4.3.6 Analysis approach	33
4.4 Quality controls	36
4.4.1 Data saturation	36
4.5 Limitations	37

4.5.1 Researcher bias.....	37
4.5.2 Subject bias	38
4.5.3 Geographic bias.....	38
4.6 Conclusion	38
Chapter 5: Research results.....	39
5.1 Introduction	39
5.2 Sample description	39
5.3 Analysis of results	41
5.4 Results for research question 1	43
5.4.1 Quality of collaborative networks	45
5.4.2 Summary of research question 1	60
5.5 Results for research question 2	60
5.5.1 Social factors on collaboration.....	62
5.5.2 Social structures	71
5.5.3 Summary for research question 2.....	74
5.6 Results for research question 3	74
5.6.1 Relational factors on knowledge sharing	75
5.6.2 Trust on knowledge sharing.....	76
5.6.3 Norms of reciprocity	78
5.6.4 Social belonging.....	80
5.7 Summary of research question 3	82
5.8 Conclusion	83
Chapter 6: Discussion of results.....	84
6.1 Introduction	84

6.2 Discussion of results for research question 1	84
6.2.1 Quality of collaborative networks	85
6.3 Discussion of results for research question 2.....	88
6.3.1 Social factors on collaboration.....	89
6.3.2 Social structures	91
6.4 Discussion of results for research question 3.....	92
6.4.1 Relational factors in knowledge-sharing	93
6.5 Conclusion	95
Chapter 7: Conclusion and recommendations.....	97
7.1 Introduction	97
7.2 Principal findings.....	97
7.3 Recommendations	99
7.4 Manager implication.....	100
7.5 Study limitations.....	101
7.5.1 Scope	101
7.5.2 Subject bias	101
7.5.3 Researcher bias.....	101
7.5.4 Geographic bias.....	101
7.5.5 Suggestions for future research	102
7.6 Conclusion	102
References	103
Appendix 1: Consistency matrix.....	118
Appendix 2: Invitation to participate in research study	120
Appendix 3: Interview guide.....	121

Appendix 4: Ethical clearance	123
Appendix 5: Thematic analysis	124
Appendix 6: Editor's additional support declaration	126

Table of Figures

Figure 1: Conceptual model of social factors that build social organisational social capital.....	23
Figure 2: Coding saturation	37
Figure 3: Overview of research question 1 results.....	44
Figure 4: Overview of research question 2 results.....	61
Figure 5: Overview of research question 3 results.....	75
Figure 6: Structural hole network diagram.....	88
Figure 7: Proposed conceptual model on social factors that build organisational social capital.....	98

List of Tables

Table 1: Mapping of research questions and interview questions	31
Table 2: Six step process for thematic analysis.....	35
Table 3: Interviewees profile from the sample	40
Table 4: Code frequencies	41
Table 5: Mapping of themes and codes to research questions.....	42
Table 6: Research question 1 theme mapping	44
Table 7: Research question 2 theme mapping	62
Table 8: Research question 3 theme mapping	75

Chapter 1: Introduction to research problem

1.1 Introduction and description of the problem

In today's world, collaboration no longer happens within defined organisational boundaries. However, it happens between distant individuals, teams, and organisational structures, creating dynamic teams with diverse individuals from within and outside the organisation (Chen & McDonald, 2015). Factors such as trust, communication, shared understanding between team members, group norms, and members' sense of belonging facilitate collaboration and knowledge sharing (O'leary et al., 2020). Any changes that affect collaboration patterns also affect knowledge sharing among teams (Chen & McDonald, 2015).

In the early months of 2020, the World Health Organization (WHO) publicly declared the COVID-19 outbreak a world-wide pandemic (World Health Organization, 2020). The declaration meant that governments across the world had to activate a state of emergency plan, which led to businesses arranging for employees to work from home to limit social interactions (Bell, 2021).

Before COVID-19 was declared a pandemic, there were organisations that already had implemented remote work policies. It was reported that in countries like America, only 5% of employees were remote workers, and in the European Union, 3.2% of employees were remote workers (Sostero et al., 2020). In a survey by Michael Page for South Africa, 26% of the participants reported working remotely (MichaelPage, n.d.). While not many organisations implemented remote work policies before the pandemic, most businesses were forced to accelerate the move away from the office with insufficient experience and understanding of working from home and its challenges. During the pandemic, more than a third of European workers and half of workers in America were in remote work arrangements (Barrero et al., 2021).

Like most organisations during the pandemic, Microsoft enacted the remote work policy for the organisation to limit social interactions. In a study conducted in the United States (US) on Microsoft employees, the findings indicated that the move to remote work had a negative effect on team collaboration and communication by creating silos and static

teams (Yang et al., 2022). The silos resulted in teams that needed to collaborate having fewer connections and, thus, bridges formed across the business. In addition, remote teams preferred using asynchronous communication compared to synchronous, which impacted knowledge sharing (Yang et al., 2022).

Another study done by VitalSmarts, a pioneer in business development, revealed that working from home negatively impacted one of their key performance indicators: communication (Christiansen, 2021). The study found that more and more people avoided communicating their concerns with colleagues and managers than they would if they were in person. This type of resistance to speaking has created unresolved issues that are harmful to the employee and the organisation's performance (Christiansen, 2021). Poor communication hinders the effectiveness of collaboration (Abdeen et al., 2021).

The pandemic gave impetus to remote work, with some organisations planning to continue work from home practices for the foreseeable future. CEOs like Mark Zuckerberg (Facebook) and Jack Dorsey (Twitter) announced their long-term plans to increase their remote work initiatives (Johnson & Suskewicz, 2020). In South Africa, companies are increasingly implementing remote working and flexitime as shown in a survey by executive search firm Jack Hammer, where human resource directors from 28 large firms across various industries and non-government organisations said the strategy to retain employees is to look beyond financial incentives, with 54% of these firms offering remote work options (Writer, 2020).

1.2 Research purpose

The purpose of the study is to gain an understanding of how relational and social factors affect the collaboration process and knowledge sharing between individuals and teams in a remote work setting. Establishing the complexities around collaboration and the exchange of information in a remote work setting can be used to better prepare organisations to manage such events and ensuring better collaborative performance through periods of difficulty (such as a pandemic). Lee and Hung (2022) stated that collaborative efforts positively and significantly affect performance.

The objectives of the research were, therefore, to:

1. Gain an understanding of the quality of collaboration for remote teams
2. Determine the influence of social and relational factors on collaboration for virtual teams
3. Determine the influence of social dimensions on knowledge sharing

It was anticipated that the research questions discussed in Chapter 3 would provide a comprehensive view of the impact of remote work in the context of the study, that will move organisations towards sustainable remote work practices.

The context of the study focused on employees working from home on a full-time basis or who have transitioned from full-time to part-time working from home in South Africa. The focus of the Microsoft study was on the US, where the data and the findings are specific to the US.

1.3 The rationale for the research

Yang et al. (2022) highlighted the challenges of collaboration and knowledge sharing for employees working from home. Ferreira et al. (2021) found that collaboration improvement is a driving force for remote work, however, communication and knowledge sharing is a disadvantage of remote work. Manca (2022) found that most organisations are promoting collaboration between individuals and within their teams, however, the effort is often unsuccessful due to tensions that arise during interactions. Tensions are caused by a lack of strong ties among collaborators and the reduced co-location impact on the creation of ties with co-workers (Manca, 2021). This highlights the need to understand collaboration challenges faced by organisations in South Africa.

Given the growing interest and the long-term plans to sustain remote work by some organisations, it is evident that organisations are interested in the concept of remote work and, as such, are implementing work-from-home policies without sufficient organisational experience and understanding of some of its difficulties. The growing interest in remote work in South Africa provides a gap and an opportunity to study the challenges experienced by workers specific to the country.

Most of the literature identified originated from developed countries, mainly in the continents of North America and Europe. Differences in work-from-home infrastructure, home-office environments, and working culture are most likely to lead to different results between developed and developing countries. Moreover, as the majority of studies were conducted after the advent of COVID-19, “enforced remote working” due to lockdowns likely resulted in different impacts for individuals and teams than “voluntary remote working” due to naturally occurring organisational factors (Waizenegger et al., 2020).

The researcher has not found a study that has explored collaboration and knowledge sharing on interpersonal relationships and social networks in the context of South Africa. The study would add to the existing body of knowledge on managing effective collaboration and knowledge sharing for remote workers. The findings may be of interest to organisations that are planning to continue with remote work for the foreseeable future.

1.4 Benefits of the research

The study contributes to the body of knowledge on remote work, virtual collaboration, knowledge management, and human resources by studying how social and relational factors contributed to the constructs of the study. In addition, the study can equip practitioners and organisations to gain a better understanding of how to improve and manage virtual collaborations to ensure better outcomes on team collaboration and knowledge sharing by promoting social interactions in virtual teams for both established members and new members joining the team.

1.5 Scope of the research

The research did not aim to study collaboration outside the context of remote work or other factors such as antecedents that may influence collaboration and knowledge sharing but focused on the relational-social factors that members possess that can benefit the exchange of information among members in a team.

Different theories, namely weak tie theory, structural hole theory, and social capital theory were explored and applied in the study to identify the strength of ties and gaps

among virtual team members caused by relational and social factors which may influence collaboration and the sharing of knowledge among virtual members.

1.6 Research report structure

To provide an understanding of the impact remote work has on collaboration and knowledge sharing, the rest of the document is organised as follows:

Chapter 2: The literature review provides key concepts of the study and the supporting theories. In addition, the section includes the questions that will aid in getting the answers to the research questions.

Chapter 3: The research questions detail the three main questions that will assist in answering the objectives of the study which are aligned to the research problem.

Chapter 4: The research methodology explains the proposed method for the study, the research instrument to be used, the sample and size, and the quality to be applied to maintain the validity and reliability of the study.

Chapter 5: The results explain the findings of the research in detail. The findings will be aligned with the research questions.

Chapter 6: Discussion of the results organises the results in terms of the research questions and the literature review.

Chapter 7: Conclusions and recommendations will highlight the main findings of the study, combining the results with the literature into a conclusion that answers the research questions. In addition, study limitations and future research opportunities will be stated.

Chapter 2: Theory and literature review

2.1 Introduction

The purpose of the literature review is to provide a comprehensive context of the current knowledge study, what is known about the subject, the strength and weaknesses of the study, to identify gaps in the research, synthesise and gain a new perspective, and discover how findings might be related and practised. Additionally, it identifies theories used in the research study. This literature review aims to determine what has been learned in the existing body of knowledge about remote work, collaboration and knowledge sharing, and add this study to the ongoing discussion.

2.2 Definition of research variables

Remote working is a process that enables workers to perform their work-related activities from a distance (Mohamed et al., 2018). Given that employees working remotely have the flexibility to work from any location at any time and are distanced from their leaders and managers, they are managed and evaluated differently compared to office-bound employees (Mohamed et al., 2018). Remote work exists in many forms; some refer to it as teleworking, hot-desking, collaborative offices, and mobile remote workers. All these forms are implemented and used differently, and slight variations exist in their definitions. Four elements are required to implement remote work successfully: policies and processes, people, and the technology (Mohamed et al., 2018). In their study, Ferreira et al. (2021) found improved collaboration as a driver for remote work and knowledge sharing as a negative effect.

Collaboration is used across various disciplines to describe determinants, the processes, and the outcomes for the organisation. Virtual collaboration is when two or more people engage in activities with a common purpose of achieving a set of goals through technology that enables interaction without the need for in-person interaction (Bedwell et al., 2012). Collaboration between group members enables the necessary interactive behaviours that facilitate task performance and predicts positive outcomes such as team connectedness and relatedness individuals within the group (Tonelli et al., 2018).

People share knowledge through face-to-face interaction about their ideas, work related activities, or experience for others to learn and use in the future. Knowledge sharing improves tacit knowledge. In today's knowledge-based economy, organisations strive to build their knowledge hub to either create new knowledge or improve at exploiting existing information (Christensen, 2007; Matsuo & Easterby-Smith, 2008). Knowledge sharing has been associated with improved business performance (Farooq, 2018).

2.3 Theoretical perspective

This section discusses the theoretical foundations underpinning the study into the influence of remote working on worker collaboration and knowledge sharing. From the literature reviewed and when looking at similar studies such as Yang et al. (2022), the following three theories were identified as relevant: weak tie theory, structural hole theory, and social capital theory. These are therefore discussed in this section, focusing on their main arguments as well as their implications on worker collaboration and knowledge sharing.

2.3.1 Weak tie theory

Granovetter's (1983) weak tie theory is based on the foundation of the strength of weak ties, which discusses how information flows across social networks. He distinguished between strong, weak, and absent interpersonal ties, with strong ties being found in small groups of people who are close such as friends and kin. Relationships that have a strong bond are important as they create a strong sense of community, however, can be limiting because they produce very similar groupings, making them less inclined than those with weak ties to offer news concepts and perspectives in their communities (Wigmore, 2017).

According to Granovetter (2005), people who are close friends typically spend time in the same social circles, so a lot of the information they learn coincides with what others in the same circle already know. Conversely, acquaintances have access to information that people in the same circle do not because they are acquainted with other individuals. Networks with strong ties tend to self-limit with information due to its homogenous nature, which is seen as a weakness (Hu et al., 2019). A larger social network with more

weak relationships, however, is more likely to counterbalance that tendency and encourage critical thinking (Hu et al., 2019). As a result, weak ties are considered more effective at delivering novel information to individuals than strong ones (Kahne & Bowyer, 2018; Michelfelder & Kratzer, 2013).

While initially developed to explain communication within social networks, weak tie theory has also been applied to collaboration within workspaces. An example of a group having strong ties inside an organisation could be a division or a collaboration team. According to weak tie theory, encouraging intergroup collaboration and engagement will likely increase the generation of new ideas and information flow while encouraging creativity (Lin et al., 2021). The generation of ideas increases and evolves as individuals exchange the idea leading to continuous evolution of the idea (Keucheni et al., 2021);

In addition to other possibilities, the encouragement of weak ties formation may lead to a variety of benefits such as increased productivity, cost-saving strategies, revenue-generating opportunities, and product development breakthroughs (Michelfelder & Kratzer, 2013). In the context of virtual working, Katzy et al. (2011) noted that network dynamics can be found in weak ties whereby virtuality and flexibility of networks can be expressed, hence, making strong ties less important. For this study, the implication of the weak tie theory can be the extent to which the perceived strength of ties between team members in collaboration networks affects their degree of collaboration and knowledge sharing and how this is impacted by remote working.

2.3.2 Structural hole theory

According to Lin et al., (2021) structural hole theory explains ways of taking advantage of social network competition and their intersecting links. COVID-19 accelerated the adoption of remote work, forcing organisations to implement technologies that enable employees to connect and form networks for collaboration virtually (Dubey & Tripathi, 2020). Through the lens of structural hole theory, a structural hole exists within a social network where there is a lack of connection between individuals or groups of people. The holes are because of a weak or lack of connections among individuals in their social networks (Lin et al., 2021). This theory explains how to benefit from social networks and

their intersecting relationship. Having links to diverse groups of people on a social network strengthens one's social capital, which can be valuable in competitive fields. Networks with mostly same-minded people are not as beneficial in this regard (Lin et al., 2022).

As a result, a network that bridges structural holes will bring network advantages that are somewhat additive rather than duplicative. Networks with many structural holes are a type of social capital as they provide advantages for knowledge sharing (Ghaffar & Hurley, 2020). According to Yang et al. (2022), structural hole theory presents opportunities for how both individuals and organisations can benefit from communication networks by taking advantage of “structural holes”. The key participant known as a structural spanner in a network that fills in structural gaps can obtain data from a variety of sources and clusters (Lin et al., 2021). This is because they are less prone to becoming completely entangled within the network, cutting them off from people and ideas outside of it. That person is more likely to serve as a bridge and link to non-redundant information from other networks since they operate on the network's edge (Lin et al., 2021). As a result, by serving as a "broker" of information between two clusters that would not have otherwise come into touch, such a player can mobilise social capital by opening up access to fresh perspectives, possibilities, and ideas (Lin et al., 2021).

The structural hole theory has been applied to multiple disciplines such as business management to improve collaboration and performance in networks with structural holes (Saglietto et al., 2020). In their study, Gao et al. (2013) found that individuals in organisations seek collaboration with others based on their network information, that is the type of connections they have or the existence of shared connections. A participant in a network with many structural holes can benefit an organisation by offering fresh perspectives and possibilities and that individual's career development and advancement are subsequently aided by this (Lin et al., 2021).

A study conducted by Burt (2004) discovered that managers who often communicated problems with other groups received greater benefits from work such as pay, more favourable work evaluations, and were more likely to be promoted. In another study, Ghaffar et al. (2018) found that a weak tie framework can be used as a link prediction

problem within collaboration networks to increase the effectiveness of groups. By investigating if remote work has led to the creation of additional structural holes within workplaces, the implications of structural hole theory for this study can be established. Considering the theory, it will be imperative for organisations to identify “structural holes” within their communication networks that threaten effective collaboration, leading to the installation of individuals with the ability to bridge between networks and plug the structural holes.

2.3.3 Social capital theory

Social capital is generally defined as the benefits that an individual(s) or communities get from their social connections (Gelderblom, 2018). Through social features such as interpersonal interactions, trust, shared norms, values, collaboration, and reciprocity, social capital entails the efficient functioning of the social groupings (Machalek & Martin, 2015).

According to Chae et al. (2019), during collaborations, knowledge sharing increases individuals’ social capital through utilising their ties. Interpersonal relationships that exist among individuals form part of the social capital theory (Chiu et al., 2006). The theory asserts that the network of relationships that individuals hold can influence knowledge sharing in collaboration networks (Nahapiet & Ghoshal, 2009). Social capital theory is about exploiting resources found in social structures and social exchange activities (Han et al., 2020). The theory consists of three concepts: structural, cognitive, and relational. Collaboration and knowledge sharing will be explained through the lens of structural and relational dimensions (Chiu et al., 2006).

The structural dimensions of social capital explain the ties or connections amongst members in a network and the configuration of the network (Chiu et al., 2006). Meanwhile, shared meanings, representations, and interpretations that people or groups of people have with one another are the emphasis of the cognitive dimension. The relational dimension describes the personal connections that individuals have to one another. The relational dimension influences the sharing of information among individuals. The willingness to share information is greater when individuals trust and relate with others (Chiu et al., 2006).

Social capital can be used to explain multiple disciplines such as higher management performance, the evolution of groups or communities, and the importance of strategic partnerships (Moran, 2005). A study by Stam et al. (2014) found that in addition to weak ties and structural holes, social capital was associated with increased organisational performance. While consolidating literature on the subject of organisational social capital, Walumbwa and Christensen (2013) found that organisational outcomes influenced by social capital include stimulation of the combination and exchange of intellectual capital, improved communication, increased likelihood of organisational survival, and inter-firm learning. Moreover, a powerful strategy for promoting the well-being and growth of both individuals and organisations is the creation and maintenance of the social capital (Walumbwa & Christensen, 2013). In this study, an understanding of the social capital theory implicates the identification of social capital limitations and how such limitations can be curbed to enhance organisational social capital for better network collaboration.

2.4 Remote work

Remote work entails work performed anywhere outside organisational confined spaces and anytime using technology that enables remote work practices (Vander Elst et al., 2017). In this study, space refers to a work location other than the remote worker's dedicated physical place of employment. Given that the study will be conducted during the transition period from the pandemic, the meaning of location is limited to home but not the client's offices. The second attribute of remote work is the time which refers to remote workers' flexible work hours, which is unusual to regular office hours.

The concept of remote work was first introduced in the early 1960s when telecommuting became accessible to employees working from home (Nilles, 1975). The concept was used to identify employees working remotely who used the technology tools to communicate with their co-workers. Remote work has since been used among teleworkers; in the US, the concept was popularly used to reduce traffic on the road and reserve some space at their place of work. In the early 2000s, Belovics and Kirk (2006) came up with the term "e-workers", which can be defined as dedicated remote workers using mainly electronics for communication with minimal face-to-face exchanges with

their colleagues. Since then, the remote work concept has continued to evolve, with many organisations adopting the idea.

In times of crisis, remote work is a crucial source of organisational and economic resilience (Hite & McDonald, 2020). Studies have shown that working remotely has many advantages that work to the organisation's benefit. Many researchers have advocated for remote work policies citing the many benefits such as, but not limited to, increased productivity, the use of new technologies, skill development, increased autonomy, location flexibility that reduces the costs of relocation, and provides home and work balance (Felstead & Henseke, 2017). Additionally, in some studies, remote working has also been empirically associated with improved psychological well-being and work-life integration (Mostafa, 2021) and productivity improvements (Galanti et al., 2021; Hafermalz & Riemer, 2021). As noted by Mostafa (2021), working remotely gives many employees a better work-home balance as they have greater control over working hours, number of breaks, and time with loved ones.

Although the literature has highlighted the benefits of remote work, challenges associated with it have also been stated. Some of these challenges include dealing with uncertainty, boundary-setting related to work time, culture and mindset shift from office-based to remote work, balancing between everyday related work with creativity, how lack of face-to-face interaction may result in reduced stimulation in the long-term which may hinder work progress, isolation, ineffective communication, and stalling work (Chafi et al., 2022; de Vries et al., 2019; Wang et al., 2021). When virtual team members experience such challenges it becomes difficult to create and maintain a sense of social connection within the team (Hafermalz & Riemer, 2021). To support the challenges experienced by remote workers, in his study, Sjølie et al. (2022) found that students struggled to collaborate online and preferred face-to-face collaboration as it provided more personal interactions and overall rich social presence. Morrison-Smith and Ruiz (2020) further added that technology in virtual teams can be used to foster collaboration and bring the team together, and where members are experiencing low levels of motivation and feeling isolated, technology can be used for support for visual observation.

One of the most important impacts of remote work is the lack of opportunity to build social networks and relationships at work or in business (Yang et al., 2022). During the shift to remote work during the COVID-19 period, virtual teams faced several challenges that hindered the success of collaboration; the collaboration networks became more isolated and static, teams defaulted to asynchronous communication and there was a reduction in synchronous communication (Yang et al., 2022). Even studies conducted before the pandemic such as one by van der Lippe and Lippényi (2019) found that while remote working may be beneficial for individual employees, team performance becomes worse when more co-workers are working remotely. Individuals who have a strong connection easily facilitate the sharing of information, trust, cooperation, and effort to ensure the new exchange of knowledge is understood and efficiently used (Yang et al., 2022).

2.5 Virtual collaboration

During the pandemic, many organisations transitioned from being office-based to working remotely. The transition prompted organisations to implement virtual collaboration using information and communication technology to ensure employees can work efficiently (Dubey & Tripathi, 2020). To better understand the collaboration between members of a team, this section will discuss the required social attributes that yield collaboration benefits.

Virtual collaboration allows individuals to work together using information and communication technology (Morrison-Smith & Ruiz, 2020). Similarly to co-located teams, virtual collaborations use real-time and non-real-time communication and tasks to accomplish a common goal (Morrison-Smith & Ruiz, 2020). The team can engage in collaboration using various mediums of communication, such as, email, audio and video real time meeting tools like MS Teams and Zoom, and other platforms that enable collaboration (Pauleen & Yoong, 2001; Zhou, 2022).

Zhou (2022) argued that by making the appropriate changes in their virtual collaboration processes, firms may improve corporate culture, create new competencies in their staff, and recreate value. Updated work performance monitoring processes are important for enhancing virtual collaboration, motivating workers, and improving individual and team

performance (Wang et al., 2021; Zhou, 2022). For management monitoring performance, Zhou (2022) argued that supervisors should trust their subordinates to manage their own time, performance monitoring can be decentralised, and communication should be open to ensure task clarity.

Equally important is the maintenance of team cohesion during instances of remote working. To build positive team relationships virtually, empathy toward team members helps understand what they are going through, virtual team leaders should encourage all members to participate, and there is a need to maintain team trust between members (Chafi et al., 2022; Zhou, 2022). O’Leary et al. (2020) identified relational and social contributing factors that describe the relationships between collaborators. Social factors refer to an individual's behaviours, perceptions, and knowledge. The relational social contributing factors are concerned with the quality of the relationships within the collaboration team. The success of the collaboration team hinges on various contributing factors such as Interpersonal ties and social structures (O’leary et al., 2020).

2.5.1 Interpersonal ties

Interpersonal ties refer to factors that enable collaborating members to share information. There are four sub-factors that define the interpersonal ties between team individuals: Interpersonal relationship, trust, communication within the team, and existing work history between collaboration members. The interpersonal relationship allows team members to build knowledge through team interaction (O’leary et al., 2020).

