

Leveraging age diversity to enhance knowledge sharing in teams

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

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Plagiarism 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.

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Abstract

This study sought to explore how teams can leverage age diversity to enhance knowledge sharing in the South African mining context. The study aimed to examine the influence of social networks and the quality of relationships within these networks on knowledge sharing within age-diverse teams. The research looked at these constructs from a social capital theory lens, which assisted in conducting the study.

The researcher used a qualitative approach to conduct 14 semi-structured interviews with professionals who work in age-diverse teams across various mining organizations in South Africa. The main findings about social networks indicate a tendency for individuals to form age-based groups. Although this aligns with the concept of conserving social capital, it hinders the exchange of knowledge and reduces team collaboration. The dynamics of knowledge sharing between older and younger employees revealed a dichotomy: while younger employees seek knowledge from older employees, older employees tend to engage in knowledge hoarding behaviours. In terms of relationship qualities, wrong ties were found to promote knowledge sharing and collaboration with age-diverse teams. However, there was evidence of the formation of information silos in closed circles of people, which negatively impacted knowledge sharing. While weak ties pose challenges to knowledge sharing, they also serve as a safeguard against inappropriate sharing of confidential knowledge.

Key recommendations revolve around businesses increasing awareness by implementing strategies around dealing with how networks function in the context of knowledge flow. These strategies could be around improving social interactions between team members, bridging connections between networks with weak ties, and managing psychological safety, all with the aim of building trust and collaboration to foster knowledge sharing.

Future research could focus on examining the impact of strong or weak ties on knowledge sharing, and how these dynamics incorporate social capital. Furthermore, future studies can look at how psychological safety and trust play an impact knowledge sharing in diverse teams.

Keywords:

Social networks, Knowledge sharing, Weak ties, Strong ties, Age diversity

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List of Acronyms

SCT	Social Capital Theory
GIBS	Gordon Institute of Business Science

Chapter 1: Introduction to the Research Problem

1.1 Introduction

This chapter introduces the study, examining how teams leverage age to improve knowledge share. The study is contextualised by providing a background to the problem and a purpose for the research. This chapter subsequently establishes the possible contribution of the research and its theoretical significance. This chapter explores the importance of this research in business, emphasising the necessity of age diversity and knowledge sharing within teams. Lastly, the study presents the research questions to be addressed and an overview of the methodological framework.

1.2 Background

Demographic shifts have resulted in the global population seeing a significant increase in age (United Nations, 2023), highlighting a challenge for organisations in managing teams of multiple generations. This growing trend of an ageing population is evident in the rising workplace age diversity, which refers to the variation among employees in terms of their ages (Wegge et al., 2020). The increasing global population growth and workforce ageing necessitate effective management of workforce diversity, prompting researchers to focus on understanding diversity's conceptualisations, measures, effects, and contexts in organisations (Roberson, 2019). Therefore, organisations must not only acknowledge aged diversity but also proactively look into the influence it has on workplace interactions.

Age is not just a number but a social category that is often well-internalised, prominent, and readily accessible, as individuals have been taught to see age as a significant element in interpersonal interactions (North & Fiske, 2015b). Nowadays, it is common for business units to consist of members from different generations, with a difference in age of over 40 years (Wegge et al., 2020). This significant age gap gives an opportunity for organisations to come up with strategies to leverage the full potential of diverse age groups. Age is linked as a prominent indicator of several ideas regarding values, attitudes towards work, job satisfaction, and intentions to share and receive knowledge.

(Gerpott et al., 2021). Age diversity may be advantageous for organisations as it allows employees of various age groups to share their unique and important knowledge with others in the organisation (Burmeister & Deller, 2016). Organisations that do not investigate these factors miss an opportunity to leverage the unique contributions that these diverse groups present. For instance, younger employees can educate their older colleagues on the utilisation of new technologies, while older employees can offer their expert knowledge about the organisation and possibly inspire younger colleagues to emulate their work practices (Gerpott et al., 2017). This dynamic interaction between older and younger employees creates an environment of knowledge sharing that can be leveraged for better team outcomes.

1.3 Research Problem

The South African mining industry, a critical player on the global stage, faces challenges on many levels, making it difficult to compete nationally and globally (Government Gazette, 2022). Over and beyond resources, companies in the industry need the exceptional practices inherent in their cultures to help stay competitive. The mining industry flourishes due to a diverse range of expertise, encompassing both experienced veterans with extensive practical experience and young, technologically skilled specialists utilising the latest innovations. This intrinsic age diversity offers a distinct and exceptional opportunity (Li et al., 2022). However, challenges hinder the successful closure of gaps in experience and leveraging the strengths of both old and younger professionals in the sector.

Promoting the elimination of conflicts based on social identity in the flow of human resources to their most efficient purposes enhances economic effectiveness, hence making diversity a growing concern for companies (Flory et al., 2021). Therefore, fostering such an environment and understanding the underlying dynamics is critical in maximising the mining industry's potential.

Much like South Africa, numerous countries globally undergo demographic changes that result in a growing elderly population, which is evident in the increased age diversity observed in the workforce (Beier et al., 2022). Furthermore, the extended length of employment, technological advances, and continuous transformations in job roles and organisational structures significantly affect the work experience of

older workers (Ackerman & Kanfer, 2020). This trend is particularly notable in industries like the South African mining sector, where workforce demographics are evolving. This presents an opportunity for organisations to effectively utilise age diversity to gain or maintain a competitive edge, specifically around knowledge sharing.

1.4 Research Purpose

Over the years, research has been done to understand the dynamics between age diversity and organisational performance. Nevertheless, despite these endeavours, there are still gaps in understanding regarding the fundamental mechanisms that influence the connection between age diversity and organisational outcomes. While scholars have proposed many theoretical explanations for the correlation between age diversity and organisational performance, the actual mechanisms behind this association have not been extensively examined (Li et al., 2021). Li et al. (2021) also suggested that they shift their focus from direct age diversity performance to possible value-creation processes that drive the relationship.

Furthermore, while some studies focus on age diversity at a team level, it is paramount to know that it also operates within multilevel systems, thereby broadening the scope to organisational, sectoral and even national contexts (Kim et al., 2021; Li et al., 2021). Beier et al. (2022) emphasised the need for further research on the impact of team age diversity on cohesion and performance over time. Age diversity is relevant at various levels in multilevel systems.

In a study about age diversity in patenting, Kaltenberg et al. (2023) cautioned that a significant amount of research on organisational performance treats 'age' and 'experience' as interchangeable. This hereby creates an opportunity to focus the study on the chronological age impact as defined objectively.

Moreover, Li et al. (2021) did a study on the relationship between age diversity and organisational performance, adopting an intellectual capital perspective. However, the study utilised a diverse sample, including many industries, limiting the ability to undertake a thorough analysis within each industry to examine the correlation between age diversity and organisational effectiveness. Thus, the study looks at the

South African mining industry context to understand the effect of age diversity on knowledge-sharing

1.5 Contribution to Academic Knowledge

While social capital theory (SCT) usually focuses on what is gained from social networks, this research looks at the operation of social networks across different age groups in a team context. This adds a specific understanding of how social capital can be leveraged in the dynamics of age-diverse teams. This would be similar to the study conducted by Li et al. (2021) but different as this study focuses specifically on the social capital perspective rather than intellectual capital. Furthermore, social capital also emphasises the significance of trust and relationships in facilitating knowledge flow (Williams, 2016). The research provides a comprehensive understanding of the role social capital plays in the quality of relationships within a diverse context, offering a fresh outlook on the preservation of trust across these age groups.

Singh et al. (2021) stated that little is known about the impact of knowledge management practices on social capital and knowledge sharing among individuals in organisations. This study tries to close the gap in some knowledge management literature by providing evidence on how age-diverse teams can enhance or impede knowledge sharing. Further, it aims to provide evidence on how organisations and teams can put together strategies and processes to improve knowledge sharing, considering an age-diverse workforce.

1.6 Contribution to Business

1.6.1 Relevance of Knowledge Sharing in Business

In today's business landscape, with its increasing complexity, the ability to leverage the knowledge of diverse age groups can help create a competitive advantage (Li et al., 2021). An organisation gains its competitive advantage by acquiring and harnessing unique knowledge that is challenging for competitors to replicate (Singh et al., 2021). Age-diverse workplaces often achieve this advantage by connecting

the knowledge gained through varied experiences and skills of employees from different age groups to improve organisational outcomes (Li et al., 2021).

In order to gain sustainable competitive advantage, it is crucial for organisations to understand and implement knowledge management strategies that use their resulting social capital to advance the organisation's interests by sharing knowledge (Singh et al., 2021). Not being aware of such practices can lead to missed performance and innovation opportunities.

Numerous research studies suggest that knowledge sharing is a vital component of achieving innovation performance (Yiu et al., 2019), which, in turn, is a critical factor for competitive advantage. Researchers have validated the importance of internal (Estrada et al., 2016; Zhou & Li, 2012) and external knowledge sharing within the organisation (Ritala et al., 2015) for driving innovation and performance. Consequently, managers and organisations benefit from implementing knowledge management strategies where people independently leverage their network of contacts and social capital to achieve organisational goals for sustainable competitive advantage (Singh et al., 2021).

1.6.2 Managing the Aging Workforce in Organisations

A key contributor to the ageing workforce challenge is that people are working longer generally, and organisations are keeping older workers, generating more age diversity (De Meulenaere et al., 2016). Creating age diversity in teams demonstrates appreciation for employees, irrespective of their age, resulting in enhanced individual and team performance (Zacher et al., 2017). Additionally, age-diverse teams facilitate interactions and knowledge sharing between workers of varying ages (Zacher et al., 2017).

Although there have been several studies on knowledge sharing between older and younger employees (Burmeister et al., 2020; Burmeister & Deller, 2016; Fasbender & Gerpott, 2022; Pfrombeck et al., 2024), they neglect other-orientated behaviour that is essentially entwined with their surroundings in social terms (Fasbender & Gerpott, 2021). This presents an opportunity to gain a deeper understanding of the

dynamics among university employees and their approach to knowledge sharing, which can aid organisations in managing them more effectively.

1.6.3 Building Collaborative Network

Employees serve as strategic conduits through which companies establish and cultivate relationships and networks (McDonnell et al., 2016). These networks serve as the foundation for the generation, sharing, and advancement of knowledge within the organisation (Parker et al., 2016). Knowledge sharing inside an organisation is believed to begin at the individual employee level with respect to their personal and professional network (Singh et al., 2021). However, understanding how workplace relationships impact employee knowledge-sharing behaviour remains limited (Han et al., 2020). Bringing age diversity as an additional dynamic significantly contributes to the complexity of the gap at hand.

Effective knowledge sharing often relies on commitment and trust within a network. Therefore, without a solid foundation of trust, managing critical business interactions across internal and external networks becomes challenging and poses a risk to effective knowledge sharing (Peters, 2024). By understanding and leveraging these networks among age-diverse employees, organisations can better manage their workforce, enhance knowledge sharing, and ultimately drive long-term competitive advantage.

1.7 Research Question

The research question of this study was "How can age diversity be leveraged to enhance knowledge sharing within teams in South African mining companies?"

Gaining insight into this question proves advantageous to managers when choosing employees who can foster improved performance. Implementing knowledge-sharing techniques in organisations can be advantageous for Human Resource departments, as it allows them to capitalise on the benefits of age diversity. Additionally, it can offer helpful insight into how talent development programmes should be adjusted to effectively utilise age diversity.

In conclusion, organisations in the mining sector of South Africa need to understand the dynamics between age diversity knowledge-sharing practices as they are crucial in providing a competitive advantage in the landscape. Coupled with effective knowledge-sharing practices, fostering diverse perspectives stemming from age diversity can unlock the full potential of the intellectual capital of these organisations. The research aims to provide inside for organisations in South Africa's mining industry that enable them to optimise their workforce composition and enhance collaboration, ultimately leading to improved team dynamics

1.8 Outline of the Study

Chapter 1 of this research report introduces the problem and defines the purpose of the study. A problem statement was drafted thereby providing the main research question to be answered.

Following that is chapter 2, which provides an outline of the literature review, highlighting similarities and differences in the literature and any gaps through comparing articles from previous studies around the subject.

Chapter 3 highlights the purpose of this study by providing the key research sub questions to be answered by the study. These sub questions are designed to answer for the main research question.

Chapter 4 highlights the methodology that was followed to conduct the study. This involves reasoning about the choice of methodology and the design of the research. This chapter addressed key items such as the population, unit of analysis, the sampling method, the sampling size, limitations, and the measurement instrument used.

Chapter 5 provides an outline the findings and the results of the research studies. Chapter 6 finds and outlines similarities, and contrasts of the findings against key literature. Chapter 7 presents the conclusion and the recommendations that come from the study.

The next chapter is the Literature Review chapter.

Chapter 2: Literature Review

2.1 Introduction

This chapter explains the theoretical framework and academic arguments that support the selected constructs for the investigation. This research aims to understand the relationship between constructs of age diversity and knowledge sharing in the context of South African mining organisations. The research also examines the challenges within the context of the theoretical framework. A deeper comprehension of the constructs provides the essential basis for the research requirements outlined in Chapter One and a justification for research questions in Chapter Three.

2.2 Theoretical Lens

One theory has been proposed that considers age diversity and knowledge sharing in the study. This research delves into the phenomenon of age diversity and knowledge sharing in mining organisations through the lens of Social Capital Theory (SCT). However, before delving into SCT as the preferred framework, it is important to recognise other pertinent ideas contributing to this field. Researchers have used the SCT to investigate relationships between gender and age as well as other demographic factors between knowledge sharing and creative performance (Soda et al., 2019), which supports the choice of SCT as a suitable theory for this study.

This research adheres to the SCT, using the framework in Figure 2.1 as a guide to address most of its elements while also incorporating the concepts of age diversity and knowledge sharing within the context of teams in mining organisations.

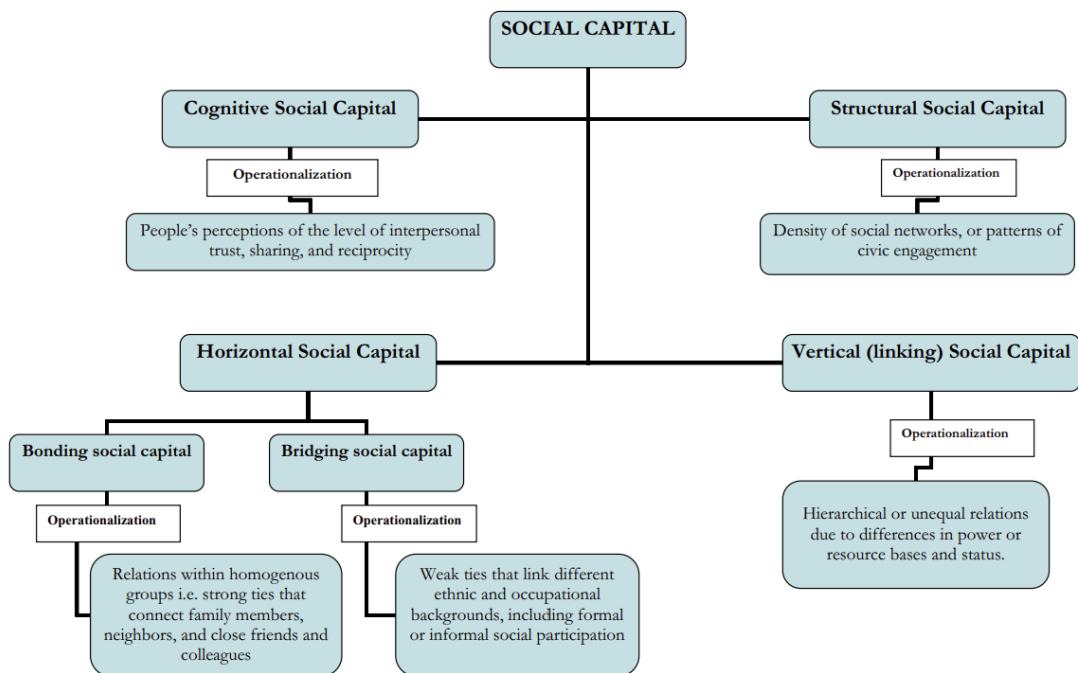


Figure 2.1: Social Capital Framework

Source: (Islam et al., 2006, p. 5).

2.2.1 Social Networks and Resources

SCT is a suitable and valuable framework that helps understand how team relationships influence knowledge sharing and, ultimately, organisational performance. It describes social capital as the resources generated via individuals' social relationships and utilised to achieve favourable social results (Bourdieu, 2011). This definition and application of the theory might oversimplify the complexity around the dynamics of knowledge sharing by overlooking the structural and cognitive dimensions and only focusing on the relational aspects.

SCT encompasses knowledge, power, and solidarity that individuals can utilise to achieve their objectives (Tóth et al., 2022). The emphasis on these concepts can obscure ways in which their dynamics operate in specific contexts. For example, in the context of knowledge sharing, the social capital of knowledge seekers enhances their contribution to knowledge because social capital encourages their involvement in sharing knowledge as a way to return what they have gained from seeking knowledge, resulting in a flow of knowledge (Yan et al., 2019). However, as this

highlights the benefits that accrue from a knowledge flow perspective, one could argue that this might lead to a bias in the knowledge shared, ultimately limiting innovation.

Krishen et al. (2019) support that relational benefits stem from the notion that social capital investment is based on the idea that individuals might benefit from their interactions with others through interconnected relationships. Lowik et al. (2012) support this statement asserting that strong relationships can act as continuous sources of new information. Although this notion is valid, there is a risk of overreliance on existing networks, leading to narrowmindedness and limiting fresh perspectives. In their study, Lowik et al. (2012) suggested that companies should utilise relational capital to mitigate the overreliance on strong connections in knowledge dynamics. These relational capabilities refer to bridging capabilities that include building and managing multiple connections or aspects within a single relationship. For instance, one can leverage formal working relationships, collaborate on tasks, and engage in informal settings, thereby creating multiple lanes of interaction to strengthen the relationship.

Social relations also generate a structure of confidence and mutual benefit that enables productive behaviour (Coleman, 1988, as cited in Krishen et al., 2019). SCT posits that individuals gain access to useful resources through social ties, which serve as the foundation for increasing the value of the structures they support (Krishen et al., 2019). However, Baycan and Öner (2023) counter by highlighting the unproductive side of social capital, where transactions within networks may be exclusive due to their reliance on specific individuals and potential exclusion of others. This exclusivity challenges the mutual benefit factor as it can create barriers and inequalities, thereby limiting opportunities for outsiders.

Krishen et al. (2019) state that a possible reason why social capital improves network connections is that cultures with higher social capital tend to have more efficient information flow. Improving the exchange of information in social networks reduces transaction costs, similar to what is described in transaction cost theory, which, in turn, promotes knowledge sharing and increases the alignment of goals (Krishen et al., 2019). Rezaei et al. (2020) support this as they found a positive correlation between social capital and knowledge management in cross-cultural settings, and identifying trust as a critical factor in this relationship. While they endorse the idea

that social capital promotes effective knowledge exchange, they may overlook the quality of the shared information and the quality of the relationship between the individuals involved.

2.2.2 Quality of Relationships

Teams characterised by deep and robust ties among members exhibit distinct knowledge-sharing behaviours compared to teams with more tenuous and open interactions (Renzl, 2008). Sharing knowledge among organisational units can be difficult, but strong interpersonal relationships between knowledge sources and recipients can improve knowledge acquisition by increasing engagement and effort (Hansen, 1999). this study can classify relationships in social networks into two types based on the strength of the ties between individuals. According to Granovetter (1973), strong ties are those with whom one has a close relationship, such as friends and family members. These provide the trust and emotional tie for engaged knowledge sharing. Tortoriello et al. (2012) support this view by emphasising that strong ties, which establish a strong connection between the information source and the recipient, motivate the information source to become more invested in sharing their knowledge with a potential recipient. These views suggest that strong ties' emotional connection facilitates knowledge sharing between individuals, a crucial aspect of collaborative work. Marsden and Campbell (2012) caution against regarding social connections just as the singular feature of strong connections since several aspects may enhance a connection between individuals. Factors such as interaction frequency and shared experiences may strengthen the bond between individuals.

