NELSON MANDELA UNIVERSITY

TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING IN KNOWLEDGE-INTENSIVE BUSINESSES

CONRAD VAN GREUNEN

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TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING IN KNOWLEDGE-INTENSIVE BUSINESSES

by

CONRAD VAN GREUNEN

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DEDICATION

This thesis is dedicated to my father whom I miss dearly. He always set a good example of integrity and kindness, which is my most respected memory of him.

My father always believed in me, and I wish he could share in this special milestone.

My father didn't tell me how to live; he lived, and let me watch him do it.

--- Clarence Budington Kelland ---

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ABSTRACT

In today's knowledge-driven economy, knowledge is regarded as possibly the most important factor of production next to labour, land and capital. Knowledge is the lifeblood of a business and therefore crucial for its survival in today's constantly changing and competitive economic environment. In fact, effective knowledge management holds many benefits for an organisation, such as increased productivity and enhanced business performance. Knowledge management is therefore key to ensure business success.

In the knowledge management process, knowledge-sharing is typically recognised as the most important activity. Knowledge that is not shared, in particular tacit knowledge residing in the minds of individuals and accrued over time, loses its value. Notably, team knowledge-sharing is of utmost importance in that it enables a team to resolve practical issues more successfully, given that knowledge is shared among team members that hold various kinds of specialised and unique expertise. Organisations increasingly organise their specialised knowledge-intensive work around projects that consist of allocated members who cooperate on a regular basis to accomplish specific goals before a set deadline. However, without knowledge-sharing among team members, the diverse knowledge of various members cannot be optimally utilised to the benefit of the team and the organisation.

Although it is well documented that knowledge-sharing among team members, in particular knowledge-intensive teams, may hold various advantages for teams and organisations in terms of their performance and competitive advantage, researchers also acknowledge that individuals are sometimes reluctant to share their knowledge. Moreover, there is a lack of empirical research on the team-related factors influencing intra-team knowledge-sharing, and a subsequent lack of guidance in terms of encouraging intra-team knowledge-sharing behaviour. Notably, the lack of current systematic, integrated research, that pay particular attention to the team-related factors influencing the knowledge-sharing behaviour within a team is problematic. This lack of research calls for further empirical research to better understand the team-related factors influencing intra-team knowledge-sharing behaviour in knowledge-intensive teams. As such, the main research objective of this study was to identify and

empirically examine selected team-related factors influencing the intra-team knowledge-sharing behaviour of individual members participating in knowledge-intensive teams in knowledge-intensive businesses.

Based on an extensive literature review, the following team-related factors influencing knowledge-sharing in a team context were identified and hypothesised to have a relationship with the dependent variable *Intra-team knowledge-sharing behaviour*. These factors, which also served as the independent variables in this study, are: *Team development competition*, *Team hyper-competition*, *Team psychological safety*, *Perceived surface-level diversity*, *Perceived deep-level diversity, Team identification*, *Metacognitive cultural intelligence*, *Cognitive cultural intelligence*, *Motivational cultural intelligence*, *Behavioural cultural intelligence*, *Affective team commitment*, *Continuance team commitment* and *Normative team commitment*.

Following the construction of the proposed hypothesised model, the researcher proceeded to develop a research design that would be suitable to address the research questions. For the purpose of this study, a positivist research philosophy and deductive approach to theory building were adopted, which is in line with the quantitative nature of this study. In addition, a survey research strategy was used and the study was cross-sectional in nature. The measuring instrument, which was in the form of a self-administered online questionnaire, was subjected to a pilot study. Minor adjustments were made to the questionnaire before an electronic link to the final version, accompanied by a cover letter, was e-mailed to 8 496 potential respondents. These potential respondents, who were identified using a convenience sampling technique, were likely to participate in knowledge-intensive teams and be representative of the population. A total of 384 usable responses were received.