2.5.1.1 Interpersonal relationships between team individuals

Personal relationships between members on a team in a virtual collaboration is important to enable effective ways of working. Relational material such as time differences, distance between members, and culture in virtual teams can make it difficult to forge relationships, which can have an influence on team operations, collaboration, and performance (O’leary et al., 2020; Pauleen & Yoong, 2001). Building and maintaining relationships can be advantageous in many ways to individuals within a

collaboration team, it can remedy the barriers preventing collaboration allowing the team to work together in harmony to complete tasks (Hafermalz & Riemer, 2021).

Forming personal relationships in a team is seen as necessary because it enhances individual commitment and trust which can minimise collaboration challenges while increasing good behaviours necessary for collaboration (Hafermalz & Riemer, 2021). Members who have strong interpersonal relationships in a collaboration team perform better and are effective in collaborating with others. Interpersonal relations also boost team morale, motivation and communication is improved because of better working relationships (Pauleen & Yoong, 2001).

2.5.1.2 Trust

Trust is the confidence that other members within the collaborative team are competent and reliable (O'leary et al., 2020). Trust is the fundamental bond in collaboration and what makes virtual teams succeed. When there is high trust among team members, collaboration is effective and virtual team performance increases (Gardner et al., 2020).

Establishing trust amongst online team members can be difficult to achieve, one of the reasons being there are fewer nonverbal cues that are available for teams working face-to-face (Gardner et al., 2020). For virtual team members to collaborate well, they need to be acquainted, trust one another, respect each other, and have confidence in each other's competence (Chang et al., 2011). Allowing team members to occasionally meet in person or virtually affords them the opportunity to understand each other's perspectives, exchange ideas, and maintenance of proper accountability and responsibility channels are all crucial for building trust between teams collaborating virtually (Hafermalz & Riemer, 2021).

Trust involves two dimensions: cognitive trust and emotional trust. Cognitive trust is driven by organisational culture and emotional trust is driven by affection, interpersonal relationships, sentimental ties, and communication, and builds stronger affective links (Lievens & De Corte, 2008).

In their investigation of virtual teams, Langlinais et al. (2022) found that interpersonal communication positively affects employees' trust, mostly through the development of

interpersonal relations, a sense of belonging, and a level of involvement. Interpersonal communication has a greater impact at the formation of a team and varies depending on the experience and seniority of the team members. Early trust development in virtual teams is important as members get to understand how they can relate with one another and after the beginning phase member focus switches to task-oriented activities and assessing each other's behaviours (Gardner et al., 2020).

2.5.1.3 Communication

Communication identifies members' engaging patterns and their ability to be involved in their networks (Ghahtarani et al., 2020). It is key among collaborating members as those who communicate often are perceived as adding more value to the group (Bock et al., 2015). Communication among team members can take place using various information and communication tools. During the COVID-19 period, in the absence of face-to-face communication, there has been an increase in the use of communication tools such as Zoom and MS Teams (Mitchell, 2021). Increasing virtual communication, however, comes with a number of new challenges for communication effectiveness that virtual teams need to overcome for better team performance (Mitchell, 2021). In their study, Whillans et al. (2021) found that the use of asynchronous digital tools such as email and text made collaborative interactions more challenging, and members of the team were unable to align with one another to come up with an integrated solution. These findings are consistent with the research study conducted by Yang et al. (2022), who found that employees defaulted to asynchronous communication when remote working. Exploring the use of rich medium communication tools that are video enabled such as WebEx, allowed the team to collaborate better as it has the same cues as face-to-face interactions (Whillans et al., 2021).

Effective communication among team members is vital to the success of a virtual collaboration. When team members can establish and maintain their personal relationships, communication becomes more successful (Pauleen & Yoong, 2001). In their article, Ferrell and Kline (2018) argued that high levels of trust between team members are often the precursor to effective communication, meaning that communication between team members gets better as teams build better and better trust.

2.5.1.4 Prior history of working together

Prior history of working together contributes to a shared understanding and building relationships and a routine during collaboration (O’leary et al., 2020; Windeler et al., 2015). Where team members have previously collaborated within a physical working environment, virtual collaboration becomes relatively easier as members already understand each other’s routines, challenges, and motivations (Windeler et al., 2015). According to Nurmi (2011), it can be challenging for virtual members to develop a shared understanding because of the lack of verbal cues, communication is delayed and the quality of the messages is often perceived as poor.

Where team members have no history of working together, early trust development becomes crucial to facilitate collaboration. In the absence of established working relationships, members may form their own perceptions about one another, which may help them foster a relationship (Cummings & Dennis, 2018). However, according to Barlow and Dennis (2016), members who are not familiar with one another may struggle to build relationships and routines, which in turn will affect communication between the individuals, and potentially cause conflicts in the group. In their article, Maynard et al. (2019) argued that virtual team members who have worked together previously are likely to collaborate better and integrate diverse information which will lead to better team performance. Members of the team are likely to share ideas and use the ideas of their fellow virtual members because they have reached high levels of being comfortable with one another, which minimises the fear of being subjected to or excluded (Maynard et al., 2019). In addition, their study confirmed that the presence of familiarity improved the effectiveness and viability of the team (Maynard et al., 2019).

2.5.2 Social structures

Social structures consist of social network norms maintained within a group (O’leary et al., 2020). Creating social networks within a group creates social comparisons (Altschuller & Benbunan-Fich, 2013) which has the potential to create positive actions from group members (Bhagwatwar et al., 2018). According to Kilcullen et al. (2021), norms are important to ensure group performance and are better established at the beginning of virtual team formation. In doing so, influencing behaviour, building trust,

and team interactions occur early on. Kilcullen et al. (2021) stated that when in-person teams suddenly move to virtual teams, it is easy for organisations to slip on standard best practices. Furthermore, Kilcullen et al. (2021) stated that norms are not a one-off implementation exercise, but need reinforcing and should be continually reviewed through practices and guidelines.

2.5.2.1 Social norms

Social norms are the informal guidelines that are accepted within a group that influences the social behaviour of members (Huang et al., 2019). The social norms within a team emerge gradually over time as a result of frequent interactions, participation, and exchanges. A study by Huang et al. (2019) discovered that the provision of emotional support is influenced by all three dimensions of social capital; however, companionship activities are made feasible by both relational and structural capital, and cognitive capital is the only one that can give informational support. Therefore, having social structures, in line with social capital theory, presents the basis for team members to have a shared understanding of issues as they collaborate with each other.

Virtual teams that have established explicit norms are successful, because norms influence behaviour (Makarius & Larson, 2017). In the absence of face-to-face interaction, social norms need to be more explicit, and social interactions such as etiquette, communication and frequency, cooperation, preference of technologies, and other interactional behaviours must be clear to all virtual members (Makarius & Larson, 2017). According to ten Brummelhuis et al. (2021), it is useful to create norms that promote availability among individuals in the team so as to allow communication efficiency and effectiveness, however, employees should be allowed to have the time to focus on work without interruptions. Maintaining a good balance between the technological tools and the norms affords individuals and colleagues to disconnect when they need to focus on work, this could help improve their productivity (ten Brummelhuis et al., 2021). In their study, Whillans et al. (2021) also confirmed that relaxing norms of communication in projects allows members to collaborate more organically, and allows them more personal autonomy over their work.

2.6 Knowledge sharing

Knowledge sharing is a central component of knowledge management. It plays a critical role in the attainment of organisational goals, It is a crucial activity in the organisational learning and in innovation (Ahmad, 2018). Also, knowledge sharing is found to enhance business performance, and if it is not managed correctly, it may lead to less competitiveness for the organisation (Farooq, 2018). Ahmad (2018) defined knowledge sharing as exchanging activity-related information, or knowledge to assist others, including collaborating with them to progress their daily tasks, solve problems and generate new ideas. For members to effectively engage in sharing ideas and build key core competencies, knowledge needs to constantly flow in the organisation and the team they belong to (Ferreira et al., 2020).

Knowledge can be classified into two types: tacit and explicit knowledge (Gamble, 2020), where tacit knowledge is difficult to transfer, and it is acquired through experience when employees work on issues, and explicit knowledge is a formal technical knowledge that is documented, it is easily communicated and can be shared through print, electronically or through other means (Ganguly et al., 2019). According to Smith (2001), the majority of the knowledge in an organisation is engrained and synthesised in people's minds and cannot be separable. Tacit knowledge is created through socialisation when people share their experiences (Borges et al., 2019).

The relational dimensions of social capital describe relational networks as interpersonal trust, reciprocity, and identification with others in a network. Individuals in a network are more willing to engage and interact with each other when trust is present between individuals (Chiu et al., 2006). Social capital has many benefits for teams to gain competitive advantages such as improved performance (Kim et al., 2013), knowledge sharing (Bhatti et al., 2021), intellectual capital (Allameh, 2018), and tacit knowledge sharing (Cai et al., 2020).

2.6.1 Trust

As a relational component of social capital, trust is the belief that others are reliable and will accomplish their responsibilities in the relationship (Han et al., 2020). When trust is

deeply embedded within the team, individuals are likely to participate in knowledge exchange (Han et al., 2020). Stronger trust within the team creates greater opportunities for team members to express their personal thoughts and feelings. In particular, trust fosters the development of a supportive emotional environment with enduring social and emotional resources (Chou & Pearson, 2012; Jahanshahi et al., 2020), thus improving the quality of conversation, communication, and the sharing of information (Lin & Joe, 2012).

According to Lee and Choi (2003), trust is directly linked to the notion of care, which accordingly is a crucial for building relationships that results in knowledge development. Team members who view their colleagues as trustworthy are more willing to act based on their deeds, and decisions as well as to go against convention or contractual duties (Ferres et al., 2004). There are many benefits associated to trust that an organisation can benefit from, particularly in terms of employee views, attitudes, behaviours, and improved performance (Delgado-Márquez et al., 2015).

For knowledge sharing to be more effective, reciprocal trust must be noticeable and colleagues must see that their efforts to share information are reciprocated and rewarded (Hejase, 2014). Some studies have tested the relationship between trust and knowledge sharing, and in their study, Hejase et al. (2014) found those team members who trust their colleagues have a better inclination toward knowledge sharing with others. Therefore, when trust is established, employees will not withhold knowledge from their colleagues (Xiao & Cooke, 2019).

2.6.2 Reciprocity

Reciprocity can be defined as the sharing of knowledge by members with the understanding that exchange is fair, and this can drive members of a team to share knowledge (Endres & Chowdhury, 2013). As a show of trust, individuals share information with others with the expectation that they will reciprocate. The outcome of reciprocity on knowledge sharing is driven by competence, positive team attitudes and team diversity (Endres & Chowdhury, 2013). The norm of reciprocity is high among ties that are perceived as having high value compared to those with a one-way direction communication (Ganguly et al., 2019). Gubbins and Dooley (2021) also add that norms

of reciprocity, solidarity, trust, and prohibition against self-serving behaviours tend to be greatest among close-knit groups and/or teams. This suggests that sufficient knowledge sharing for effective teams requires team members to socialise more and become closer together so trust can be built, and communication can flow more effectively.

According to Gubbins and Dooley (2021), reciprocity plays a significant role in influencing knowledge sharing. Therefore, a lack of knowledge reciprocity can result in a person's emotional reserves being depleted and is strongly linked to depersonalisation and an absence of personal achievement (Rose et al., 2010), which reduces social capital. Accordingly, people are motivated to contribute tacit knowledge when they believe their efforts will be recognised through reciprocations and guarantee continuous participation (Faraj & Wasko, 2005). Furthermore, as a component of social capital, reciprocity is rooted within interpersonal relations, it can create the perception that members are involved and help colleagues understand the information needed (Linton, 2000). In their study, Wu and Leung (2005), found that reciprocity results in an increase in social capital and can create network connections, which consequently results to significant team performance outcomes.

In their study, Ganguly et al. (2019) found that knowledge reciprocation highly contributes to tacit knowledge sharing, which is similar to prior studies. Tacit knowledge is not easily documented, it is affective and is rooted in people's ideas, emotions, and values the reciprocity perception will be realised in the knowledge sharing process (Gamble, 2020). Furthermore, Liou et al. (2016) and Serenko and Bontis (2016) also confirmed that knowledge exchanges between members drives the attitudes toward knowledge sharing, which is the core of social exchange theory.

2.6.3 Identification

Identification refers to individuals in the group seeing themselves as a unit in the team (Chiu et al., 2006). Social identification of individuals within a group influences the sharing of knowledge (Farooq, 2018; Gubbins & Dooley, 2021). According to Gubbins and Dooley (2021), social identification is the bond that exists between individuals, i.e., a sense of personal affiliation, proximity, or likeness to a group of people. By classifying employees into social groups and offering a heuristic for identifying and assigning traits

to others, organisational architecture encourages social identification. It is also understood that social identification promotes greater psychological safety, shared goals, mutual comprehension of rules and consequences, and enhanced trust (Gubbins & Dooley, 2021).

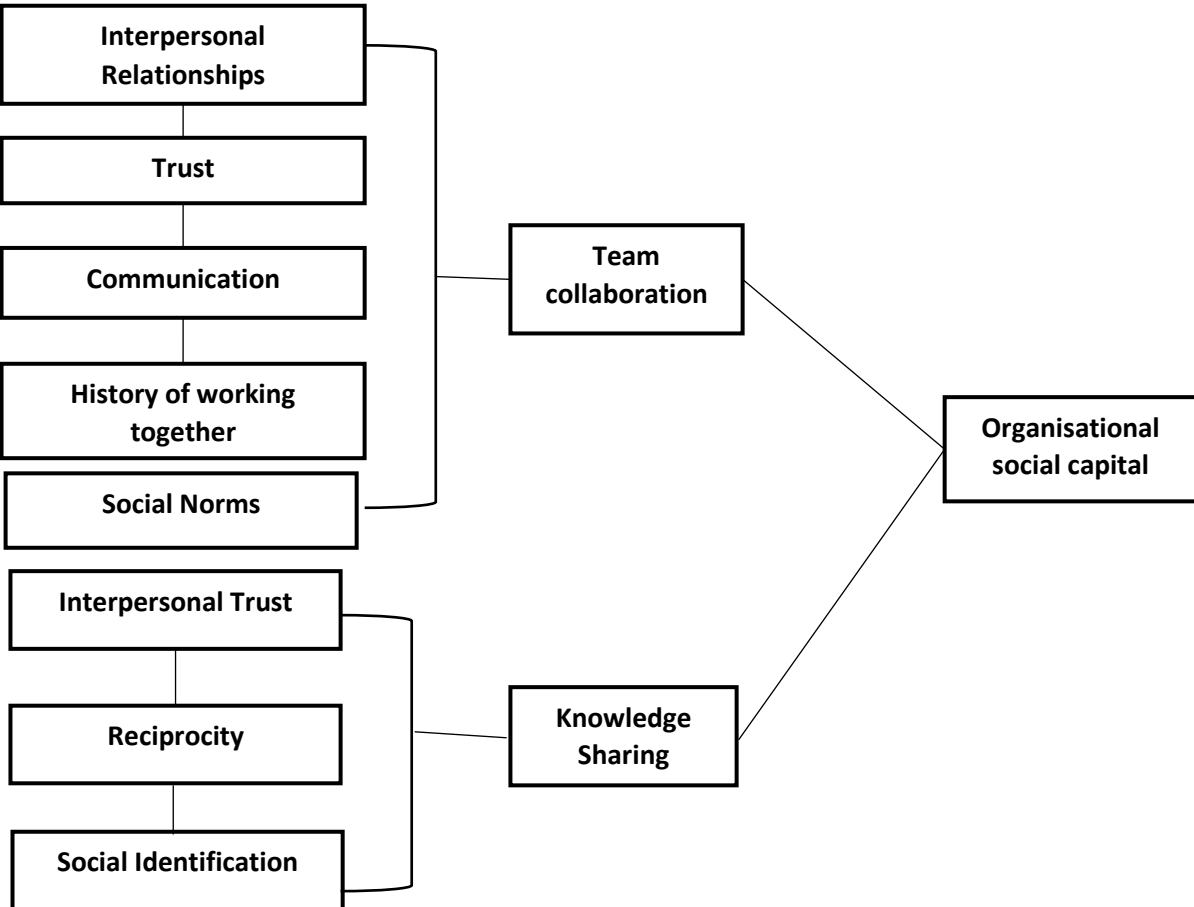
In their study, Stevens et al., (2019) argued that social identification is a type of commitment that influences participation, while Tohidinia and Mosakhani (2010) noted that it is a social influence that can be used to build team effectiveness, coherence, and increase loyalty. Similar studies showed that social identification influences user behaviour intention, which in turn affects user behaviour related to information sharing (Zhou, 2011; Wu & Sukoco, 2010).

Empirical studies have shown evidence that identification influences knowledge sharing, Ho et al. (2012) found that social identification and trust between team members significantly influences knowledge sharing within a team. In addition, Kim et al. (2020) found that social identification and the quality of knowledge sharing creates a connection between members based on the frequency of their interaction, relationship, and group task. Other studies also confirmed that the social identification of individuals within a group ultimately influences the sharing of knowledge (Farooq, 2018; Gubbins & Dooley, 2021).

2.7 Conceptual model based on literature

The review of theoretical literature as well as relevant empirical studies brought about a number of key lessons learnt regarding nuances of virtual team collaboration and knowledge sharing in the context of remote working. Given the number of challenges facing virtual teams that have discussed, for instance, several pre-conditions for establishing trust, togetherness, reciprocity, and social identification are necessary for better virtual team collaboration and knowledge sharing. Figure 1 shows the envisioned conceptual structure showing the key pre-conditions for better virtual teams' collaboration and knowledge sharing, including factors such as strength of ties and structural holes.

Figure 1: Conceptual model of social factors that build social organisational social capital



2.8 Conclusion

With many organisations shifting to remote working, the literature states the many benefits associated with remote work, not only for the organisation but also for individuals (Felstead & Henseke, 2017). However, there is an unintended impact of remote work that some organisations did not anticipate; collaboration among employees is negatively impacted, resulting in workers becoming more siloed in their networks, lack of awareness of co-workers' activity, low morale, and less stimulation (de Vries et al., 2018; Babapour Chafi et al., 2021).

The theoretical literature review established three key theories underpinning the study namely: weak tie theory, structural hole theory, and social capital theory. The weak tie theory is that individuals interact based on the strength of ties between their relationships, hence, implicating on the extent to which the perceived strength of ties between team members in collaboration networks affect their degree of collaboration and knowledge sharing. The structural hole theory posits that the lack of connection between individuals or groups of people negatively affects collaboration, thus, requiring individuals with the ability to bridge between networks and plug the structural holes to be included in teams. The social capital theory identifies networks of ties among individuals who live and work in a team, suggesting that virtual teams need to build greater social capital for them to collaborate more effectively.

Further empirical reviews established that key components of social factors that affect team collaborative relationships include interpersonal relationships, interpersonal trust, communication, member's history of working together, and social norms. On the other hand, knowledge sharing was found to be dependent on interpersonal trust, social identification, and reciprocity. An understanding of these relationships was then illustrated in the form of a conceptual structure for the study. The next chapter details and discusses the key research questions for the study.

Chapter 3: Research questions

The study intends to promote efficient collaboration and the sharing of knowledge between individuals and teamwork and, as a result, maximise team outcomes that provide a competitive edge for the organisation. The study will explore the following questions:

3.1 Research question 1: How does remote work affect collaborative networks and social interaction?

The challenges highlighted in the literature are associated with the difficulty to build effective collaborative networks and knowledge exchange environments. The challenges are attributed to a lack of strong ties within collaborative groups and the lack of social interaction when working remotely. The research found that collaboration networks became more siloed with minimal interaction during remote work (Yang et al., 2022). Drawing from individuals' experiences, the question seeks to understand if work practices within collaborative networks and social interactions have been impacted by the work-from-home policies.

3.2 Research question 2: How do social factors contribute to the relationships within collaboration teams working remotely?

Through relational social contributing factors, this question aims to understand the qualities of the relationships between members who collaborate while working remotely. The question will explore the interpersonal ties and social structures within members' collaboration networks.

3.3 Research question 3: How do social networks contribute to knowledge sharing in teams working remotely?

The aim of this question is to understand how relational dimensions of social capital contribute to knowledge sharing. The research question will help to understand how trust, shared norms, and identification with others influence the exchange of information within networks.

Chapter 4: Research methodology

4.1 Introduction

This chapter explains the methodology used to conduct this research study, it includes the theories, the philosophy upon which the study is based and the implications of the adopted methods (Saunders & Lewis, 2018). According to Saunders and Lewis (2018), methodology is the main factor used to evaluate the quality of the research. The details of the methodology options are discussed in a systematic order to answer the research questions in the study. Furthermore, this section discusses how credibility of the study was maintained to ensure quality that is valid, reliable, and trustworthy. This study adopted a qualitative and exploratory approach underpinned by the chosen methodology and design.

4.2 Choice of methodology

The purpose of the research design was to outline a plan that shows the strategies of inquiry that the study used to collect and analyse data in a logical way that answers the research question and objectives, including the reasoning for the selected data collection methods and analysis strategies (Saunders et al., 2019). The chosen design for the study included the philosophy, approach, methodological choices, and the strategy followed for the study. A qualitative exploratory study was deemed as the appropriate method to explore the challenges of remote work on collaboration and knowledge sharing among workers. According to Saunders et al. (2019), exploratory research is used to understand what is happening and get new information on the topic of study.

4.2.1 Philosophy

An interpretivism philosophy was followed as the intention of the study was to capture the depth and complexity of the constructs defined for the study through analysing the experiences of the participants. The approach is suitable to study social actors in their natural setting (Saunders & Lewis, 2018), and provides an understanding of the way social factors make sense of their reality (Farmer & Farmer, 2022).

The paradigm assumes that social reality is subjective and shaped by human experiences and their context (Bhattacharjee, 2012). Based on the above, this approach was deemed appropriate for the study as it allowed the researcher to understand the participants' experiences from their own perspectives and lived experiences in the context of remote work.

4.2.2 Approach

The study adopted induction as the approach, which is a technique used to make a factual conclusion based on evidence that is observed (Bhattacharjee, 2012). The theory in the study was derived from the codes, themes and patterns identified from the gathered data. Farmer and Farmer (2022) described inductive approach as suited for qualitative studies because it focuses on observing and collecting data without a need to define a hypothesis and theory that explains the phenomenon being studied by the researcher. Saunders and Lewis (2018) stated that the inductive approach is useful when the researcher is trying to understand the meaning that people attach to occurrences and that the emphasis is on understanding the research context. Based on the above, the inductive approach was deemed suitable as the study sought to understand the meaning that participants attach to their lived experience in their remote work environment.

4.2.3 Methodological choices

According to Saunders and Lewis (2018), a qualitative mono-method is a strategy that uses one method of data collection technique and analysis procedures. A qualitative mono-method strategy was used for the study, which included the use of data collected from the interviews.

4.2.4 Strategy

Given the intention of the study to understand the challenges faced by employees in remote working environments, a narrative inquiry as a strategy was deemed appropriate for the study. According to Saunders et al. (2019), a narrative inquiry is a strategy used to get individuals to tell stories from their personal account. The purpose of narrative strategy is to develop a deeper understanding of organisational experiences that are

closely connected to the experiences of their members. The study afforded interviewees the opportunity to tell their experiences on the constructs of remote work, collaboration, and knowledge sharing.

4.2.5 Time horizon

This was a cross-sectional study; the data was gathered over a short period of time and the views of the participants were based on a period in time. According to Saunders and Lewis (2018), a cross-sectional study is more suitable if the researcher wants to observe changes and development over a short period (Saunders & Lewis, 2018). Given the resources and time constraints, this approach was deemed appropriate. The investigation provided insights from the data collected over a brief period which is sufficient to address the research question.

4.3 Research design

4.3.1 Population

According to Saunders and Lewis (2018), a population is defined as “the complete set of group members”. The population identified for the study included individuals who are fully remote or are hybrid workers from various organisations. The individuals held positions ranging between senior manager, manager, team lead, staff, HR manager, and HR generalist. The population was made of remote workers based in Johannesburg, from across industries, namely information and communication technology, insurance, banking, telecoms, rail transport management, and wellness. The individuals were required to have experience in virtual collaboration and knowledge sharing. Full-time office-based employees were not considered for this study.

The intentional heterogeneity of the population from the different industries was to ensure that individuals can provide perspectives that cannot be attributed to a homogeneous group.

4.3.2 Unit of analysis

Statistically, a unit of analysis refers to “the “who” or “what” for which information is analysed and conclusions made” (Sedgwick, 2014). Gronn (2002) defined the unit of analysis as the focus or primary subjects of the research. The unit of analysis for this research was individuals and their experiences of collaboration and knowledge sharing in a remote work environment or has moved to a hybrid model. To represent heterogeneity in the unit of analysis, individuals who were interviewed represented different job levels, from senior manager to low-level staff. The sample was deliberately chosen to ensure that all employees can give meaningful contributions and are represented.