However, Granovetter (1973) suggests that weak ties could potentially yield more efficient outcomes in knowledge sharing. He posits that weak ties, which are characterised by individuals who interact in limited ways or infrequent encounters with less emotional investment, can distribute information to a larger number of people. Researchers have explored this mechanism where information about job opportunities from weak ties can lead to better employment or career advancements (Deshpande & Khanna, 2021). This not only emphasises the importance of weak ties in knowledge sharing but also highlights their importance to personal and professional growth. Furthermore, Hauser et al. (2007) endorses weak ties' benefits

by asserting that only weak ties can function as bridges. Information from networks can spread effectively through these ties, and removing a weak connection can ultimately disrupt knowledge sharing rather than losing a strong connection (Hauser et al., 2007). They further elaborate, stating that casual connections are more effective in disseminating new knowledge than personal friendships, leading to heightened creativity, as individuals with strong connections often share similar information (Hauser et al., 2007). Strong ties may promote trust and deep knowledge sharing, but weak ties enable the transfer of non-redundant knowledge.

The presence of diverse social connections enables the exchange of resources and effective strategies among individuals and teams (Tasheva & Hillman, 2019). This view is acceptable on a wide spectrum; however, it may overlook some of the negative aspects of social connections. Non-redundant relationships, which are weak in nature, are considered more advantageous than strong ties because they provide access to exclusive information and resources that are not accessible to the entire network (Tasheva & Hillman, 2019). Kim and Fernandez (2024) agree, adding that even partial variants of this information are preferable to repetitive information. (Hu et al., 2019) identifies this dilemma as an informative weakness in close relationships, as individuals with strong ties not only share the same information, but also find it challenging to disseminate this information to groups outside their circle, consequently creating a structural weakness.

Hernández-Chea et al. (2021) suggests that strong ties have a positive influence on collaboration. However, this view overlooks the element of diverse team members with different social connections, which might improve the performance of activities that need minimal collaboration by granting access to useful information and resources (Tasheva & Hillman, 2019). These views agree that while strong ties foster collaboration, a diverse social network might offer benefits that can be equally or more beneficial depending on the task at hand.

Weak ties also provide control benefits to knowledge brokers, allowing them to regulate shared information distribution (Reagans & Zuckerman, 2008). Despite the inherent power dynamics, weak ties can maintain the exclusive benefit of sensitive knowledge for specific individuals, thereby protecting team members. (Reagans & Zuckerman, 2008). On the other hand, Harvey (2008) emphasises that strong ties may encourage individuals to share confidential information with their close peers,

potentially leading to an unintentional breach of confidentiality. This dynamic reveals a potential risk with strong ties while underscoring the value of weak ties in controlling knowledge distribution in teams.

2.2.3 Bridging and Bonding Social Capital

Social capital, as defined, can manifest itself in two forms. (Woolcock, 2001) distinguishes between the two primary forms: bonding social capital and bridging social capital. Bonding social capital refers to the social connections within a group, such as family, friends and homogeneous social networks. It is defined by intricate networks that fulfil several purposes: strong trust, common ideals, and enduring reciprocity (Derose, 2008). Although this strives to strengthen connections and entities within similar groups, it can actually impede the benefits of diversity by creating silos (Baycan & Öner, 2023). Organisations need to manage this effectively to leverage and build stronger intergenerational connections.

Bridging social capital forms around weak ties (Neumeyer et al., 2019), and describes the social connections between different groups, such as organisational networks that go beyond demographical barriers (Woolcock, 2001). It facilitates the connection between individuals who may not typically interact, optimising the utilisation of ideas between diverse networks (Woolcock, 2001). This can be beneficial for an age-diverse team because it can create innovative solutions and foster a positive and dynamic environment. Younger employees in a team would introduce new technologies, while older employees would bring insights from experience and provide legacy context to issues. However, the success of bridging social capital depends on how the organisation creates an inclusive culture and raises awareness of the concept of age diversity and its impact on team dynamics.

2.3 Leveraging Age Diversity

In the context of teams, age diversity refers to having employees from different age groups encompassing different generations. By examining the age distribution within organisations, this study can easily measure this diversity. Workforce surveys and workforce makeup analysis typically aid in this process. In some quantitative studies,

researchers occasionally divide age groups into 10-year intervals to assess the age distribution and measure the diversity within an organisation (Li et al., 2021). In organisations, individuals spanning three or even four generations work together or within a team. As a result, one could conclude that strategies for achieving the active involvement of these various age groups will be critical to the future prosperity of organisations.

Demographic changes significantly influence workforce age diversity (Beier et al., 2022). Age diversity is a factor amongst other aspects that has exacerbated difficulties such as the free flow of information and resources, emphasising the need for organisations to efficiently handle worker diversity (Roberson, 2019). Due to prevalent social trends, an increasing number of people are currently collaborating with colleagues, managers, clients, and suppliers who significantly differ in age from themselves (Luksyte et al., 2022). This coming together of different age groups is shaping the workforce, making it necessary for organisations to establish robust policies and strategies to leverage this diversity. This not only assists in inclusion and staff retention but also positively leads to improved organisational performance and cultivates mutual learning and respect.

2.3.1 Benefits of Age Diversity

Many studies have been done on the benefits of age diversity in organisations, of which creativity and innovation have been highlighted (Beier et al., 2022; Lee & Kim, 2020). When older and younger employees come together, they can bring to the table different ideas and perspectives from their experience to help solve complex problems (Guillén & Kunze, 2019). For example, younger employees may possess exceptional academic abilities but may lack social experience, whereas older employees may have lesser academic abilities but greater work experience or social skills (Backes-Gellner & Veen, 2013). The integration of these employees with diverse knowledge pools mitigates the potential for unilateralism and reluctance to innovate, in contrast to workers with uniform problem-solving methodologies.

According to Backes-Gellner and Veen (2013), age-homogeneous organisations and teams find it challenging to share knowledge. The problem intensifies when individuals with significant knowledge do not receive promotions (Backes-Gellner &

Veen, 2013). As a result, these employees eventually leave with the knowledge that they have resigned from the company (Backes-Gellner & Veen, 2013). Diversifying the age composition within the organisation can be a solution. A recent study concluded a positive correlation between older workers seeking knowledge from younger colleagues and their motivation to remain in the workforce and maintain their workability (Pfrombeck et al., 2024). In addition, Burmeister et al. (2018) found that young people often seek knowledge from older individuals with growth-related motives and perceive their older colleagues as more motivated and willing to share information. This underscores additional benefits related to retention and knowledge sharing, particularly in relation to age diversity.

2.3.2 Challenges of Age Diversity

Social trends are causing an increase in age diversity among peers, supervisors, customers, and vendors, which is celebrated for fostering diverse perspectives, ideas, and problem-solving (Luksyte et al., 2022). However, this view is quite overly simplistic as it only looks at the positive side of things. In the context of age, a growing body of studies has shown the negative impacts of age diversity in the workplace (Beier et al., 2022; Fasbender & Drury, 2022; Luksyte et al., 2022). If defined as separation, diversity refers to differences within a group due to differences in values, beliefs, or attitudes (Triana et al., 2021). This view often leads to conflict and decreased performance outcomes (Triana et al., 2021). In the workplace, challenges around age diversity can manifest in the form of discrimination. In a recent study, Amarnani et al. (2019) revealed that age intensifies the negative impact of customer mistreatment in customer service roles. Their study shows that customer mistreatment increasingly undermines older employees' self-esteem, which in turn diminishes their overall performance. This can provide evidence that age diversity can intensify vulnerabilities, specifically when discrimination against older employees exists. In their study, Guillén and Kunze (2019) further argue that discrimination against older workers is primarily due to low competence perceptions. Should this view and perception not be addressed, team cohesion could be impacted, ultimately leading to reduced performance.

According to Guillén and Kunze (2019), if interdepartmental collaboration is not fostered, older employees are perceived as less innovative than their younger

counterparts. This not only overlooks the contributions of older employees but also limits the opportunity for a more innovative and inclusive work environment, as it undermines the value of perceptions older employees bring to the table. The issue comes up as the failure of the organisation to encourage environments and promote collaboration across different age groups rather than the actual capabilities of the older workforce. Addressing this could result in unlocking opportunities for improved innovation from all employees regardless of age.

A study by Luksyte et al. (2022) also revealed that age-diverse teams perform worse when there is at least one disagreeable person, as they fail to recognise past age differences and stereotypes. These views illustrate the organisation's susceptibility to perceptions and the slight contributors to exacerbating challenges related to age differences, which may ultimately lead to deeper team dysfunctions.

In order for mining firms to remain competitive and ensure the growth of their employees, it is crucial to adopt effective training procedures that facilitate this development. However, in a recent study, Gerpott et al. (2021) discovered a negative correlation between perceived age diversity and participants' learning outcomes in training programmes. They found that knowledge sharing served as a mediator for this relationship, highlighting yet another advantage of age-diverse knowledge sharing.

In the modern workplace, older workers face challenges due to retirement delays and unemployment among younger workers (North & Fiske, 2015a). Socioeconomic factors and personal circumstances sometimes cause this delayed retirement, but it can also impede younger employees' career advancements and projections. This can create generational inequality and tensions, which may interfere with workplace harmony and impede organisational growth. Managers must differentiate perceptions from realities to accommodate older workers while recognising the threat of changing organisational demography. However, the acknowledgement from managers is not enough, as they must confront these tensions (North & Fiske, 2015a).

Stereotyping may also exacerbate challenges facing dynamics between older and younger employees. A study by Finkelstein et al. (2013) revealed that both young and middle-aged workers have positive stereotypes about older colleagues, while older and middle-aged workers negatively stereotype young workers. This

discrepancy may lead to one-sided conflict in the workplace. Older employees may view younger employees as inexperienced and untrustworthy, which can lead to isolation and reduced collaboration. In addition, Cutcher et al. (2022) suggest that older employees often exhibit resistance to change. However, North and Fiske (2015b) view this as a common stereotype, lacking empirical evidence to establish its validity. Fasbender and Gerpott (2022) highlighted the commonly overlooked reality that older employees are often eager to learn and improve from younger colleagues. They assert that organisations may harbour ingrained stereotypes, necessitating the implementation of HR strategies to challenge them.

(North and Fiske (2015b) also highlight tensions that may impact dynamics around employees of different age groups. One that stands out is succession-based tensions, which revolve around older employees deliberately withholding resources, knowledge, and status (North & Fiske, 2015a). This knowledge hoarding has a negative impact on organisational growth, and managers need to understand that protecting older employees at the cost of collaboration leads to an impasse where no one wins. Breaking down barriers and incentivising knowledge sharing through formal or informal mentoring programs may be the solution, paving the way for a future where respect for experience-gained knowledge replaces power dynamics.

Reverse mentoring, a concept that involves a younger employee as a mentor and an older, more experienced employee as a mentee, offers another perspective on mentoring as a solution (Marcinkus Murphy, 2012). This relationship is characterised by unequal status and power dynamics within the organisation. This structural role reversal presents unique challenges for senior executive mentees who are often older. In a practical sense, reverse mentoring is a strategy that leverages young workers' expertise and technology savvy to enhance leadership and drive innovation within organisations (Marcinkus Murphy, 2012). The primary goal is to learn from the mentor's expertise through knowledge sharing and skill development, demonstrating their willingness to learn from their mentor (Marcinkus Murphy, 2012). Yet, without addressing the inherent power dynamics, reverse mentoring risks reinforcing the very generational divides it seeks to bridge.

2.3.3 Age Diversity and Social Capital

A growing body of research is solidifying the importance of people's social networks, or social capital, in generating different ideas (Han et al., 2014). However, this idea ignores the practicality of how social capital functions in complex environments.

Han et al. (2014) assert this challenge in a study that highlights the beneficial impact of team-bonding social capital (resources contained within an external network structure) on team innovation. Simply having social networks does not guarantee creativity in terms of ideas. One can argue that the quality of the relationships and connections within the network is significant, rather than how big the network is or how many networks there are.

From an age perspective, older employees possess significant advantages in terms of social capital; an overly aged-workforce might counterbalance these benefits and instead impede organisational innovation by disrupting the continuous flow of knowledge (Park & Kim, 2015). This claim suggests that age diversity can be a liability if not checked, and it is more so when it inhibits knowledge sharing and collaboration.

Moon (2018) further adds to the discussion by illustrating that employees in age-diverse organisations have fewer social connections compared to those in age-homogeneous organisations. Higher levels of age heterogeneity in an organisation can lead to conflict between groups and hinder the development of social capital due to 'us-them' divisions based on age. While social capital is necessary for organisations, this study needs to look at the dynamics that age diversity brings to teams, as it impedes rather than promotes innovation development unless properly managed through organisational awareness.

2.3.4 Intergenerational Knowledge Sharing

Age-diverse knowledge sharing involves the transfer of knowledge between employees with a considerable age difference (Fasbender & Gerpott, 2021). Previous research has identified some positive benefits linked to age-diversity knowledge exchange in organisations. Burmeister et al. (2020) suggest that age-diverse knowledge sharing in organisations can contribute to the retention of

motivation among employees. Furthermore, Li et al. (2021) highlight the link between each diverse knowledge exchange and organisational performance. These views imply that organisations can enhance their problem-solving abilities, adaptability, and innovation by leveraging the perspectives and knowledge of employees of different ages. This also helps in creating an environment that promotes a strong connection to the organisation through a commitment to goals, ultimately leading to improved employee retention.

Several important organisational challenges today are based on generational dynamics. Managers most likely view generational events as having a major influence on outcomes, including recruitment, retention, skill transfer, and knowledge sharing (Joshi et al., 2011). However, Rudolph et al. (2021) cautions about researching of people dynamics within generational contexts; as it may lead to generalisations that may lead to incorrect decisions that may be harmful and divisive. In a study about knowledge sharing preferences in the context of information communication technology, Bidian et al. (2022) found that generational differences are only based on perceptions rather than reality. While there is a strong debate about whether the generational divide impacts knowledge sharing positively or not at all, the claim may be too simplistic. Age alone is a simplistic construct that determines the success of knowledge sharing and collaboration across different generations. The dynamics that matter most may be other factors, such as the quality of relationships between employees of different ages and the environment that the organisations have created.

Fundamentally, a more experienced person passes knowledge on to a less experienced person, regardless of which generation the instructor or scholar is from (Gerpott et al., 2021). This notion holds some merit; however, it overlooks the dynamics and complications of human behaviour. Many other factors, including motivation, trust, and organisational culture, can influence the sharing of knowledge. Joshi et al. (2011) highlight conflict and power dynamics as motivators for older people to withhold knowledge from younger people to maintain their societal positions. This is supported by North & Fiske, (2015b), asserting that older individuals often engage in this tension of knowledge hoarding, which ultimately affects team performance (Fasbender & Gerpott, 2021). This behaviour is detrimental to organisations and undermines team collaboration, further exacerbating the issue of the organisation's ability to leverage intellectual capital.

Li et al. (2017) suggested that commitment is one of the factors that improves knowledge sharing. However, there is a lack of universal acceptance of this claim. Leon (2020) refuted this, emphasising that commitment doesn't enhance knowledge sharing, especially when individuals belong to different generations; nevertheless, it fosters mentorship among employees from different generations. This suggests that older workers' mentorship can guide young workers, but it fails to equip them with the comprehensive knowledge necessary for future leadership. Although mentorship is valuable, there is a need for something bigger to ensure that knowledge sharing is both meaningful and complete.

2.4 Knowledge Sharing

Knowledge sharing in an organisation involves the donating and collecting of knowledge among the specialised knowledge units or individuals inside a company (Yang & Wu, 2008). However, various factors such as team dynamics, trust within the team, and the nature of the shared knowledge determine the effectiveness of knowledge sharing. Many studies agree on the importance and significance of knowledge sharing for organisational outcomes; however, there are slight differences in how it occurs from a process perspective and whether it truly leads to performance, innovation, and creativity outcomes.

The concept of 'knowledge' is widely acknowledged as a crucial factor for achieving success for organisations and individuals (Pereira & Mohiya, 2021). However, knowledge by itself is inert. In organisations, knowledge or expertise is effectively communicated, shared, transferred, or coordinated through a method known as knowledge sharing (Ertek et al., 2017), which is adopted as a strategy to enhance and leverage their organisational resources and skills through knowledge-driven approaches (Olan et al., 2022). As intellectual capital constitutes an organisation's collective knowledge and expertise (Mahmood & Mubarik, 2020), knowledge sharing becomes important for its cultivation. However, potential challenges can impact the implementation of knowledge sharing in organisations, which necessitates future research (Olan et al., 2022).

Two types of knowledge sharing exist at the team level: tacit and explicit (Nonaka, 2009). Tacit knowledge sharing involves sharing personal experiences and

expanding on background knowledge, requiring direct interaction. Explicit knowledge sharing, on the other hand, involves expressing ideas in formalised formats such as manuals and databases. Both of these forms are valid; however, they leave a debate on whether they are effective in creativity, performance, and innovation.

A contingency framework suggests that tacit knowledge sharing has more potential for innovative solutions, while explicit information sharing enhances creativity in knowledge workers with similar expertise (Huang et al., 2014). Personal experiences drive tacit knowledge, providing the sharer with unique perspectives or insights that explicit knowledge sharing cannot offer. For complex problems, this is advantageous as it gives team members diverse knowledge from others to leverage. While tacit knowledge seems to be better, it does have its challenges. As tacit knowledge is all about sharing personal experiences and insights, it requires trust between participants, which may not always exist in teams. This creates a level of complexity in the process, necessitating a conducive environment for effective knowledge sharing.

Conversely, Huang et al. (2014) posit that explicit knowledge-sharing activities at the team level can enhance creativity among homogeneous team members by facilitating extensive information exchange and broadening perspectives. Since this is a formal process, it provides structure to the knowledge exchange and facilitates the smooth flow of information. However, explicit knowledge sharing can fall short in terms of generating ideas that will arise from different perspectives.

While Huang et al. (2014) agree that both types of knowledge sharing have their advantages, their merit lies in the context that when faced with problems requiring innovative solutions, the value of tacit knowledge increases due to its ability to accommodate diverse perspectives. However, it heavily relies on trust, which can be challenging to establish in teams. In situations where there is a shared understanding, explicit knowledge sharing can thrive, and team members can benefit from a more structured flow of information to solve problems.

2.4.1 Trust and Collaboration in Knowledge Sharing

Mutual trust is essential for knowledge transactions because of the inherent risk involved. Individuals' interacting networks, which include both formal and informal

social connections, constrain their ability to share knowledge by the extent to which they trust (Yang & Wu, 2008). Kim and Shim (2018) further elaborate on this idea, suggesting that relational social capital significantly enhances the efficiency of knowledge sharing among cluster participants in trust-bound settings. This finding highlights the importance of fostering a culture of trust within teams; a lack of trust can severely impact knowledge-sharing efforts. Without trust, foundational knowledge-sharing initiatives can falter, as individuals can deliberately withhold information or knowledge and fail to participate in the exchange process.

Team-level knowledge sharing promotes individual creativity by cultivating shared understanding among team members and enabling the acquisition of insights from others, hence expanding their knowledge range (Gong et al., 2013). While this portrays a positive and somewhat simplistic view of knowledge sharing (Huang et al., 2014) delves into the intricacies of this process. They assert that individuals with distinct expertise may find it challenging to understand and utilise the expertise of others unless they actively engage in tacit knowledge sharing, which allows them to access the knowledge backgrounds of others with different expertise (Huang et al., 2014). This implies that knowledge sharing is not universally applicable and necessitates a thorough exploration of the various contexts or circumstances in which the process may occur.

Knowledge sharing is an essential element in knowledge management processes (Wang & Hu, 2020). It acts as an intermediary between collaborative activities and performance in innovation (Awan et al., 2021). Previous studies have indicated that a common method of social contact and collaboration inside an organisation may enable employees to address issues by offering assistance and creative resolutions (Awan et al., 2021). According to Wang and Hu (2020), to achieve the desired level of innovation performance, it is crucial to participate in collaborative, innovative activities and actively promote a high degree of knowledge sharing.

Pereira and Mohiya (2021) studied the inverse of knowledge sharing and the underlying motivators, stating that possible causes for this behaviour can stem from either personal or collective experiences. Various factors can impact a knowledgeable person's decision to either conceal or share knowledge (Pereira & Mohiya, 2021). The factors can include the individual's personal motivations towards the knowledge seeker, the organisational environment, the value of the knowledge

being pursued, and the volume of knowledge available for distribution (Pereira & Mohiya, 2021). Fasbender and Gerpott (2022) noted that a lot of focus had been given to older employees' knowledge sharing with younger colleagues. However, they suggest that corporate leaders should foster a comfortable environment for older employees to learn new skills and knowledge by encouraging younger employees to share their knowledge (Fasbender & Gerpott, 2022). To improve performance outcomes, businesses should actively encourage and strengthen knowledge-sharing behaviours among employees (Song et al., 2020).