4.3.3 Sampling method, criteria, and size

The purpose of sampling is to define the inclusion and exclusion criteria and the size of the sample (Robinson, 2014). Sampling is an important process that allows the researcher to obtain a sample representing the targeted population within the limitations of the study (Crandall et al., 2016). Also, identification of sample size is vital for generalisability and repeatability (Delice, 2010). According to Saunders and Lewis (2018), a researcher can employ two types of sampling techniques in a study. This study adopted a non-probability sampling, which is used when the researcher does not have a complete list of the population. A purposive sampling method was adopted, also known as purposeful sampling, which is a deliberate process in selecting the participants in the targeted population that fit the research's objectives and the inclusion criteria (Farmer and Farmer, 2022). The samples size was deliberately determined by the participants' experience and knowledge in the domain of the study and their roles in the organisations for diverse views and representation.

In a qualitative non-probability study, the issue of sampling size is ambiguous and may be difficult to establish. It is best to align the sample size to the research questions and objectives (Saunders et al., 2019). While it may be challenging to reach saturation in a semi-structured interview, Saunder and Lewis (2018) suggested that in a homogenous population, the sample size can range between four to twelve, and for a heterogenous population can be between twelve and thirty. In line with the guideline from literature,

the sample size for the study consisted of 20 participants, two semi-structured interviews were used for pilot testing and 14 semi-structured interviews were part of the main interviews. Four participants could not be interviewed due to availability, which meant that the final sample size was 14. The researcher used her networks to gain access to the sample selected for the research.

4.3.4 Data collection tool

A measuring instrument is a tool used for data collection, usually referred to as a questionnaire (Saunders et al., 2019). The study used a semi-structured interview guide with open-ended questions. According to Saunders and Lewis (2018), this type of instrument is usually associated with exploratory studies when the researcher is interested in understanding the context. The tool was deliberately chosen to allow the researcher to probe for answers where participants are required to explain their previous answers. The interview questions were structured according to the research problem and questions, and the interviewees had the option of a face-to-face or virtual interviews.

A total of 16 semi-structured interviews, including pilots, were conducted via MS Teams with interviewees from different industry sectors. The semi-structured interviews varied in time to complete depending on the participant being interviewed. The longest recorded interview duration is 1 hour 7 minutes and 37 seconds, with the shortest recorded interview being 30 minutes and 34 seconds. On average, the interviews lasted 45 minutes and 7 seconds. The initial invite to the identified participants was made through a phone call, which was a deliberate choice as emails are often ignored, and the researcher wanted to establish a personal connection on a phone call. The purpose of the phone call and the topic of the research was explained to the potential participant. Once the participant agreed to part take in the study, a formal invite to part take in the interview was sent via an email explaining the purpose of the research. Included in the email was the consent form for the participant to sign and send back (Appendix 2).

The interview questions were mapped against the main research questions in Chapter 3 to ensure alignment with the literature reviewed and that the research remained within context of the study. This allowed for an improved understanding of the identified social factors as well as ensuring good quality data was collected. The mapping of the

questions to the research questions in Chapter 3 are presented in Table 1. The design of the developed questions was to allow for new insights but also to validate and possibly further develop the conceptual model. These questions were used as a guideline, and in some instances the questions were not asked in the order listed, probing questions were asked to get further clarity where it was needed. Saunders et al. (2019) confirmed that in a semi-structured interview, the researcher may ask further questions to the participant to get more details or explore the objective in detail (Appendix 3).

Table 1: Mapping of research questions and interview questions

Research questions	Interview questions
How does remote work affect collaborative networks and social interaction?	<ol style="list-style-type: none"> 1. Describe how you were collaborating with your fellow team members before you began working remotely. 2. Can you describe how you are collaborating and interacting with your team members when working remotely? 3. With your experience, what are the difficulties with establishing social interactions within your team? 4. Describe how do you access collaboration information sitting outside your team?
How do social factors contribute to the relationships within collaboration teams working remotely?	<ol style="list-style-type: none"> 5. How do interpersonal relationships between team members influence collaboration when working remotely? 6. In your experience, how does trust between team members influence collaboration within the team? 7. How do you think communication between team members is important in ensuring collaboration within the team? 8. How does prior history of working together influence collaboration relationships with members in your team?

	<p>9. How do social norms within teams influence collaboration when working remotely?</p> <p>10. How do social norms in a remote team influence communication for your members?</p>
<p>How do social networks contribute to knowledge sharing in teams working remotely?</p>	<p>11. How does interpersonal trust contribute to knowledge sharing in teams working remotely?</p> <p>12. How do norms of reciprocity contribute to knowledge sharing in teams working remotely?</p> <p>13. How does a sense of social belonging within the team help in ensuring knowledge sharing among team members?</p>

4.3.5 Data collection process

Saunders et al. (2019), suggested that one of the reasons a semi-structured interviews is suitable for exploratory studies is because it provides the researcher with the insights of what is happening and the context. The interviews were semi-structured, virtually conducted via MS Teams, and were open ended. This type of interview was deliberately chosen to ensure an open dialogue and allowed flexibility to participants to share their views openly and their understanding of the subject matter. Saunders et al. (2019) discussed the importance for interview questions to be focused around key themes from the literature. The interview questions were centred on the research questions discussed in Chapter 3 and were listed in the interview guide (Appendix 3).

Agee (2009) pointed out the influence that an interviewer's skills have on the outcome of an interview, therefore, the interviewer sufficiently prepared to ensure that they had the skills necessary to conduct an interview.

Prior to conducting the main semi-structured interviews, two pilot interviews were conducted to test the interview guidelines and the interview skill of the researcher. This provided the researcher an opportunity to get view of the participant's understanding of the research questions and highlight any potential issues for correction before the main

interviews were conducted. The pilot interviews were conducted in exactly the same way as the main interviews, and both interviews were recorded and notes were made. The researcher noted two challenges from the pre-interviews, firstly, that academic terminology was not easily understood by the participants. For example, the researcher had to explain/define what social norms means. Secondly, some questions had to be paraphrased for easier readability. As such, a few of the interview questions were paraphrased, and during the main interviews, an explanation was provided for each question asked to ensure the meaning does not get lost on the participant. Saunders et al. (2019) recommended a pilot test as it makes it easier for the researcher to correct the mistakes early in the process rather than later. Furthermore, a pilot interview is to ensure the appropriateness of the questions aligns with the objective, allowing the researcher to record the time of the interview, and assess the validity and reliability of the data to be collected.

Before the commencement of the interview, the interviewee was notified that the interview would be recorded and transcribed, and consent for recording was requested. In addition, the participant was asked to confirm if they are a remote or hybrid worker. When the interview started, formal introductions were made, the researcher explained the topic of the study, and participants were encourage to discuss their experiences openly and provide as many examples where possible. Furthermore, the researcher explained that the interviews will take approximately an hour. During the interview, notes were made so that when a participant gave an answer to a question that is already on the guide, the researcher does not repeat the question but rather asks for additional information if there was anything to add. The interviews were recorded using MS Teams, and transcribed using an AI tool called Otter.ai. The interview notes were recorded on the interview guide as a line item under each question asked. All of the interview recordings and transcriptions were kept in a cloud-based system that requires authorisation to access. Both Google Drive and Microsoft Cloud storage, which require authentication, were used for storage.

4.3.6 Analysis approach

Data was collected from the participants, analysed, and presented in line with the research objectives and questions of the study. An iterative approach was adopted, and

the transcription and analysis of the first four interviews commenced before completing the entire interview process. The analysis of the data was focused on the identification of common themes as well as exploring new insights that came from the collected data, however, most of the analysis happened at the end of the complete interviews. As indicated, a semi-structured interview was the instrument of choice for data collection, and a thematic analysis approach was adopted for analysing the data. Thematic analysis is generally used in the qualitative analysis; as this method allows the researcher to identify common themes in relation to the research question (Saunders et al., 2019). Braun and Clarke (2006) proposed a six-step process that is deliberate and more rigorous that researchers can use to identify the themes. Each step of the thematic process was followed to analyse the data and create themes as detailed in Table 2.

The transcripts from each interview were reviewed during the analysis period in some instances, and the recording was replayed to confirm certain quotes from participants. Each transcript analysis, at a minimum, took approximately 3 hours to analyse, and following the six step process for thematic analysis described by Braun and Clarke (2006), the analysis took a little over two weeks to complete.

Table 2: Six step process for thematic analysis

Step	Description of the process taken
1. Familiarising with the data	Transcribed data using Otter.ai. The transcripts were read to familiarise the researcher with data and noting initial ideas. All transcripts were loaded on Atlas.ti for analysis.
2. Generating initial code	Labels were assigned to units of data to bring meaning and structure to facilitate the interpretation of the unstructured data. The labelling of the data into codes was in line with the questions listed in the interview guide which was mapped to the main research questions.
3. Searching for themes	This process involved grouping similar related codes into higher categories. Codes that had similar meaning were merged into one code to eliminate duplicates.
4. Reviewing themes	The themes developed were reviewed and checked against the main research questions in Chapter 3 for consistency.
5. Defining and naming themes	This process involved refining each theme, and ensuring the definition was clear and unique in meaning. This was also useful for a reader who is not familiar with the data to understand the meaning of the theme.
6. Produce the report	The presentation of the results, including extraction of quotes, linked back to the research questions and literature was put together to produce a report.

Source: (Adapted from Braun & Clarke, 2006)

4.4 Quality controls

The quality of the research is evaluated by assessing its validity, reliability, bias, and trustworthiness (Saunders et al., 2019). Validity is concerned with the credibility of the study; it looks at the strategies employed for data collection and that the findings are about what they are. Reliability ensures that the findings are consistent when using the chosen data collection methods and analysis (Saunders et al., 2019). To ensure validity and reliability, the study employed a measurement instrument in line with the research question and objectives.

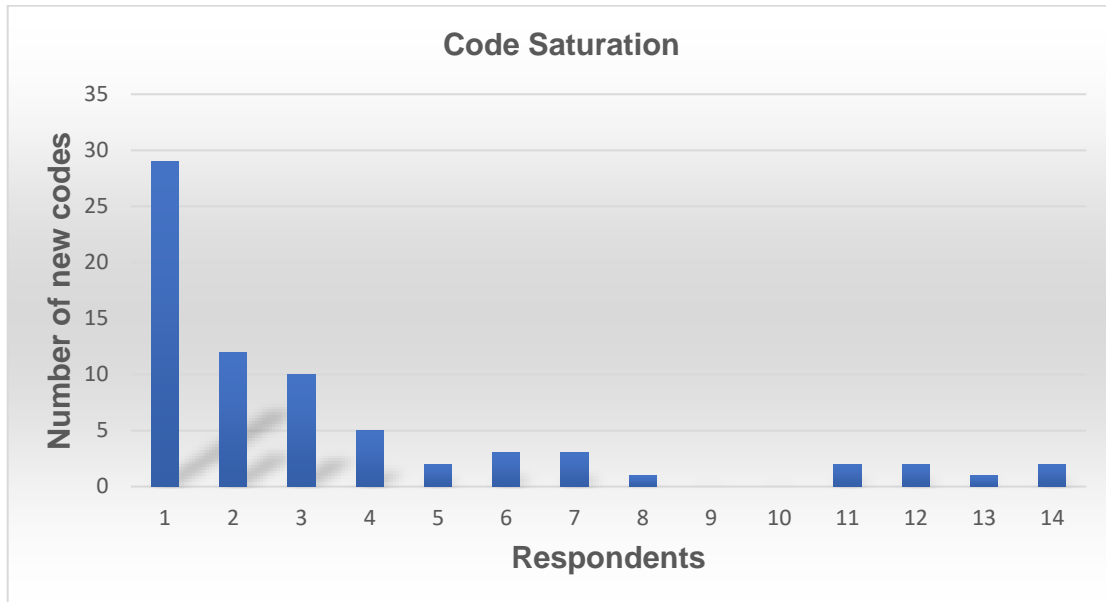
For factual accuracy, all interviews were recorded and transcribed. Information shared by the participants was treated as confidential to encourage more openness. A consent letter was shared with the participants that ensured confidentiality and anonymity of the individuals and organisations they work for. According to Nowell et al. (2017), a study's trustworthiness is confirmed when the researcher demonstrates a rigorous process in the data analysis through consistency, recording, systemising, and being transparent with analysis methods. The aim of demonstrating trustworthiness in a qualitative inquiry is to prove that the findings are significant enough to warrant attention (Lincoln & Guba, 1985). It is based on the richness, appropriateness, and saturation of the data. Thus, data collection, data analysis, and the reporting of the findings are critical phases to ensuring the trustworthiness of the research (Elo et al., 2014). Figure 2 shows code saturation to demonstrate the quality controls applied to achieve saturation.

4.4.1 Data saturation

To ensure the quality controls (reliability, validity, and trustworthiness) were applied to the data, the researcher made sure that the codes were consistently applied and were exclusive, which is when no more new insights could be deduced from the data (Saunders et al., 2019). Before creating the categories, a review of the research and interview questions was completed to establish the relationship between codes, therefore, ensuring an up to date definition of the categories for consistency in application (Saunders et al., 2019). Trustworthiness of the study was consistently maintained through the analysis of the process; themes were created in alignment with

literature so that theory saturation is attained. Figure 2 shows how the coding saturation unfolded.

Figure 2: Coding saturation



4.5 Limitations

A generalisation of the findings is a limitation, as the sample size was not large enough and focused within a specific context, therefore, the findings cannot be applied to represent a population. The study presents insights from the perspectives of senior managers and low-level employees, but views from levels above senior manager are not represented, and they may hold different views which could add value to the discipline if further explored.

4.5.1 Researcher bias

Qualitative research is subjective and is easily influenced by the researcher's perspectives. It is crucial for the researcher to be aware of any potential biases because their context may affect how they interpret the results (Saunders et al., 2019). It should be noted that the researcher is a remote worker in the ICT field, and that most of the interviews conducted included people from ICT sector; as such, potential bias may exist.

Furthermore, the researcher was not trained to conduct interviews, and this could potentially have an impact on data collection. This lack of experience may have an effect on the way the results are interpreted based on the understanding of the researcher, leaving the potential for other interpretations and findings.

4.5.2 Subject bias

The study was focused on individuals that are remote workers or are on a hybrid model. The data collected from the participants may be biased and there may be a degree of misrepresentation in their life experiences.

4.5.3 Geographic bias

The geographic focus of the study was limited to individuals based in Johannesburg, Further limitations exists as the study was conducted in a short period, thus, necessitating studies on a longitudinal time horizon.

4.6 Conclusion

This chapter provided the details of the methodology employed to achieve the study's objectives. The strategy is a narrative inquiry, the population and sample were defined, including the tools used in the study. The study discusses in detail the instrument used to collect data, the mapping of the interview questions to the main research questions to ensure alignment with literature. In addition, the data collection process was discussed, as well as the preparations of the main interviews, how the interviews were conducted, and the tools used to record and transcribe the recordings. Furthermore, the study explains mechanisms employed to maintain the research's validity, reliability, and trustworthiness.

The next chapter presents the findings of the study by describing the sample used to collect the data and present the analysis of the findings from the data collection.

Chapter 5: Research results

5.1 Introduction

This chapter presents findings from the qualitative study into the impact of remote work on collaboration and knowledge sharing among workers in South Africa. Data was collected through in-depth interviews with 14 individuals working across various industry sectors and employed in firms within the Johannesburg area. The technique of analysis used a thematic content analysis, in which emergent codes from interview transcripts were categorised into themes based on significant expressional parallels and contrasts. A summary table of topics is followed by a thorough breakdown of the findings by theme and code in this chapter. The coding procedure that was used as a part of the data analysis is described in the next section.

5.2 Sample description

Data was collected from 14 participants, with 12 participants coming from the financial services industry, specifically the insurance and banking sectors. The other two participants were from telecommunications and rail transport management industries, specifically. The participants included senior managers, managers, team leads, staff, HR generalists, and all the participants are remote workers, either in full or part-time capacity. The variation in industry and industry sector was to get rich insights that could be attributable to a heterogenous group. The sector types (private vs public) had no influence on the study, and is included in Table 3 for information purposes only. The identity of the participants and the organisations they work for were anonymised to maintain confidentiality of the participants. Where quotations included actual names of people or company names, details were modified to maintain confidentiality.

Table 3: Interviewees profile from the sample

Category	Sub-Category	Participant	Remote worker	Job Level	Gender	Industry	Industry sector
Private	Large Enterprise	Participant 1	Y	Manager	Female	Financial Services	Insurance
		Participant 2	Y	Manager	Male	Financial Services	Insurance
		Participant 4	Y	Senior Manager	Male	Financial Services	Insurance
		Participant 5	Y	Manager	Male	Financial Services	Banking
		Participant 6	Y	Senior Manager	Female	Financial Services	Banking
		Participant 7	Y	Staff	Male	Financial Services	Insurance
		Participant 8	Y	Team lead	Male	Financial Services	Insurance
		Participant 9	Y	Staff	Female	Financial Services	Insurance
		Participant 10	Y	Staff	Male	Financial Services	Insurance
		Participant 11	Y	Team lead	Female	Financial Services	Insurance
		Participant 12	Y	HR Manager	Female	Financial Services	Insurance
		Participant 13	Y	Manager	Male	Financial Services	Insurance
		Public Sector	State Owned Enterprise	Participant 3	Y	Senior Manager	Female
Participant 14	Y			HR Generalist	Female	Rail Transport Management	Railway

5.3 Analysis of results

At the start of the interviews, all participants were asked to confirm if they are working as a full or part time remote worker, and the response received aligned to the concept of the study. All interviews were transcribed, using a high-end AI tool (Otter.ai). Next, the researcher edited the transcripts to correct the grammar where spelling was incorrect, or words were repeated. To begin analysis, Atlas.ti was used as the tool to create codes, the initial coding process involved taking a close look at the research and interview questions. Four main themes aligning to the research questions were created. A total of 92 single codes were created, and after thematic analysis, 15 codes, four code groups, and 298 quotations were created (Appendix 5).

According to Malterud et al., 2016, qualitative studies place value of the richness of the data, therefore the analysis of the research findings lays more attention on the quality of the data than on measurable attributes. Given the data was synthesised at theme level, emphasis on the frequencies of codes was not considered as part of the analysis. However, it is important to note the codes that frequent mostly across the participants. Table 4 below provides code frequencies by rank.

Table 4: Code frequencies

Rank	Code	Frequency
1	Challenges with remote work	88
2	History of working together	33
3	Norms of reciprocity	32
4	Communication	24
4	Interpersonal relationships	24
6	Efficiency-based traits	16
6	Trust in collaboration	16
8	Collaboration_Tools	15
8	Social_belonging	15
10	Norms on communication tools	14

11	Trust in Knowledge sharing	13
12	SourceofInfo_Self	11
12	Norms on collaboration	11
12	Relationship based behaviors	11
12	Organised Collaboration	11
16	SourceofInfo_Others	6
17	SourceofInfo_document	2

In addition, the analysis of the codes mapped to the themes, which in turn were mapped to the research questions, was completed, with research question 1 weighing more, mainly due to the challenges participants experienced during remote work. Following that was research question 2 with a higher percentage, then research question 3. Table 5 shows the mapping of the code categories to themes and the research questions.

Table 5: Mapping of themes and codes to research questions

Research Question	No of codes created	Sub-category	Category	Theme	RQ code %
How does remote work affect collaborative networks and social interaction?	8		Office-based collaboration	Quality of collaborative networks	76%
	26	Challenges with remote work	Quality of virtual collaboration		
	11	Organised collaboration			
	6	Collaboration tools			
	6	Source of info others	Accessibility of information		
	11	Source of info Self			
	2	Source of Info documents			
How do social factors	2		Interpersonal relationship		15%

contribute to the relationships within collaboration teams working remotely?	1		Trust in collaboration	Social factors on collaboration	
	1		Communication		
	2		History of working together		
	1		norms on collaboration	Social structures	
	7		Norms on communication tools		
How do social factors contribute to the relationships within collaboration teams working remotely?	1		Trust in knowledge sharing	Relational factors on knowledge sharing	9%
	4		Norms of reciprocity		
	3		Social belonging		
Total no of codes	92				

Source: Primary research data

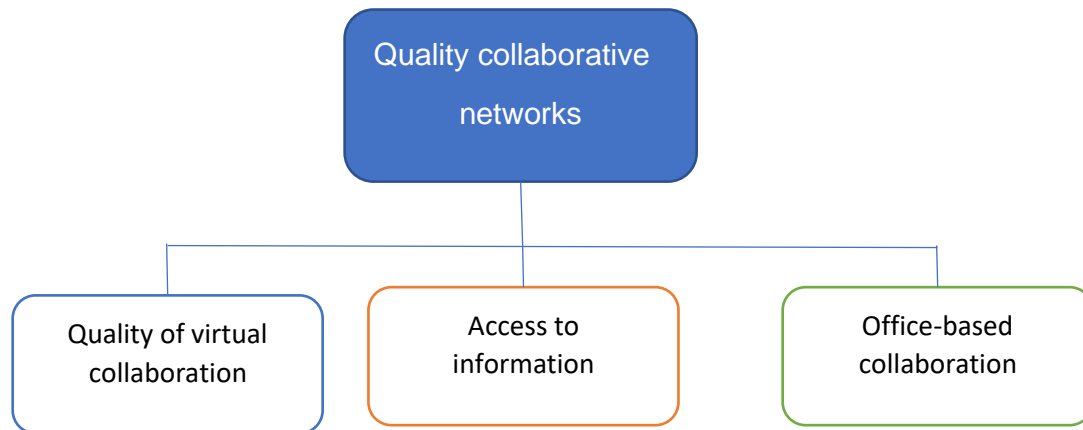
5.4 Results for research question 1

Research question 1: How does remote work affect collaborative networks and social interactions?

The first objective of the study was to assess the extent to which remote work has influenced team collaborative networks and interaction among employees working remotely in the Johannesburg area. In achieving this objective, the study sought to collect data on how participants collaborated before COVID-19, how participants collaborate now while working remotely, and any challenges that remote workers are currently experiencing in remote working. The respective findings on these variables are presented in this section.

Responses to research question 1 generated one theme, which is the quality of collaborative networks. Figure 3 show an overview of the summary of the theme and categories which represents views from the data.

Figure 3: Overview of research question 1 results



The created codes related to research question 1 are presented in Table 6. In total, 70 codes were created, with the challenges sub-category having the most codes created as participants experienced various challenges with virtual collaboration. Research question 1 constituted 76% of the codes created.

Table 6: Research question 1 theme mapping

Research Question	No of codes created	Sub-category	Category	Theme	RQ code %
How does remote work affect collaborative networks and social interaction?	8		Office-based collaboration	Quality of collaborative networks	76%
	26	Challenges with remote work	Quality of virtual collaboration		
	11	Organised collaboration			
	6	Collaboration tools			
	6	Source of info others			

	11	Source of info Self	Accessibility of information		
	2	Source of Info documents			

5.4.1 Quality of collaborative networks

In response to research question 1, the theme examines three categories on the impact that remote work had on collaborative networks. The first objective of the study is to assess the extent to which remote work has influenced team collaborative networks and interaction among employees working remotely. In achieving this objective, the study sought to collect data on how participants collaborated before COVID-19, how participants collaborate now while working remotely, and any challenges that remote workers are currently experiencing in collaborating with others. In this theme, three categories are identified and discussed, namely; face-to-face collaboration, the quality of virtual collaboration, and accessibility of information. The respective findings on these variables are presented in this section.

5.4.1.1 Face-to-face collaboration

Virtually all of the study's participants were fully-office based before the pandemic but have since shifted to either full remote work or some form of hybrid, with the greatest time spent working remotely. Participants were asked to describe how they collaborated during their period of working from the office. The purpose of this question was to establish, from the workers' viewpoints, the difference between in-person and remote collaboration.

From the data collected, it was clear that all participants found office-based collaboration much easier than remote collaboration. Keywords used to describe in-person collaboration included "easy", "human connection", "informal", "no fuss", and others. What became clear was that during office-based collaboration, participants found it easy to collaborate with one another informally because the relationships they had allowed it. Developing from this category is some of the views participants had to share regarding the relationships they had in office:

“When you walk into that space where people are, everyone just stops what they're doing and they give you attention, you greet each other, you have a quick few minutes talk, and everybody is happy. And I think that, for me, that was building a good relationship and trust, and it was very easy for me to ask or collaborate with anyone.” **Participant 4**

Another participant also shared the same sentiment as participant 4 on building relationships:

“I am from the online space, there has been a couple of issues where you'll find people complaining about the system, so it was easier for you to go to the next person, if the impact was caused by someone from another team. You can go to the person who implemented the change and let them know your changes are breaking the system. I think it was the human interaction that was making it to create relationships better.” **Participant 2**

In addition to the ease of building relationships, other participants found being in the office enabled easy collaboration. The next Participant links the ease of collaboration as a result of sitting in one physical meeting room:

“So, because we were at office physically, we had lot of meetings face-to-face, meetings were very normal for us. That's the first thing we would do, it was very easy to connect with people. You get in a room and together you brainstorm, and you can bring charts if you need to, it was easier that way. So, the second part of meetings as a team, is that our meetings always involve media agencies that are not necessarily in the bank. So again, meetings would be a big deal for us, we used to call them workshops, where we can sit in a room and literally start talking about a campaign and how we can leverage each other's skills.”
Participant 6

In contrast to the previous Participant, others associated the ease of collaboration to getting help fairly easy without the need to organise a formal meeting to brainstorm. There was a sentiment that in-person collaboration rarely required the need for scheduling to be conducted, since one could easily go to the other person's office and

ask for advice, ask for information, or just chat informally. The following quotes attest to this:

“For me, the collaboration was one of those dependent collaborations because everybody was already in the office. There was no need to set up meetings, etc. You could just get up, go to the person's desk, ask what you need to ask, and come back to your desk and continue with what you need to do. So that is the kind of collaboration we initially had before COVID.” **Participant 9**

“We were all in the same environment, and the sense that it was, it's an open plan setting. So, on a simple basis, if you want to be able to ask something, or if you're working on a project, and there's something that you want to ask, just walk to your colleague, and be able to quickly chat about it or like finish off on something. I think so it was like that. And then also, in terms of the meetings, we were all in one room, in person, if there was something that we are working on all these, like, you know, meetings that happened be it forums, be it maybe a weekly meeting.” **Participant 14**

Another dimension of in-person collaboration that emerged from the study was the extent to which collaboration was viewed as “informal”. This does not mean a completely informal setup where scheduling was not available but refers more to the sense that informal connections were easier as people could just bump into each other at the canteen or while having coffee, or have chats in the hallway or in meeting rooms before and after meetings. It appears that participants highly valued these interactions, pointing out that they were a good opportunity for team members to get to know each other better and begin to enrich their working relationships. This is supported by the following quote:

“So, the way we communicated with the team was in person face-to-face, and that was either through a channel of formal meetings or informal chats just as we pass each other in the hallway, or at making coffee.” **Participant 13**

During the interviews, emphasis was placed on getting quick responses on queries, and participants felt that they were able to get quick responses, sitting close to each other in proximity was beneficial, and people paid more attention in collaboration sessions.

Responses presented in this category show that people found being in the office efficient for collaboration. In terms of proximity, most participants appreciated being close to one another, people described it as being easy to walk to someone's desk and get information.

"It was way simpler before, I think being in the same space with you team members makes it very easy to have conversations. You know, if you have an idea about something, or you have a struggle in any way, other people are right there to assist you. So even outside those impromptu conversations, it was also a simple thing to then set up that meeting quickly with specific team members within your team, and also outside to have a brainstorm around certain things to be done, which really helped progress whatever it is that we are working on."

Participant 13

To further support the view of participant 13 on progress, participant 2 reflected on the resolution time and efficiency of in-person collaboration:

"... if you needed to setup a session with other teams, it could be formal or informal, it was helping to get issues resolved quicker and efficient."

Participant 2

Another participant reflected that being in such close proximity to their colleagues also meant that the use of technology to collaborate was not deemed necessary. Participant 3 had this to say:

"All of us were in the same office and we shared one block and it was fairly open plan office with management sitting on one floor. It was just always easy for me to just push my chair to my colleague's desk and ask them something. It is very rare that if I wanted something from a colleague internally, I would send them an email, I would not send them an email."

Participant 3

Reflecting on other benefits of in-person collaboration, another participant reflected on the attentiveness of his colleagues when they attend in-person meetings. The implication was such that meetings were viewed largely as more productive due to benefiting from the in-person experience. The following quote attests:

“If you pull people into a meeting room, they generally will not come with the laptops, and then you can have their full attention in terms of what you need to get through. It's also the face-to-face, which was a good aspect of it because then you could get a sense of what a person is feeling, or if they don't understand or they need to elaborate more.” **Participant 7**

From the discussion in this subsection, it is clear that participants viewed in-person collaboration in a positive light because of reasons such as the ease with which people could be reached, the informal nature of some encounters, and the “productive” nature of in-person meetings. It was evident that in-office collaboration helped to build and strengthen some of the work relationships which participants valued so much and having that eased the conversation when collaborating or asking for help.

5.4.1.2 Quality of virtual collaboration

In this section, there are three sub-categories that emerged when analysing collaboration during remote work. In the three sub-categories, participants reflected on what worked well during virtual collaborations, the tools used to collaborate, and lastly the challenges encountered as a result of remote work.

5.4.1.2.1 Organised collaboration

In the era of remote work, participants had the opportunity to bring some of the examples where working virtually is different to working in office. The fact that participants had mainly positive things to say about office collaboration does not mean it is the complete opposite for remote collaboration. What emerged from the study was that instead of just being a straightforward challenge for collaborating, remote work was found to add layers of complexity to team dynamics, requiring all members to adjust how they interact. This subsection discusses participants’ perspectives on how they are currently collaborating while working remotely.

A major discussion point arose around scheduling of meetings. According to the majority of participants, collaborating remotely has resulted in the need for more planning and structure in place, scheduling meetings since the “pop in” option essentially does not exist. Without knowing what the person you need is working on at a given time, it is

essentially impossible, or at least highly impolite, to immediately drag them into an unscheduled meeting. As a result, workers have had to adjust to respect each other's schedules while collaborating remotely and be more organised. This argument is attested by the following quote:

"I think, firstly, the biggest thing that we had to do was try to adjust to not being in the office where we could just get up and go to someone's desk. We had to get to a point where you needed to request time in people's calendars. So that you can find some form of availability for you to either have a discussion or ask the questions that you need to ask. So far, it's been working well, there's just one or two where people just feel the need to just throw you into a meeting without even asking what your diary looks like. When someone is not even aware that you are already in another meeting, because people tend to put their status in red." **Participant 9**

In addition to requesting people's availability for meetings, participant 3 added another layer of planning, meaning working remotely forces one to be mindful and more organised. This is what they said:

"If I think of something now, I need to plan it, I now need to schedule a team's meeting. And sometimes I want to deal with something like now, in the next hour, but then when I check the schedules of the people, on Teams, they're not free for the next day or two, then I need to postpone that thing to like, Friday." **Participant 3**

Still on scheduling, it was further clarified that the need for better scheduling and respect of each other's time is because while in the home setup, workers often have to deal with a unique set of distractions that are not found at the office. These include children and other family members in the house, the need to run small errands, and others. As a result, while collaborating remotely, participants noted that it is now important to first check with the person you seek before simply roping them into a meeting. The below quote supports this:

“Working remotely has forced us to honour each other's time a little bit more because you have to book time in someone's diary if you want to spend time with them or get whatever out of them. It's opened our eyes to what other people are doing in the world, for example, I mean, when you're at home, you're with your family, right? So, you have to pay attention to that and pay attention to their needs as well.” **Participant 12**

5.4.1.2.2 Collaboration tools

The number of virtual collaboration tools utilised has reportedly increased since people started collaborating largely online. Some of the tools mentioned include Jira, MS SharePoint, MS Teams, Confluence, OneDrive, WhatsApp, and many others. Using MS Teams, which was mentioned as the main tool employed by all participants, team members are able to notice each other's availability or unavailability, allowing for easier collaboration. Furthermore, these virtual collaboration tools allow collaborators to divide labour, schedule meetings, hold meetings, share documents, and many other key functions as shown by the quotes below:

“We work I think, mostly on Teams, Microsoft Teams connection and making sure that we are on Teams itself, you know, it has that an option for teams, were you able to open different pages relating to whatever project that you're working on. So, we were able to store documents and share whatever, for the sake of collaboration as well. You're able to share whatever documents or post any updates with the particular team members; SharePoint, OneDrive, are facilities to be able to access whatever you may need.” **Participant 14**

“Now I'd say it's more like on the platforms such as Teams. We still do the daily stand-up, which we call Scrum, as part of being agile. So, we rely mostly on those ways of agile methods of working but mostly Teams and then so though that is like the more formal one where we get updates and then the informal ones like depending on we need to clarify stuff because in the office you can walk up to a person and talk to that person but now remotely obviously we just call each other to get info or to share whatever we need to share.” **Participant 10**

With regards to the quality of the collaborative networks, the researcher noted that much has happened within teams to settle into the routine of remote work. Working remotely has taught many to respect each other's time and collaborate based on availability. It has also exposed them to the many technological tools to facilitate work. As a benefit, people's competency with the tools of choice may have improved as none raised a challenge with the use of tools.

5.4.1.2.3 Challenges in collaboration within remote teams

While the results made it clear that many workers have been settling into the routine of remote working, participants provided several collaborative challenges that they have been facing since the advent of remote working. These include the unavailability of team members in times of need, the elimination of ad hoc interactions, some team members feeling alone and unsupported, and people becoming strangers without in-person interaction. However, it should be noted that regarding the challenges, and all other aspects of remote collaboration to be discussed in later sections, participants found remote collaboration to be easier with people that they knew well prior to working together remotely.

One of the discussion points that emerged concerned the unavailability of people in remote teams. Participants lamented that in many instances, they found it hard to collaborate because some people were largely unavailable, or people just miss each other as they interact with others during the day, or it was perceived that other people could be lying about being busy, since no one is watching them. As a result, key team issues took unreasonably long to be resolved, and some team members became frustrated due to the difficulty in accessing the help they need. The following quotes refer:

*"I just find that calling people, nine out of 10 times you probably find that they don't answer the phone, they never hear the phone the first time, then they call you back, but you're in another meeting again. So, you keep missing each other. Because you don't know what's on the other side, what they are busy with, what they're up to." **Participant 13***

In addition to unavailability, other participants expressed frustration with regards to delays in communication, which was caused by various issues such as delayed resolution, no follow-ups on email, or communication not being clear enough. The is what participant 2 said:

"I've seen incidences where people report an issue via email, and no one attempts to resolve the issue until maybe it's a serious burning issue escalating. And you'll find the issue has been there for three days, four days, five days, and no one was looking into it. But because now it's been escalated from top to bottom, now people are starting to run around. The other challenge is, you don't know whether that person is on leave, or is on sick leave, or is on whatever."

Participant 2

"Having sent the email to a team doesn't mean someone follow-up, and that is another aspect that is lacking to say I didn't get any response yet send another email." **Participant 2**

Participant 9 adds another element to people's unavailability. They mentioned that people are sometimes not as busy as they portray, because some of these tools give the ability to update one's status, and people sometimes misuse the status to avoid certain conversations.

"I think the only issue that I find difficult is that people tend to hide behind a specific status on Teams because they either don't want to be part of whatever question that you may have, or they just don't want to be part of it. People have taken working from home as a mum holiday. People are very relaxed, they're not pushing their timelines, they're not pushing their work. They give the same update in scrum every day for long periods of time." **Participant 9**

Furthermore, some participants argued that another challenge was people getting distracted by a number of things while working from home. Children and other family members, house chores, and related things were blamed for distracting remote workers. The implication of these distractions is that team members become unavailable at times

while needed, they do not perform optimally, and team projects take longer to achieve. The following quotes attest:

“Because right now, people are more involved in their private lives, their children, the pickups, the school, the extramural activities, and running of errands, for example. So, as opposed to being in the same space in person in the office, now everybody's in their own separate space, their lives run a little bit more differently.” **Participant 1**

“Now, there's an added balance that is required from working from home, because you're not removed from the home. So, there are certain things in the home that still affect your work life. On top of the eight hours that you have, there is now home stuff that also affects you more than what it was when you were in the office.” **Participant 11**

Another key factor that came through in the challenges is that some team members are feeling alone, isolated and unsupported as remote collaboration means questions are not always answered on time. Worsened by being new in a team, lack of sustained support from other team members leads to frustration and feelings that one is working alone without support. This is supported by the following quote:

“What I've heard from other people within the space is that they don't find it as smooth as before COVID, they actually find it very frustrating, where now they feel like they are on their own, there is no one there to kind of help when they have issues because within the team, they haven't set up a proper point of contact within themselves.” **Participant 9**

Another key challenge raised by the majority of participants relates to the extent to which remote collaboration has forced most interactions to become more formal. Working remotely has largely removed the ad hoc nature of in-person interactions, since people can no longer bump into each other but have to align each other's calendars to meet. Worse still, it was reported that there has been an increase in the numbers of people working in silos, in that most individuals are focused on their own work, with little consideration for collaborating. These arguments are supported by the following quotes:

“At first, it presented quite a few challenges. Because at work, everybody's there you can get to see everybody and, check them immediately as you see them. But now, the way in which we do that, it's very formal, because when you just phone someone up, I don't know what they are busy with. So, it does force me to actually think about not just my time, but the other person's time as well, like if they're available.” **Participant 13**

“Quite the struggle, actually, I think because we are so removed and almost in a sense working in silos, right? There are now a lot of gaps because we don't get the time to talk. Everyone is just trying to get through the day to do what they need to be done. There's no more impromptu, you actually have to make the added effort to have a conversation with someone.” **Participant 11**

Participant 5 viewed silos as a problem created by team structures where people are designated to one team thus unable to interact with other team members focused on a different project. Here is what they said:

“... this thing of I belong to this team, that person belongs to that team, we have created silos in such a way that people just focus on their own areas. So, it becomes very difficult to ask the next person, maybe in your own team, they will tell you straight away, I don't know, we need to talk to the person next door.”

Participant 5

Lastly, participants reported that they felt like they were becoming strangers with colleagues, since the advent of remote working. With the reduction of ad hoc interactions, people are generally absorbed by their work and can spend very long periods of time without interacting socially with colleagues. Limited social interactions were blamed for the gradual breakdown of interpersonal relationships, negatively affecting both collaboration and knowledge sharing. The following quotes support this:

“If you are not intentional and understand that there's five people in the room virtually, you can easily forget somebody, like you can forget somebody and so from an inclusivity perspective, it can be problematic because now in a meeting if you've got eight people, certainly there are ones that love to talk and you have

forgotten other people, and so you've not included them and they feel left out. So as a leader, I've had to be aware of that, because it was a big challenge.”

Participant 6

In addition to the limited interactions other people found that the interactions they had with the team were mostly limited to work, and were task-focused:

“Um, so the thing is, if you work remotely, you kinda hardly ever interact as the entire team. Unless, like, you organise a meeting for the entire team. Otherwise, it's almost specific people speaking to each other. And then you find that other team members hardly ever speak to each other.” **Participant 5**

“I do find that with the hybrid, we only meet when it's about the allocated work like if there's a meeting, or whatever it is for work-related things.” **Participant 14**

As previously discussed, however, the prior working history was a central mitigating theme for all challenges and issues relating to working remotely. According to the participants, having that relationship of having worked with a person in the office setup before meant, to a larger extent, they already had sufficient interpersonal relationships and trust. As a result, not only did they become comfortable collaborating remotely, but also, they maintained pre-established social interactions. The construct of prior history will be further unpacked at each level of discussion in the following sections. In the meantime, the following quotes relate to how the majority of participants indicated that collaborating remotely was easier where people had a prior in-person working relationship:

“For me, the working relationship wasn't that great. Like. And that also filtered to how we work because we're working on the same thing and depend on each other. And yeah, not having that social relationship, I think we interact differently if we know each other, like if we've met face to face before.” **Participant 10**

Other participants reported that it was a challenge to work with new joiners, meaning those they have no history of working with.

“I’ve been moved into a new role right now, and I have never met one of my subordinates because she’s never been to the office. This already creates a barrier because I don’t know how to address sensitive issues because I don’t know her that well. That already on its own is an issue because we haven’t established that working relationship, but I don’t know how to come to her with particular things and having to book time in her diary or the time only to have a get to know you discussion when she’s got all of this work piling up is not necessarily feasible.” **Participant 12**

“I think the challenge is when there is like someone new, who needs to be integrated, you know, it’s sort of like, it’s a bit difficult to get to know that person. Because, when you work with people you also want that level of friendliness, or just knowing someone but now because it’s MS Teams, there is sort of a barrier.”

Participant 8

From the findings on the challenges of working remotely, the researcher made two main observations on the central arguments. Firstly, people were found to be more comfortable collaborating remotely with those they have had prior in-person contact with, making collaboration especially difficult for new entrants into the team. Secondly, while most participants viewed remote collaboration as more challenging than in-person, most were doing a lot to improve their remote collaborations already for better team performance.

5.4.1.3 Accessibility of information

In evaluating the extent of collaborative networking within and outside of teams, the study sought to assess the nuances of information access by team members. Accessing collaborative information sitting outside of one’s team speaks to the availability of bridges/ links that help fill the structural holes between teams (Lin et al., 2021; Yang et al., 2022). As posited by Gao et al. (2013) individuals in their organisations should seek to collaborate with others based on their network information, that is the type of connections they have or the existence of shared connections. A participant in a network with many structural holes can benefit an organisation by offering new perspectives and possibilities.

In terms of filling structural holes within their teams, the group of people that were found to be the most relevant bridges/links are business analysts. Business analysts are most relevant as bridges because they are conversant in both technical language and business management language. As a result, for those working in the IT field (which is the group that mostly participated in the study), findings showed that their first point of connection is largely a business analyst in their team. The following quotes relate to how people access information through business analysts:

“If you were to ask me, who would be your go-to person in another team, the first person would be the business analyst. And then if you're struggling, then you escalate with the dev man. But working remotely, you identify that you're not going to get a person at the time that you need them. So, it's a case of, can I get hold of the BA, is the BA helpful? Because in some instances, that individual is maybe overworked, or you guys don't click.” **Participant 7**

“If it's something that is related to what the team is doing, I will go to the business analyst most of the time. If not, then I will ask my fellow development managers, I will just throw a message into the managers' Microsoft Teams chat and say guys, I'm looking for XYZ. Does anybody perhaps have any? Any idea on where I can start looking for this information?” **Participant 1**

However, due to the complexities of information sharing, for example in instances where no business analyst is available, or the information required is not really accessible through business analysts, participants discussed the need to build a rapport with relevant persons, meaning they source the information themselves acting as a bridge. Building strong collaborative relationships with relevant persons was found to be another keyway in which team members bridge structural holes within and outside their team, which is in line with what scholars such as Ghaffar et al. (2018) say. The following quotes support this:

“The best way would be to try and call the person to establish a rapport so that they understand why you are calling them before you set up a meeting. Because I find if you just set up a meeting with somebody that is not inside your network, they don't understand what the need is for the meeting. Chances are if he doesn't

know you, or has never heard of you, or they don't necessarily know you that much, it's a 50-50 chance, you may get some time with him or you might not."

Participant 13

In this case, participant 3 indicated that a manager is a key person to give guidance and introduce a person so that a connection is established:

"The primary person that I relied on was my manager to guide, where do I go to for this, or for that, but also my colleagues, and then once they introduced me to one person, let's say at finance, then I would try and build rapport with that person. Sometimes, I would ask people to try and get to their human side, although I'd never met them before...try and call them and make jokes around the weekend." **Participant 3**

Some participants relied on key documents to provide the information of who to contact in specific areas. This then give them guidance who to contact:

".. if you like working in that big project, there are people allocated, there is what you call the stakeholder list on the project plan, and someone who is written there as responsible for this." **Participant 14**

In addition to having to build working relationships for bridging structural holes, some participants indicated that they felt they had to step in as bridges due to the difficulty in accessing information. This further relates to the challenges in contacting people as they work in their silos, leading to a lack of response where one requires outside assistance. As a result, people have had to step up and become bridges for information gaps.

"In my current role, I am the guy that tries to put the information together but in previous times, I relied on other people to do that. Like I'd just send a request to a person and say, listen, this is missing, and we need it and then they'll go find it. But right now, I find myself having to play that role as people are not so responsive remotely." **Participant 5**

“For us, we don't have such things as bridges. You are your bridge, and you are your team spirit. If we do it individually, we do what we must to collaborate with others and reach out and do all of our work. Most of our work requires other teams. So even so that, imagine how many bridges we would have, if I'm to call them bridges, connectors or whatever, you just do what you must to get the job done.” **Participant 6**

The researcher noted that teams appear to be having challenges plugging structural holes in a remote-working world. However, despite this, the existence of links such as business analysts in teams simplifies remote collaboration, giving people information they need. Furthermore, many others have had to work their networks to become information bridges for their teams through searching directly for information and building working relationships with relevant persons.

5.4.2 Summary of research question 1

This theme discussed the effect of remote working on collaborative networks, by understanding how participants worked pre and during remote work. Results showed that people are generally wary of remote working, viewing it as an extra challenge for collaboration. This was, however, largely limited to those that are joining new teams/ have new members joining their teams, as individuals indicated they find collaboration easier with those they have a prior in-person working relationship with. Prior history was, therefore, seen as an enabler of collaboration in remote teams. Lastly, collaboration was also enabled through the plugging of structural holes in teams with the use of business analysts and relationship building. The next theme discusses the influence of social factors on collaboration

5.5 Results for research question 2

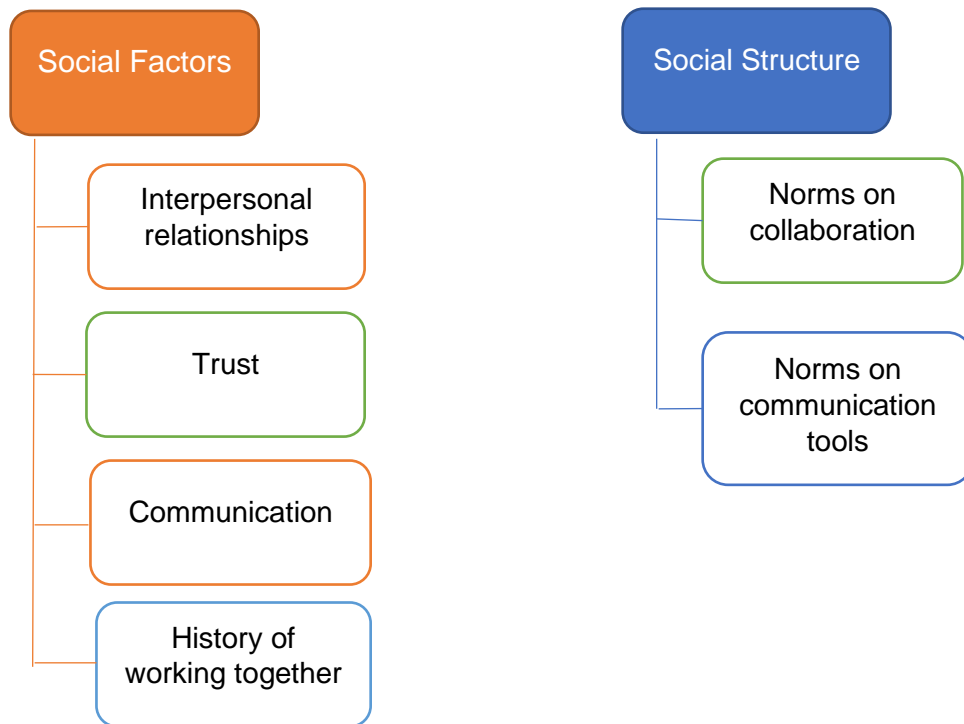
Research question 2: How do social factors contribute to the relationships within collaboration teams working remotely?

The second objective of the study sought to understand how the social factors influence collaborative relationships when working remotely. In achieving this objective, the data collected centred around interpersonal ties which are the social factors that enable

members to collaborate easily. The respective findings on these variables are presented in this section.

Responses to research question 2 generated two themes, which are social factors and social structures and their influence on collaboration. Figure 4 below show an overview of the summary of the categories and themes which represents views from the data.

Figure 4: Overview of research question 2 results



The themes were created from 15% of the codes created during the thematic analysis, which totalled 14 codes in this category. Table 7 provides the categories created under these themes.

Table 7: Research question 2 theme mapping

Research Question	No of codes created	Sub-category	Category	Theme	RQ code %
How do social factors contribute to the relationships within collaboration teams working remotely?	2		Interpersonal relationship	Social factors on collaboration	15%
	1		Trust in collaboration		
	1		Communication		
	2		History of working together	Collaboration norms	
	1		Norms on collaboration		
	7		Norms on communication (tools)		

5.5.1 Social factors on collaboration

This theme emerged from the study and entailed the influence of social factors on remote collaborative relationships. As theorised in the study’s conceptual framework, expected social factors that affect collaborative relationships in remote teams include interpersonal relationships, trust levels, communication, prior history of work, and team social norms. This section presents results following these codes based on data collected from interviews with 14 remote workers in the Johannesburg area.