2.4.2 The Role of Leadership in Knowledge Sharing

Leaders raise knowledge sharing, which is a crucial aspect of effective problem-solving processes, as seen in the efforts of consulting firms like Bain and McKinsey, which have developed mechanisms for this through face-to-face interactions and relational connections, fostering better employee technical skills (Carmeli et al., 2013). This direct, hands-on approach fosters an environment where employees can collaborate and build on each other's expertise. Furthermore, it facilitates the transfer of technical skills, which is crucial in knowledge-intensive environments. While these modes of knowledge transfer are effective, they heavily rely on direct contact or interaction, thereby overlooking the benefits of digital platforms. This is quite significant in the world of remote and hybrid working teams. From a global perspective, internationally dispersed teams will not have the courtesy of face-to-face interactions, thus inhibiting the value of this mechanism, especially around complex problem-solving.

Indirectly, leaders can exert influence on knowledge sharing by shaping the norms and atmosphere inside the workgroup (Carmeli et al., 2013). Leaders foster a culture of collaboration and encourage employees to share their knowledge, ultimately enhancing their problem-solving abilities (Carmeli et al., 2013). This aligns with the findings by Dong et al. (2017), who found that transformational leaders foster a shared vision and create a supportive organisational social environment, promoting elevated knowledge-sharing levels among their followers. This, however, raises questions about the variability of leadership styles and how consistently a leader can create these types of environments. The problem lies in organisations making sure that all leaders follow a similar approach to promoting knowledge sharing because

inconsistencies in leadership styles sometimes undermine efforts to foster a collaborative culture.

Transformational leadership fosters a knowledge-sharing environment, enhancing knowledge-sharing within the team and promoting innovation (Sheehan et al., 2020). This type of leadership fosters open knowledge sharing through motivation and inspiration, resulting in collaborative problem-solving and creativity. In parallel, empowering leadership, which enhances work's meaning, boosts performance confidence, promotes shared decision-making, and grants autonomy (Zhang & Bartol, 2010), facilitates knowledge sharing (Lee et al., 2014). By giving team members self-governance to make decisions and the confidence to share their views, empowering leaders also creates conditions where knowledge sharing is embedded in the team's culture.

Leaders play a crucial role in fostering knowledge sharing among team members by actively role-modelling this behaviour as a knowledge builder. They offer new ideas, challenge technical solutions, and stimulate new approaches, leading to discussions and reviews that encourage knowledge-sharing and reciprocity among team members (Lee et al., 2010). Gerpott et al. (2020) support this view by stating that leaders who openly share knowledge can foster social exchange relationships among followers, who reciprocate by making knowledge resources available to others, including colleagues. In return, followers will reciprocate by making their resources and information accessible to their fellow colleagues, creating a dynamic cycle of mutual knowledge sharing.

However, leadership and its role in knowledge sharing go beyond motivation and inspiration. In a public sector study, Khan and Khan (2019) discovered that transformational leadership relies heavily on organisational learning and knowledge sharing to bridge the gap between leadership and employee innovation. Without these elements, leaders will struggle to enhance employee productivity. This view solidifies the idea that leadership effectiveness is not just about how leaders model their behaviours but also how they create structures that support the construct of knowledge sharing.

2.4.3 Hierarchy in Knowledge Flow

Hierarchy in teams plays a significant role in team dynamics, team effectiveness, and performance; however, there are different types of hierarchy that play different roles in how these impacts manifest. In a recent study, Greer et al. (2018) found that hierarchy in formal positions has a negative impact on team effectiveness and performance, while hierarchy in terms of expertise has a positive effect on team performance. This view underscores that hierarchy is not always detrimental to team dynamics and can be an advantage when structured around expertise. Furthermore, Gray et al. (2023) also found a link in how hierarchy stability also impacted how individuals in the team share information in a team, asserting its importance. Arain et al. (2020) provide support from a formal hierarchy structure and knowledge perspective, suggesting that managers are the primary source of knowledge, particularly concerning organisational dynamics. They assert that employees are prone to imitating the same behaviours as their managers in terms of how they share or hide knowledge (Arain et al., 2022). These perspectives indicate that hierarchy can facilitate competence-driven collaboration while also creating an environment of knowledge hiding, contingent upon the behaviours exhibited by the management regarding knowledge sharing.

However, Anand (2011) argues that while hierarchy functions as a mechanism to coordinate and enhance knowledge sharing, the process is typically unidirectional, originating from a top-down perspective. This can limit knowledge sharing and inhibit innovation from individuals lower in the team's structure. Reitzig and Maciejovsky (2015) suggested that organisations with team members who share similar interests and experiences are more adept at managing knowledge without excessive reliance on hierarchies. They assert in their analysis that the complexity of the knowledge base correlates with hierarchy and information flow. These studies underscore the potential advantages of effectively leveraging hierarchy and warn against restrictive dynamics in top-heavy structures.

2.5 Conclusion

This chapter highlighted the literature on the concepts of age diversity and knowledge sharing within the framework of social capital. This chapter provided an account of the dynamics that occur within teams and between younger and older employees. The review presented a framework of SCT that guided the study's conduct. Under SCT, both bonding social capital and bridging social capital were shown to be relevant to an age-diverse team. This aspect provided valuable insight into how social networks function in terms of knowledge sharing. Research demonstrated that strong ties, like close friendships, foster trust and knowledge, while weak ties, characterised by less frequent interactions, provide benefits like access to diverse knowledge and resources. Under knowledge sharing, the review highlighted two types of knowledge: tacit knowledge and explicit knowledge. Tacit knowledge is based on personal experiences, which are shown to require trust and explicit knowledge, which is shared through formal platforms and demonstrated to benefit homogeneous teams.

While age diversity offers several benefits, including different perspectives, it also presents challenges due to the differences in knowledge seeking, knowledge hoarding, and preferred communication styles between older and younger employees. The importance of leadership styles and hierarchy in teams was highlighted as significantly influencing the dynamics of diversity and knowledge sharing in teams. The sources presented both positive and negative aspects of SCT and knowledge sharing in age-diverse teams, prompting future research to explore potential limitations and delve deeper into the dynamics of social networks in various contexts.

The next chapter is the Research Questions chapter.

Chapter 3: Research Questions

3.1 Introduction

Upon developing a comprehension of the research problem, the questions outlined in this chapter emerged as particularly prevalent.

3.2 How Do Social Networks Influence Knowledge Sharing in Age-Diverse Teams in the South African Mining Industry?

There is a lot of theoretical comprehension of the impact that social capital and knowledge sharing have on value creation in the workplace; however, the understanding of how knowledge management practices influence theoretically recognised and adaptable social capital and individual knowledge sharing to foster creative work performance remains limited (Singh et al., 2021).

Li et al. (2021) recommend further research to examine the multilevel process through which age diversity influences organisational effectiveness. This level of investigation helps to understand how organisations with specific knowledge structures from specific sectors, such as mining, can benefit more from age diversity Li et al. (2021). Further, this research helps understand how social networks in age-diverse teams impact knowledge sharing.

In addition, Li et al. (2021) suggested that research investigate other factors that may add or subtract value, influencing the link between age diversity and organisational success. These elements may extend to studying the relational quality within teams, which can deepen the understanding of the impact of social networks on knowledge sharing in age-diverse teams. This leads to the next question.

3.3 How Does the Quality of the Relationships Influence Sharing of Knowledge in Age Diverse Teams in Mining Organisations?

Building on SCT, Singh et al. (2021) made the assumption that the strength of amongst colleagues fosters an enabling environment for knowledge sharing. These ties and environments provide employees with the confidence and willingness to participate in deep and intense interactions that facilitate knowledge sharing in organisations. However, this study still needs to test this assumption to confirm its validity, which gives rise to a research opportunity to close the gap.

Consolidating the insights from the literature on knowledge sharing and relationship dynamics is critical to further building on the studies. Han et al. (2020) suggest that researchers look at studies that map out the network of relationships within organisations, especially with a focus on the quality of ties that impact knowledge sharing.

3.4 Conclusion

This chapter explores the impact of social networks on knowledge sharing in age-diverse teams in the South African Mining Industry. It suggests further research to understand how age diversity influences organisational effectiveness and the quality of relationships within teams. The study also explores the role of relational quality in knowledge sharing, highlighting the need for further research.

The next chapter is the Research Methodology chapter.

Chapter 4: Research Methodology

4.1 Introduction

The study of age diversity and knowledge sharing in the mining industry requires a robust methodological approach. By employing a qualitative methodology, this study aims to provide a nuanced understanding of how teams in the mining industry can leverage age diversity to enhance knowledge sharing within this specific organisational context.

4.2 Research Design

4.2.1 Purpose of Research Design

This research was an exploratory study. An exploratory study, as defined by Saunders and Lewis (2019), seeks to discover new insights, pose new questions, and evaluate things from a fresh perspective. This study aimed to gain insights into how teams in mining companies leverage age diversity to enhance knowledge sharing.

4.2.2 Research Philosophy

The research philosophy, as defined by Saunders et al. (2019), pertains to the fundamental basis for the research. This interpretivist-based study aims to identify the distinctions among social groups, as defined by Saunders et al. (2019), to acquire a greater awareness of their respective contexts and experiences. Interpretivism asserts the existence of numerous realities and systems of knowledge, all of which are socially constructed via language, interpretation, and experience; furthermore, they are all equally valid due to their capacity to inform the convictions and behaviours of individuals (Järvinen & Mik-Meyer, 2020). This study constructed meaning from the participants' experiences by utilising their perspectives and views. Open-ended questions facilitated the exploration of individuals' perspectives and interactions with the world (Cresswell & Cresswell, 2023).

Fletcher and Beauregard's (2022) review of the research articles conducted from 2011 to 2021 on workplace diversity and its influence revealed a prevalent positivist paradigm in the sample. However, philosophy has been applied in most studies around diversity in the workplace (Fletcher & Beauregard, 2022) and recommends interpretivist qualitative methods to help bridge the literature on other diversity studies.

4.2.3 Research Approach

In an effort to establish a connection between theoretical understanding and practical challenges, this study examines the relationship between age diversity and knowledge sharing in teams. Deductive research develops a theoretical structure through empirical observation, deducing particular instances from general inferences (Collis & Hussey, 2014). The inverse is true for inductive reasoning, which proceeds from particular empirical data to more generalised analytical conclusions (Creswell & Creswell, 2023). This reverse method involves moving from specific to general observations. Abduction is frequently employed to distinguish the relationship between theory and data, wherein the data influence the researcher's selection of theory, while theory assists in the interpretation and contextualisation of findings (Creswell & Creswell, 2023). This research used the inductive approach to determine general insight into how teams can leverage age diversity to enhance knowledge sharing. This can be supported by Xiong et al. (2021), who use an inductive approach to investigate knowledge dynamics within international research and development teams.

4.2.4 Research Strategy

Although several studies around age diversity involved secondary data (Huang et al., 2022; Kaltenberg et al., 2023; Talavera et al., 2021), this study used semi-structured interviews to collect primary data. Saldaña (2011) describes phenomenology as an approach to research that centres on human experiences, events, or concepts. This study used phenomenology in this research, conducting semi-structured interviews to elucidate the dynamics of age diversity and knowledge

sharing in teams. Each participant in this study acted as a storyteller, adding to the narrative that shapes the phenomenological understanding of how age diversity can improve knowledge sharing.

4.2.5 Methodological Choice

A mono-method (qualitative) approach was used to conduct the study on how teams can leverage age diversity to enhance knowledge sharing. Most studies around age diversity and knowledge sharing have followed a quantitative methodology (Burmeister et al., 2020; Fasbender & Gerpott, 2022; Janahi et al., 2023; Kunze et al., 2021); however, they do not allow for the answering of the research questions. Quantitative research frequently relies on statistical data, which can illustrate generalisations but may not address the subtleties of individual and group dynamics (Saunders & Lewis, 2019). In contrast, the preferred qualitative approach allows for a comprehensive and detailed understanding of how age diversity allows for enhanced knowledge sharing by exploring participants' perceptions, experiences, and interactions in depth.

4.2.6 Time Horizon

As time is contracting for the research, cross-sectional research is the ideal option. According to Saunders and Lewis (2019), cross-sectional research is where the research data is collected from participants at a single point in time, as opposed to longitudinal research, which involves collecting data from the same participants over an extended period.

4.3 Population

The population targeted for this study consisted of professionals working in or leading age-diverse teams within the South African mining industry. Targeted participants were drawn from knowledge-intensive departments such as engineering, finance, and other technical fields.

4.4 Unit of Analysis

According to Creswell (2007), in phenomenology research, the unit of analysis is individuals who have shared an experience. This study's unit of analysis was professionals and managers working in age-diverse teams in South African mining companies. This is because these individuals have specialised expertise and knowledge and are critical to the organisations they serve. By focusing on professionals, this study aims to gather insights from individuals who are involved in decision-making and knowledge management.

For a team to qualify as age-diverse, this study defines it in ten-year intervals. According to Wegge et al. (2008), each organisation is comprised of personnel from a variety of cohorts with a range of ages exceeding 25 years. Similar to Wegge et al. (2008), this study defined these age cohorts as 20-29 years old, 30-39 years old, 40-49 years old, 50-59 years old and 60-69 years old. The operationalisation of a particular diversity dimension is determined by its conceptualisation, as per Harrison and Klein (2007). Age diversity should be operationalised in the form of variety, as the current study primarily focuses on theoretical considerations regarding knowledge-sharing experiences. In accordance with prior age-diversity research, the concept would be operationalised using Blau's index (Blau, 1977), the most frequently employed diversity index for qualitatively distinct demographic and functional categories (Harrison & Klein, 2007). The research focuses on qualitative insights, and this approach provides a comprehensive understanding of defining age diversity, ensuring consistency with broader demographic diversity literature.

4.5 Sampling

Purposive sampling was utilised for this research. Purposive sampling is employed when this study selects individuals based on their specific experience with the phenomenon being studied (Collis & Hussey, 2014). The advantage of purposive sampling is that the researcher selects candidates based on their relevance to the researcher's interests (Zickar & Keith, 2023). This targeted approach enables the incorporation of persons who possess firsthand experience with age variety and its influence on information exchange, providing comprehensive and detailed information that is directly pertinent to the research aims. This was applied hand in

hand with snowball sampling. Snowball sampling is utilised in research where it is critical to include individuals with firsthand knowledge of the phenomenon under investigation (Collis & Hussey, 2014). The researcher enquired whether participants had any connections with individuals within the mining industry network who would fit the population criteria of working in age-diverse teams to potentially establish communication with them. By doing so, the researcher could increase the participant sample size and gain access to a broad spectrum of experiences and perspectives, enhancing the richness and depth of the qualitative data collected.

This study targeted a total of 20 interviews; however, due to time constraints and participants' willingness, it only conducted 14 interviews. According to Saunders and Lewis (2019), a sample size of 12 to 30 samples is appropriate when the sample is to be obtained from a population consisting of various individuals in a sector.

The aim was to target mining companies in different commodities to ensure variability. The researcher conducted interviews with participants from mining companies that operate in commodities such as coal, iron ore, manganese, platinum, and diamonds. Furthermore, in these companies, participants or professionals who work in teams in different departments at various levels of the organisation were interviewed. This study included participants from different age groups to capture the range of age diversity. This ensures that the sample reflects the diversity of the industry.

All the study participants were professionals working in or leading age-diverse teams in knowledge-intensive departments such as engineering, finance, and other technical fields (Table 4.1). Participants were selected from mining companies across various commodities to mitigate the influence of a single commodity and gain a comprehensive understanding of the dynamics of the constructs.

Table 4.1. List of Participants

Participants	Industry	Role	Department	Years in Mining	Years in organisation
Participant 1	Platinum	Principal Integrated Logistics	Logistics	10	2
Participant 2	Coal	Senior Engineer	Engineering	10	4
Participant 3	Coal and Metals	Marketing Manager	Marketing	7	3,5
Participant 4	Iron Ore	Technical Services Manager	Technical Services	25	3
Participant 5	Iron Ore	Section Engineer	Engineering	15	1
Participant 6	Manganese	Mine Production Planner	Planning	10	3
Participant 7	Coal	Head of Marketing	Marketing	10	2,5
Participant 8	Platinum	Chief Surveyor	Technical Services	14	13
Participant 9	Diamonds	Manager Business Improvement	Business Improvement	12	2
Participant 10	PGMs and others	Quality Assurance Specialist	Quality Assurance (Labs)	8	8
Participant 11	Precious Metals Group	Health and Safety Principal	Health and Safety	26	26
Participant 12	Coal	Manager Technical Insurance and Treasury	Finance	16	3

Participants	Industry	Role	Department	Years in Mining	Years in organisation
Participant 13	Coal	Senior Environmental Specialist	Environment	12,5	12,5
Participant 14	Precious Metals Group	Environmental Manager	Environment	12	5

Source: Author's own.

4.6 Data Collection

Data collection was done through semi-structured interviews with participants. Semi-structured interviews are known to be very effective and allow for deep insights relating to the study (Bell et al., 2019). However, conducting unstructured interviews can be laborious, as they often involve challenges in regulating the scope of discussion and documenting the exchange of ideas (Collis & Hussey, 2014); they look beyond ordinary idle conversation, thereby providing comprehensive insights into the subject. All data collected was primary data, which is described by Myers (2013) as data gathered by the researcher firsthand. Since this study was cross-sectional, it proved suitable for gathering data at a particular moment.

Myers (2013) noted that although interviews are a great and ideal method to gather data, the process has some shortcomings. The absence of trust stems from the unfamiliarity of the interviewer, which can cause participants to withhold sensitive information, thereby compromising the accuracy of the collected data (Myers, 2013). Myers (2013) also noted that time constraints may lead to the disclosure of insufficient information or the fabrication of viewpoints and, most importantly, relating to this study, the level at which a researcher enters an organisation can limit access to different individuals, possibly leading to difficulty getting access to senior or relevant managers. The researcher developed trust and rapport through transparent communication to mitigate potential challenges. The researcher sent consent forms for signatures to reassure the participants about the study's confidentiality and their ability to withdraw from the interview at any time.

The interviews were conducted using Microsoft teams as it allowed for ease of reach and was ideal program for recording the interviews. Microsoft teams as an online option has become increasingly popular and as a preferred method of conducting interviews and it offers flexibility, low cost and improved accessibility to participants (Doyle et al., 2020).

4.7 Measurement Instrument

The study used an interview guide with open-ended questions as the measurement instrument for the semi-structured interviews. The researcher crafted the interview guide by carefully choosing questions that aligned with the specific research questions. The interviews were semi-structured, and as the participants responded to the questions, the researcher asked follow-up questions not included in the interview guide. The follow-up question remained within the theme; however, the level of detail that was discussed was based on the varied responses from the participants. A high-level draft of the interview guide was shared with the participants before the interview so they could familiarise themselves with the content and the types of questions that would be asked. Preparing the participants allowed for deeper insights and further reduced the pressure from the element of surprise.

Table 4.2 shows the linkage between the research questions and the interview questions. The complete interview guide can be seen in Appendix C.

Table 4.2: Link Between Interview Questions and Research Questions

Interview Question	Linked to Research Question
1,2,3,4,5,6,7,8,9,14,15	RQ1
10,11,12,13	RQ2

Source: Author's own.

4.8 Data Analysis

Thematic analysis was the chosen approach to analysing the data. Thematic analysis is a method that has become popular in analysing qualitative data and is

linked to seeking common themes within a set of data (Stainton-Rogers & Willig, 2017). Thematic analysis applies to most theoretical frameworks (Stainton-Rogers & Willig, 2017). This adaptability, in conjunction with its availability, renders it especially ideal for individuals who are new to qualitative research.

Following the cleaning up of transcripts and before beginning data analysis, the researcher arranged the interviews in an order that provided deeper insights into addressing the research questions. This was done at the researcher's discretion to allow for noticing saturation in the coding process. The analysis commenced with coding the data from the transcripts into codes. This study then grouped these codes into secondary ones or categories, ultimately leading to themes. Coding involves the classification and labelling of various data elements, whereas thematic analysis involves identifying and analysing patterns or "themes" within the data (Saldaña, 2016).

The process that was followed was in line with Braun and Clarke (2006). The process began with familiarisation of the data, in which the researcher immersed themselves in the data through repeated reading and note-taking, thereby gaining a sense of the overall content whilst identifying any initial impressions about the data. According to Saldaña (2016), this stage also involves gaining emotional insights into the data, taking brief notes of thoughts that arise, setting reminders for what to look for, and finally prioritising which data would be significant for the analysis process. This was done even after each interview, reviewing and redoing it before the analysis process.