5.5.1.1 Interpersonal relationships

As interpersonal ties were viewed as important in building trust and enabling collaboration, the study sought to establish remote workers’ perspectives on how interpersonal relationships affect their everyday collaboration. Findings revealed that interpersonal relationships were viewed as highly important in unlocking collaboration, given how collaborating with “strangers” is a challenge for the majority. This was especially clear when the discussion of prior working history came up. According to the participants, interpersonal ties already exist between those team members who have

worked together in an office setup before but are very challenging to establish with new members joining teams today. As a result, teams getting new members in the era of remote work are struggling to establish interpersonal relationships. This also extends to trust issues, communication issues, and problems with shared social norms.

Regarding the importance of interpersonal ties, all participants felt that having relationships with team members beyond the working environment is healthy for collaboration. Instead of transactional work relationships, viewing each other as individuals was seen as a better way to request for information from colleagues, especially in the current environment of virtual collaboration. The following quotes attest to this:

“I think, by far, being a remote worker has made me much more involved and interested in relationships and relationship building purely for survival's sake because otherwise then I don't know what's going on. Then I'd be locked out and feel like okay, I'm sitting here at my house and the walls are closing in and I don't really know what's 100% happening in the company or, the little tricks of how to work the system.” **Participant 3**

“Having an interpersonal relationship with your colleagues, or your team members, or the people that you are collaborating with is very important. You need to reach out to people also on a personal level, not just on a professional level. As soon as you take an interest in people's personal lives, personal struggles, personal challenges, then they sort of give you the same energy back when it comes to the professional needs of collaboration.” **Participant 1**

Participants shared many opinions on the importance of interpersonal ties, but majority of this fell into the argument that relationships outside the working environment help loosen up people for better collaboration. For instance, some argued that in an agile environment, the lack of interpersonal relationships could lead to total collapse of the team. Others, in alignment with the study's hypothesis on the relationship between interpersonal ties and trust and communication, noted that having ties within teams helps build up trust which, in turn, also makes team members better communicate and collaborate. As previously stated, however, the lack of prior working history was seen

as an antithesis to interpersonal relationships within remote teams. New joiners are being left out of collaborative circles, have to go a long way to access information, and are generally taking much longer to be integrated in remote teams. This is leading to collaborative challenges as shown by the quotes below:

“I felt for the new joiners, I still feel for them. I can't think of anybody that was new in my team specifically, however, for those new entrants, from what I've heard outside of teams, it was hard and continues to be hard to integrate. In fact, there are people that joined our product team during COVID. And today, you don't even know them when you go to the floor. So, for them, it was very difficult from what I've gathered.” **Participant 6**

“What I've picked up so far, is that people that knew each other before we moved into this remote working, some of them they still cling to each other, they've built relationships then and so, even now, during this hybrid, they still connected and to a point that when you have a new person joining the team, that person it becomes so hard for them to integrate easily. Because these people, sometimes they are so used to working in a particular way.” **Participant 4**

This subsection presented results on the construct of interpersonal relationships and its importance in collaboration within remote teams. From the findings, the researcher noted that team members are generally well-informed on the need for and importance of having interpersonal ties, and team challenges of having no or limited ties. However, despite this, team members are having challenges integrating new entrants, leading to problems with interpersonal ties, translating to inefficiencies within remote teams.

5.5.1.2 Trust in collaboration

The construct of trust was viewed by participants largely in the same light as they viewed interpersonal ties, citing that lack of trust between team members makes collaboration difficult. Similarly, participants indicated that they found it difficult to trust individuals that they have only ever collaborated with remotely, without any in-person relationship. Regarding the importance of trust, it was seen as necessary in remote teams mainly because of the physical distance between team members, requiring them to trust each

other to deliver. With trust, individuals are able to trust that the next person will do what is expected of them to contribute to a team, and team leaders have to trust that members are putting the amount of effort necessary to deliver quality results. The following quotes echo the importance of trust in remote teams:

“Trust has become a big thing in terms of collaboration because right now, I can’t see the person and what they are actually doing, and whether it is what they are expected to do if we are working on a document or something like that. So, trust really plays a big part.” **Participant 14**

“You have to trust someone to do what they need to do in order for you to continue with your job. Second-guessing is going to firstly hamper you; it’s going to hold back on what you’re doing. And you got to trust that your team members are doing the right thing. Trust building doesn’t happen immediately. It comes with time. And once you build trust, you’ll be able to trust them even if a person does make a mistake. You can trust them because of their work ethic. And once you trust someone, I think that goes a long way.” **Participant 7**

In working environments that lack trust, collaboration was seen as highly challenging as team leaders end up refusing to delegate to those whom they do not trust. Besides worsening team dynamics, this also leads to inefficiencies in the teams’ delivery of their objectives. The following quotes relate to scenarios of no trust in the workplace:

“To be honest, there are certain people in the team I trust and certain people I don’t. So, the people that I trust, because I’ve built that relationship, I’ve seen the work ethic, I then can say, guys, I need this done. Also, even if they have a problem, even if they come back and say sorry, I haven’t sorted this out, I know it for good reason because I know how they work. And then with the person that I do not have a trusting relationship, unfortunately, I do not have that with some people within the team. I would be more on their case because I want to make sure if they are prioritising my item.” **Participant 7**

“I find that the team members that I don’t trust, I don’t even try and collaborate with, I’d rather try something on my own. And from start to finish, even if I fail at

it than work with somebody I don't really trust. And I find that the trust takes time to build because there's very little interaction, so you actually really don't know the people.” **Participant 3**

Lastly, as previously stated, participants also discussed trust in the sense of prior working history. Short working relationships that have so far been entirely virtual were viewed negatively when it came to trust building, as participants indicated that they hardly have any interactions outside of work. Consequently, persons joining new teams often run into cliques that already have their own understanding and a way of doing things, leading to the new entrants feeling left out. This is attested by the quotes below:

“Right now, I have trust issues with my current team because I don't know them, especially the one lady that I haven't met. When I joined the team, the first thing I did was I asked her for a recruitment dashboard. Her recruitment dashboard didn't have at least four of the positions that she was escalated on. And that already broke my trust in her and this has absolutely impacted our collaboration.”

Participant 12

“I've noticed that people sort of create a small community of people they know, who they can call. It's because of the communication and the trust that they've built among themselves, not that they excluding anyone new. But it's because of their trust, you know, and collaboration that has been happening.” **Participant 8**

In summary, findings in this subsection indicate that trust, similar to interpersonal ties, is an important ingredient into a successful collaborative relationship. From the examples provided, it was noted that teams that lack trust face huge challenges in collaborating. Trust was found to be especially lacking in teams where some people are new entrants and a prior in-person working history does not exist.

5.5.1.3 Communication

Following interpersonal ties and trust, the study sought to establish the extent to which communication is important for collaboration in remote teams. Results on communication were in line with those on interpersonal ties and trust, with participants arguing that communication is especially important in the current remote working

environment. Team members have to be especially forthcoming when collaborating remotely because they may step away from their emails for some time, go on vacation, or be distracted with other things that make it necessary to inform other team members. Similarly, feedback is essential for remote collaboration because it ensures that others get the information they need, or at the very least, appreciate the challenges that another team member is facing. The following two quotes attest to the importance of communication in collaboration:

“It is very important that the communication levels are actually kept. Working from home, when you're trying to get a person, and this person may have stepped out of the workspace and maybe they have gone to the shops, if there isn't any communication, you just keep on calling repeatedly on Teams or WhatsApp and you can't get hold of this person. And if they don't tell you they are going out, it becomes hard if you sent something and expect an instant answer.” **Participant 4**

“Feedback is very important. And even if there is a delay, even if there is an issue, I just think communication is super important. I can't walk to your desk. Like I said earlier, certain things that I can't do anymore, because I'm not around you. So, if you can't answer an email, you use WhatsApp or a text to say, I'm this far with this, or this is what's happening to keep each other in the loop. I think it's super important.” **Participant 14**

Communication breakdown in remote teams was blamed on a variety of factors such as bad communicators, language and cultural barriers, and the lack of prior in-person working history. Relating to bad communicators, participants noted that some people hardly provide any information on their whereabouts and challenges, leading to bottlenecks in team performance. From leaving their home to run errands without communicating, to poor performance, bad communicators were found to be a major problem for successful remote collaboration, as stated by participant 9 below:

“There are also one or two instances where we've picked up within the team where you've got people that really do not communicate properly. They are slacking in their work because they have taken this whole work from home thing

as a holiday, for lack of a better phrase. And they've become dependent to a point where when assigning work, they don't do it to the best of their ability. And then when the system analyst comes in and has to go through the work, they realise at that point that this person didn't even try.” Participant 9

Additionally, given that some participants collaborate remotely with people from all over the world including India, other parts of Africa, and the United Kingdom, language and cultural barriers were also blamed for communication breakdown. Differences in culture have made it challenging for some teams to communicate informally outside of work, since seemingly small practices such as certain jokes can be interpreted in a drastically different way by colleagues from a different culture. As a result, it was found that multicultural remote teams often end up with strictly working relationships, with hardly any outside interaction.

“This is a big one for me because I have struggled with individuals. Not picking on any sort of culture or race or anything but just the experience that I've had. There are few people from XXX¹ that I struggle with, mostly because their English speaking wasn't that great. It's not their first language, fairly understandable. And I would ask a question, and I get an answer, but it made no sense. And then, we'd spend 20 minutes trying to unpack their answer, where it could have been a five-or even a two-minute response. And then all that time is wasted because we didn't understand the wording, you're unable to articulate yourself in a specific way.” Participant 7

The last barrier to communication was the lack of prior history of in-person collaboration. Without that physical working relationship, participants reported that they found it challenging to relate to others as there are often subtle personality traits that can only be picked up while communicating in person. For instance, non-verbal communication often has challenges conveying tones such as sarcasm and jest, and where people already know each other's personalities, it is easier to interpret these.

“So, we have meetings, messaging, and calling platforms. But I think what tends to happen is, like, because we're not in one room, people have that fear of intruding. Because they don't know what's in your space, unless there's that bond already formed, like, where I can call you at any time. And when you are not in a frame or space to speak, you will let me know.” **Participant 5**

“If it's a new joiner, as an example, then they don't know the way we work and the company's ethos. But if it's somebody that's been here for a while, and you have really worked with them, you assume that they know what they need to do”.

Participant 13

Overall, this subsection showed that communication is essential for remote collaboration as much as interpersonal ties and trust are also important. Effective communication is however affected by barriers such as bad communicators, cultural and language barriers, and the lack of prior in-person working history.

5.5.1.4 Prior history of working together

The influence of prior history on collaboration has been well documented in this chapter. As per discussions on all other constructs, the importance of interpersonal factors and social norms on collaboration, as well as the importance of interpersonal and social factors on knowledge sharing were found to be largely dependent on people's established in-person working history. With individuals being wary of new entrants in the team especially during remote working, new entrants appear to be facing a lot of challenges in integrating, establishing interpersonal relationships remotely, and conforming to established social norms. For the purposes of discussing findings, therefore, prior history was viewed as an over-arching theme more than a standalone factor influencing collaboration. The following quotes show some instances of participants emphasising the importance of having a prior working relationship:

“I think with my direct team, I mean, we've all worked together physically, therefore, moving to remote has not been a challenge in terms of just that interaction. However, in terms of collaborating with other colleagues that I have not necessarily worked with personally, I wouldn't say it's that much of a

challenge, but it's different. For example, I'm seeing people that I don't know, but always see an email from them. The first time I'm on a Teams meeting with them, I have to find out if they are lady or a gentleman then.” Participant 1

“I've got two people that report directly to me. The one is an older lady, who applied for the position herself and didn't get it. But because she and I have met before, and we've had one on one interactions, she understands where I'm coming from, and I'm starting to get where she's coming from, we've been able to connect on a deeper level, versus the second person who's actually closer to my age group. I've never met her before, we've only really dealt with each other via email, and Teams and electronically, and I find that a lot of what I say to her gets lost in translation.” Participant 5

The above shows how prior history affects collaboration. The researcher noted, however, that in the majority of cases, participants were not focusing much on how teams can better integrate new entrants, but rather on the inconveniences of having new people with whom there is no prior working relationship. The implication of this is such that teams are more focused on their problems rather than finding ways of building relationships with new entrants while working remotely. With labour turnover being a natural part of life, teams have to sooner or later find ways to collaborate better with new members. Participant 14, for instance, mentioned that team leaders should make it their goal to ensure that members collaborate better, including new entrants. Meanwhile, participant 11 argued that it is a prerogative of the entire existing team to want to integrate new entrants and share knowledge with them. The following quotes attest:

“I think my experience has been when the leader is able to demonstrate a level of wanting people to come together when in a bigger team and creating that shared vision and talks of this is where we are going, this brings people in. That helps to in terms of knowledge sharing.” Participant 14

“It has to be the people who are already established within the team who aid that person in them feeling like they belong, because if we are almost segregating them, and not allowing them to, in a sense, shine, or show them value, then they will never feel like they belong.” Participant 11

Furthermore, some participants held a view that there is an expectation that new joiners are supposed to know how things work and that there is reluctance from the team to assist.

“I don’t know if people in the office are not trained, or they’ve never been on the receiving end of being new during COVID, or being a fully remote employee, like they don’t know what it feels like. So, they are oblivious, like they continue as though, like they assume, you should know everything.” **Participant 3**

“.. so, you could see that these people are struggling in terms of getting or understanding of the system or the support from the existing people, because they assume that you should know these things, even if you’re new.” **Participant 4**

Findings presented in this subsection underline the importance of prior history in linking all other constructs with remote collaboration and knowledge sharing. Teams, however, have a lot to do to begin working on solutions for integrating new entrants, since there will surely be new people continuously joining remote teams in the future.

5.5.2 Social structures

The study also sought to establish the influence of shared social norms on collaborative relationships within remote teams. It was theorised that teams with established social norms enable better collaboration, a lack of understanding of such norms can be problematic for teams. The following discusses the two sub-categories focused on collaboration norms.

5.5.2.1 Norms on collaboration

A central discussion point that emerged refers to the need for one to respect established team norms, to ensure that one can belong to that team. Noted established norms had to do with issues such as meeting times, communication channels, informal networks, and other things. The majority of participants indicated their frustrations at other individuals that fail to follow established norms, as shown by the following selected quotes:

"I've had one or two instances where I am pulled into a meeting at 6pm. The meeting wasn't discussed with me prior. But it's a meeting that I did want. So, because of the fact that I have been wanting this meeting, but it wasn't discussed with me, it's a bit annoying. Because these meetings tend to come at a time when I'm busy with something else on a personal note." **Participant 9**

"I'd say, for us, I know one of the big things they always used to say is, guys, we can't be having a meeting during lunchtime. People would always complain about this, saying, can we just not do this, because we need our time as well?" **Participant 11**

Similar to all other constructs, shared social norms were highly linked to the prior history of in-person collaboration. Participants argued that new entrants were always unfamiliar with established social norms within teams, and are, therefore, the ones that mostly break these norms. This is worsened by remote working since the absence of in-person communication means new entrants will take longer to learn the team's methods. The following quotes attest:

"It's a bit of a challenge for new people that are joining when the team, as they join, the team already has some sort of cadence. And because they are remote, they are not fully aware. So, as an example, like if you don't invite a person to a meeting that they don't know about, they wouldn't even know that they're not invited to a meeting". **Participant 5**

"I'd say social norms are a major factor. If you're joining a new team, you shouldn't go into it assuming that our social norms also apply to other people, so it's almost a check to say, guys, is this okay? For instance, no meetings before nine. Now you've set up this meeting early. So, you've already got a group of people coming into this meeting who are not happy because that is not their norm". **Participant 11**

In summary, findings on established social norms showed that many teams have existing ways in which they do things that they would rather stay undisturbed. New

entrants to such teams are often faced with pressure to integrate as quickly as possible before they are blamed for changing norms and frustrating existing members.

5.5.2.2 Norms on communication tools

This subcategory sought to understand the agreed forms of communication tools or forums that are set in place that the team needs to adhere to in order to give proper feedback for collaboration. As asserted by Markarius and Larson (2017), social norms need to be explicit to influence behaviour and build trust. The researcher noted that most common forms of tools that participants relied on for communicating progress are teams call, daily stand-ups, weekly meetings, emails. below quotes attest this.

“So, the only ritual we follow religiously, is the daily stand-up. Where people give their updates on a particular item there are busy with.” **Participant 4**

“We meet in person at least once a week, because it’s better for our projects.” **Participant 3**

The researcher noted that other teams rely more on informal types of feedback

“I think the way that we sort of conduct ourselves in the team, I encourage emails, I love emails.” **Participant 1**

In addition, there was a sense from some participants that social norms are treated casually and not explicitly set for some team.

“...we’ve actually never talked about social norms formally...” **Participant 5**

“Some people have sort of like intellectual capacity to pick up on the norms immediately, and some don’t.” **Participant 6**

In this sub section the researcher noted that some teams are structured and have their rituals for communication which works for collaboration, however, for other teams’ explicit rules have not been set to guide acceptable ways of communication. This may cause communication issues for these teams further down the line.

5.5.3 Summary for research question 2

This theme discussed the influence social factors had on collaboration, specially focusing on the quality of the relationships, trust between members, communication, and history of working together. The results showed that there is awareness on the importance of building relationships to facilitate collaborations, while teams that worked together prior to remote work maintained the relationships, but it presented a challenge for new joiners. Similarly, in the absence of face-to-face collaboration, trust and communication were found to play a big role collaboration. Across the social factors, the researcher found that members with established relationship (prior history of working together) worked better together indicating strong ties, however, it remains a challenge for new joiners.

With regards to collaboration norms, some teams have their own ways of working and have processes set in place, while others are more casual.

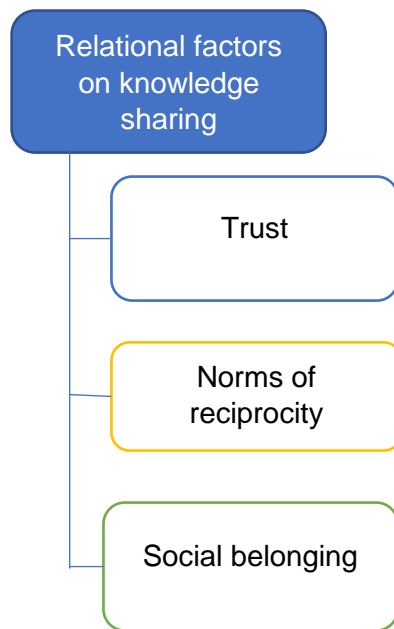
5.6 Results for research question 3

Research question 3: How do social networks contribute to knowledge sharing in teams working remotely?

The third objective of this study sought to understand how the relational dimensions of social capital influenced knowledge sharing when working remotely. In achieving this objective, the data collected centred around social factors that enable members to exchange information. The respective findings on these variables are presented in this section.

Responses to research question 3 generated one theme that is relational factors on knowledge sharing. Figure 5 shows an overview of the summary of the categories and themes which represents views from the data.

Figure 5: Overview of research question 3 results



The created codes related to research question 3 are presented in Table 8. The themes were created from 9% of the codes created during the thematic analysis, which totalled 8 codes in this category. Table 8 provides the categories created under these themes.

Table 8: Research question 3 theme mapping

Research question	No of codes created	Sub-category	Category	Theme	RQ code %
How do social factors contribute to the relationships within collaboration teams working remotely?	1		Trust in knowledge sharing	Relational factors on knowledge sharing	9%
	4		Norms of reciprocity		
	3		Social belonging		

5.6.1 Relational factors on knowledge sharing

The third theme that emerged from the study relates to the influence of interpersonal and relational factors on knowledge sharing. From the literature study, it was found that

interpersonal trust (O’leary et al., 2020), norms of reciprocity (Endres & Chowdhury, 2013), and social belonging (Farooq, 2018; Gubbins & Dooley, 2021) affect knowledge sharing within remote teams. The study sought to establish the extent to which these relational factors are applicable to knowledge sharing using a series of questions posed to the interview participants. Results on this theme are presented in the subsections below.

5.6.2 Trust on knowledge sharing

The first relational factor that was targeted for exploration is interpersonal trust. Based on literature, it was theorised that more trust leads to greater knowledge sharing, similar to the influence of trust on collaboration. Participants were therefore asked to discuss the extent to which trust levels in their teams affect how they share knowledge. From the results, it was established that trust levels had a significant influence on team members’ knowledge sharing. The existence of trust reportedly enables better communication and allows for delegation of responsibilities and informal interactions between team members. Instead of transactional relationships where individuals work in silos and only share the bare minimum, trust levels open up communication lines and ensure team members share more than just work-related knowledge. The following quotes support this:

“I think if you've got interpersonal trust, it makes knowledge sharing a lot smoother. Because I could have trust, for example, in one person in the team. And with the new platform that we're working on, which is AWS, I'm able to give him a call or drop him an email, and he will share the information without even being biased, he will give me everything I need to know. But if it's someone that there is no interpersonal trust, that person is just going to give you the bare minimum of what you need. And they're going to leave you like that.” **Participant**

9

“I had an experience where if the examiner is presenting a new tool, he was like, if you don't understand, I'm more than willing to make time you can come to me to take you through. So, I find that people are helpful in terms of clearing up certain concepts and ensuring that we're all on the same page. For knowledge

sharing, people are willing to make extra time to help you understand and I think there's just that dedication towards being on the same page.” Participant 14

In the absence of trust, however, participants argued that knowledge sharing will be reduced. For instance, due to the absence of trust, some team members may be unwilling to ask questions to one person that actually has the knowledge, due to a lack of trust. Consequently, the team’s output is affected as individuals become unable to participate optimally. In the same line of thinking, an individual who does not have a good interpersonal relationship with another may refuse to share key knowledge for the team to succeed, just because of the absence of trust between the two. The following quotations attest to the challenges of limited trust within teams collaborating remotely:

“My interns don't want to go to this lady for training, although she's the one who's got so much knowledge on HR. Everyone avoids her, as far as, please teach me how to do a reference is concerned, please teach me how to upload this on the system. No one trusts her to teach them the right thing because her work is never up to date.” Participant 12

“If you do not have a good personal relationship with that team member, you're going to struggle to get information out of them, they're not going to be willing to want to assist you, because it's just going to come across as it's a waste of their time. So having that personal relationship makes life a lot easier and makes getting information from a person a lot easier.” Participant 7

Similar to other themes on collaboration and knowledge sharing, participants also noted that trust levels are usually better where individuals have a prior history of in-person collaboration. From the results obtained, it was noted that team members largely viewed those they have worked with in the office before with more trust, while taking comparatively much longer to build interpersonal trust with new team members. In support of this, some participants argued that trust is difficult to establish in an entirely virtual collaborative setup where lack of face-to-face communication is at risk of being misinterpreted. While joined remotely by team members from different countries and cultural backgrounds, it is reportedly easier for misunderstandings to occur, worsened by the lack of physical interaction. The following quotes attest:

“Yeah, people that I know, let's say I knew them from before. So, I used to work in telecom from 2013 to 2015. Some of the people that I knew, then it was way easier for them to share knowledge than people I have newly met.” **Participant 3**

“Trust plays a very big part, you don't know this person, it takes longer to build those interpersonal relationships as well, because you don't get to interact with them on a daily basis, you know, which also breeds into the work aspect. Now, when this person is trying to reach out to you and needing assistance, it's very easy to say, I've got something else to do.” **Participant 11**

Again, the theme of prior history of working together comes through in this sub-section as well, and indicates that people who've worked together are sharing information fully because they trust one another. It remains a challenge for new joiners to be trusted as the relationship has not yet developed, thus people either withhold information or only share details related to the query.

5.6.3 Norms of reciprocity

As an anti-silo working system, norms of reciprocity were also theorised to be important in explaining knowledge sharing within remote teams. Here, findings generally mirrored what was found on trust, including the arguments that people reciprocate knowledge sharing more with those they have a prior history of working together with. Meanwhile, two main reasons for the low levels of reciprocity in remote teams were identified and discussed: the non-sharing of knowledge due to competition within teams, and the problem of working in silos. Using a worldview of “knowledge is power”, some team members reportedly hold on to important knowledge so as to appear more knowledgeable than their peers, thus, affecting team output. This is attested by two quotes below:

“Because XYZ believes in that thing of saying because knowledge is power, I'm not going to share all the information, I will withhold it, I will hoard it, I will be the clever one, or whatever the case may be and they withhold that information, and as a result, you build a culture where everybody withholds. So now you're

breaking a team instead of building a team because everybody now is withholding information that is needed by everybody else, and knowledge sharing is absolutely not gonna happen.” Participant 6

“We're supposed to be reciprocal with the information, but I just felt that like, the past few years, that there's a certain level of competitiveness. Sometimes people don't do it because they want to share as they want to be the top performing channel or whatever. They don't really always want to share that they know the tricks of the trade.” Participant 3

Similarly to this, working in silos without complementing each other was also blamed for the limited reciprocity within remote teams. The “isolated” nature of each remote worker clicking away at a physically far distance from the others can create an environment where one just wants to be done with their portion of their work and knock off for the day. In the end, fewer people will volunteer to check on their teammates’ progress, help diagnose challenges, and offer solutions. Other team members may also retaliate if they think they were neglected when they needed help, worsening the working relationships. The following quotes support this argument:

“I find that if you have someone who isn't necessarily a team player and doesn't see the importance of transferring the skill and operating in their own little silo, in order to cover up the mess that they are doing, is an issue as well. So that's what I'm finding with the problem makers are the ones that don't want to talk and collaborate with others, and others will go to them and take them for information, and they won't share.” Participant 12

“There are certain people that don't share information, and they are only out there to make themselves look good. So, they don't kind of like share that information. As a result, you block those people out, so whenever they come for any help, you don't want to help that individual. Because, you know, they are just out for themselves, they don't work as a team.” Participant 13

The discussions above generally supported the study’s established hypothesis that reciprocity is important for knowledge sharing within remote teams. A lack of reciprocity,

due to reasons such as silo mentality and competition between team members results in the lack of knowledge sharing and failure of virtual teams to build strong relationships beyond work.

5.6.4 Social belonging

As Farooq (2018) noted, a sense of belonging is a good motivator for people to put effort into their work and produce results. This study further hypothesised that in addition to interpersonal trust and norms of reciprocity, social belonging within remote teams is necessary for knowledge sharing. Findings from the interviews largely supported this view, with participants arguing that a sense of belonging within a team unlocks desires for one to contribute to their team and share knowledge with others. With a sense of belonging, it was argued that a worker feels their achievements are tied to the team's achievements, prompting them to work less as an individual but part of a team. As argued by participant 12 in one of the quotes below, one gets to "own the house" that they know is theirs, taking care of it and protecting it from harm.

"If this is your house, there's no way you're going to throw a piece of paper on the floor, you're not going to let her go to ruin. We're told that this is our South Africa, this is our land, don't pollute, don't do that. You own it, it is yours, so you don't want to ruin it, right? So that is what we need to make people feel that this is your team, this is your business if we fail. So, it is important to make people feel like a community because if I don't have ownership of something, I don't care whether it fails or not really." **Participant 12**

"I think social belonging is important. It's one of the key things for a team to thrive together and achieve its goals and objectives, the social belonging feeling like we are one that is important, it's an important thing that every team member needs to know about, to try to be part of the team. And then that will drive each team member to contribute towards one thing and being engaged." **Participant 10**

While the issue of social belonging was noted to be important for knowledge sharing, many participants lamented that working remotely has eroded social belonging. This is

because people are individually detached from each other, don't get to interact socially with colleagues nearly as much as before and, therefore, tend to share knowledge less. The following quote attests to this:

"I think once upon a time, that social belonging with a team before COVID, was a big thing. Now, I don't think people are actually still after that because people are more worried about their own lives than worry about trying to fit into the team. I think people are more obligated for lack of a better word, to focus on what they need to focus on. And not what, from a team perspective, people are trying to achieve. So, if I'm able to do the work that's assigned to me and finish, I'm happy I'm done, I can close my laptop and knock off, not realising that as much as I'm doing my own work, the whole team's effort needs to come together as one."

Participant 9

The history of working together was also brought up on the construct of social belonging, with the argument that people are tied closer to those they have worked previously in an office setup. The implication of this is that, in a remote setup, people gravitate towards those they previously knew, leaving new team members uninvolved. In this case, it is important for team leaders and existing members to support new entrants in belonging in the team, since for teams with strong ties, new members are usually beneficial for knowledge sharing. The following quotes speak to the challenge of social belonging in remote teams:

"I feel like that's an area that we lack in, especially now with this virtual aspect. I feel like when we were in the office, there was definitely more of that welcoming atmosphere because you could sit and have this conversation, go and grab a coffee or go for lunch. So, it was easier to integrate a person into the team. But now virtually, it's almost completely gone. It's shut out. People who know each other within the team interact with each other, and the newbies are in essence left out." **Participant 11**

"I think it is a struggle for new people to actually get involved because it's like, us, at our company, we do things very different compared to the other companies

so it's like a new start-up, they feel the need to first earn their stripes before they actually are let in.” **Participant 13**

In addition to non-existing work relationships, some participants expressed that the only time they felt like they belong is when the team shared a common cause. Participant 3 had this to share as a new joiner in her organisation:

“The only time when we’ve rallied together, and I felt belonging, is only now when I’m going through adverse challenges. The team witness me go through a very adverse challenge on teams meeting, and they are like no, no, that’s not right, you must do something. This is the first time where I felt like we are a unit, it’s on this huge challenge with my manager that I’m having.” **Participant 3**

Participant 3 also felt strongly that teams with established relationships should make an effort try to be inclusive to new joiners:

“It has to be the people who are already established within the team who aid that person in them feeling like they belong, because if we are almost segregating them, and not allowing them to, in a sense, shine, or show them value, then they will never feel like they belong.” **Participant 3**

This subsection discussed the importance of a sense of belonging in knowledge sharing within virtual teams. Results suggested that while teams understand the importance of social belonging, there have been challenges in integrating new members that are joining in this virtual working environment. Without team leaders intervening to improve ties in the team, or existing members opening up to new members, teams with strong ties will fail to benefit from diverse ideas coming from the outside. The failure of teams to efficiently integrate new members should hence be viewed with the negative lense it deserves, calling for the need for team members to invest effort in accomodating new entrants as this is of overall benefit to the team.

5.7 Summary of research question 3

In this theme, the researcher noted the importance of social-relational factors in enabling collaboration and knowledge sharing. The centre is around relationships, some are

formed prior to working remotely and some had to be fostered during remote work. Having history of working together is the strongest factor that comes out that enables easy exchange of information.

5.8 Conclusion

This chapter presented findings on the impact of remote working on collaboration and knowledge sharing using data from 14 interviews conducted with workers in various sectors in Johannesburg. Four main themes emerged from the analysis of data.

The first theme inspected the quality of collaborative networks which discussed three categories, namely office-based collaboration, quality of virtual collaboration and the accessibility of information when working remotely. Office-based collaboration sought to understand how people collaborated in the office before becoming remote, and the quality of virtual collaboration looked at how people collaborated virtually with the intent of understanding the differences between the two. The last category was to understand the accessibility of information internally and externally to the team.

The second theme sought to understand the influence of social factors on collaboration, and these factors were: interpersonal ties, trust, communication, social norms, and prior history. The third theme investigated the influence of social norms on virtual collaboration. The fourth theme relates to the influence of relational factors on knowledge sharing, and included interpersonal trust, norms of reciprocity, and social belonging. In all the themes, an over-arching theme was that prior in-person working history affected the extent to which all interpersonal factors and social norms affect collaboration, as well as the extent to which interpersonal and relational factors affect knowledge sharing.

The next chapter presents a discussion of the study's findings in line with literature, and implications for workplace remote collaboration.

Chapter 6: Discussion of results

6.1 Introduction

In this chapter, the research findings are discussed in detail, within the context of the study and in line with literature discussed in chapter 2, as well as the findings' implications on the future of remote working. The insights gathered from the findings of the study are dealt with in this chapter by comparing and contrasting to the concepts discussed in the literature in order to answer the research questions in chapter 3. The chapter contains a theme-by-theme overview of results, which are the quality of collaborative networks, social factors on collaboration, social structures, and relational factors on knowledge sharing.

The important findings are discussed in detail as per each research question. However, it is worth noting that 76% of quotes related to the quality of collaborative networks, in particular the challenges noted on remote work places' emphasis on the key elements to facilitate a smooth collaboration between employees. Equally, the emphasis placed on history of working together is noted as the glue that enables the smooth collaboration, and thus, the lack thereof results in hindered collaboration.

6.2 Discussion of results for research question 1

Research question 1 was intended to gain context on the extent to which collaborative networks have been impacted by remote work by establishing the behaviours people carried pre-remote work and efficiencies associated to in-office work contrasted against remote working now. Extant literature on the diverse views on remote work exist, and some researchers viewed remote work as essential strategic decision in times of crisis (Hite & McDonald, 2020), which is what happened with the COVID-19 pandemic – organisations moved to remote work, while, at the same time, other researchers noted the benefits and challenges on remote work (Felstead & Henseke, 2017; Galanti et al., 2021; Hafermalz & Riemer, 2021). Thus, it is important to understand the extent to which the move to remote work has influenced work relationships.

6.2.1 Quality of collaborative networks

This theme included discussions into four major issues which were: office-based collaboration, quality of virtual collaborations, challenges in collaboration within remote teams, and the accessibility of collaborative information in remote teams. In South Africa and elsewhere around the world, while there were limited and rising instances of remote working, the proportion of employees working remotely increased substantially due to the pandemic (Bell, 2021; Sostero et al., 2020). The sudden shift, however, meant many employers and employees were unprepared, and collaboration was one of the most negatively impacted aspect of working (O’leary et al., 2020). This study, therefore, theorised that collaboration was easier for teams in office set-ups as opposed to remote working set-ups, leading to the collection of empirical data on the subject.

6.2.1.1 Face-to-face collaboration

Upon reflection of office-based collaboration, most participants viewed working closely with colleagues in-person as beneficial for many reasons and noted that social interactions and collaboration with colleagues was easier. Several participants drew a key contrast between remote and in-person working by highlighting how one could easily go into the other person’s office and ask for advice, ask for information, or just chat informally. Additionally, it was found that casual social connections were simpler because the office allowed for flexibility and informal talks, which allowed people to chat and exchange information wherever they met. In this kind of a setup, the researcher noted that workers could establish interpersonal connections easier as there were more chances to chat with colleagues, instead of a remote setup where most encounters are structured. The findings are similar to Sjølie et al. (2022), where individuals found face-to-face collaboration easier than online collaboration, because face-to-face collaboration offered richer social context and opportunities. The insights from literature when compared against the findings of the study suggested that employees work well together when they are connected more closely, and being in office was able to provide that because employees could talk to one another casually and not be restricted to work related matters only, which meant that one could get a quicker response from a colleague.

6.2.1.2 Quality of virtual collaboration

6.2.1.2.1 Challenges with remote work

The findings revealed that working remotely was associated with several challenges for team collaboration, as found in the study. Many participants reported challenges relating to the unavailability of team members in times of need, the elimination of ad hoc interactions, some team members feeling alone and unsupported, and people becoming strangers without in-person interaction. These findings appear to conflict with empirical studies that associated working remotely with improved psychological well-being and work-life integration (Mostafa, 2021) as well as improvements in productivity (Galanti et al., 2021; Hafermalz & Riemer, 2021). On closer examination, however, these studies were mainly focused on the experiences of individual employees instead of teams. While many employees would be successful in a silo system while working remotely, the inherent knowledge sharing nature of teams meant that collaborating remotely resulted in challenges for team collaboration.

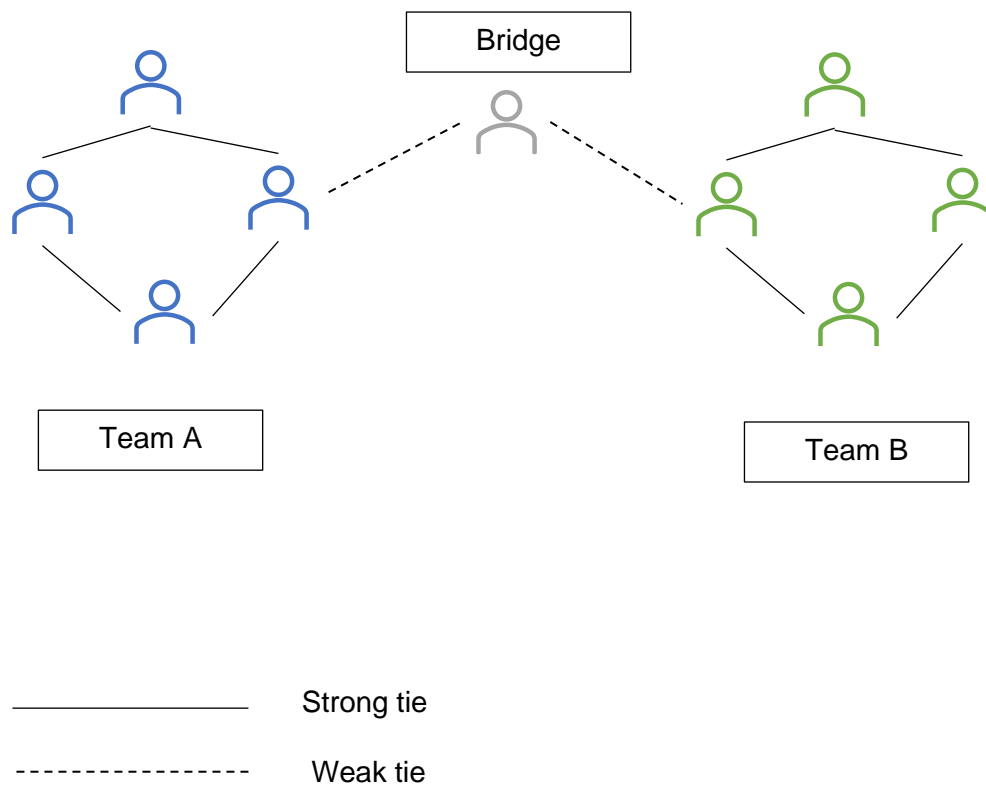
This study's findings on the challenges of remote collaboration corroborate previous studies that highlighted several challenges such as boundary-setting related to work time, culture and mindset shift from office-based to remote work, balancing between everyday related work with creativity, and how the lack of face-to-face interaction may result in reduced stimulation in the long-term which may hinder work progress, isolation, and ineffective communication (Chafi et al., 2022; de Vries et al., 2019; Wang et al., 2021). Maintaining social connections was especially stated as highly challenging as people were working in separate areas and did not get to interact "informally" as much. Given that research question 1 made up 76% of the codes created and was related to challenges experienced, it is evident that individuals were not ready for remote work, and that there was lack of sufficient preparation to ease the transition from in-person collaboration to virtual collaboration. The researcher also noted a potential concern in that although it has been over two years since the start of COVID-19 and the adoption of remote work, the participants' current experiences show that there have been no solutions offered and no ease of collaboration has been established yet. The challenges experienced were concerning and immediate remedial action is required for the success of many organisations with remote work policies.

6.2.1.2.2 Accessibility of information

The findings on accessibility of information in remote teams was that participants found it to be challenging. To access information, especially information outside of one's team, participants indicated that they have had to learn to build social relationships with other teams, as well as relying on team members they already know well. Accessing collaborative information sitting outside one's team speaks to the availability of bridges/ links that help close structural holes between teams (Lin et al., 2022; Yang et al., 2022). Therefore, for individuals to access information, they have to either rely on existing bridges of information or learn to become information bridges themselves in the absence of existing information conduits. In line with Ghaffar et al. (2018), this study found that building strong collaborative relationships with relevant persons was a key approach in which team members bridge structural holes within and outside their team. The absence of useful information bridges like business analysts in some organisations, however, meant that many teams are failing to fully benefit from the propositions that teams tend to benefit from having bridges of structural holes within them (Lin et al., 2021).

What transpired from the findings and literature was the importance of having a bridge to ensure that teams can exchange information and collaborate, and that was seen with teams that have people acting as bridges where information flows seamlessly between the teams. It was further noted that teams without a bridge have an opportunity to build relationships directly with other stakeholders, thus benefitting them by getting rich information directly, this places them at a better advantage than those who rely on one person to get the information. Figure 6 shows a bridge filling the structural hole and tie strength between teams.

Figure 6: Structural hole network diagram



Source: Author's own

6.3 Discussion of results for research question 2

Research question 2 intended to gain context on the influence of social factors on collaboration when working remotely, specifically looking at the interpersonal ties and social structures. The intent was to understand the qualities of the relationships between collaboration members. In their study, Sjølie et al. (2022) confirmed that the transition from face-to-face to virtual collaboration affected student's social interactions, thus it was a challenge to collaborate. In a similar study of social factors, O'leary et al. (2020) confirmed that the existence of social factors in a virtual collaboration increases the social ties between collaborators.

6.3.1 Social factors on collaboration

The second theme explored five main sub-themes falling under social factors, thus exploring how interpersonal ties enable trust and collaboration, how trust leads to collaboration, the importance of communication in remote collaboration, how prior history of working together eases remote collaboration, and the influence of shared social norms within remote teams on communication and collaboration.

6.3.1.1 Interpersonal relationships

The findings of this study corroborated with literature on the topic of interpersonal relationships. Most participants reported a high level of erosion of interpersonal ties between team members as communication became more structured, purposeful, and work-focused. The erosion of interpersonal ties meant that working relationships became more transactional than collaborative, as confirmed by this study's findings, and this was in line with Ferreira et al. (2021). Similarly, Manca (2022) found that while most organisations were promoting collaboration between individuals and within their teams, the effort is often unsuccessful due to tensions that arise during interactions. The tensions are a result of lack of strong ties among collaborators and the reduced co-location impact on the creation of social ties with co-workers. The findings suggested that the underlying cause of the tensions and challenges in collaborating was due to a lack of strong ties between team members, because the interpersonal relationships have eroded during the period of remote work. While this finding in principle was in line with Granovetter's (1983) observations of social ties, it also highlighted how teams were falling well short of success in remote collaboration. When comparing the findings against the weak tie theory, participants suggested that workers are happier to only belong within teams where ties are strong, which was not inherently bad, but closes out such teams from new experiences and novel ideas (Keucheni et al., 2021; Lin et al., 2021). Team members working with individuals that they have weaker ties with (such as those they do not have a prior in-person working relationship with) have plenty to gain by accepting these new individuals and collaborating with them better.

6.3.1.2 Trust in collaboration

The findings on trust influencing collaboration were seen in the same light as interpersonal relationships. Individuals trusted those they have worked with before more as they know their style of work and that they can deliver. It has proven true that establishing trust with new joiners was a challenge (Gardner et al., 2020), as they were either excluded and, if included, there was some micromanagement. Challenges with interpersonal ties was found to translate into trust challenges, with team members having little trust of each other, partly because they hardly interacted socially outside of work. The findings in relation to literature established that early trust development was not necessary for existing team members, as trust was established prior to remote work. However, the study found that it is necessary to establish early trust for new joiners which may prove difficult for them to attain, as existing team member often exclude them from collaboration. Furthermore, to break the lack of inclusivity, the findings suggested occasional in-person meetings were crucial to establish social connection between members, where not possible, then emphasis on communication is a must.

6.3.1.3 Communication

The findings on communication were also highly in-line with literature, suggesting a lot of communication breakdown in remote teams, which was blamed on bad communicators, language and cultural barriers, and the lack of prior in-person working history. As noted by Yang et al. (2022), the shift to predominantly asynchronous communication by teams working remotely resulted in widespread breakdown as individuals find it difficult to reach each other. The ineffectiveness of communication in remote teams, together with challenges of maintaining social ties and trust, was found to be greatly neutralised by having a prior history of working together. Participants were evidently more trusting, patient, and considerate of those with whom they have worked together in-person before, leading to severe collaborative challenges where teams had new members. This finding supports previous empirical findings on the subject such as O'leary et al. (2020), Windeler et al. (2015), and Cummings and Dennis (2018). As noted by Barlow and Dennis (2016), team members who are not familiar with one another may struggle to build relationships and routines, which in turn will affect communication between the individuals, and potentially cause conflicts in the group. On the other hand,

where team members have previously collaborated within a physical working environment, virtual collaboration became relatively easier as members were already accustomed to each other's routines, challenges, and motivations (Windeler et al., 2015).

6.3.1.4 History of working together

The value of prior working history is apparent based on literature and this study's findings, but the researcher challenges teams to find methods of effectively collaborating remotely even with individuals they never worked in-person with before. This is far from impossible, given that where team members have no history of working together, early trust building can be crucial for facilitating collaboration. In line with Cummings and Dennis (2018), in the absence of established working relationships, team members can form their own social ties through offline interactions, which may help them build overall trust and collaborate better. Simply blaming collaboration challenges on the lack of strong ties neglects the role of existing team members as well as team leaders in building cohesive teams, thus, there is a need for teams to invest in integrating new entrants better than presently.

6.3.2 Social structures

6.3.2.1 Norms on collaboration

The findings in this section indicated that social norms were not explicitly set and not widely known by everyone in the teams. Some participants reflected on meetings that were set either during lunch time or outside of working hours, which was seen as a lack of understanding of established social norms. The findings of Makarius and Larson (2017) indicated that norms need to be explicit so that interactional behaviour is clear. In addition, the creation of norms promotes individuals' availability (ten Brummelhuis et al., 2021). What was clear in this study was that lack of norms creates a misunderstanding on collaboration behaviours. Similarly, the lack of norms may be indicative of some of the challenges indicated earlier, such as availability of members, no or late replies to emails or a lack of follow-ups. Therefore, the study found that when teams transitioned to remote work norms were not explicitly set to guide teams how to

collaborate, and for the teams that established norms failed to discuss the norms with new joiners in their teams. This study concluded that for the success of virtual collaboration, team's social norms must be explicitly set in the early stages of collaboration to prevent any behaviours that may impact collaboration progress. As seen in Chapter 5, if social norms are not made clear and explicit, individuals experience various challenges with collaboration. Furthermore, the assertion made by Whillans et al (2021) that relaxing norms allows team member to collaborate more organically, should be looked at in context, where collaboration is constrained due to challenges found in the study, it is advisable to enforce social norms and they can be reviewed until such that all individuals in the team have built strong ties to collaborate organically.

6.3.2.2 Norms on communication tools

This subsection sought to understand the processes and technology tools that teams agreed on for effective communication. The preference of technologies and interactional behaviours must be clear to all members (Makarius & Larson, 2017). The researcher noted that with regards to tools and processes, clear norms were established, for example some teams encouraged emails as a form of communication tools, while other teams relied on daily stand-ups or weekly meetings. Where norms were clear, it was suggested that collaboration was working effectively. The key learnings on this subsection were that norms are more important in a virtual environment to guide collaboration behaviour. It is also noted that the norms work for some team and others not, but the challenge is when the norm is not widely known, for example one team only preferred the use of email, so for a team that prefers daily stand-up or MS team chat for communication, they may get to see a query sent via email later, thus causing a delay. Therefore, norms should not only be implemented at team level but should be widely implemented at department or organisation level.

6.4 Discussion of results for research question 3

Research question 3 sought to understand the influence that relational dimensions of social capital have on knowledge sharing when working remotely. In his study, Ahmad (2018) discussed the importance of knowledge sharing in an organisation to improve

performance, and therefore, in the absence thereof, learnings may not take place and innovation may be impacted.

6.4.1 Relational factors in knowledge-sharing

The third theme of the study related to an exploration of how interpersonal and social factors affect knowledge sharing among remote teams. Sub themes contained include how interpersonal trust contributes to knowledge sharing in remote teams, the importance of norms of reciprocity in knowledge sharing within remote teams, and the influence of team social belonging on knowledge sharing within remote teams.

6.4.1.1 Trust in knowledge sharing

Relating to the notion of trust specifically, it was posited that when trust is deeply embedded within the team, individuals are likely to participate in the knowledge exchange (Han et al., 2020). Stronger trust within the team creates greater opportunities for team members to express their personal thoughts and feelings. Particularly, trust fosters the development of a positive emotional space with enduring social and affective resources (Chou & Pearson, 2012; Jahanshahi et al., 2020), which improves the quality of conversation, communication, and knowledge-sharing (Lin & Joe, 2012).

The study found that the existence of trust enables better communication and exchange of information. Instead of transactional relationships where individuals work in silos and only share the bare minimum, participants indicated that trust levels open up communication lines and ensure team members share more than just work-related knowledge. This is in corroboration with Han et al. (2020), who found that team members are more willing to exchange knowledge with those they trust more. In the absence of trust, participants argued that inefficiencies became rampant, and some people, such as interns, were not even willing to ask for assistance from those they do not have a good relationship with. The researcher noted this point as interesting because there is resistance from new joiners to request information, indicating trust was broken before it could be formed. Thus, future exchange of information will remain a constraint. Social relationships are very important in remote teams for trust building, because having that

trusts translates to overall team performance improvements (Hejase, 2014; Xiao & Cooke, 2019).