This was followed by breaking the data into meaningful words, phrases, sentences, or paragraphs, generating initial primary codes. This involved the descriptive naming of the units to capture the essence of what they were talking about.

The last two steps involved dividing these codes into categories based on patterns, and ultimately, the themes were developed and named. The researcher continuously refined the reiterative process of theme generation to ensure consistency in the findings. Table 4.3 shows the final thematic map that was developed, and the codes that were generated are shown in Appendix C. During the analysis process, this study identified and created a total of 180 codes, grouped them into 12 code groups or categories, and ultimately identified seven themes to facilitate the inductive identification of common ideas and insights from the data.

Table 4.3: Themes and Categories Developed From the Analysis Process

Themes	Categories/Code groups
Impact of Age on Knowledge Sharing and Social Interactions	Dynamics of Age diversity (26)
	Generational Differences (15)
Collaboration and Knowledge Flow	Knowledge Sharing Mechanisms (28)
	Collaboration and Interaction (13)
	Team Structure and Dynamic (11)
	Barriers from Hierarchy and Role (8)
Team Culture and Leadership on Social Network Formation	Trust and Openness (12)
	Leadership and Mentorship (6)
	Organisational and Team Culture (14)
Trust, Emotional and Psychological Factors	Trust and Openness (12)
	Social Ties and Relationships (23)
	Emotional and Psychological Factors (13)
Technology in Enhancing or Inhibiting Knowledge Sharing	Technology in Knowledge Sharing (5)
Strong Ties in Promoting Trust and Knowledge Sharing	Social Ties and Relationships (23)
	Trust and Openness (12)
Weak Ties in Knowledge Sharing	Social Ties and Relationships (23)

Source: Author's own.

The data analysis reached a point of data saturation, which is ideal for qualitative analysis. Saturation occurs when interviews yield no new data beyond what has been obtained from previous interviews (Saunders et al., 2019). This point reached transcript number 12 in the order the researcher followed. The realisation of saturation was realised in the coding process as no new codes were being created.

4.9 Data Quality

In research studies, data quality refers to the data's credibility and reliability. Collis and Hussey (2014) define reliability as the measurement's exactness and

consistency, along with the absence of discrepancies upon replication of the research. Going into the research, the assumption was that the participants would be honest; however, as the method of collecting data is semi-structured interviews, confirmation of this assumption may be challenging. Therefore, data was validated through data triangulation to ensure that the information collected was correct. Triangulation involves the integration of two or more autonomous data sources or data collection techniques within a single study (Saunders & Lewis, 2019), which helps increase confidence that the data supports the information being put forward. (Collis & Hussey, 2014). Data triangulation was utilised as a method to analyse the data drawn from three different sources. The sources included journal articles from the literature review, findings from the research study, and conversations with interviewees and industry colleagues to share some of the key high-level findings in order to verify the possibility of the outcomes.

To ensure reliability, this study implemented member-checking and peer debriefing. This would necessitate consulting all participants to obtain their input and validate the interpretation of the findings. Given the researcher's tenure in the mining industry for slightly over a decade and the network that they had built, the findings were communicated with colleagues and peers with industry experience, leveraging their perspectives as feedback to ensure the data interpretations are sensible.

4.10 Limitations

Collis and Hussey (2014) define limitations as weaknesses or deficiencies in the methodological choice. In this case, the methodological choice in a mono-method qualitative study thereby gives rise to a few limitations.

Purposive sampling and snowball sampling approaches may limit the sample size to the point where it is not representative of the broader mining professional population. The potential lack of access and availability of busy professionals, who may be difficult to schedule interviews with, can exacerbate this, potentially leading to incomplete data or limited participation.

Selection bias is another limitation that may have impacted the study, as participants were self-selected or recommended by others known by the researcher, potentially

introducing bias based on a specific network. Bias can also extend to subjectivity in terms of data interpretation. Qualitative research is subjective by nature, and the researcher's biases can influence the interpretation of the data. Because the researcher is also working in a team, their experience may have influenced interpretation. Despite endeavours to maintain objectivity, personal views may affect how data is interpreted and presented.

The concern around contextual constraints is also a potential limitation. This refers to the organisational culture of participating mining companies, which may influence their experiences and perceptions of knowledge sharing. This can limit or impact the applicability of the findings.

4.11 Research Ethics

Prior to commencing data collection, the researcher sought ethical clearance from the Ethics Committee at the Gordon Institute of Business Science (GIBS). Following the explanation of the processes and assurance of secrecy, all participants were required to fill out a Consent Form. The findings were reported using pseudonyms instead of the individuals' actual names to preserve confidentiality. None of the companies' names were mentioned in the research report. From a data preservation perspective, the transcripts from the interviews will be stored by the researcher for a minimum period of ten (10) years after the completion of the original research project, as required by the Research Data Management Procedure of the University of Pretoria.

As required in the ethical process, consent forms were sent to each participant before the interviews were conducted to assure them of confidentiality and that they could choose to withdraw anytime during the interview if they felt uncomfortable with continuing. These consent forms have been filed and are to be submitted to the online folder provided by GIBS.

4.12 Conclusion

This chapter outlines the research study's methodology. The chosen methodology

was qualitative research, as it facilitates a deeper exploration of the topic to answer the research questions. The research philosophy was based on the intention to understand the lived experiences and insights between varying groups of people. This study conducted semi-structured interviews with selected candidates, chosen through prospective sampling, to collect the data. The interviews were conducted using Microsoft Teams, and the data analysis was done through thematic analysis.

The next chapter presents the Research Findings chapter.

Chapter 5: Findings

5.1 Introduction

This chapter provides an overview of the study's findings from the semi-structured interviews that were conducted. The findings were organised according to themes developed from the research questions and the participants' responses. A total of 14 interviews were conducted, all done through Microsoft Teams, which was the preferred method by all interviewees.

The presented data has been analysed to understand how teams in mining companies can leverage age diversity to enhance knowledge sharing.

The sub-research questions are:

1. How do social networks influence knowledge sharing in age-diverse teams in the South African mining industry?
2. How do the quality of the relationships sharing of knowledge in age-diverse teams in mining organisations?

5.2 How Do Social Networks Influence Knowledge Sharing in Age-Diverse Teams in the South African Mining Industry?

This section highlights the findings that try to answer the first research question. Five key themes were identified that would assist in giving insights. These insights were supported by quotations from the participants' interview answers.

Table 5.1 illustrates the Key themes and the code groups that were drawn from.

The table specifies the number of code groups per category to indicate which codes were more significant. This ultimately assists in identifying and elaborating the findings to address the research questions. Even though some of the codes were not in a significant quantity, they were also discussed in order to emphasise certain findings.

Table 5.1: Themes and Categories for RQ1

Themes	Categories/Code groups
Impact of Age on Knowledge Sharing and Social Interactions	Dynamics of Age Diversity (26) Generational Differences (15)
Collaboration and Knowledge Flow	Knowledge Sharing Mechanisms (28)
	Collaboration and Interaction (13)
	Team Structure and Dynamic (11)
	Barriers from Hierarchy and Role (8)
Team Culture and Leadership on Social Network Formation	Trust and Openness (12)
	Leadership and Mentorship (6)
	Organisational and Team Culture (14)
Trust, Emotional and Psychological Factors	Trust and Openness (12)
	Social Ties and Relationships (23)
	Emotional and Psychological Factors (13)
Technology in Enhancing or Inhibiting Knowledge Sharing	Technology in Knowledge Sharing (5)

Source: Author's own.

5.2.1 Theme 1.1: Impact of Age on Knowledge Sharing

This theme helps give insights into how different age groups interact within social networks, particularly focussing on the dynamics linked to the diversity aspect.

5.2.1.1 Dynamics of Age Diversity

Most participants believed that team members would continue to gather according to their respective age groups. This is evident in their daily interactions and their physical cohesion during meetings and office hours. The workplace necessitates interpersonal interaction among individuals, irrespective of their age or gender. Some participants see significant groupings in terms of age groups. Sometimes, it may not be that visible due to the fact that team members should engage nonetheless. These interactions extend beyond the confines of the workplace and can significantly strengthen professional relationships. Colleagues who socialise outside of the

workplace can form strong bonds, deepening their understanding of each other's personalities. It can foster trust, which can enhance knowledge sharing and improve collaboration.

The older people stick together, and the younger people stick together, definitely. Also, the older ones have known each other for quite a long time. So, it's almost natural that they tend to talk more to each other. #Participant 12

I definitely interact more with people in the 30 to 40 age group, which is the age group that I fall within. You could argue that it's because our departments are closely linked, but it's also just because we relate; we relate better. So, because we are able to have outside-of-work interactions, it makes it easier when we share knowledge at work; it's easier for me to lean toward those people more than I lean toward people that I only see at work. #Participant 9

From a social point of view, I'd say the youngsters normally gravitate toward each other, even though the age gap isn't that great. But sometimes, the gap isn't even visible because people interact with each other regardless of age in a very informal way. Participant #6

You tend to find a lot of the people in their 30s have established more of a social network, and they interact a lot more than what you'd find in older ages. #Participant 3

The younger ones, they get along. I'll be honest there; there aren't actually any quarrels and stuff. They support each other then, and they gel more with even the middle group, if I can say the 30 to 40 group, they get along with them well. It's the 40 to 50 group that tends to be isolated, if I can put it that way, because of the experience element. Participant 5

Participant 7 noted that the age group 30–40 years old serves as a mediator or key connector between the younger and older groups, thereby playing a significant role in team dynamics, particularly in relation to social interactions and knowledge flow.

I think the 30s to 40s are able to connect easily with the 20s to 30s and the 40s to 50s. It's more because they've partly worked with the older generation

and now started working with the younger generation. This helps them balance, allows them to connect to the two, and allows for ease of information flow. I think that age group is very critical in the flow of information and communication, depending on how you make use of it. #Participant 7

Younger employees may be more likely to seek knowledge from older employees, as they have a significant amount of knowledge. However, in terms of relationships, younger employees find it easier to relate to people their age. This 30- to 40-year-old group helps bridge the two groups' relationship, facilitating knowledge sharing and exchange. They also bridge the gaps between the two groups, creating an inclusive environment in the team.

Now the 20 to 30 group, remember they are hungry for experience; they are hungry for knowledge. They are hungry to perform. They want to prove a point. #Participant 5

The participants brought to light certain challenges concerning the preferred communication methods of younger employees. Participant 9 shared that younger employees prefer their information to be presented in a short and concise format. This is different from older employees who find detail in their information appealing. Furthermore, younger employees often utilise short-message communication platforms like Microsoft Teams, even when they are physically present in the same building as their counterparts. From the perspective of their older counterparts, they find this practice to be both unnecessary and somewhat disrespectful. This is because older people tend to prefer a more face-to-face approach to verbal communication. These clashes may cause issues with age-diverse team dynamics.

So with the younger group like myself, I tend to shorten things, hoping that you know someone will pick it up. But you find that messages get lost in translation, and my older counterparts would prefer a more thorough explanation of things. So yeah, I think the method in which the information is shared and then also maybe just the prioritisation as well. #Participant 9

Although we've always been really in open offices. But younger people would rather send you a Teams message when they're sitting next to you than stand

up and talk to you. And the older generations don't like that. They really don't like that. They almost think it's disrespectful. #Participant 12

The majority of the participants emphasised the difficulties of older employees resisting change or adhering to traditional methods. The established work habits, deeply rooted throughout their careers, are the root of this resistance. They tend to be quite comfortable and may see change as a disruption to their way of working. Older employees tend to be more cautious in their approach to welcoming change, as they have experienced a lot of it throughout their careers and have seen the negative aspects of poorly implemented initiatives.

The one thing you find with older employees is the fact that it's always the old way of doing things. So, they tend not to become very open to new ideas that may come from people who are younger or new to the team. That's the one challenge I've encountered where the older group tends to be a bit rigid in their thinking. #Participant 3

I think that the challenges may come from people who resist change, especially older people who dominantly resist change. In most cases, it doesn't necessarily mean what they've been doing is the best way of doing it, but because that's what they know and they're not comfortable with new ways of working, you find that there's resistance. #Participant 4

With the older generation, there is a bit of a struggle to accept change, to accept the new age information management and the new age teams, the new age work-from-home kind of thing. So I would say from that perspective changing mindsets is difficult because they are used to the traditional way of doing things. #Participant 1

When a young employee comes up with those suggestions and tries to implement things, they are blocked by the older guys, who say, "I know it's not going to work... We've tried this before, and it didn't work". The older people don't necessarily want to change how things are done because they know it works this way. #Participant 10

5.2.1.2 Generational Differences

Participant 11 brought up a concern about the traditional nature of the mining industry, particularly in the region, where it is important for young people to show respect towards their elders. In the workplace, this can pose a challenge as it can disrupt team dynamics, particularly when it comes to fostering an environment where everyone is treated equally, regardless of age. Although the notion of respecting elders may foster a sense of community and build strong bonds between people of different age groups or generations, it may also lead to issues related to team dynamics.

There is a historic legacy within the mining industry of, you know, the culture, the respect as a result of culture, that still exists. But especially on the mining side, because we still have people, you know, who've been with the mine for quite some time. And also because the mines are situated in areas where, you know, it's a more traditional type of environment. #Participant 11

Most participants concurred that young people are more inquisitive, highly curious, and constantly seek knowledge from more experienced employees. This is attributed to their inexperience and the vast amount of knowledge they can acquire to further their careers. This is because young people are quite ambitious and often see knowledge as a key stepping stone to future career advancements. This creates numerous opportunities within the team and network for knowledge sharing, potentially leading to innovation and problem-solving. Young people are fascinated by new knowledge and eager to tackle new challenges in search of innovative solutions. They understand that having a robust knowledge base can equip them to take on complex challenges. All of this curiosity drives them to seek new information.

Now, the 20 to 30 group remembers that they are hungry for experience and knowledge. They are hungry to perform. They want to prove a point. #Participant 5

It comes down to the individual being a young person and recognising that older people have the knowledge. And it's not an expectation, but the reality is that a person would have to then take it on themselves to actually draw from that reservoir of knowledge from the older people. #Participant 6

The reason for that is again really aligned with your research: the reason why we brought in young employees is for development. So they encourage, they encourage, or we encourage them to interact with the guys with more experience to get their learnings, and so on. #Participant 8

The younger people find it easier because they are more flexible. They are passionate, willing to share ideas and argue about certain things, and they try to show off as well that they know certain things. And if they don't know, they are curious; they want to learn. #Participant 5

However, Participants 10 and 3 observed instances where older individuals hoard knowledge or information. One participant pointed out that some older individuals hoard knowledge as a strategy for self-preservation and fear of job insecurity. They may be apprehensive about sharing their knowledge, potentially diminishing their value to the organisation. From a self-preservation perspective, the mining organisation tends to hire older employees as consultants after retirement because they possess a stronger knowledge base about the legacy aspects of the organisation. Sometimes, older individuals take advantage of this practice, which can result in hoarding knowledge. This serves as one of the major barriers to innovation and may defeat any attempt to foster collaboration. This also hinders any efforts to strengthen the team's social network.

But with older people, what I'm noticing is that most of them try to withhold information. I suspect that those older people who don't want to share the information are for self-preservation so that when they go on pension, they can come back and become consultants because they know no one knows what they know and no one has the skill that they have. #Participant 10

You tend to find that some of these individuals who've been in the organisation much longer tend to hog information quite a bit just to also ensure that they can affirm themselves and still appear to be people. #Participant 3

Participants 2 and 4 also shared how older team members may hoard knowledge because they feel threatened by younger ones. Most older individuals may have reached the pinnacle of their careers within the organisation. This may often result in them feeling bitter about their situation, thereby, in turn, hiding or refusing to share information with younger people in order to spite them. This is another barrier that

undermines any efforts to strengthen the social networks within the team, foster collaboration, and encourage new ideas.

You'd find some sort of resistance where people are not willing to teach new people in their teams because they're thinking, I'm teaching you, I'm empowering you; you're just going to come and overtake me. So I've had those experiences where someone is frustrated; they can't be promoted because they don't have the right qualifications. They get tired and frustrated. To a certain extent, they also don't share information, even when it's critical business information. #Participant 4

A lot of resistance to knowledge sharing from old employees who have all the experience is because a lot of them know that they will not necessarily get promoted to higher levels. #Participant 2

5.2.1.3 Theme Summary

The majority of participants concurred that team members tend to group together based on age groups, even in the context of workplace interpersonal interactions. It was found that Interactions may extend beyond the workplace, thereby forming strong bonds, fostering trust, enhancing knowledge sharing, and improving collaboration. The age group plays a big role in managing team dynamics, facilitating knowledge sharing, and bridging the gaps between younger and older employees outside that age group.

It was also found that younger employees are more likely to seek knowledge from older employees due to their extensive knowledge and experience. This curiosity in young employees often leads to innovation and problem-solving as they are eager to tackle new challenges. Participants emphasised the preferences of different generations when communicating information. While older employees prefer a more detailed format, younger employees seem to prefer sharing information and knowledge concisely. Younger employees also prefer using digital communication platforms regardless of whether they are in the physical presence of the people they are communicating with. On the other hand, all people prefer a more face-to-face verbal communication approach.

Older employees' resistance to change and rigidity posed a significant challenge due to their deeply ingrained work habits and discomfort with disruption. This proved to be counterproductive, especially with regard to the sharing of new ideas with them. Furthermore, older employees were found to hoard and hide knowledge and information as a self-preservation tactic in fear of job insecurity.

5.2.2 Theme 1.2: Collaboration and Knowledge Flow

This section shows the findings on how age-diverse teams develop and maintain social networks through the flow of knowledge, information, and collaborations. The environment and team dynamics should function as mechanisms for collaboration, accommodating various communication styles that cater to the needs of diverse age groups. Team dynamics that are strong and robust can break down barriers to communication, thereby enabling knowledge flow across different age groups. Therefore, this study looks at how this setting strengthens social networks, which in turn should improve knowledge sharing in age-diverse teams.

5.2.2.1 Knowledge Sharing Mechanisms

Formal and structured knowledge-sharing platforms were identified by Participants 3 and 8. These platforms included mentorships, on-the-job training, workshops, and meetings. These programs facilitate social interactions, experience sharing, and the development of social ties among employees of various age groups. These also extended to graduate development programmes where young graduates who are fresh from university can gain knowledge from older and experienced professionals in their field. These programs enhance knowledge and facilitate the transfer of skills from older employees to younger ones.

So, currently, our knowledge sharing is done mainly with on-the-job training. So we prefer what we do. We allocate the young bloods to experienced guys, and then we have a program that they follow to determine what they want and need to achieve. #Participant 8

What we have is, for instance, a digital hub in terms of innovation where everyone can just share ideas. Even this morning, there was a coffee session for sharing ideas, for instance, and the innovation team drove this. It was actually next week; it's called What's your big idea? So, with that, it allows for knowledge sharing and innovation. So there are a few drives, like coming from the innovation team via our strategy office, that try to foster knowledge sharing and the sharing of ideas. #Participant 3

I was in that program, which is the PIT (Professionals in Training) program, where you come in and do this program for a year and a half, and we assigned a mentor. Our mentor is somebody from an older age group who's experienced and sitting at a management level. Even if you become a manager one day, you'll find that mentor is still your mentor. You'll find that the younger generation does reach out to older age groups for mentorship. #Participant 13

We've got a developmental program for metallurgists. We've got two different functions, and part of that developmental program is that young and old will come and present in a forum of the same discipline. There'll then be a forum of the metallurgists and engineers who will come and sit and discuss. And within that space, you have a whole range of people of different ages. We also have things like, for example, mentorship programs within the organisation where, you know, senior personnel and experienced personnel are actually encouraged to mentor junior people within the organisation. #Participant 11

5.2.2.2 Organisational and Team Culture

Participants 5 and 13 highlighted the responsibility to share knowledge and information and to collaborate was highlighted as a way to foster accountability and teamwork. Leadership and employees' understanding of the organisation's vision and direction drive a sense of commitment among team members to achieving shared goals. Accountability also stems from role-based communication, which helps communicate information and knowledge to specific roles to ensure efficiency and avoid information overload. Collaboration and teamwork can be ensured by ensuring that relevant information is shared with the correct roles and

responsibilities.

Fortunately for me, my direct reports are well aligned with the goal and where they want to go. So my engineer has his way of driving accountability, which is amazing, whereby he gets the team so involved that you don't have a choice. If they're reluctant to assist each other, that element of responsibility sitting on them not exactly forces them but encourages them to assist each other so that they can see if one portion of the ship is sinking. So, that transition of that mindset took about six months to fully embed in their heart and in their mind. #Participant 5

So, in terms of interacting more than others, basically, we communicate if it's a role and if it's a task related to your information related to your role, it gets communicated to you. And then the other team members, if there's like, I'd say, a meeting or a workshop on an event that's related to their role. So they will only get invited, or communication will be sent to them. I would say that the communication is more role-based. #Participant 13

5.2.2.3 Collaboration and Interaction

Participants emphasised the importance of a cohesive and productive work environment as a major outcome of social interaction. The idea of social interaction outside of work results in improved communication between colleagues in a team. This improved communication makes it easier for employees in a team to be open to sharing ideas and enhancing collaboration in the workplace. This also fosters trust, creating more supportive environments that facilitate collaboration, the exchange of experiences and knowledge, and the ability to ask for help from one another. All this leads to an improved flow of information and the development of innovative solutions in projects.

Typically, the ones who interact a lot more on a social basis find it very easy to interact and work together when they're at work. So, social interaction can actually come in two forms. In most cases, it's beneficial where your social interactions enable seamless cohesion when working together, and they actually bounce off ideas very quickly, work together very quickly, help each other out, and teach one another very easily. #Participant 2

You need to at least connect with the people that you work with. Connecting breaks down the boundaries and barriers where you find that either one member who may not have the information or the knowledge is intimidated or fearful of interacting with other team members to get help. So social networks are absolutely critical, where the closer you are as a team, the more you like each other, the more you enjoy working together, and it makes it easier to share information within the team. #Participant 3

For example, if I'm working with sites on certain projects, then I will report back to the team, and they can just give insight because, from a measurement perspective, my boss would be looking at that more than the team. We leverage each other's skills from a formal setup of a meeting but informally. So, if there's something that I actually do not know, I can maybe interact with one of my colleagues as well. #Participant 1

Participant 3 mentioned the importance of implementing collaborative structures as a way to formalise knowledge sharing and collaboration among the team. Their organisation implemented a buddy system that fosters mutual support among team members by creating a built-in support network. This initiative ensures the regular sharing of knowledge, and when available, it creates pairs based on expertise and market experience to facilitate knowledge sharing. By encouraging team members to help each other, this buddy system helps improve efficiency and productivity within the team.

I've also started what we call the buddy system, where, for instance, if someone is stuck, you have a buddy in the team who can help you think through whatever challenge you could be having or even knowledge sharing within the team. #Participant 3

A team can also extend collaboration externally, engaging in cross-departmental knowledge sharing and problem-solving. Participant 3, a mining company's marketing team member, gave an example of how their age-diverse team's social interaction extended and facilitated knowledge sharing and problem-solving, beginning with a specific issue. The involvement of the finance team in workshopping the problem demonstrated the advantages of cross-functional collaboration in solving problems.

So, one time, we had a bit of a challenge or credit issue with a member of the team when a customer was not paying. And what you found was that the different members of the team were able to unpack the issue, determine where we have gaps, and determine where we can potentially address some of these gaps. Doing that resulted in us having some sort of workshop with the finance team on how to better manage credit. So, it stems from one person's issue. #Participant 3

5.2.2.4 Barriers from Hierarchy and Role

Participants discussed how hierarchy can act as a barrier to knowledge sharing and communication. They highlight the issue that rank precedes the success and efficiency of the team; restrictive communication occurs, leading to delays and gaps. Participant 4 supports that an open-door policy where communication is free-flowing, irrespective of rank, can enhance team dynamics.

Sometimes, you would find that hierarchy. It's if an organisation is too strict on who you need to talk to based on their level and stuff. It also delays the flow of information. But if people are able to walk into your office or your desk, even if you are in a higher or lower role, it also makes it easier for information to flow. If there are no hierarchy boundaries that you know, I'm a manager; you can just comment or talk to me. #Participant 4

On previous occasions, we realised that we had issues with how things were communicated and that there would be loopholes. So, information would only be communicated or shared within the six people who are managers, a group of managers, it would be shared up to a certain level and wouldn't filter off to the rest of the team. The only people who would know would be those with whom a particular manager has some sort of relationship because they interact a lot. #Participant 10

5.2.2.5 Theme Summary

Under this theme, participants spoke about how social interaction fosters a cohesive

and productive work environment, improves communication, fosters trust, and facilitates exchanging experiences and knowledge. Participants also highlighted the importance of knowledge sharing and collaboration in fostering accountability and teamwork, with leadership's and employees' understanding of the organisation's vision driving commitment.

It was found that initiatives to formalise knowledge sharing and collaboration among team members, foster mutual support, and promote knowledge sharing through expertise and market experience, thereby improving efficiency and productivity, were examples of a buddy system. It was also noted that other formal knowledge-sharing mechanisms like mentorships, on-the-job training, workshops, and meetings promote social interactions and experience-sharing among employees. These programs also facilitate skill transfer between older and younger employees. Participants also highlighted how hierarchy can hinder knowledge sharing, as senior individuals may use their rank to selectively share information. This can create power dynamics that may limit the acquisition of insights, slow down the learning process, and reduce collaboration, thereby significantly impacting those with limited experience.

5.2.3 Theme 1.3: Team Culture and Leadership on Social Network Formation

Team culture and leadership are key drivers in forming and developing social networks in age-diverse teams, as leaders play a significant role in fostering environments of openness, inclusivity, and supportive knowledge sharing. Through this, leaders can foster social networks within the team that connect employees of different ages. Inclusivity and openness as a leadership-driven initiative strategy can close gaps caused by generational differences and enhance knowledge flow within the team. The following findings clarify how these two drivers contribute to the formation of social networks and help understand the impact of knowledge-sharing dynamics.

5.2.3.1 Organisational and Team Culture

Participants 1 and 2 highlighted the importance of closing generational gaps through

creating a team culture that fosters social connections. Although there are differences relating to age group dynamics, putting in robust and long-standing initiatives to ensure social connections among team members is crucial. Leadership plays a crucial role in fostering social connections among team members by implementing these initiatives and actively participating in them. This allows the team to maintain the culture of these social settings even when the leader is no longer present. Participant 2 also emphasised that these social settings don't necessarily need to occur within the workplace but outside of work hours. This provides a relaxed environment where team members can interact in a different setting, leading to a more open-minded approach to sharing ideas. This can lead to a high-performing team.

The older generation, because they're not in most of your social interactions, tends to have a bit of a gap in terms of building relationships that lead to friendships. However, I think our leader really liked the social setting last year. So normally, in one of our meetings, the engagement would be more about your personal things than work. The boss left but then we still, from time to time, keep to that culture of having those sessions. #Participant 1

Social settings where you have diversity in terms of age so that people can interact outside of work or discuss things outside of your normal work routines. I find that that actually helps because sometimes you can get to know someone personally; it actually helps in terms of building a better work relationship or a high-performing team, if I should put it like that. #Participant 2

5.2.3.2 Leadership and Mentorship

Participant 3 and 13 stated that their leadership is critical in creating a pleasant, collaborative work atmosphere by encouraging openness and transparency within their teams. They emphasised how their techniques contribute to developing strong team bonds, as openness fosters an environment where people can get to know one another outside of their professional lives by revealing personal details about themselves. This fosters trust among the team and frequently results in great team dynamics. It not only breaks down barriers based on age and other characteristics but also emphasises the creation of collective responsibility and accountability, allowing team members to understand the link between their personal achievement

and the team's overall performance. This practice of sharing accountability is important for building a positive team environment.

So one thing that we strive for, myself and my direct reports, is openness, whether they like it or not. Once again, as I said, if we all fail together, if one of us fails, the whole team fails. So one of the things that's very critical that lies within my engineer and myself is that part of our responsibility is to break those walls of age group or even race or even experience. We break those walls for the mere fact that you have the same job title. We are equal. #Participant 5

If you are open and if you create that kind of friendship and can respect your colleagues rather than treat them like colleagues and just say I, then you stick to your work only. I feel that if you have close relationships but do not, it means meeting up for supper or dinner every weekend or every day. It's more like if you are if you open up more to your colleagues and you show, lend a hand, and be friendly towards them; they would feel they can talk to you, trust you with any information, knowledge sharing, anything. #Participant 13

5.2.3.3 Trust and Openness

Participant 9 also highlighted how a lack of openness can stem from preconceived beliefs about individuals. When people have preconceived beliefs about how others will receive their information, they may hesitate and withhold sharing their knowledge in social groups. They argue that these preconceived beliefs limit the value of potential insight and ideas that could lead to innovation and problem-solving, ultimately inhibiting knowledge sharing and collaboration.

Whereas when you come to a different maybe social group, and you want to explain to them, there's a level of reservation where maybe because you know, you think they don't understand you well, you've already sort of prejudged what information you're going to put forward. So, you're not going to be as open with your thoughts, your information, or what you know because you are already perceiving that a different group will receive that information differently. #Participant 9

5.2.3.4 Theme Summary

Participants emphasised the importance of leadership in promoting a collaborative work environment through the promotion of openness and transparency. This fosters trust, breaks down barriers, and promotes collective responsibility and accountability. Furthermore, it was highlighted that leadership plays a crucial role in implementing and actively participating in these initiatives, emphasising the importance of closing generational gaps in a team culture. Social settings, both within and outside of work hours, can foster open-mindedness and high-performing teams by providing a relaxed environment for team interaction. Preconceived beliefs about individuals can lead to a lack of openness in social groups, limiting potential insights and ideas, hindering innovation and problem-solving, and ultimately preventing knowledge sharing and collaboration.

5.2.4 Theme 1.4: Trust as a Key Factor in Social Networks and Knowledge Sharing

5.2.4.1 Emotional and Psychological Factors

Participants 3 and 13 highlighted fear or judgements as a barrier to building strong social networks. This can manifest itself in older and younger employees. Some employees might experience intimidation when attempting to share their ideas or knowledge, fearing that their contributions would be irrelevant or unappreciated. Younger individuals may observe the older generation's resistance to new information, which stems from their generational biases and their protectiveness towards the processes or ideas they have grown accustomed to. This fear or intimidation often results in the concealment of knowledge and the withholding of critical ideas, thereby impeding the development of social networks within the team.

You need to at least connect with the people that you work with. And in connecting, it breaks down the bound, the barriers where you find that either one member who may not have the information or the knowledge is intimidated or is fearful of actually interacting with other team members to try to get help. #Participant 3

They aren't keen to take your suggestions and can get offended easily. You need to fine-tune how you talk to them so they understand and don't shut you down...I learned that in the mining industry, you need to adjust to different personalities to get things done and earn their trust. #Participant 13

Psychological safety was also highlighted as a key enabler in building social networks and enhancing knowledge sharing in age-diverse teams. Participants 11 and 7 shared that employees are more likely to share knowledge when they feel safe and free from fear or judgment. In age-diverse teams, the perception of knowledge dynamics varies across generations, making this crucial. Because of these differences, some employees would stick with their agemates and only share information and knowledge with them as a means to protect themselves, as that network may be the safest on the team.

From a psychological point of view, look, I think people are happy, and people are open to speaking about even their domestic challenges within the team. I think that is what you want to have in a team.... I think obviously, as people, there are things that we reserve to ourselves and become personal, but where possible and people want to share, there is that type of open policy to be able to be shared from that perspective. #Participant 11

For them, it made them feel safer because they were together, and it made them feel like they were not asking stupid questions to the older generations. So you'd always see them together, sitting like in a circle, asking their questions and firing through, like, take me through how this real process works. #Participant 7

5.2.4.2 Trust and Openness

Participants 9 and 11 acknowledge that trust fosters a sense of security where team members feel comfortable sharing ideas without the fear of judgment. This highlights trust as a key advantage, as it creates a safe psychological environment of open

communication, allowing team members to freely share their insights and expertise. According to Participant 11, the team's ability to adapt to change was enhanced by the addition of new members to their structure, which introduced new team dynamics. The team's approach to ironing out any issues raised indicates an adaptive and flexible mindset to maintain team cohesion. This indicates that the team has attained a comfortable level, demonstrating the establishment of trust.

When you come to a different maybe social group, and you want to explain to them, there's, there's a level of reservation where maybe because, you know, you think they don't understand you well, you've already sort of prejudged what information you're going to put forward. So, you're not going to be as open with your thoughts or your information or what you know because you are already perceiving that a different group will receive that information differently. #Participant 9

There is a level of trust among the team members because there is appreciation that we could learn from each other from a psychological safety point of view. I think we've reached a stage now where we're comfortable with the team members. So we had to go through some discussions to say how do we clarify the scope of work of the execution team versus the different teams that were previously established I think since that has been cleared out and has been discussed, there has been some comfort to, you know, clear understanding in terms of what the deliverables of each person in the team are. #Participant 11

Trust can also come from strong connections that stem from long-term relationships and collaborations. As highlighted by Participant 10, these kinds of relationships are invaluable in a team environment as they create a supportive environment where members can rely on each other. The longevity of older employees creates a special dynamic that strengthens their social connections.

So, within the older generation, like in their own little circle, there is a strong relationship. They trust each other because they've worked together for so long. They know each other; they know each other's strengths and weaknesses, and they know what the other person can do. So, their relationship is solid. #Participant 10

Furthermore, a crucial aspect of trust is the willingness of individuals within the social network to go above and beyond, serving as the foundation for their fellow team members, which can significantly positively impact knowledge sharing. Participant 1 emphasises that familiarity and the development of mutual understanding and relationships form the foundation of trust.

Trust: You will not be able to go the extra mile to help someone that you just don't know or are not familiar with. But once you become familiar with it, I need to assist you with that requirement from a positional point of view. It's just a requirement. So that's the bare minimum. But once I start getting to know someone, I can offer much more than just the bare minimum. #Participant 1

However, trust is not granted overnight. Building trust requires gradual, consistent, and time-consuming efforts. One participant shared the importance of building trust, especially in a high-stakes environment like a finance department. They underscore the practical aspect of trust in a professional setting, where an individual's track record of competence is crucial, particularly in situations where errors can be costly in terms of resources and time. All this emphasises thorough work and the gradual earning of trust in a team.

It does take quite a bit of time to earn trust. I've noticed it's not easy. Looking, just thinking of it, when a graduate comes in, people are, and we work with money, so it's very difficult. To ask somebody to make sure they do a payment run, make sure the money's in the account before they do it, it takes time. #Participant 12

5.2.4.3 Social Ties and Relationships

Participant 6 highlighted the significant challenge of knowledge sharing within closed circles or networks. Although the participant's experience was in the context of a closed network, stemming from his outsider status as a newcomer to their workplace, this phenomenon can also be observed in other age groups, particularly in older employees who may be resistant to change. Team members in the closed networks have similar thinking styles, making it a challenge for people with different perspectives to share. This can stifle innovation and cause stagnation in the thinking capability of the team.

In the way of basically sharing knowledge, it seems there's a culture that this is the way we've done things. This is the way we'll do things. So it becomes hard for someone with somewhat of a different way of thinking to infiltrate the team for that kind of thinking or maybe introduce new ideas to a team that is generally comprised of people of the same kind of thinking. It is a bit of a challenge to introduce new ideas or to innovate. #Participant 6

5.2.4.4 Theme Summary

The formation and growth of social networks depend heavily on trust. One of the key advantages of trust in this context is that it creates an environment of open communications where team members are free to share their insights, experiences, and expertise. This also fosters collaboration and mitigates any conflict that may arise, as trust often helps manage disagreements. A trusting atmosphere makes team members feel confident to present diverse perspectives and creative solutions, ultimately enhancing problem-solving capabilities.

5.2.5 Theme 1.5: Technology in Enhancing or Inhibiting Knowledge Sharing

5.2.5.1 Technology in Knowledge Sharing

Participants mentioned a variety of information-sharing mechanisms, including the use of digital communication mediums like email, WhatsApp, Microsoft Teams, and LinkedIn. These mediums lack sophistication, primarily serving to disseminate daily updates rather than intricate details. Participant 5 mentioned that sophisticated technology is not used in the systems that are used for sharing knowledge. Unfortunately, this underscores a significant opportunity to enhance knowledge sharing through the incorporation of technology or sophisticated systems.

So typically we have, firstly, WhatsApp groups where we share information as and when it happens because a lot of what happens in our space happens in real time. Sometimes you're not close to your computer. So it's that you can, you know, quickly share that there's an element of emails as well, but there's

also through in-person interactions because we are spread across multiple regions. #Participant 7

So one of our blasting engineers is now our section manager for blasting; she's very active on LinkedIn. And so in even a post, she shares information to an extent that with me now running both sides. So what I've then seen with the stuff that she puts on LinkedIn, then I've been challenging the other team to say, but no, I'm seeing these things because sometimes I don't have enough time to sit with all of them to see this, the things that they're working on. #Participant 4

Currently, we're not using any form of technology to actually share it. We just have a lot of more technologically advanced types of systems that we use doing the actual work. But we don't use any form of technology to actually share the information. #Participant 8

There are emails, And the quickest and easiest method to transfer knowledge is through either their cell phone or basically talking to each other or coming to the site, as I mentioned. But other than that, there's no other platform of communication that they use that I'm not aware of or that I'm aware of. #Participant 5

5.2.5.2 Theme Summary

This theme emphasised the role of technology as a facilitator of knowledge sharing. However, participants highlight that the technology systems used to share information are quite basic and not sophisticated. This showed that there is an opportunity for improvement in that regard.

5.3 How Does the Quality of the Relationships Influence the Sharing of Knowledge in Age Diverse Teams in Mining Organisations?

This section highlights the findings that came from the data collected from the interviews for the second research question that explored how the quality of relationships influences the sharing of knowledge in age-diverse teams in mining

organisations. For this question, from a coding perspective, descriptive codes were summarised by the researcher and then converted or allocated into third-order categories and three themes based on the answers given by the participants. The following table highlights the themes and the categories associated with each theme, providing an answer to the question.

Table 5.2: Themes and Categories for RQ2

Themes	Categories
Strong Ties in Promoting Trust and Knowledge Sharing	Social Ties and Relationships (23)
	Trust and Openness (12)
Weak Ties in Knowledge Sharing	Social Ties and Relationships (23)

Source: Author's own.

Table 5.2 specifies the number of code groups per category to indicate which codes were more significant. This ultimately assists in identifying and elaborating the findings to address the research questions. The following categories were instrumental in the identification and application of the findings:

- Social Ties and Relationships
- Emotional and Psychological Factors
- Trust and Openness

5.3.1 Theme 2.1: Strong Ties in Promoting Trust and Knowledge Sharing

5.3.1.1 Social Ties and Relationships

Participant 2 and 13 shared their experiences of having strong ties within their teams, along with the advantages they observed. They discovered that strong relationships foster an expectation of mutual investment in each other's growth. In that case, they experience a willingness to share expertise and a willingness to go above and beyond to teach each other. This is not solely a professional duty but rather stems

from a deep-rooted sense of friendship. From an emotional investment standpoint, their readiness to assist without prompting demonstrates that they derive genuine joy from this interaction. Strong ties also mean information and resources flow more freely when there's mutual respect and understanding. The two participants observed that strong relationships result in receiving more knowledge than expected, highlighting the benefits of cultivating strong connections within the team. This can sometimes manifest as unexpected generosity, a sudden willingness to share beyond what is necessary. This kind of generosity enhances the team's ability to share knowledge effectively.

From a trusted perspective, Participant 13's experiences highlight the importance of interpersonal engagement and skill in building strong connections. Connecting on a personal level helps gather information and fosters a collaborative and supportive environment.

Typically, strong ties come with an element of genuine intent to train one another. When people have a strong relationship, they genuinely want to help one another out. So if one is to be knowledgeable in one aspect, they are more than willing to go the extra mile to teach the other. #Participant 2

And then the strong ties—if you've got strong ties, you'd find that you get more than you ask for. You get more information and stuff than you ask for. Even out of the blue, they're willing to share. So yeah, developing strong ties will definitely work in your favour.. #Participant 13

Participant 3 emphasises another benefit of strong ties: the receiver finds it easier to receive knowledge and information. This is because there is an emotional investment in the relationship and the success and growth of the other person. Participants 3 and 8 highlight that the emotional investment in growing the relationship drives the members of the team to build their relationship through interacting outside of the workplace. This would strengthen the bond, ultimately leading to enhanced team dynamics.