6.4.1.2 Norms of reciprocity

The findings on reciprocity also supported previous studies, with participants emphasising that they normally share information with those they feel will reciprocate. This links back to the notion of trust again, as reciprocation means individuals are comfortable engaging in mutually beneficial information sharing exercises. In addition, the study found that two main reasons hinder healthy levels of reciprocity in remote teams: the non-sharing of knowledge due to competition within teams, and the problem of working in silos. The subject of, reciprocity, is however still fairly under researched at this time, specifically in the context of remote teams. As a result, while studies exist that point to the importance of reciprocity, little is known about the consequences of a lack of reciprocity in teams that collaborate remotely. Existing understanding, however, is clear in that reciprocity is important for positive team attitudes, effective communication, and improved team performance (Endres & Chowdhury, 2013; Ganguly et al., 2019). This hence infers that lack of reciprocity negatively impacts team cohesion and performance, effects of which can only be more impactful for remote teams. Team members in remote teams, therefore, have the responsibility to build reciprocal relationships that promote richer knowledge sharing.

6.4.1.3 Social belonging

Participants were also clear on the value of social belonging in fostering knowledge sharing within remote teams. The majority argued that a sense of belonging within a team unlocks desires for one to contribute to their team and share knowledge with others. With a sense of belonging, it was further indicated that a worker feels their achievements are tied to the team's achievements, prompting them to work less as an individual but part of a team. While the issue of social belonging was noted to be important for knowledge sharing, however, many participants lamented that working remotely had eroded social cohesion within teams. This is because people are individually detached from each other, don't get to interact socially with colleagues nearly as much as before and, therefore, tend to share knowledge less. These findings

show a worrisome position, given how empirical studies have affirmed that identification influences knowledge sharing (Ho et al., 2012). Kim et al. (2020), for instance, found that social identification and the quality of knowledge sharing create a connection between members based on the frequency of their interaction, relationship, and group task, leading to better team performance. Similar to reciprocity, there is currently a dearth of empirical studies investigating the value of social identification for knowledge sharing, specifically within remote teams. This study made conclusions on the value of social identification based on pre-pandemic established knowledge.

The influence of prior working history was found to be a factor interplaying with the value of trust, reciprocity, and social identification for knowledge sharing. Similar to the influence of prior history on collaboration, the study found that workers were more comfortable sharing knowledge with those they had previously worked with in-person. The implication of this is that, in a remote setup, people gravitate towards those that they already previously knew, leaving new team members uninvolved. Consequently, it is important for team leaders and existing members to support new entrants in belonging in the team, since for teams with strong ties, new members are usually beneficial for knowledge sharing. Without team leaders intervening to improve ties in the team, or existing members opening to new members, teams with strong ties will therefore fail to benefit from diverse ideas coming from the outside (Hu et al., 2019), leading to a lack of development. There is, therefore, still a need for teams to move away from their comfort zones of collaborating only with those they have strong ties with, to new team entrants for richer knowledge sharing.

6.5 Conclusion

This chapter focused on a summary of findings from both literature and this study. The findings for research question 1 clearly showed that employees were not ready to shift to remote work and the transition to virtual environment has since been difficult and presented challenges. As far as coordination and information flow between networks was concerned, more structured teams had a structural hole bridge to close the gap, while teams without such individuals were forced to act as bridges. The discussion of research question 2 highlighted the need to build and maintain strong connections within the teams, the lack thereof impacts building relationships and trust, and the

communication is poor. Overall, those with a prior history of working together, collaborated better but left new entrants excluded. The findings of research question 3 discussed the findings on relational factors on knowledge-sharing, which again showed the importance of trust, reciprocity, and social belonging in enabling sharing of information.

The next chapter puts forward suggested recommendations based on the findings, discusses the implications for future research, and concludes the entire study.

Chapter 7: Conclusion and recommendations

7.1 Introduction

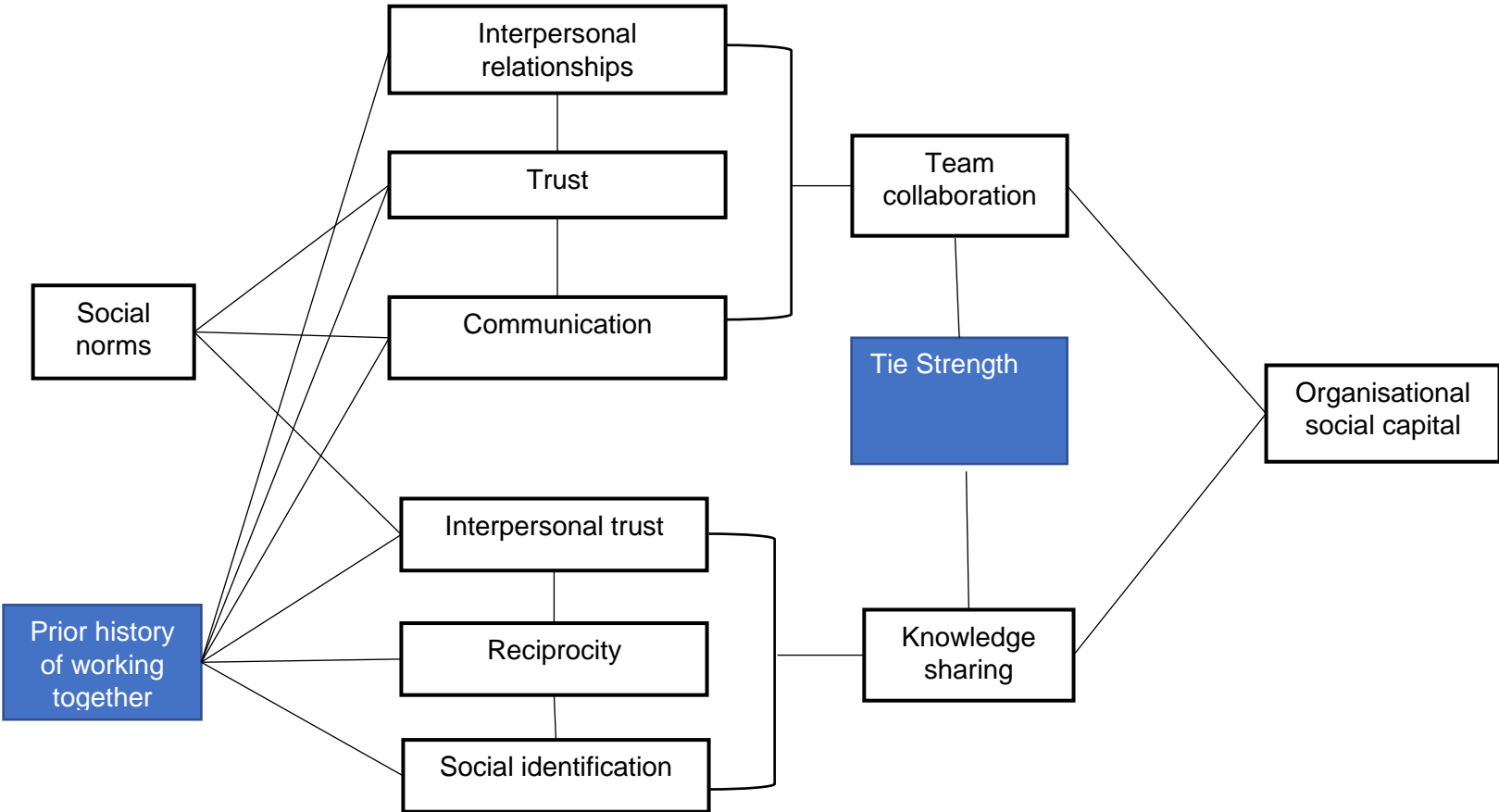
This chapter concludes the findings of the research. Integrating the findings from chapter 6, this chapter provides recommendations, suggestions for future research, and the overall conclusion of the study. A proposed framework based on the findings is also included in this chapter.

7.2 Principal findings

The purpose of the study was to explore how relational and social factors affect the collaboration process and knowledge sharing between individuals and teams in a remote work setting. The findings from the study were reflective of the reality for many workers and organisations that had to speedily move to remote work as a result of the pandemic. This move was sudden and less preparations were done on individuals and teams to carry out the same work activities as used to when in-office.

The shift to remote work brought both benefits and challenges. Individuals that had existing social relationships have maintained the relationship and continue to collaborate with those in their close networks, however, building new relationships is a challenge in a remote work setting, meaning teams are not leveraging from their weak ties for richer insights and collaboration. Again, relational-social factors have benefited those who worked together before the move to remote work more than those who joined organisations during the pandemic. This adds another challenge to leaders and organisations because new joiners may feel left out and, as a result, organisations lose out on the value they bring, or worse, they leave the organisation. An awareness of building relationships exists, however, it seemed more prevalent to those who are conscious of it and made a deliberate effort to be inclusive of new joiners.

Figure 7: Proposed conceptual model on social factors that build organisational social capital



7.3 Recommendations

A major finding of the study was how having a prior in-person working history between team members seemed to nearly eliminate all the major challenges associated with remote collaboration. This was evident in the discussion of challenges, the importance of social factors on collaboration, as well as the importance of interpersonal and social factors on knowledge sharing. Since remote working is most likely here to stay, and teams are not always going to be made up of individuals that have worked together physically, the researcher recommends interventions by leaders and team members for improving remote collaboration and knowledge sharing as follows:

Firstly, it is suggested that team leaders should take responsibility for inducting new members in remote teams. Where team cohesion is failing because individuals hardly know each other outside of work, do not trust each other, do not share information, or generally don't have fruitful relationships, team leaders should take it as their responsibility to rectify this. Any and all tools at the disposal of a team leader should be availed towards improving collaboration and knowledge sharing, for example, having more in-person social events for teams, encouraging informal conversations, and creating a welcoming environment for new entrants.

Secondly, in the same line of thinking, existing team members should also feel responsible for welcoming new entrants and making sure they are well inducted and integrated with the rest of the team. Concerning findings came out of the study in relation to inducting new entrants, with some participants reporting that they had not socially interacted with their fellow team members for months after joining the team. This is not the way to build ties and trust for better team collaboration and knowledge sharing, as it promotes overly transactional team relationships. Teams should especially be aware of the value that new entrants bring, since they have weak ties with the team, and tend to benefit the team by broadening available information. Existing team members are encouraged to take it upon themselves to induct new members up to well beyond work responsibilities, but also interacting with them socially through "getting to know you" and teambuilding activities. As new entrants realise that they are welcomed, they will be more likely to settle in, integrate better, which is ultimately good for collaboration and knowledge sharing.

Thirdly, the researcher recognised that integration of new members is not entirely a responsibility of team leaders and existing members, but also partly a responsibility of new entrants themselves. Given the great importance that team members placed on prior working history, new entrants have a lot to prove to existing members before trust can be built, and for collaboration and knowledge sharing to become fruitful. One technique new entrants can use to integrate faster would be to be inquisitive and interested in following established social norms within the existing team. By following team social norms, new entrants prove themselves as part of the team and respecting of existing structures. The end result is likely that existing members will trust new entrants more, hence, becoming more likely to collaborate effectively and share knowledge with them.

Lastly, still dealing with the challenges of collaboration and knowledge sharing in the absence of prior in-person working history, it is recommended that companies adopt a hybrid working model where possible, especially for new entrants. Without the constraints of distance, new entrants can benefit from interacting both formally and informally with their colleagues in an office environment. As was echoed by literature, and affirmed by findings of this study, having that personal working relationship opens up many team members to trusting new entrants, thus improving collaboration and knowledge sharing.

7.4 Manager implication

The implications for managers from this study is that they need to be more deliberate in ensuring remote collaboration is easy for employees to achieve common goals, this means that managers must be intentional in creating a social presence for online teams. This can be achieved by allowing teams to have some informal session online, and to make sure the team can occasionally collaborate in office where possible.

The findings also suggest that managers give special attention to new joiners in the team and be deliberate in facilitating relationships between existing and new members. The findings on existing social norms calls for managers to review their policies to

include mandatory training on acceptable behaviours of collaboration to improve the success of remote collaboration.

7.5 Study limitations

7.5.1 Scope

The scope limitation was mainly in the sense of type of target population and the area of the study. The target of working professionals was mostly from the financial services industry and meant that findings may not necessarily be generalisable to (1) the entire financial services industry and, (2) professionals working in other industries. IT professionals especially use specialised agile platforms for collaboration whose features, advantages, and limitations may be far different from what professionals in other sectors experience.

7.5.2 Subject bias

The study was focused on individuals that are fully remote workers or are on a hybrid model. All participants were fully office-based before the pandemic forced remote work. The data collected from the participants may be biased, therefore, in that there may be a degree of misrepresentation in their life experiences.

7.5.3 Researcher bias

The researcher as a tool in the gathering of data was not professionally trained to conduct interviews. The lack of experience could potentially influence the result of the research. Furthermore, the researcher is a professional in the ICT sector, which may add potential bias to the research findings.

7.5.4 Geographic bias

All participants were based in the Johannesburg area, and findings may have been skewed by specific experiences that professionals in Johannesburg face that other professionals in other cities or other countries do not face. More research in other geographic locations will therefore help create a clearer picture of the collaboration challenges facing remote teams.

7.5.5 Suggestions for future research

The study being qualitative in nature, the findings cannot be generalised to a population due to the sample size. Also, the study represents the views of senior managers to low-level staff, so if the study was to be further pursued to include views from executives, their views on the study may be different. Furthermore, it is suggested that future researchers expand the topic of collaboration by researching the experiences of professionals in other sectors. The sample representation of the other two industries is very small, thus, research using a larger sample from the telecommunication industry or rail transport management may add value to the body of research.

7.6 Conclusion

The study sought to explore the extent to which remote work impacted collaboration and knowledge sharing in the context of interpersonal and social factors. Findings of the study established a plethora of challenges teams have faced in effectively collaborating while working remotely which hindered collaboration. Further evidence show that relational-social factors are crucial for the success of virtual teams, and several challenges could be resolved by just focusing on creating a social presence online. Prior working history was found to be the over-arching theme affecting how effective social factors are on remote collaboration and knowledge sharing. Furthermore, this study does not only expand on the implications of remote work but provides valuable lessons that managers and organisations can learn from when implementing remote work policies.

References

- Abdeen, F. N., Fernando, T., Kulatunga, U., Hettige, S., & Ranasinghe, K. D. A. (2021). Corrigendum to “Challenges in multi-agency collaboration in disaster management: A Sri Lankan perspective” [Int. J. Disaster Risk Reduct. 62 (2021) 1–12] (International Journal of Disaster Risk Reduction (2021) 62, (S2212420921003605), (10.1016/j.ijdr.20. International Journal of Disaster Risk Reduction, 63(102399). <https://doi.org/10.1016/j.ijdr.2021.102502>
- Agee, J. (2009). Developing qualitative research questions: a reflective process. *International Journal of Qualitative Studies in Education*, 22(4), 431–447. <https://doi.org/10.1080/09518390902736512>
- Ahmad, F. (2018). Knowledge sharing in a non-native language context: Challenges and strategies. *Journal of Information Science*, 44(2), 248–264. <https://doi.org/10.1177/0165551516683607>
- Allameh, S. M. (2018). Antecedents and consequences of intellectual capital: The role of social capital, knowledge sharing and innovation. *Journal of Intellectual Capital*, 19(5), 858–874. <https://doi.org/10.1108/JIC-05-2017-0068>
- Altschuller, S., & Benbunan-Fich, R. (2013). The pursuit of trust in ad hoc virtual teams: How much electronic portrayal is too much? *European Journal of Information Systems*, 22(6), 619–636. <https://doi.org/10.1057/ejis.2012.39>
- Babapour Chafi, M., Hultberg, A., & Bozic Yams, N. (2021). Post-pandemic office work: perceived challenges and opportunities for a sustainable work environment. *Sustainability*, 14(1), 294. <https://doi.org/10.3390/su14010294>
- Barlow, J. B., & Dennis, A. R. (2016). Not as smart as we think: a study of collective intelligence in virtual groups. *Journal of Management Information Systems*, 33(3), 684–712. <https://doi.org/10.1080/07421222.2016.1243944>
- Barrero, J. M., Bloom, N., & Davis, S. J. (2021). *Why working from home will stick*. www.Nber.Org.
- Bedwell, W. L., Wildman, J. L., DiazGranados, D., Salazar, M., Kramer, W. S., & Salas,

- E. (2012). Collaboration at work: An integrative multilevel conceptualization. *Human Resource Management Review*, 22(2), 128–145. <https://doi.org/10.1016/j.hrmr.2011.11.007>
- Bell, T. (2021). *SIGN OF THE TIMES: Many are eager to drop remote work and return to the office, here's why*. Daily Maverick. <https://www.dailymaverick.co.za/article/2021-10-03-many-are-eager-to-drop-remote-work-and-return-to-the-office-heres-why/>
- Belovics, R., & Kirk, J. (2006). Making e-working work. *Journal of Employment Counseling*, 43(1), 39–46.
- Bhagwatwar, A., Massey, A., & Dennis, A. (2018). Contextual priming and the design of 3D virtual environments to improve group ideation. *Information Systems Research*, 29(1), 169–185. <https://doi.org/10.1287/isre.2017.0721>
- Bhattacharjee, A. (2012). *Social Science Research: principles, methods, and practices* (Second). http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=1002&context=oa_text_books
- Bhatti, S. H., Vorobyev, D., Zakariya, R., & Christofi, M. (2021). Social capital, knowledge sharing, work meaningfulness and creativity: evidence from the Pakistani pharmaceutical industry. *Journal of Intellectual Capital*, 22(2), 243–259. <https://doi.org/10.1108/JIC-02-2020-0065>
- Bock, G. W., Ahuja, M. K., Suh, A., & Yap, L. X. (2015). Sustainability of a virtual community: Integrating individual and structural dynamics. *Journal of the Association for Information Systems*, 16(6), 418–447. <https://doi.org/10.17705/1jais.00400>
- Borges, R., Bernardi, M., & Petrin, R. (2019). Cross-country findings on tacit knowledge sharing: evidence from the Brazilian and Indonesian IT workers. *Journal of Knowledge Management*, 23(4), 742–762. <https://doi.org/10.1108/jkm-04-2018-0234>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative*

- Research in Psychology*, 3(2), 77–101.
<https://doi.org/10.1191/1478088706qp063oa>
- Burt, R. S. (2004). Structural holes and good ideas. *American Journal of Sociology*, 110(2), 349–399. <https://doi.org/10.1086/421787>
- Burt, R. S., & Reingen, P. H. (1994). Structural holes: The social structure of competition. *Journal of Marketing*, 58(1), 152. <https://doi.org/10.2307/1252259>
- Cai, Y., Song, Y., Xiao, X., & Shi, W. (2020). The Effect of Social Capital on Tacit Knowledge-Sharing Intention: The Mediating Role of Employee Vigor. *SAGE Open*, 10(3). <https://doi.org/10.1177/2158244020945722>
- Chae, C., Yoon, S. W., Jo, S. J., & Han, S. (2019). Structural determinants of human resource development research collaboration networks: A social-network analysis of publications between 1990 to 2014. *Performance Improvement Quarterly*, 24(3), 55–76. <https://doi.org/10.1002/piq>
- Chafi, M. B., Hultberg, A., & Yams, N. B. (2022). Post-pandemic office work: Perceived challenges and opportunities for a sustainable work environment. *Sustainability (Switzerland)*, 14(1), 1–20. <https://doi.org/10.3390/su14010294>
- Chang, H. H., Chuang, S. S., & Chao, S. H. (2011). Determinants of cultural adaptation, communication quality, and trust in virtual teams' performance. *Total Quality Management and Business Excellence*, 22(3), 305–329. <https://doi.org/10.1080/14783363.2010.532319>
- Chen, W., & McDonald, S. (2015). Do networked workers have more control? The implications of teamwork, telework, ICTs, and social capital for job decision latitude. *American Behavioral Scientist*, 59(4), 492–507. <https://doi.org/10.1177/0002764214556808>
- Chiu, C. M., Hsu, M. H., & Wang, E. T. G. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision Support Systems*, 42(3), 1872–1888. <https://doi.org/10.1016/j.dss.2006.04.001>
- Chou, S. Y., & Pearson, J. M. (2012). Organizational citizenship behaviour in IT

- professionals: An expectancy theory approach. *Management Research Review*, 35(12), 1170–1186. <https://doi.org/10.1108/01409171211281282>
- Christensen, P. H. (2007). Knowledge sharing: Moving away from the obsession with best practices. *Journal of Knowledge Management*, 11(1), 36–47. <https://doi.org/10.1108/13673270710728222>
- Christiansen, J. (2021). *Distance is destroying dialogue: New study shows employees are more than twice as likely to avoid discussing concerns with remote colleagues*. Crucial Learning.
- Crandall, S., Bushardt, R., & Ip, E. (2016). Key Sampling Issues in Quantitative Research in Health Professions Education. *Academic Medicine*, 91(12). <https://doi.org/10.1097/acm.0000000000001394>
- Cummings, J., & Dennis, A. R. (2018). Virtual first impressions matter: The effect of enterprise social networking sites on impression formation in virtual teams. *MIS Quarterly: Management Information Systems*, 42(3), 697–718. <https://doi.org/10.25300/MISQ/2018/13202>
- de Vries, H., Tummers, L., & Bekkers, V. (2019). The Benefits of Teleworking in the Public Sector: Reality or Rhetoric? *Review of Public Personnel Administration*, 39(4), 570–593. <https://doi.org/10.1177/0734371X18760124>
- Delgado-Márquez, B. L., Aragón-Correa, J. A., Hurtado-Torres, N. E., & Aguilera-Caracuel, J. (2015). Does knowledge explain trust behaviors and outcomes? The different influences of initial knowledge and experiential knowledge on personal trust interactions. *International Journal of Human Resource Management*, 26(11), 1498–1513. <https://doi.org/10.1080/09585192.2014.938679>
- Delice, A. (2010). The Sampling Issues in Quantitative Research. *Educational Sciences: Theory and Practice*, 10(4).
- Dubey, A. D., & Tripathi, S. (2020). Analysing the sentiments towards work-from-home experience during COVID-19 pandemic. *Journal of Innovation Management*, 8(1), 13–19. https://doi.org/10.24840/2183-0606_008.001_0003
- Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014).

- Qualitative content analysis: A focus on trustworthiness. *SAGE Open*, 4(1), 1–10. Sagepub. <https://doi.org/10.1177/2158244014522633>
- Endres, M. L., & Chowdhury, S. (2013). The role of expected reciprocity in knowledge sharing. *International Journal of Knowledge Management*, 9(2), 1–19. <https://doi.org/10.4018/jkm.2013040101>
- Faraj, S., & Wasko, M. M. (2005). Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. *MIS Quarterly*, 29(1), 35–57.
- Farmer, A. Y., & Farmer, G. L. (2022). *Qualitative Research In: Research Methods for Social Work: A Problem-Based Approach*. SAGE Publications. <https://doi.org/https://dx.doi.org/10.4135/9781071878873>
- Farooq, R. (2018). A conceptual model of knowledge sharing. *International Journal of Innovation Science*, 10(2), 238–260. <https://doi.org/10.1108/IJIS-09-2017-0087>
- Felstead, A., & Henseke, G. (2017). Assessing the growth of remote working and its consequences for effort, well-being and work-life balance. *New Technology, Work and Employment*, 32(3).
- Ferreira, J., Mueller, J., & Papa, A. (2020). Strategic knowledge management: theory, practice and future challenges. *Journal of Knowledge Management*, 24(2), 121–126. <https://doi.org/10.1108/JKM-07-2018-0461>
- Ferreira, R., Pereira, R., Bianchi, I. S., & da Silva, M. M. (2021). Decision factors for remote work adoption: Advantages, disadvantages, driving forces and challenges. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 1–24. <https://doi.org/10.3390/joitmc7010070>
- Ferres, N., Connell, J., & Travaglione, A. (2004). Co-worker trust as a social catalyst for constructive employee attitudes. *Journal of Managerial Psychology*, 19(6), 608–622. <https://doi.org/10.1108/02683940410551516>
- Galanti, T., Guidetti, G., Mazzei, E., Zappalà, S., & Toscano, F. (2021). Work from home during the COVID-19 outbreak: The impact on employees' remote work productivity, engagement, and stress. *Journal of Occupational and Environmental*

Medicine, 63(7), E426–E432. <https://doi.org/10.1097/JOM.0000000000002236>

Gamble, J. R. (2020). Tacit vs explicit knowledge as antecedents for organizational change. *Journal of Organizational Change Management*, 33(6). <https://doi.org/10.1108/jocm-04-2020-0121>

Ganguly, A., Talukdar, A., & Chatterjee, D. (2019). Evaluating the role of social capital, tacit knowledge sharing, knowledge quality and reciprocity in determining innovation capability of an organization. In *Journal of Knowledge Management* (Vol. 23, Issue 6). <https://doi.org/10.1108/JKM-03-2018-0190>

Gao, G., Hinds, P., & Zhao, C. (2013). Closure vs. structural holes: how social network information and culture affect choice of collaborators. *Proceedings of the 2013 Conference on Computer Supported Cooperative Work*, 5–18.