So, you tend to find that with strong ties because it goes beyond the friendship aspect. Information is shared a lot more in the sense that because you are so emotionally invested in whoever it is that you're interacting with, you don't want them to fail, and you want them to succeed. Because of that relationship aspect, you will help someone solve a problem. You will share information to

enable them to actually, you know, work through whatever activity or whatever project that they would be working on. So strong ties have definitely had a strong influence in terms of knowledge sharing, where you are more likely to actually share more information if you have a relationship outside of work or with a very, what did you call it, strong tie in the lessons because of the emotional investment in seeing that other people succeed. #Participant3

So we see a strong link between the guys who are socialising and those who are knowledge-sharing. They are just peers; they are more comfortable with one another. They don't just limit their relationship to the workspace. They still go out and arrange their own gatherings. They've got strong ties there. And it's both young and old. #Participant 8

There are those who are very tight as some their interactions is beyond work because of their area, where they are, where they come from, they share history. #Participant 14

However, Participant 10 highlighted the negative side of strong ties in terms of knowledge sharing. They provided an example of how strong ties can lead to biases, potentially impeding the flow of information among relevant individuals. Strong relationships can lead to the creation of information silos, where team members selectively share information. This creates an uneven distribution of knowledge within the team, which becomes a barrier to effective knowledge sharing.

Furthermore, it creates an exclusionary environment as information may not reach certain members, especially direct reposts in the participant's case. Exclusion, in this case, can have a negative impact on team performance and create feelings of isolation.

. And sometimes, that information doesn't go to the direct report of the other individual because of the type of relationship they have. And they converse regularly. So because they converse regularly due to the strong relationship, they share information even before it's supposed to be officially released. In some cases, you find that the direct manager of the younger person doesn't know certain things that the younger person knows because the younger person has a relationship with a certain manager. #Participant 10

5.3.1.2 Trust and Openness

Participant 10's observations talk about the role of trust and dependability in developing relationships and knowledge sharing. They emphasised that team members build trust by consistently fulfilling their commitments. However, this trust and dependability come from the willingness to ask questions, constantly communicate on any issues, and seek clarity. This allows for openness in terms of sharing knowledge and ideas. This may be critical for younger members who are attempting to create connections within the team; they should earn trust by following through on their promises.

And between, like the diverse group, there are relationships. The strength of a relationship is that certain people have built a relationship because they probably trust each other. And they know that if this young man said he'd deliver, he does deliver for real. And I can rely on them. And if they don't know, they will come and ask. And you know, I can trust that I'll; I can show them this thing, and they'll do it and do it well... And when they are supposed to do a project, they pull through with it and ensure that it is done. #Participant 10

5.3.1.3 Theme Summary

According to this theme, strong ties often foster mutual investment in team members' success, leading to a willingness to exceed expectations in knowledge sharing. An emotional investment in a relationship between team members enhances the efficient flow of information. Participants spoke about how they put in initiatives to interact outside the workplace and how these initiatives further strengthen the emotional investment in the relationships with close teammates.

Furthermore, it was found that consistently fulfilling commitments and maintaining open communication, particularly with younger employees seeking to establish connections, build trust in strong ties. Strong ties can inhibit knowledge sharing due to the potential barriers that may arise, ultimately creating information silos. This creates a delay in information flow, an uneven distribution of knowledge, and an exclusionary environment in the team.

5.3.2 Theme 2.2: Weak Ties in Knowledge Sharing

5.3.2.1 Social Ties and Relationships

Some participants shared their experience in teams with predominantly weak ties between team members. They emphasised the detrimental effects of weak ties, such as exclusion, and the potential for selective information sharing during in-between corridor meetings. Furthermore, Participant 13 shared their experience of how weak ties result in challenges of extracting knowledge or information from team members. Unlike strong ties, where people are willing to share and may even go above and beyond to share knowledge, weak ties are the direct opposite and, in extreme cases, can result in knowledge hoarding or hiding.

I would say relationships are strictly professional, mostly just strictly professional here and there. When there has been, or when people have been working together for a longer period than others, there will be a stronger professional bond, but nothing beyond professional in my view. An instance of negative impact is. I think this one goes beyond just the age thing. There are instances where you will find certain groups discussing certain things related to work but not really involving the whole team for some reason or another. So, I would attribute that to the level of connection with and between those members. So this would be an instance where these are corridor meetings. Yeah, corridor meetings happen between certain people who have a direct impact on the business or decision-making, and it excludes certain individuals. And I would attribute that then to the bond or the connection, or in terms of the individuals. #Participant 6

So if you don't really have strong relationships with people, they don't really tell you much. They just struggle to get information from them. It's like a real struggle where it sometimes has to go to another level to extract that information. So, if you do have weak ties with people, it's not going to help you if you need something from them. That's what I've experienced. #Participant 13

From a knowledge-sharing perspective, there are certain benefits to having weak ties. Participant 9 highlighted that, despite weak ties with certain team members, sharing knowledge and information is beneficial. This also pertains to a strong work

ethic and a commitment to professionalism.

Participant 10 discussed the advantages of having weak ties as a safeguard against premature information sharing. Often, when people have strong ties with team members, they find themselves sharing information that they should not in the first place. In this case, weak ties serve well, as you would not share information unnecessarily. This highlights the importance of striking a balance between trust and responsibility when it comes to sharing information or knowledge.

So I think these are the ones that are weaker than others because, like I think in my team, between the 40 and 50 age group, there are, I would say, two or three of those people to whom I am very open, and we have a very good sharing of information relationship, even though we're acquaintances. Then there are others where we're acquaintances, and the only time there will be knowledge sharing is in a meeting #Participant 9

Suppose there's certain information I'm not supposed to share yet because it's still in its infancy stages, and I have a strong tie with a certain individual I trust. Then I go and tell them whatever information they need, and they decide to use it. Whichever way disadvantages the team, then there's a problem. Then, if I have a weak tie with a person, I'm not really going to be sharing things with them, and I'll only share relevant information that affects them or that I'm supposed to share with them. In some cases, I might be ensuring that there's confidentiality of certain things that are happening because I just don't have that type of relationship where I can talk to them about everything. #Participant 10

Participant 2 highlighted how work ethic is important in the willingness of individuals to share information despite having weak ties. A person with a good work ethic would share relevant knowledge and information as required for the team's greater good. Also, there is an important role to be played by leadership, where they would need to encourage and set a culture that promotes this. Weak ties will exist in a team, and they are not entirely destructive to the dynamic of knowledge sharing. However, it is up to the individuals to make sure that they are professional and act in the team's best interest.

Weak ties depend on the person's work ethic. People with a very good work ethic will train one another regardless of whether the ties are weak or not. They will help others effectively to the best of their ability because that's just how their work ethic is. However, weak ties with a person with a low work ethic result in a little bit of reluctance to train others or give others your input when necessary. And you, as the leader of the team, should continuously encourage it to happen. #Participant 2

5.3.2.2 Theme Summary

Participants emphasised the negative effects of weak ties, such as selective information sharing, exclusion, and challenges in extracting information. This also highlighted that weak ties lead to knowledge hoarding and hiding. However, some positives around weak ties were identified. Positive aspects of weak ties were identified as a safeguard against premature information sharing or confidential information that shouldn't be shared with certain people. While these positive aspects are possible, they do require traits such as good work ethic in individuals as important factors to enabling knowledge sharing in weak ties.

5.4 Conclusion

The study found that individuals are prone to interacting with those in their age groups. However, as these social circles formed, there was evidence of age groups serving as key connectors to groups that would not typically interact. These dynamics tie in with the concepts of bonding and bridging social capital. The study found that social interactions, outside and within the workplace, are important in driving knowledge sharing amongst diverse teams. The study showed how different age group dynamics impact social networks and the dynamics of knowledge sharing. Differences between older and younger individuals shape this dynamic, with younger individuals tending to seek knowledge from their elders, while older individuals may exhibit knowledge hoarding and hiding as a self-preservation strategy within the team. Other dynamics that emerged included older employees' resistance to change,

stemming from their deeply ingrained work habits over a long career, which can impede their ability to receive new knowledge and ideas from younger colleagues.

Furthermore, research revealed that the communication styles of younger and older employees differ in their preferences for sharing information and knowledge. Psychological safety emerged as a significant influencing factor in knowledge sharing. This means that teams and networks must create a safe environment so that people feel free to share their perspectives without fearing judgment. The findings have shown that hierarchies and the leadership role in knowledge sharing within age-diverse teams significantly influence the dynamic.

Regarding the quality of relationships, the chapter highlighted that strong ties benefit knowledge sharing, as they foster a culture where individuals are more willing to share their knowledge. However, the chapter also highlighted the negative aspects of strong ties, such as the creation of information silos and the risk of sharing confidential knowledge with individuals who shouldn't have access to it.

Research revealed that weak ties can impede the flow of information. However, they can also serve as protective measures for sensitive information, safeguarding individuals from potential breaches of confidentiality.

The next chapter is the Discussion of Findings chapter.

Chapter 6: Discussion of the Findings

6.1 Introduction

This chapter provides an analysis of the findings of the study, which are drawn out in chapter 5. In this chapter, this study reveals the similarities, differences, contradictions, and contrasts between these findings and the literature provided in Chapter 2. This chapter also brings forward the researcher's insights and arguments concerning the findings. This analysis and discussion are done on the key themes with the aim of providing perspectives into the constructs of age diversity and knowledge sharing in mining organisations' teams.

To discuss the findings, this study utilised the framework in Figure 2.1 regarding social capital. This study looked at the findings from the perspective of the different aspects of the framework to help guide the discussion.

6.2 Cognitive Social Capital

The framework defines cognitive, social capital as the degree of interpersonal trust in resource sharing (Nahapiet & Ghoshal, 1998). When this study operationalises this aspect, it measures the level of trust and shared values within the network (Islam et al., 2006; Nahapiet & Ghoshal, 1998). This study shall look into the categories and discuss the findings relating to cognitive and social capital.

6.2.1 Dynamics of Age Diversity

In terms of social interactions and social groupings, the findings acknowledge that team members have a tendency to form groups based on age. Participants in the interviews revealed that older employees tend to stick together, while younger employees also stick together by forming their own social connections. The literature on bonding social capitalism supports this, emphasising the development of close relationships within homogeneous groups that share similar characteristics, such as age (Derose, 2008). For all those sticking to the same age groups and people with similar interests, there is a downside, especially regarding age, where team

members miss an opportunity to leverage each other's perspectives. From a knowledge-sharing perspective, this can stifle collaboration and create knowledge silos, as young people with minimal experience miss out on the opportunity to learn from older individuals who possess a vast knowledge base. Furthermore, older team members may miss out on new ideas from the younger generation, which could lead to innovation.

However, the study found that there are instances where one group acts as a connector between different age groups that may not necessarily interact. The theory of bridging social capital supports this, asserting that certain groups foster connections between individuals who may not typically interact, enabling social groups to leverage ideas and information beyond their local community (Derose, 2008). From an age perspective, this is beneficial as it creates innovative solutions and fosters a positive and dynamic environment. This observation highlights their ability and position to navigate generational differences and create a collaborative environment for knowledge sharing.

6.2.2 Generational Differences

The study found that all the employees may engage in knowledge hoarding or hiding, which is a form of self-preservation and a reluctance to empower younger colleagues who might eventually replace them. The observation suggests that older employees may have reached their career limits in an environment where the succession plan for senior roles prioritises younger employees. As a tactic, older employees withhold knowledge and information, which ultimately impacts the performance of one team. Furthermore, a participant pointed out that older employees often hoard and conceal knowledge with the intention of retiring, only to reappear as consultants due to their deliberate creation of a critical knowledge gap within the team. North and Fiske (2015a) support this knowledge-hoarding dynamic, asserting that older individuals often engage in this tension, which ultimately affects team performance (Fasbender & Gerpott, 2021). If older employees stop sharing information, the knowledge-seeking endeavours of younger employees would largely be in vain. In the worst scenario, an entire organisation jeopardises significant knowledge loss when retiring older employees fail to impart their expertise to the subsequent generation.

The findings of this study emphasise the active role that young employees play in seeking knowledge. From the interviews, the participants highlight that young people's motivation stems not only from a need to learn and build their knowledge base but also from a need to prove themselves and ultimately advance their careers. It was found that the 20 to 30 age group are hungry for knowledge, experience, and an opportunity to perform. Literature from (Burmeister et al., 2018) supports this observation, suggesting that young people often seek knowledge from older individuals with growth-related motives. Burmeister et al. (2018) also discovered that young workers perceive their older colleagues as more motivated and willing to share information based on a perceived motivation to share knowledge. This may explain why young people tend to gravitate towards older individuals when seeking knowledge, in the hopes that they will share their experiences and, ultimately, broaden their knowledge base for career development.

Older employees' resistance to change emerged as a significant barrier to interaction with younger employees. Participants in the interviews highlighted that older employees are resistant to change and would rather stick to their deep-rooted work habits and ways of doing things prevalent in the mining industry. From a knowledge-sharing perspective, this phenomenon extends to the rejection of new information and ideas. Cutcher et al. (2022) support this in their study that older workers exhibit resistance to change. However, North & Fiske (2015a) view this as a common stereotype, lacking empirical evidence to establish its validity. Fasbender and Gerpott (2022) contradict this and suggest that older employees remain motivated to self-improve and learn from their younger counterparts. If organisations leave these stereotypes and perceptions unaddressed, they can undermine the potential for cross-generational knowledge sharing.

Communication style differences across different age groups came out as a factor that may inhibit or enhance knowledge sharing in teams. Participants found that younger employees prefer concise, short-form communication of information. They may find that lengthy emails are overwhelming and difficult to comprehend. As a result, they gravitate toward digital communication platforms like Microsoft Teams, even through face-to-face conversations with colleagues. Older employees, who prefer face-to-face communication, may find this somewhat disrespectful, particularly when they are in close proximity to their counterparts.

Furthermore, research revealed that older employees tend to favour a more detailed and thorough communication style, prioritising comprehensive explanations over concise and short-format information. All these points highlight the importance of communication styles as a barrier between different age groups. Pesch et al. (2015) highlighted that communication styles foster a more innovative and collaborative environment; however, differences between communication styles and age diversity can diminish these benefits. They highlighted that communication styles have more effect on innovation than age diversity and are paramount to the success of the teams.

6.2.3 Trust and Openness

Participants recognised that trust cultivates a sense of security, enabling team members to share ideas without the apprehension of criticism. This underscores trust as a significant advantage, fostering a secure psychological environment for open communication and enabling team members to freely share their views and knowledge. Gong et al. (2012) found that trust relationships foster creativity, and information exchange enhances it. This means that team members are more likely to share ideas and collaborate with people they trust, and in turn, this is further enhanced by information exchange.

6.2.4 Emotional and Psychological Factors

From a psychological safety perspective, participants highlighted fear or judgements as a barrier to building strong social networks. This can manifest itself in older or younger employees. Some employees might experience intimidation when attempting to share their ideas or knowledge. This is supported by previous research that asserts that people are more reluctant to share knowledge due to the fear of losing their perceived value (Kim et al., 2015). From this view, when employees are willing to share their knowledge, they do so because they perceive a supportive and safe work environment, which leads to interpersonal trust (Gong et al., 2012). Therefore, a knowledge-sharing-fostering environment improves interpersonal relationships, allowing employees to interact without concerns of criticism (Frazier et

al., 2017).

Furthermore, participants shared that employees are more likely to share knowledge when they feel safe and free from fear or judgment. In age-diverse teams, the perception of knowledge dynamics varies across generations, making this crucial. Due to these differences, some employees only share information and knowledge with their agemates to protect themselves, believing their network to be the safest on the team. Siemsen et al. (2009) suggested that low employee confidence can hinder information exchange or sharing, but psychological safety can provide a solution. However, a lack of psychological safety and low employee confidence to share may be beneficial as it prevents the sharing of inaccurate knowledge and unnecessary information overload (Siemsen et al., 2009).

6.3 Structural Social Capital

Structural Social capital refers to the depth of the social network; this study looks at the social interactions within the network (Nahapiet & Ghoshal, 1998). This extends to how frequent engagement occurs and the network engagement patterns. This study shall look into the categories and discuss the findings relating to structural social capital.

6.3.1 Collaboration and Interaction

The findings revealed how social connections with different departments facilitated information exchange and problem-solving. This is supported and aligns with SCT, which talks about the importance of networks and relationships in knowledge sharing (Bourdieu, 2011). This underscores the necessity of not just depending on diversity but also seeking external opinions during problem-solving. Guillén and Kunze (2019), who found that interdepartmental collaboration serves as a tool to compensate for older employees' gaps in knowledge and innovative ability, support this idea. The teams leverage this diversity of knowledge and perspectives for their success.

6.3.2 Organisational and Team Culture

Participants highlighted how team members develop a sense of accountability and responsibility to share knowledge with their fellow colleagues to ensure teamwork and the team's success. Leadership often fosters this motivation for knowledge sharing by creating a conducive environment for the team. Gagné et al. (2019) support this by highlighting the importance of extrinsic motivators in knowledge sharing, which stem from personal meaning or perceived importance. They assert that an individual's willingness to share knowledge increases when they perceive it to contribute significantly to the attainment of important organisational goals. This phenomenon is likely to increase collaborative efforts, ultimately leading to the accomplishment of organisational goals.

From a team culture perspective, participants highlighted the role of social connections in generating new ideas and facilitating knowledge sharing. They highlighted that team members interacting socially outside the workplace helps strengthen their bonds and create a more comfortable environment in which to share knowledge. The theory of bonding social capital, which essentially strengthens relationships and connections among homogeneous groups of people, supports this (Derose, 2008).

Findings suggested that preconceived beliefs about individuals can lead to a lack of openness in social groups, limiting potential insights and ideas, hindering innovation and problem-solving, and ultimately preventing knowledge sharing and collaboration. This pertains to the biases that individuals hold about others, which can hinder opportunities and the exchange of perspectives within the team. Guillén and Kunze (2019) link this to age discrimination, perceiving older employees as less competent or less innovative, which in turn hinders their collaboration with other employees.

6.4 Vertical Linking Capital

Vertical Linking Capital refers to the connections and relationships across different network hierarchy types. These hierarchies could link to differences in power dynamics, resources and status.

6.4.1 Barriers from Hierarchy and Role

Participants emphasised that hierarchy might negatively influence knowledge sharing within teams. In their comments, they emphasised that certain workers might limit the distribution of critical information according to hierarchy within the team structure, resulting in possible delays and omissions. An organised structure with hierarchies facilitates knowledge control, hence simplifying the management of complications arising from specialised fields. Anand (2011) asserts that hierarchy functions as a mechanism to coordinate and enhance knowledge sharing; however, this process is typically unidirectional, originating from a top-down perspective. According to the findings, the presence of biases and strong ties among senior members of the structure, who may be older, could potentially lead to a preference issue in sharing knowledge.

Furthermore, the predominantly one-directional nature of this knowledge flow misses opportunities for reciprocation and the bottom-up transfer of new ideas. Reitzig and Maciejovsky (2015) found that organisations with team members who share similar interests and experiences are more adept at managing knowledge without excessive reliance on hierarchy. They assert in their analysis that the complexity of the knowledge base correlates with hierarchy and information flow. An increase in knowledge complexity necessitates additional levels within the hierarchy. This introduces a new dimension to comprehending how hierarchy influences knowledge sharing and flow within a team.

6.4.2 Leadership and Mentorship

The findings indicate that participants emphasised how leadership fosters an environment of transparency to cultivate robust social networks, build trust among team members, and encourage personal interactions within the team. The establishment of such an atmosphere facilitates the dismantling of barriers, irrespective of age, to enhance team cohesion. Carmeli et al. (2013) posited that leaders influence the norms and values of a team to foster a collaborative atmosphere. This relates to transformational leadership, which occurs when leaders cultivate an advantageous organisational social environment that promotes extensive knowledge sharing among their subordinates (Dong et al., 2017).

According to one participant, the norms and values frequently become deeply rooted and persist beyond the leader's presence in the company.

6.5 Horizontal Social Capital

Horizontal social capital refers to the relationships among individuals within a group (Islam et al., 2006). This brings in the concept of bonding and bridging social capital, which looks at strong ties within homogeneous groups and weak ties that link individuals across different groups.

6.5.1 Bonding Social Capital (Strong Ties)

6.5.1.1 Social Ties and Relationships

Participants agreed that strong ties between employees in teams foster an expectation of mutual support and a willingness to go above and beyond in sharing knowledge and assisting each other. Team members' emotional investment in each other's growth and success stems from their close relationships. This aligns with the literature assertion by Tortoriello et al. (2012), who agree that personal connections drive strong ties and encourage individuals to spend more time and effort in knowledge sharing. Lowik et al. (2012) support this statement asserting that strong relationships can act as continuous sources of fresh information. However, they state that in order to mitigate the overreliance of strong connections which involves the use of bridging capabilities, such as building and managing multiple connections within a single relationship, such as formal working relationships, task collaboration, and informal settings.

Additionally, the results provided examples of how emotional investment occurs in the workplace through knowledge sharing within strong ties. The participant discussed how the desire to see other close team members succeed significantly motivates individuals to share knowledge and resources, going above and beyond what is expected of them professionally. This aligns with the findings of Tortoriello et al. (2012), who advocate for the importance of strong personal connections in

knowledge sharing.

6.5.1.2 Trust and Openness

The findings revealed that trust plays a crucial role in fostering and preserving strong bonds among team members of varying ages. However, findings emphasised that building and developing trust requires demonstrating reliability over time. The speaker shared an example where young employees entrust themselves to networks by consistently fulfilling their commitments, communicating openly, and demonstrating a strong desire to collaborate. Research from Rost (2011) supports this, highlighting trustworthiness as a crucial factor in strengthening relationships. This is supported by Coleman's (1988) perspective, which states that effective norms that foster trustworthiness within an organisation enhance social capital. Renzl (2008) also suggested that trust is important in mitigating the anxiety of individuals in collaborative spaces. This can be particularly beneficial for young individuals who may be hesitant to communicate openly with experienced colleagues about information they need clarification on.

However, one participant highlighted the negative side of strong ties. Strong ties can inhibit knowledge sharing due to the potential barriers which are creating information silos. This creates a delay in information flow, an uneven distribution of knowledge, and an exclusionary environment in the team. This view is supported by Granovetter (1973), who highlights that the distribution of information to a wider population is an advantage of casual relationships as no emotional investment or basis exists or leads to selective distribution.

6.5.2 Bridging Social Capital (Weak Ties)

6.5.2.1 Social Ties and Relationships

As previously stated in the chapter, weak ties frequently result in information hoarding among team members, and participants noted that members of teams without close connections lead to exclusion and selective knowledge sharing. Findings from the study showed that individuals have challenges obtaining

knowledge from team members with weak connections. This may make it difficult for younger people to pursue knowledge for career advancement and progress.

However, literature from Granovetter (1973) contradicts this, arguing that weak ties can lead to efficient outcomes in knowledge sharing, including efficiency in disseminating knowledge to a larger number of people. Deshpande and Khanna (2021) also challenge the findings, emphasising the importance of weak ties in the context of labour market outcomes. They found that individuals with weak ties are more inclined to share information about job opportunities with individuals with whom they are not close.

The study found some benefits of weak relationships in knowledge sharing, as they provide protection against the premature or sensitive dissemination of information. While literature does not explicitly affirm this, it indicates that individuals are more inclined to offer information confidentially to those with close relationships (Harvey, 2008). This indicates that strong connections offer a significant danger of confidential information being disclosed to others who should not have access solely due to their strong ties. Reagans and Zuckerman (2008) emphasised that weak ties offer control advantages to knowledge brokers, enabling them to exercise control over the shared information and manage its distribution. Despite the inherent power dynamics involved, it can support the continuous advantage of confidential information to certain people, thereby protecting individuals in the team.

Moreover, participants emphasised the risk of a lack of professional distance associated with strong ties, which could lead to individuals excessively sharing information or knowledge. It was highlighted that individuals with close connections sometimes engage in isolated informal interactions that potentially exclude others. This problem clearly highlights a disadvantage in close connections and an indirect advantage in weak ties due to professional distance. While literature frequently emphasises the importance of strong ties in knowledge sharing, there has been a significant emphasis on highlighting the strengths and benefits of weak ties in the same context. Weak ties can give access to exclusive and non-redundant information and resources that may be unavailable in strong ties (Tasheva & Hillman, 2019). Snippets of this information, even if not effectively relayed, may still hold greater value than repeated and non-important information (Kim & Fernandez, 2024)

Weak ties can also serve as a bridging function, connecting employees from different

social circles and facilitating knowledge flow (Kim & Fernandez, 2024). This bridging function can help develop individuals' knowledge bases. This aligns with the perspective of Participant 7, who highlighted the role of the 30-40 age group in bridging the gap between older and younger employees.

The success of weak ties and their ability to share knowledge at a professional level heavily depends on the individual's willingness. The study found work ethic to be one of the key enablers for knowledge sharing in weak ties. People with a strong work ethic prioritise the team's success, ensuring timely and effective communication of relevant information and knowledge to the relevant individuals. The study found that leadership has an important role to play in cultivating a culture of professionalism and accountability to guarantee the team's success in this area. Kim and Fernandez (2024). argue that in professional situations such as role transition, strong ties may be beneficial as they will boost willingness to offer knowledge. However, certain roles may not allow close relationships, leading to the inevitable emergence of weak ties. As social relationships encompass a variety of dimensions, one or a few of these dimensions need to be leveraged to enhance the overall strength of the tie in certain situations (Marsden & Campbell, 2012). Beyond emotional involvement or closeness, one may assess dimensions such as work ethic, interaction frequency, and shared experiences to gauge the strength of a connection and enhance reliance on that connection.

6.6 Conclusion

This chapter analyses the findings of a study on age diversity and knowledge sharing in mining organisations. The study uses the cognitive and social capital framework to examine the dynamics of age diversity and knowledge sharing. It reveals that team members tend to form groups based on age, with older employees tending to stick together and younger employees forming their own social connections. However, this can stifle collaboration and create knowledge silos. The study also highlights the role of bridging social capital, which fosters connections between different age groups, fostering a positive environment for knowledge sharing. The study also highlights the importance of young employees seeking knowledge, as they are hungry for knowledge and experience and are more motivated to share their experiences.

Older employees' resistance to change and their deep-rooted work habits in the mining industry can hinder knowledge sharing between generations. Communication style differences between different age groups can inhibit or enhance knowledge sharing in teams. Trust and openness are crucial factors in fostering a secure psychological environment for open communication and knowledge sharing. Emotional and psychological factors like fear or judgment can also hinder knowledge sharing. A knowledge-sharing-fostering environment improves interpersonal relationships and prevents inaccurate knowledge-sharing. Structural social capital refers to the depth of the social network and its patterns of engagement. Addressing these stereotypes and perceptions can help foster cross-generational knowledge sharing in the mining industry.

The study highlights the importance of social connections in knowledge sharing, organisational culture, and team culture. It emphasises the role of extrinsic motivators, such as personal meaning or perceived importance, in knowledge sharing. Social connections also contribute to generating new ideas and facilitating knowledge sharing. However, preconceived beliefs about individuals can limit openness, hinder innovation, and hinder collaboration. Hierarchy can negatively influence knowledge sharing within teams, as it may limit the distribution of critical information. Leadership can foster an environment of transparency, build trust, and encourage personal interactions, enhancing team cohesion. Horizontal social capital refers to relationships among individuals within a group, with bonding and bridging social capital being key concepts. Strong ties between employees in teams foster mutual support, emotional investment, and continuous sources of fresh information. The study suggests that companies should utilise relational capital to mitigate overreliance on strong connections in knowledge dynamics.

Trust is essential for fostering strong bonds among team members of varying ages, but it requires demonstrating reliability over time. Trustworthiness is crucial for strengthening relationships and mitigating anxiety in collaborative spaces. However, strong ties can inhibit knowledge sharing by creating information silos, leading to delays in information flow and an exclusionary environment. Weak ties can result in information hoarding, exclusion, and selective knowledge sharing but can also serve as a bridging function, connecting employees from different social circles and facilitating knowledge flow. The success of weak ties depends on the individual's willingness to share knowledge, with work ethic being a key enabler. Leadership

plays a crucial role in cultivating a culture of professionalism and accountability. To enhance the overall strength of a connection, one or a few dimensions need to be leveraged.

The next chapter is the final Conclusion and Recommendations chapter.

Chapter 7: Conclusion and Recommendations

7.1 Introduction

This study aimed to understand how teams can leverage age diversity to enhance knowledge sharing in mining organisations through research questions. The research question was derived as an industry problem, leveraging diversity management and knowledge management strategies to transform team dynamics and boost innovation and knowledge retention in mining companies. From a scholarly standpoint, age diversity significantly contributes to mining organisations' competitive advantage and growth in this challenging environment.

Research was conducted using a qualitative research approach, gathering data through semi-structured interviews for analysis. This approach was chosen because it was deemed suitable for understanding and clarifying the problem and understanding the relationship between the two constructs within the context of the mining industry. Furthermore, it is a qualitative approach because most previous studies on aged diversity had used quantitative approaches, which presented a unique opportunity to gain a deeper understanding of the dynamics of the constructs. This study aims to add to the existing body of knowledge on the topic of age diversity and knowledge sharing within the mining industry of South Africa. Consequently, the research employed an inductive approach even during the data collection process. Furthermore, this study conducted a literature review and identified age diversity as a key factor that enabled organisations to compete and stay ahead of their competitors in the challenging mining environment.

7.2 Critical Findings

The research focused on the two sub questions formulated to understand the scope of knowledge-sharing analysis and its relationship to age diversity. Semi-structured interviews yielded answers to the study's questions, categorising them into specific themes by gaining common insights from the participants. The researchers presented the derived data to understand how mining organisations can leverage age diversity to enhance team knowledge sharing. The study focused on employees working in age-diverse teams in different mining organisations.

7.2.1 Research Question 1: How Do Social Networks Influence Knowledge Sharing in Age-Diverse Teams in the South African Mining Industry?

In mining organisations, teams tend to be very diverse in terms of age. The study revealed that team members often form age-based social groups, particularly in their interpersonal interactions at work. The literature on bonding social capital supports this view, suggesting that people tend to form homogeneous groups based on similar characteristics (Woolcock, 2001). These interactions may extend outside of the workplace, forming strong bonds, fostering trust, and, most importantly, enhancing knowledge sharing while improving collaboration. While teams tend to stick with age groups, there are some groups that end up being connectors, thereby bridging the gaps between groups of younger employees and older employees to help create team cohesion. Literature on bridging social capital supports this, emphasising that certain groups can establish connections between individuals who do not typically interact, facilitating knowledge sharing beyond close circles (Woolcock, 2001).

While these social groups try to coexist, some generational differences exist between older and younger employees and teams. The study found that younger employees are more likely to seek knowledge from older employees due to their extensive knowledge and experience. This curiosity from younger employees comes from the fact that they're still young in their careers and eager to learn, take on challenges, and prove themselves for career growth and advancement (Burmeister et al., 2018). This curiosity often leads to innovation, as they use their knowledge to be innovative and generate new ideas. However, there is a barrier to this, as older employees are known to hoard and hide information (North & Fiske, 2015b) as a tactic to self-preserve their position in the team due to fear of job insecurity. This study found that factors such as reaching their career peak or leveraging their knowledge to potentially retire and return as consultants in the future contribute to this behaviour.

Another barrier identified with older employees was their rigidity or resistance to change regarding receiving new knowledge and ideas. This is due to their deeply ingrained work habits and the discomfort they experience when their routines are disrupted. Cutcher et al. (2022) support this, but, North and Fiske (2015a), who see this as a stereotype devoid of empirical evidence, contradict it.

Another key finding was that communication styles of knowledge or information can be specific to older or younger employees in terms of preference. This study found that younger employees prefer information and knowledge shared in a short and concise manner, preferably in a digital format. In comparison, older employees prefer a more interpersonal face-to-face verbal communication approach. This dynamic between the two generations can hinder collaboration and knowledge sharing because each group may not be receptive to that communication style (Pesch et al., 2015).

This study reveals multilayered levels of dynamics in social interactions between older and younger employees, which all team members must comprehend to enhance their understanding of the impact of knowledge sharing. However, researchers caution against generalisations that come from research around age dynamics in the generational context and how they may lead to divisive approaches by management (Rudolph et al., 2021). Managers should exercise caution when making decisions based on the study's findings.

The study found that collaboration not only enhances knowledge sharing but also fosters accountability within the team, encouraging team members to be professional and share their knowledge when necessary, ultimately driving team success. It is important that leadership drive this while holding the employee accountable for this dynamic. This aligns with the empowering leadership style where team members are granted autonomy and decision making this increasing their accountability within the team (Zhang & Bartol, 2010). The study also found that leadership plays a crucial role in implementing initiatives to close down generational gaps in a team culture. This involves driving social settings within and outside the workplace to provide a more relaxed environment for teams to engage in. Carmeli et al. (2013) supports these ideas highlighting how leaders should create this culture of collaboration. It's crucial for leadership to integrate these initiatives into the team culture, establishing them as norms and traditions and ensuring they persist even when the team members leave.

This study also found that psychological safety plays a crucial role in fostering social networks, enhancing knowledge sharing, and nurturing diverse groups. Researchers discovered that employees often refrain from sharing their knowledge because they fear judgment or feel unsafe in their interactions (Kim et al., 2015). Different

perceptions of knowledge dynamics from previous generations may drive people to stick with their age mates as a means of self-protection, perceiving that environment as safer. All team members are responsible for understanding the concept of psychological safety trust and its role in promoting knowledge sharing within the team. Unmanaged psychological safety and trust, as well as their role in promoting knowledge sharing within the team, can create an environment where individuals of different ages refrain from sharing their perspectives due to unfounded perceptions.

Hierarchy has emerged as a key area of concern for knowledge sharing and collaboration, as some senior managers use their rank to selectively share knowledge and information with their subordinates. What is known from Greer et al. (2018) is that hierarchy in formal positions has a negative impact on team effectiveness. The study also found that this issue stems from the close relationships that senior individuals may have with specific team members, thereby impeding the efficient sharing of information. This is due to the view that hierarchies typically share knowledge in a top-down manner (Anand, 2011) and managers tend to share information with those with whom they have a close relationship (Tortoriello et al., 2012).

7.2.2 Research Question 2 How Does the Quality of the Relationships Influence the Sharing of Knowledge in Age Diverse Teams in Mining Organisations?

While social interactions and networks contribute to knowledge sharing in diverse teams, it was essential to understand how the quality of those relationships influences those dynamics. This study analysed the quality of relationships by examining the strengths of ties between individuals in mining organisations' teams. Strong ties contribute to collaboration and information flow, fostering mutual investment in team member success (Tortoriello et al., 2012). This study agreed with this view stating that individuals with strong ties are more likely to exceed expectations and contribute significantly to the success of their colleagues. From a knowledge-sharing perspective, this means that they will share information willingly, and they will share information over and above what is expected in their relationship.

To build and maintain this strong tie and emotional investment, individuals in their team would push to engage and interact both within and outside the workplace to help strengthen their relationship.

The study found that younger workers were willing to develop strong ties and trust, which they would need to accomplish by regularly completing their obligations and improving their competence through the delivery of tasks. This would foster trust with individuals, sometimes older, who have more experience than them. This is supported by Gong et al. (2012) who underscore trust as a basis for establishing psychological safety in teams making it easy for individuals to share knowledge. This would be highly beneficial for younger employees who are seeking to build networks in their teams

However, there were concerns about knowledge sharing among strong ties, as it could lead to the emergence of information silos and potentially create a barrier. This is because individuals with strong ties tend to choose to share information with those they are close to, which aligns with the concept of bonding social capital. This supports the views by Baycan and Öner (2023) stating that strong ties limit the benefits of diversity by creating silos. This presents the need for bridging social capital which would break down these silos thereby creating opportunity for sharing of new ideas between teams that would not normally interact.

Weak ties also exist in teams, where colleagues are only casual acquaintances rather than close friends. This relationship quality was found to exist in most participant teams and was linked to inhibiting knowledge sharing. Weak ties were found to lead to selective information sharing, where team members chose which information to share and with whom. The researcher also found a link between selective information sharing and an aspect of exclusion. The study also revealed that when it comes to weak ties, team members often struggle to extract information from individuals they consider casual acquaintances. These findings around weak ties all show a negative connotation with regards to these findings regarding weak ties all indicate a negative impact on knowledge and information sharing. However, the findings may overlook the benefit of weak ties serving as a safeguard for confidential information with individuals that they should not share that information with, which is supported by Harvey (2008), Reagans and Zuckerman (2008). They found that people with strong ties frequently share information and go above and beyond to

share knowledge, but weak ties shield individuals from this type of dynamic when they share information they shouldn't and with people they shouldn't. This underscores the need to maintain a balance between trust and accountability when it comes to information sharing.

7.3 Research Contributions to Academic Knowledge

This study enhanced the understanding of knowledge sharing and age diversity by filling in some of the gaps in the field of SCT. This study also provided a deeper understanding of the two concepts in the mining industry context.

In the context of SCT and the rule of social interaction, the study sheds light on the ways that different age groups interact when it comes to sharing knowledge. The study revealed that individuals within teams have a tendency to remain within their respective age groups, thereby validating the concept of bonding social capital. This phenomenon occurs when different team members gravitate toward groups with which they share similar characteristics, such as age (Derose, 2008; Tortoriello et al., 2012). However, the study also identified instances of bridging social capital, where one group acts as a connector between different age groups that may not necessarily interact. As observed by one participant, the 30- to 40-year-old age group serve as a connector to the younger and older age groups. This bridging between the two groups who have weak ties can serve as an advantage as it will provide individuals with new ideas and knowledge as suggested by Tasheva and Hillman (2019).

The study examined social networks across various age groups and identified several differences that could influence the dynamics of knowledge sharing. The study found that young people are prone to being knowledge seekers with the aim of using this knowledge for growth and career advancement as supported by (Burmeister et al., 2018) . Conversely, the study revealed that older employees occasionally conceal information with the intention of securing their own standing within the team as supported by North and Fiske (2015a). If this dichotomy in generational differences exists within a team, it may create an inhibitor for collaboration, stifling new ideas and innovation possibilities.

All participants unanimously agreed that older employees were rigid or resistant to change. This validates the existing literature by Cutcher et al. (2022) on the dynamics of knowledge sharing among older individuals and their rigidity in the workplace. This aspect serves as a key barrier to knowledge sharing within teams for all employees. However, North and Fiske (2015a) and Fasbender and Gerpott (2022) argue that this common stereotype has not been unanimously validated, cautioning against its reference in practice.

This study also looks at how the strength of relationships in these networks contributes to knowledge sharing amongst age-diverse teams. Participants discussed the benefits of strong ties, including trust and collaboration, which boost knowledge sharing within the team. This was supported by literature from (Rost, 2011). However, a contrasting perspective on the benefits of strong ties emerged with the formation of knowledge silos, which hindered the sharing of information with relevant individuals and the dissemination of knowledge overall. This would add to the existing literature by suggesting that homogeneous groups tend to share the same knowledge (Derose, 2008), thereby hindering the exchange of diverse perspectives.

On the other hand, there was evidence of weak ties being inhibitors of knowledge sharing. However, there were also contradictions to this from literature stating that weak ties benefited knowledge flow (Deshpande & Khanna, 2021; Granovetter, 1973; Kim & Fernandez, 2024). This creates an opportunity to further investigate this dynamic around weak ties, as the finding may have been inconclusive.

7.4 Research Contributions to Business

The research provides useful insights that can benefit businesses, especially around the South African mining sector.

This research highlights the significance of generational differences in communication styles; younger people favour digital communication, while older people prefer more intimate face-to-face interactions. Understanding such dynamics can help businesses tailor their communication strategies while providing multiple channels for information sharing. Businesses can foster a culture of transparent

feedback and provide training on intergenerational dynamics.

The study offers information about the importance of social interactions in building collaboration and strong team relationships, which ultimately promote knowledge sharing. Despite the findings around employees grouping themselves based on age, the study shows that there are positives to social interactions beyond the workplace. Businesses can leverage this information by organising social events, team-building activities, and programs that encourage interactions across ages.

The findings revealed a strong resistance to change among older employees. Businesses can leverage this to develop strategies that foster clear communication about the reasons for change and provide training opportunities to help older employees adapt to new technologies and processes, ultimately encouraging an openness to receiving new knowledge and ideas. Businesses can also implement reward programs for employees who actively participate in change implementation.

By encouraging employees to build networks across different age groups and departments, businesses can also leverage the value of weak ties to promote the flow of non-redundant, diverse information and connect with individuals possessing different expertise and experiences than those in their closed circles.