Gardner, R., Kil, A., & van Dam, N. (2020). Research opportunities for determining the elements of early trust in virtual teams. *Management Research Review*, 43(3), 350–366. <https://doi.org/10.1108/MRR-12-2018-0483>

Gelderblom, D. (2018). The limits to bridging social capital: Power, social context and the theory of Robert Putnam. *The Sociological Review*, 66(6), 1309–1324. <https://doi.org/10.1177/0038026118765360>

Ghaffar, F., & Hurley, N. (2020). Structural hole centrality: evaluating social capital through strategic network formation. *Computational Social Networks*, 7(1). <https://doi.org/10.1186/s40649-020-00079-4>

Ghahtarani, A., Sheikhmohammady, M., & Rostami, M. (2020). The impact of social capital and social interaction on customers' purchase intention, considering knowledge sharing in social commerce context. *Journal of Innovation & Knowledge & Knowledge*, 25, 1–9. <http://dx.doi.org/10.1016/j.jik.2016.01.016>

Granovetter, M. (1983). The strength of weak ties: A network theory revisited. *Sociological Theory*, 201–233.

Granovetter, M. (2005). The impact of social structure on economic outcomes. *Journal*

- of *Economic Perspectives*, 19(1), 33–50.
<https://pubs.aeaweb.org/doi/pdf/10.1257/0895330053147958>
- Gronn, P. (2002). Distributed leadership as a unit of analysis. *The Leadership Quarterly*, 13(4), 423–451. [https://doi.org/10.1016/s1048-9843\(02\)00120-0](https://doi.org/10.1016/s1048-9843(02)00120-0)
- Gubbins, C., & Dooley, L. (2021). Delineating the tacit knowledge-seeking phase of knowledge sharing: The influence of relational social capital components. *Human Resource Development Quarterly*, 32(3), 319–348.
<https://doi.org/10.1002/hrdq.21423>
- Hafermalz, E., & Riemer, K. (2021). Productive and connected while working from home: what client-facing remote workers can learn from telenurses about ‘belonging through technology.’ *European Journal of Information Systems*, 30(1), 89–99.
<https://doi.org/10.1080/0960085X.2020.1841572>
- Han, S. H., Yoon, S. W., & Chae, C. (2020). Building social capital and learning relationships through knowledge sharing: a social network approach of management students’ cases. *Journal of Knowledge Management*, 24(4), 921–939. <https://doi.org/10.1108/JKM-11-2019-0641>
- Hejase, H. (2014). Knowledge Sharing: Assessment of Factors Affecting Employee’ Motivation and Behavior in the Lebanese Organizations. *Journal of Scientific Research and Reports*, 3(12), 1549–1593. <https://doi.org/10.9734/jsrr/2014/8107>
- Hite, L. M., & McDonald, K. S. (2020). Careers after COVID-19: challenges and changes. *Human Resource Development International*, 23(4), 427–437.
<https://doi.org/10.1080/13678868.2020.1779576>
- Ho, L., Kuo, T., & Lin, B. (2012). How social identification and trust influence organizational online knowledge sharing. *Internet Research*, 22(1), 4–28.
<https://doi.org/10.1108/10662241211199942>
- Hu, H., Wang, L., Jiang, L., & Yang, W. (2019). Strong ties versus weak ties in word-of-mouth marketing. *BRQ Business Research Quarterly*, 22(4), 245–256.
<https://doi.org/10.1016/j.brq.2018.10.004>
- Huang, K. Y., Chengalur-Smith, I. S., & Pinsonneault, A. (2019). Sharing is caring: Social

support provision and companionship activities in healthcare virtual support communities¹. *MIS Quarterly: Management Information Systems*, 43(2), 395–423. <https://doi.org/10.25300/MISQ/2019/13225>

Jahanshahi, A. A., Maghsoudi, T., & Nawaser, K. (2020). The effects of social capital and psychological resilience on employees' positive work attitudes. *International Journal of Human Resources Development and Management*, 20(3–4), 231–251. <https://doi.org/10.1504/IJHRDM.2020.107956>

Johnson, M. W., & Suskewicz, J. (2020). *Does Your Company Have a Long-Term Plan for Remote Work?* Harvard Business Review.

Kahne, J., & Bowyer, B. (2018). The Political Significance of Social Media Activity and Social Networks. *Political Communication*, 35(3), 470–493. <https://doi.org/10.1080/10584609.2018.1426662>

Katzy, B. R., Stettina, C. J., Groenewegen, L. P. J., & De Groot, M. J. (2011). Managing weak ties in collaborative work. *2011 17th International Conference on Concurrent Enterprising, ICE 2011 - Conference Proceedings*.

Keuchenius, A., Törnberg, P., & Uitermark, J. (2021). Adoption and adaptation: A computational case study of the spread of Granovetter's weak ties hypothesis. *Social Networks*, 66, 10–25. <https://doi.org/10.1016/j.socnet.2021.01.001>

Kilcullen, M., Feitosa, J., & Salas, E. (2021). Insights From the Virtual Team Science: Rapid Deployment During COVID-19. *Human Factors*, 0018720821991678. <https://doi.org/10.1177/0018720821991678>

Kim, H., Lee, J., & Oh, S. E. (2020). Individual characteristics influencing the sharing of knowledge on social networking services: online identity, self-efficacy, and knowledge sharing intentions. *Behaviour and Information Technology*, 39(4), 379–390. <https://doi.org/10.1080/0144929X.2019.1598494>

Kim, T. T., Lee, G., Paek, S., & Lee, S. (2013). Social capital, knowledge sharing and organizational performance: What structural relationship do they have in hotels? *International Journal of Contemporary Hospitality Management*, 25(5), 683–704. <https://doi.org/10.1108/IJCHM-Jan-2012-0010>

- Langlinais, L. A., Howard, H. A., & Houghton, J. D. (2022). Trust me: Interpersonal communication dominance as a tool for influencing interpersonal trust between coworkers. *International Journal of Business Communication*, 23294884221080932. <https://doi.org/10.1177/23294884221080933>
- Lee, D., & Hung, C. (2022). Meta-Analysis of Collaboration and Performance: Moderating Tests of Sectoral Differences in Collaborative Performance. *Journal of Public Administration Research and Theory*, 32(2), 360–379. <https://doi.org/10.1093/jopart/muab038>
- Lee, H., & Choi, B. (2003). Knowledge management enablers, processes, and organizational performance: An integrative view and empirical examination. *Journal of Management Information Systems*, 20(1), 179–228. <https://doi.org/10.1080/07421222.2003.11045756>
- Lievens, F., & De Corte, W. (2008). Development and test of a model of external organizational commitment in human resources outsourcing. *Human Resource Management*, 47(3), 559–579. <https://doi.org/10.1002/hrm>
- Lin, C. P., & Joe, S. W. (2012). To share or not to share: assessing knowledge sharing, interemployee helping, and their antecedents among online knowledge workers. *Journal of Business Ethics*, 108(4), 439–449. <https://doi.org/10.1007/s10551-011-1100-x>
- Lin, Z., Zhang, Y., Gong, Q., Chen, Y., Oksanen, A., & Ding, A. Y. (2022). Structural hole theory in social network analysis: A review. *IEEE Transactions on Computational Social Systems*, 9(3), 724–739. <https://doi.org/10.1109/TCSS.2021.3070321>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.
- Linton, J. D. (2000). The role of relationships and reciprocity in the implementation of process innovation. *Engineering Management Journal*, 12(3), 34–38. <https://doi.org/10.1080/10429247.2000.11415080>
- Liou, D. K., Chih, W. H., Yuan, C. Y., & Lin, C. Y. (2016). The study of the antecedents of knowledge sharing behavior: The empirical study of Yambol online test

community. *Internet Research*, 26(4), 845–868. <https://doi.org/10.1108/IntR-10-2014-0256>

Lippe, T., & Lippényi, Z. (2019). Co-workers working from home and individual and team performance. *New Technology, Work and Employment*, 35(1). <https://doi.org/10.1111/ntwe.12153>

Machalek, R., Martin, M. W., & Wright, J. D. (2015). Sociobiology and Sociology: A New Synthesis. In *International Encyclopedia of the Social & Behavioral Sciences* (Second Edition) (pp. 892–898). Elsevier. <https://doi.org/https://doi.org/10.1016/B9780080970868.320104>

Makarius, E. E., & Larson, B. Z. (2017). Changing the perspective of virtual work: Building virtual intelligence at the individual level. *Academy of Management Perspectives*, 31(2), 159–178. <https://doi.org/10.5465/amp.2014.0120>

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample Size in Qualitative Interview Studies. *Qualitative Health Research*, 26(13), 1753–1760. <https://doi.org/10.1177/1049732315617444>

Manca, C. (2022). Tensions as a framework for managing work in collaborative workplaces: A review of the empirical studies. *International Journal of Management Reviews*, 24(3), 333–351. <https://doi.org/10.1111/ijmr.12280>

Matsuo, M., & Easterby-Smith, M. (2008). Beyond the knowledge sharing dilemma: The role of customisation. *Journal of Knowledge Management*, 12(4), 30–43. <https://doi.org/10.1108/13673270810884237>

Maynard, M. T., Mathieu, J. E., Gilson, L. L., R. Sanchez, D., & Dean, M. D. (2019). Do I really know you and does it matter? Unpacking the relationship between familiarity and information elaboration in global virtual teams. *Group and Organization Management*, 44(1), 3–37. <https://doi.org/10.1177/1059601118785842>

McAllister, D. J. (1995). Affect-and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, 38(1), 24–59.

MichaelPage. (n.d.). Dramatic increase in remote working in South Africa. Michael Page. <https://www.michaelpageafrica.com/advice/insights/latest-insights/dramatic->

increase-remote-working-south-africa

- Michelfelder, I., & Kratzer, J. (2013). Why and how combining strong and weak ties within a single interorganizational R&D collaboration outperforms other collaboration structures. *Journal of Product Innovation Management*, 30(6), 1159–1177. <https://doi.org/10.1111/jpim.12052>
- Mitchell, A. (2021). Collaboration technology affordances from virtual collaboration in the time of COVID-19 and post-pandemic strategies. *Information Technology and People*. <https://doi.org/10.1108/ITP-01-2021-0003>
- Mohamed, N. E., Ali, Y., & Hassan, A. (2018). The impacts of remote working on workers performance. *19th International Arab Conference on Information Technology (ACIT)*, 1–5.
- Moran, P. (2005). Structural vs. relational embeddedness: Social capital and managerial performance. *Strategic Management Journal*, 26(12), 1129–1151. <https://doi.org/10.1002/smj.486>
- Morrison-Smith, S., & Ruiz, J. (2020). Challenges and barriers in virtual teams: a literature review. In *SN Applied Sciences* (Vol. 2, Issue 6). Springer International Publishing. <https://doi.org/10.1007/s42452-020-2801-5>
- Mostafa, B. A. (2021). The effect of remote working on employees wellbeing and work-life integration during pandemic in Egypt. *International Business Research*, 14(3), 41. <https://doi.org/10.5539/ibr.v14n3p41>
- Nahapiet, J., & Ghoshal, S. (2009). Social capital, intellectual capital, and the organizational advantage. *Knowledge and Social Capital*, 23(2), 119–158. <https://doi.org/10.2307/259373>
- Nilles, J. (1975). Telecommunications and organisational decentralisation. *IEEE Transactions on Communication*, 23(10), 1142–1147. <https://doi.org/10.1109/TCOM.1975.1092687>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 1–13. <https://doi.org/10.1177/1609406917733847>

- Nurmi, N. (2011). Coping with coping strategies: How distributed teams and their members deal with the stress of distance, time zones and culture. *Stress and Health*, 27(2), 123–143. <https://doi.org/10.1002/smi.1327>
- O’leary, K., Gleasure, R., O’reilly, P., & Feller, J. (2020). Reviewing the contributing factors and benefits of distributed collaboration. *Communications of the Association for Information Systems*, 47(1), 476–520. <https://doi.org/10.17705/1CAIS.04722>
- Pauleen, D. J., & Yoong, P. (2001). Relationship building and the use of ICT in boundary-crossing virtual teams: A facilitator’s perspective. *Journal of Information Technology*, 16(4), 205–220. <https://doi.org/10.1080/02683960110100391>
- Robinson, O. C. (2014). Sampling in interview-based qualitative research: a theoretical and practical guide. *Qualitative Research in Psychology*, 11(1), 25–41. <https://doi.org/10.1080/14780887.2013.801543>
- Rose, J., Madurai, T., Thomas, K., Duffy, B., & Oyeboode, J. (2010). Reciprocity and burnout in direct care staff. *Clinical Psychology and Psychotherapy*, 17(6), 455–462. <https://doi.org/10.1002/cpp.688>
- Saglietto, L., Cézanne, C., & David, D. (2020). Research on structural holes: an assessment on measurement issues. *Journal of Economic Surveys*, 34(3), 572–593. <https://doi.org/10.1111/joes.12371>
- Saunders, M., & Lewis, P. (2018). *Doing research in business and management: an essential guide to planning your project* (2nd ed.). Harlow, England : Pearson.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (Eighth edi).
- Sedgwick, P. (2014). Unit of observation versus unit of analysis. *BMJ*, 348(4).
- Sjølie, E., Espenes, T. C., & Buø, R. (2022). Social interaction and agency in self-organizing student teams during their transition from face-to-face to online learning. *Computers & Education*, 189, 104580. <https://doi.org/10.1016/j.compedu.2022.104580>
- Serenko, A., & Bontis, N. (2016). Understanding counterproductive knowledge behavior:

- antecedents and consequences of intra-organizational knowledge hiding. *Journal of Knowledge Management*, 20(6), 1199–1224. <https://doi.org/10.1108/JKM-05-2016-0203>
- Smith, E. A. (2001). The role of tacit and explicit knowledge in the workplace. *Journal of Knowledge Management*, 5(4), 311–321. <https://doi.org/10.1108/13673270110411733>
- Sostero, M., Milasi, S., Hurley, J., Fernandez-Macías, E., & Bisello, M. (2020). Teleworkability and the COVID-19 crisis: a new digital divide? A Joint European Commission-Eurofound Report. *European Commission and Eurofound*.
- Stam, W., Arzlanian, S., & Elfring, T. (2014). Social capital of entrepreneurs and small firm performance: A meta-analysis of contextual and methodological moderators. *Journal of Business Venturing*, 29(1), 152–173. <https://doi.org/10.1016/j.jbusvent.2013.01.002>
- Stevens, M., Rees, T., & Polman, R. (2019). Social identification, exercise participation, and positive exercise experiences: Evidence from parkrun. *Journal of Sports Sciences*, 37(2), 221–228. <https://doi.org/10.1080/02640414.2018.1489360>
- ten Brummelhuis, L. L., ter Hoeven, C. L., & Toniolo-Barrios, M. (2021). Staying in the loop: Is constant connectivity to work good or bad for work performance? *Journal of Vocational Behavior*, 128(May 2020), 1–17. <https://doi.org/10.1016/j.jvb.2021.103589>
- Tohidinia, Z., & Mosakhani, M. (2010). Knowledge sharing behaviour and its predictors. *Industrial Management and Data Systems*, 110(4), 611–631. <https://doi.org/10.1108/02635571011039052>
- Tonelli, D. F., Sant'Anna, L., Barcelar Abbud, E., & Aparecida de Souza, S. (2018). Antecedents, process, and equity outcomes: A study about collaborative governance. *Cogent Business and Management*, 5(1), 1–17. <https://doi.org/10.1080/23311975.2018.1469381>
- Vander Elst, T., Verhoogen, R., Sercu, M., Van den Broeck, A., Baillien, E., & Godderis, L. (2017). Not extent of telecommuting, but job characteristics as proximal

- predictors of work-related well-being. *Journal of Occupational and Environmental Medicine*, 59(10), e180–e186. <https://doi.org/10.1097/jom.0000000000001132>
- Waizenegger, L., McKenna, B., Cai, W., & Bendz, T. (2020). An affordance perspective of team collaboration and enforced working from home during covid-19. *European Journal of Information Systems*, 29(4), 1–14. <https://doi.org/10.1080/0960085x.2020.1800417>
- Walumbwa, F. O., & Christensen, A. L. (2013). The importance of social capital in the workplace and how individuals and organizations can support its development. *The fulfilling workplace: The organization's role in achieving individual and organizational health* (pp. 105–117). Routledge.
- Wang, B., Liu, Y., Qian, J., & Parker, S. K. (2021). Achieving effective remote working during the COVID-19 Pandemic: A work design perspective. *Applied Psychology*, 70(1), 16–59. <https://doi.org/10.1111/apps.12290>
- Whillans, A., Perlow, L., & Turek, A. (2021). Experimenting during the shift to virtual team work: Learnings from how teams adapted their activities during the COVID-19 pandemic. *Information and Organization*, 31(1), 100343. <https://doi.org/10.1016/j.infoandorg.2021.100343>
- Windeler, J. B., Maruping, L. M., Robert, L. P., & Riemenschneider, C. K. (2015). E-profiles, conflict, and shared understanding in distributed teams. *Journal of the Association for Information Systems*, 16(7), 608–645. <https://doi.org/10.17705/1jais.00401>
- World Health Organization. (2020). *WHO Director-General's opening remarks at the media briefing on COVID COVID-19 - 11 March 2020*. World Health Organization. <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
- Writer, S. (2020). *New perks which could be widely introduced at South African companies*. BusinessTech.
- Wu, W. P., & Leung, A. (2005). Does a micro-macro link exist between managerial value of reciprocity, social capital and firm performance? The case of SMEs in China.

Asia Pacific Journal of Management, 22(4), 445–463.
<https://doi.org/10.1007/s10490-005-4119-7>

Xiao, M., & Cooke, F. L. (2019). Why and when knowledge hiding in the workplace is harmful: a review of the literature and directions for future research in the Chinese context. *Asia Pacific Journal of Human Resources*, 57(4), 470–502.
<https://doi.org/10.1111/1744-7941.12198>

Yang, L., Holtz, D., Jaffe, S., Suri, S., Sinha, S., Weston, J., Joyce, C., Shah, N., Sherman, K., Hecht, B., & Teevan, J. (2022). The effects of remote work on collaboration among information workers. *Nature Human Behaviour*, 6(1), 43–54.
<https://doi.org/10.1038/s41562-021-01196-4>

Zhou, Z. (2022). Virtual team collaboration problem identification and possible solutions. *Proceedings of the 2022 7th International Conference on Social Sciences and Economic Development (ICSSSED 2022)*, 652(Icssed), 1658–1664.
<https://doi.org/10.2991/aebmr.k.220405.275>

Appendix 1: Consistency matrix

TITLE: The impact of remote work on collaboration and knowledge sharing

QUESTIONS	LITERATURE REVIEW	DATA COLLECTION TOOL	ANALYSIS
<p>Research Question 1: How does remote work affect collaborative networks and social interaction?</p>	<p>Yang et al. 2022</p>	<p>Semi-structured interview guide question RQ1 1.1 - RQ1 1.3</p>	<p>Thematic analysis</p>
<p>Research Question 2: How do social factors contribute to the relationships within collaboration teams working remotely?</p>	<p>O’Leary et al. (2020)</p>	<p>Semi-structured Sub Question RQ2a: interview guide question RQ2a 2.1- RQ2a 2.4 Sub Question RQ2a: interview guide question RQ2b 2.1</p>	<p>Thematic analysis</p>
<p>Research Question 3: How do social networks contribute to knowledge sharing in teams working remotely?</p>	<p>Yang et al. 2022</p>	<p>Semi-structured interview guide question</p>	<p>Thematic analysis</p>

		RQ3 3.1- RQ3 3.3	
--	--	------------------	--

Appendix 2: Invitation to participate in research study

Dear Sir/Madam

Thank you for taking my call earlier. As discussed, I am a final-year MBA student at the Gordon Institute of Business Science, and I am in the process of completing the compulsory research report as part of the degree. My research project is titled “The Impact of Remote Work on Collaboration and Knowledge Sharing”. The concept of remote work in this context refers to people who either work from home full-time or who have made shifts to working partly from home and the office.

The aim of the study is to establish the influence of social and relational factors on collaboration and knowledge sharing.

I believe that you have the necessary experience needed to provide key insights into this area of study. The interview will be a semi-structured, in-depth interview, and it will last approximately 1 hour. Please find attached a copy of the consent form that you will read prior to the interview commencing and you will be required to sign and return to me. The interview will be confidential, and you will remain anonymous.

Please can you confirm your agreement to participate, as per our telephone conversation and indicate your availability for the interview.

I anticipate hearing from you.

Many Thanks,

Nonkululeko Maphakela

Appendix 3: Interview guide

Industry sector:

Start time:

Role:

End time:

Date:

Research Question 1

RQ1 1.1: Describe how you were collaborating with your fellow team members before you began working remotely

RQ1 1.2 Can you describe how you are collaborating and interacting with your team members when working remotely?

RQ1 1.3: With your experience what are the difficulties with establishing social interactions within your team?

RQ1 1.3: Describe how do you access collaboration information sitting outside your team?

Research Question 2

RQ2a: How does interpersonal ties contribute to collaboration?

RQ2a 2.1: How does interpersonal relationship between team members influence collaboration when working remotely?

RQ2a 2.2: In your experience, how does trust between team members influence collaboration within the team?

RQ2a 2.3: How do you think communication between team members is important in ensuring collaboration within the team?

RQ2a 2.4: How does prior history of working together influence collaboration relationships with members in your team.

RQ2b: How does social structures contribute to collaboration?

RQ2b 2.1: How does social norms within teams influence collaboration when working remotely?

RQ2b 2.2: How does social norms in a remote team influence communication for your members?

Research Question 3

RQ3 3.1: How does interpersonal trust contribute to knowledge sharing in teams working remotely?

RQ3 3.2: How does norms of reciprocity contribute to knowledge sharing in teams working remotely?

RQ3 3.3: How does a sense of social belonging within the team help in ensuring knowledge sharing among team members?

Appendix 4: Ethical clearance

**Gordon Institute
of Business Science**
University of Pretoria

**Ethical Clearance
Approved**

Dear Nonkululeko Eufrazier Maphakela,

Please be advised that your application for Ethical Clearance has been approved.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

[Ethical Clearance Form](#)

Kind Regards

Appendix 5: Thematic analysis

Research Question	No of codes created	Sub-category	Category	Theme
How does remote work affect collaborative networks and social interaction?	8		Office-based collaboration	Quality of collaborative networks
	26	Challenges with remote work	Quality of virtual collaboration	
	11	Organised collaboration		
	6	Collaboration tools	Accessibility of information	
	6	Source of info others		
	11	Source of info Self		
	2	Source of Info documents		
How do social factors contribute to the relationships within collaboration	2		Interpersonal relationship	Social factors on collaboration
	1		Trust in collaboration	
	1		Communication	
	2		History of working together	
	1		norms on collaboration	

teams working remotely?	7		Norms on communication tools	Social structures
How do social factors contribute to the relationships within collaboration teams working remotely?	1		Trust in knowledge sharing	Relational factors on knowledge sharing
	4		Norms of reciprocity	
	3		Social belonging	
Total no of codes	92			

Appendix 6: Editor's additional support declaration

I, Kristy Hesom, the Editor declare that I have only rendered the services as listed and detailed below as contracted by Nonkululeko Eufrazier Maphakela in their fulfilment of the requirements for a Masters degree at the Gordon Institute of Business, a division of the University of Pretoria.

Detail of type of services rendered to the student:

- Fix typos, misspellings, and punctuation issues.
- Ensure that in-text references are in the correct style (APA) and are included in the end-text references.
- Ensure that your reference list is in the correct format.
- Ensure that your format/page layout is in line with the GIBS green pages.

FULL NAME: Kristy Hesom for Wordsmiths SA Pty Ltd
SIGNATURE: *K. Hesom*
EMAIL ADDRESS: aimee@wordsmiths-sa.com
CONTACT NUMBER: +2783 608 1049 (WhatsApp)
or +3161 275 1672 (Cell, outside SA)