While technology came out as the potential key factor to driving knowledge sharing within each diverse team, it was found that the technology that is being used is limited to emails and social media. From a communication and knowledge-sharing perspective, this may be quite basic, thereby needing to be enhanced for more sophisticated systems to be employed by organisations to facilitate knowledge-sharing. Given the varying attitudes and approaches of older and younger employees towards technology use, it presents a valuable opportunity to explore potential technology or system enhancements while also understanding the actual adoption patterns of different generations

Lastly, key businesses can mitigate knowledge hoarding by older employees through developing strategies around the issue. This may involve the implementation of knowledge management systems that pair experienced employees with younger employees, such as mentorship programs or those that incentivise knowledge sharing.

7.5 Suggestions for Future Research

The researcher suggests that in future studies, students should investigate the impact of knowledge sharing on innovation and its integration into the organisation's strategy. Furthermore, researchers need to expand on aspects such as trust and psychological safety within the context of knowledge sharing among different generations in the mining industry. Researchers can conduct future research in various contexts, including the perspective of an entire organisation and industries like healthcare and banking. Scholars can also conduct a more in-depth and focused study on either strong ties or weak ties to understand the impact on knowledge sharing and how these dynamics include social capital.

7.6 Revised Conceptual Framework

We have revised and simplified the study's proposed conceptual framework on SCT (see Figure 7.1) to incorporate knowledge sharing and account for age diversity. The proposal now suggests that individuals' social interactions and the quality of their relationships serve as the foundation for social capital. This study divides the strength of social connections and interactions into weak and strong ties, each offering advantages and disadvantages in terms of information and knowledge sharing. Age group dynamics, generational differences and hierarchy among the older and younger employees in the network influence the dynamics of the relationships. While the findings and literature by Granovetter (1973) and Kim and Fernandez (2024) reveal some contradictions in information flow on both weak and strong ties, this presents an opportunity for future research to better understand the dynamics involved.

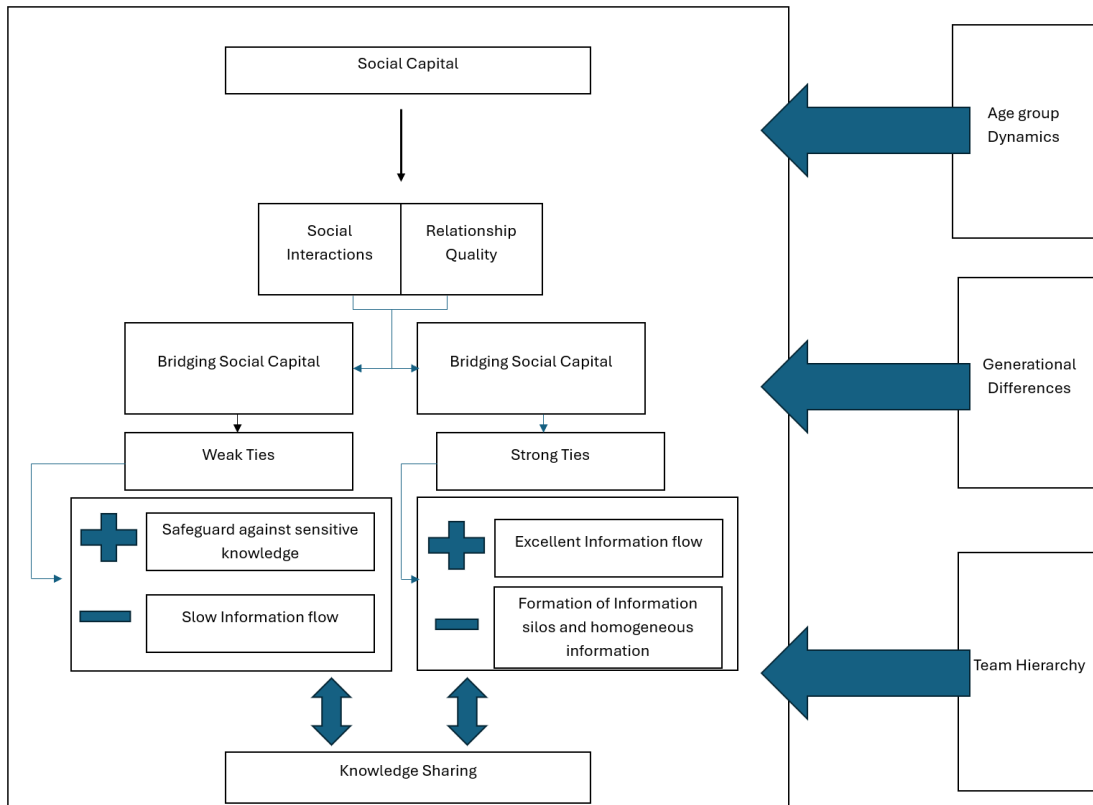


Figure 7.1: Revised Conceptual Framework

Source: Author's own.

7.7 Research Limitations

Given the exploratory nature of this research, certain limitations may arise, as outlined in Chapter 4.

7.7.1 Researchers Bias

Qualitative analysis carries a risk, as the researcher's assumptions could potentially impact the study's findings. The researcher had to constantly manage their biases and increase awareness of their biases to mitigate this risk. Furthermore, the researcher, having worked in the mining industry for over a decade, had to carefully avoid imposing their own experiences on the narratives of the participants. In addition, the researcher anonymously shared some of the participants' views with other participants to verify their perspectives. Furthermore, the researcher used the

research participants to confirm the accuracy of the recorded data, following interviews and transcript cleanup.

7.7.2 Time Horizon

The limited time horizon imposed a constraint on the number of interviews conducted. This study was conducted over four weeks in August and September 2024, resulting in only 14 out of the targeted minimum of 15 interviews. Despite the shortfall in the targeted number of interviews, this study gathered sufficient data to support a thorough analysis and compilation of findings.

7.7.3 Understanding Knowledge and Information

Participants struggled to distinguish between routine daily information and knowledge as a concept. The researcher clarified that participants should not define knowledge as daily immediate details shared by individuals but rather as long-term ideas, experiences, lessons, and insights that an individual has accumulated over time. However, it was noted that they used the word interchangeably throughout the interviews.

7.8 Study Conclusion

This study explores how age diversity can enhance knowledge sharing in mining organisations. The research used a qualitative approach, focusing on semi-structured interviews, to understand the relationship between age diversity and knowledge sharing in the mining industry. The study found that age-based social groups form in mining teams, fostering trust and knowledge sharing. However, there are generational differences between older and younger employees. Younger employees seek knowledge from older employees due to their extensive experience, while older employees may resist change due to job insecurity. Communication styles also differ between the two generations. This study highlights the importance of understanding the dynamics between older and younger employees to improve

knowledge sharing and competitive advantage in the mining industry.

Social interactions between different age groups within a team foster collaboration and trust, facilitating the sharing experiences and knowledge. Formal knowledge-sharing mechanisms like mentorship, on-the-job training workshops, and team meetings facilitate social interaction and enhance knowledge-sharing. Leadership is crucial in implementing initiatives to close generational gaps in a team culture, ensuring they persist even after team members leave. Psychological safety is crucial in fostering social networks and nurturing diverse groups. Hierarchy and close relationships between senior managers and team members can hinder efficient knowledge sharing. Technology can also drive knowledge sharing within diverse teams, but its use is limited. The quality of relationships, including weak and strong ties, influences knowledge sharing in age-diverse teams in mining organisations.

This study explores the relationship between weak ties and knowledge sharing in teams, particularly in the mining industry. It found that weak ties inhibit knowledge sharing and lead to selective information sharing. However, they also provide benefits such as safeguarding against premature sharing of confidential information. The study also highlighted the importance of work ethic and professionalism in fostering a culture of trust and collaboration. It also highlighted the differences in knowledge-sharing dynamics among different age groups, with young people seeking knowledge for growth and career advancement and older employees concealing information for their standing. The study also highlighted the importance of understanding the dynamics of knowledge sharing and age diversity in the mining industry.

The research provides valuable insights for businesses, particularly in the South African mining sector, on generational differences in communication styles. Younger people prefer digital communication, while older people prefer face-to-face interactions. Understanding these dynamics can help businesses tailor their communication strategies and provide multiple information-sharing channels. Social interactions are essential for building collaboration and strong team relationships and promoting knowledge sharing. Businesses can leverage this information by organising social events and programs that encourage interactions across ages. Older employees may resist change, so strategies should include clear communication, training, and reward programs. Building networks across different

age groups and departments can promote diverse information flow. Future research should explore trust and psychological safety in knowledge sharing among different generations.

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List of Appendices

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Appendix A: Participant Email Inviting Them to Participate in the Study

Good day, Sir/Madam,

My name is Omphile Ramantsi. I am a Masters student registered for the Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. As part of the requirements for the degree, I am conducting research on exploring how teams leverage age diversity to enhance knowledge share within South African mining companies. It is hoped that the information to be obtained may enhance the academic discourse on age diversity and knowledge sharing in teams and, in a small way, contribute to a general understanding of the experiences of age-diverse teams in the mining industry.

I would like to extend an invitation to you to take part in my research. Your participation is entirely voluntary, and you will not be penalised for choosing not to participate. I will set up an interview with you at a time and location that works for you if you are interested in participating. The interviews should last an hour. You have the option to withdraw from the study at any point, as well as to decline to answer any questions that make you feel uncomfortable.

The audio of the interview will be recorded with your consent. The only person who will have access to the recordings is my supervisor. The recordings and interview schedules will be kept on the GIBS online platform for two years and then deleted permanently afterwards. Your name and personal information will be kept private, including any identifying information in the finished research report.

Please feel free to ask any questions regarding the study. I will answer them to the best of my ability. I may be contacted on 23984113@mygibs.co.za. Should you wish to receive a summary of the findings of the study, an abstract will be made available on request. Thank you for taking the time to consider participating in the study.

Yours sincerely,

Omphile Ramantsi

Supervisor's name: Dr Gloria Mbokota (mbokotag@gibs.co.za)

Appendix B: Informed Consent Form

I am conducting research on age diversity and knowledge sharing. Our interview is expected to last about 45 minutes to an hour and will help us understand how teams leverage age diversity to enhance knowledge share within South African mining companies. Your participation is voluntary, and you can withdraw at any time without penalty. By signing this letter, you are indicating that you have given permission for:

- The interview is to be recorded;
- The recording is to be transcribed by a third-party transcriber, who will be subject to a standard non-disclosure agreement;
- Verbatim quotations from the interview may be used in the report, provided they are not identified with your name or that of your organisation;
- The data to be used as part of a report that will be publicly available once the examination process has been completed and
- All data is to be reported and stored without identifiers.

If you have any concerns, please contact my supervisor or me. Our details are provided below.

Researcher name: Omphile Ramantsi

Email: 23984113@mygibs.co.za

Research supervisor name: Dr Gloria Mbokota

Supervisor email: mbokotag@gibs.co.za

Signature of participant: _____

Date: _____

Signature of researcher: _____

Date: _____

Appendix C: Instrument (Interview Guide)

What the researcher should look out for?		Interview Questions	Link to Research questions
Introduction and greeting	-	Provide the participant with a background and introduction to the topic. - Provide details on the process, confidentiality and make them aware that they can withdraw anytime during the interview.	-
Ask follow-up questions if needed	1	Can you briefly introduce yourself and your role within the organisation?	-
	2	How long have you been working in the mining industry?	-
	3	What is the size of your team, and how diverse is it from an age perspective? (20-29 years old, 30-39 years old, 40-49 years old, 50-59 years old and 60-69 years old)	1
	4	How would you describe the social networks within your team? Are there specific groups that interact more frequently?	1
	5	Can you describe how knowledge is currently shared within your team?	1
	6	In your experience, how do social interactions within the team influence the sharing of knowledge and information?	1
	7	Can you provide an example of a time when a network connection (formal or informal) helped facilitate knowledge or resource sharing within your team?	1
	8	What challenges, if any, have you encountered in promoting knowledge sharing among employees of different ages?	1

What the researcher should look out for?		Interview Questions	Link to Research questions
	9	How would you describe the relationships between older and younger employees in your team?	2
	10	Can you share an example where the quality of a relationship between employees of different ages positively or negatively impacted the sharing of knowledge	2
	12	How do certain individuals or groups act as key connectors or hubs in the flow of information within your team?	1 and 2
	13	How does your organisation support knowledge sharing across different age groups? Are there specific policies or practices in place?	1
	14	What strategies do you think could be implemented to improve knowledge sharing between younger and older employees in your organisation?	1
Closing		Thank the participant.	-

Appendix D: Ethics Approval

GIBS ETHICAL CLEARANCE APPLICATION FORM 2024/25

G. APPROVALS FOR/OF THIS APPLICATION

When the applicant is a student of GIBS, the applicant must please ensure that the supervisor and co-supervisor (where relevant) has signed the form before submission

STUDENT RESEARCHER/APPLICANT:

29. I affirm that all relevant information has been provided in this form and its attachments and that all statements made are correct.

Student Researcher's Name in capital letters: OMPHILE RAMANTSI

Date: 28 Jul 2024

Supervisor Name in capital letters: GLORIA MBOKOTA

Date: 29 Jul 2024

Co-supervisor Name in capital letters:

Date: 28 Jul 2024

Note: GIBS shall do everything in its power to protect the personal information supplied herein, in accordance to its company privacy policies as well the Protection of Personal Information Act, 2013. Access to all of the above provided personal information is restricted, only employees who need the information to perform a specific job are granted access to this information.

Decision:

Approved

REC comments:

Date: 05 Aug 2024

Appendix E: Consistency Matrix

Research Questions	Literature review	Data collection tool	Analysis
Sub Question 1 How do social networks influence knowledge sharing in age-diverse teams in the South African mining industry?	(Krishen et al., 2019; Li et al., 2021; Singh et al., 2021; Yan et al., 2019)	Interview Questions 3,4,5,6,7,8,11,12,13,	Thematic Analysis from data
Sub Question 2 How does the quality of the relationships influence the sharing of knowledge in age-diverse teams in mining organisations?	(Granovetter, 1973; Han et al., 2020; Hauser et al., 2007; Singh et al., 2021; Tortoriello et al., 2012)	Interview Questions 9,10,11	Thematic Analysis from data

Appendix F: List of Codes

No	Code
1	30-40 age group ease of connecting with other age groups
2	Advantages of open plan setting to allow knowledge sharing
3	Advantages to weak ties in knowledge sharing
4	Age as a barrier to knowledge sharing
5	Age discrimination as a challenge
6	Age diversity in teams
7	Age-related social interaction
8	Attitude towards new knowledge
9	Barrier of familiarity
10	Biases affecting knowledge sharing
11	Biases on whom the knowledge is coming from
12	Bonding Social capital
13	Buddy system to pair employees for enhanced knowledge sharing
14	Challenges with older employees
15	Close relationships drive knowledge-sharing
16	Closed social circles as a barrier to knowledge sharing
17	Coaching as a way of knowledge-sharing
18	Collaboration from different team members
19	Comfortability with peers, leading to knowledge sharing
20	Communication forum as a way to share knowledge
21	Competition as a barrier to knowledge sharing
22	Confidential information/knowledge
23	Conflict as a challenge
24	Creating closeness through building relationships
25	Cross-functional Collaboration
26	Different perspectives
27	Disadvantages of perceptions of people in social interactions
28	Disengagement from older employees
29	Diversity policy to manage how people interact
30	Ease of communication
31	Email as a means to share information
32	Emotional investment

No	Code
33	Employee connectedness
34	Empowering leadership
35	Environment of Openness
36	Example of sharing information in informal interactions
37	Experience
38	Explicit knowledge sharing
39	Face-to-face interaction
40	Familiarity with pre-existing relationships
41	Fear of sharing knowledge
42	Formal information sharing in the organisation
43	Forums as a recommendation for knowledge-sharing
44	Friendship as an advantage
45	Generational Gap in Social Connections
46	Getting along with peers influences the sharing of knowledge
47	Graduate program as a strategy for knowledge sharing linked to age
48	Group thinking, as a result
49	Hierarchy as a barrier to knowledge flow
50	Helping fellow team members
51	How information is packaged
52	HR strategies to improve Age diversity and Knowledge sharing
53	Hybrid teamwork challenges
54	Impact of formal social interactions
55	Impact of informal social interactions
56	Impact of team structure on social aspects of the team
57	Importance of team cohesion
58	Importance of common interests
59	Importance of Education (HR strategy)
60	Importance of psychological safety in KS
61	Importance of Team Culture
62	Importance of team members liking each other
63	Importance of the nature of the information being shared
64	Inclusivity as a strategy to address issues of diversity
65	Increased interaction among young employees
66	Indifference in strong vs weak ties
67	Individual attitude toward sharing knowledge

No	Code
68	Innovation in young employees
69	Innovation-driven Knowledge Sharing
70	Intention to share knowledge
71	Inter-generational interaction
72	Interacting outside of work
73	Intimidation as a barrier
74	Knowledge filtering as a challenge
75	Knowledge flow
76	Knowledge hiding
77	Knowledge hiding because of weak ties
78	Knowledge hiding by older people as a self-preservation tactic
79	Knowledge Hoarding by Older Employees
80	Knowledge management HR strategy
81	Knowledge seeking by young employees
82	Knowledge seeking by younger people
83	Knowledge sharing mechanism
84	Knowledge sharing mechanism as a challenge
85	Knowledge sharing with external contractors is a challenge
86	Knowledge sharing with young graduates
87	Knowledge transfer
88	Lack of inclusion as a barrier to the social dynamics of the team
89	Lack of mentorship
90	Lack of Openness from weak ties
91	Lack of openness to new ideas
92	Lack of promotion motivator
93	Lack of trust as a barrier to knowledge sharing
94	Language as a barrier to knowledge sharing
95	Leadership influence to improving team social interactions
96	Leveraging experience for sharing stories
97	Leveraging experience to share knowledge
98	Location as a social enabler
99	Manager Role in Knowledge Flow
100	Mentorship according to hierarchy, not age
101	Method of knowledge sharing being a challenge
102	Mining industry legacy of old thinking

No	Code
103	Negative previous experiences as a barrier
104	No age group barriers to social interactions
105	No policy in place around knowledge sharing and age diversity
106	No technology is used to share knowledge
107	Older employees
108	Older employees prefer emails as a form of communication
109	Older employees reaching their career ceiling
110	Older employees' social interaction
111	Older employees' rigidity
112	Older people's preference for knowledge sharing method
113	Openness
114	Openness to New Ideas
115	Opportunity for improvement in technology
116	Organisational culture
117	Organisational values
118	Overcoming the challenge of age as a barrier to knowledge sharing
119	Personal relationship
120	Personality
121	The personality of individuals as a barrier
122	Policies to manage knowledge sharing
123	Power dynamics
124	Problem-solving
125	Psychological safety as an enabler in knowledge sharing
126	Recommendation to having policies that ensure knowledge sharing
127	Reciprocation on knowledge sharing
128	Recommended strategy for knowledge sharing
129	Recruitment strategies to ensure diversity
130	Remote working as a challenge to knowledge sharing
131	Resistance to change by older employees
132	Resistance to new information by older employees
133	Resistance to share by older employees
134	Respect as an enabler of knowledge sharing across age groups
135	Responsibility
136	Responsibility as a driver
137	Rewarding knowledge sharing

No	Code
138	Role of Explicit Knowledge Sharing
139	Role of leadership
140	Role of mentorship in Knowledge sharing
141	Role responsibility to share information
142	Same age group interactions
143	Section based Social interactions
144	Set hiring practices to deliberately improve diversity in teams
145	Sharing knowledge through job training
146	Skills diversity as an advantage to knowledge sharing
147	Social interactions
148	Social network
149	Spending time together
150	Strong ties
151	Strong ties due to shared historical experiences
152	Strong ties with older employees
153	Succession plans as part of developing young employees
154	Support system
155	Tacit Knowledge sharing
156	Team cohesion
157	Team dynamics
158	Team meetings as a platform
159	Team structure impact on dynamics
160	Technology use and age
161	Trust as support for relationships
162	Trust development among team members
163	Use of LinkedIn to share information
164	Use of technology to share information
165	Verbal conversation in knowledge sharing
166	Weak ties
167	Weak ties in knowledge sharing amongst different age groups
168	Weak ties with young people
169	Willingness to share information
170	Work ethic as a factor in sharing knowledge
171	Workshops and forums as a means of Knowledge-sharing
172	Young employees' inexperience as a demotivator

No	Code
173	Young professional development programme as a way for age-diverse knowledge sharing
174	Younger employees
175	Younger employees overestimate their knowledge
176	Younger employees share knowledge with older
177	Younger employees sitting together as a preference
178	Younger employees trying to bring about change
179	Younger people are distracted when being advised
180	Younger people's preference on how knowledge is shared