Following the data collection, the data were analysed to examine the proposed relationships as depicted in the hypothesised model. To address possible multicollinearity concerns associated with different variables that belong to a shared category, such variables were first combined into a single hierarchical variable. Thereafter, a confirmatory factor analysis (CFA) was performed on each factor that confirmed the factor structures by using various goodness-of-fit indices. Subsequent to the CFAs, the validity and reliability of the measuring instrument was assessed. The

reliability of the measuring instrument was evaluated using Cronbach's alpha coefficients, while the assessment of validity involved calculations of the average variance extracted (AVE) estimates and squared correlations between constructs. Based on the results of the reliability and validity assessments, the hypothesised model was revised accordingly. The revised model included *Team development competition*, *Team psychological safety*, *Cultural intelligence*, *Team commitment* and *Perceived deep-level diversity* as the independent variables influencing *Intra-team knowledge-sharing behaviour*. Descriptive statistics and correlation results were presented on the constructs in the revised hypothesised model, while a structural equation modelling (SEM) analysis was the main statistical technique used to test the significance of the relationships between the dependent and the independent variables. The relationships between selected demographic variables and *Intra-team knowledge-sharing behaviour* were assessed by means of general linear modelling (GLM), a subset of SEM.

In light of these analyses, it was concluded that *Team psychological safety, Team development competition*, *Cultural intelligence* and *Age* have a significant influence on *Intra-team knowledge-sharing behaviour* and could thus be seen as predictors or determinants thereof. Of all the significant relationships identified in this study, *Team psychological safety* had the strongest effect on *Intra-team knowledge-sharing behaviour*. One should, however, not lose sight of the impact that competition and cultural intelligence could have on the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams.

This study contributes to the body of knowledge-sharing research in general, but also to knowledge-sharing behaviour in a team context in particular. Besides the theoretical contributions, this study makes several practical recommendations to knowledge-intensive businesses on how to manage the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams. These recommendations could possibly enhance the competitive advantage of knowledge-intensive businesses.

KEY WORDS: Intra-team knowledge-sharing behaviour; Knowledge-intensive businesses; Knowledge-intensive teams; Team-related factors.

TABLE OF CONTENTS

PAGE

CHAPTER FIVE
RESEARCH DESIGN AND METHODOLOGY

LIST OF FIGURES

PAGE

LIST OF TABLES

PAGE

CHAPTER ONE

INTRODUCTION, PROBLEM STATEMENT AND SCOPE OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

In today's knowledge-driven economy, knowledge is regarded as possibly the most important factor of production next to labour, land and capital (Phillips, Yu, Hameed & Akhdary, 2017:176; Aksoy, Ayranci & Gozukara, 2016:336; Nnabuife, Onwuka & Ojukwu, 2015:25). Asrar-Ul-Haq and Anwar (2016:2) assert that knowledge is the lifeblood of a business and therefore crucial for its survival in today's constantly changing and competitive economic environment. In fact, effective knowledge management holds many benefits for an organisation such as increased productivity and enhanced business performance. Knowledge management is therefore key to ensure business success (Sayyadi, 2019:33; Asrar-Ul-Haq & Anwar, 2016:2).

In the knowledge management process, knowledge-sharing is typically recognised as the most important activity (Lee, 2018:1; Asrar-Ul-Haq & Anwar, 2016:2). Knowledge that is not shared, in particular tacit knowledge residing in the minds of individuals and that is accrued over time, loses its value (Indrasiene, Jegeleviciene, Merfeldaite, Penkauskiene, Pivoriene, Railiene, Sadauskas & Valaviciene, 2021:9; Asrar-Ul-Haq & Anwar, 2016:2).

Notably, team knowledge-sharing is of utmost importance in that it enables a team to resolve practical issues more successfully, given that knowledge is shared among team members that hold various kinds of specialised and unique expertise (Chuang, Jackson & Jiang, 2016:527). Lee (2018:1) notes that knowledge-sharing not only has a positive impact on teamwork, it also enhances the performance of the organisation and individual employees. Similarly, Mueller (2014:190) asserts that organisations increasingly organise their specialised knowledge-intensive work around projects, with project teams that consist of allocated members who cooperate on a regular basis to accomplish specific goals before a set deadline. These members are assigned to permanent or semi-permanent project teams in which organisations encourage individual knowledge-sharing activities in order to achieve optimal results. Likewise,

He, Baruch and Lin (2014:949) stress that for a team to be effective, members should share their knowledge with each other. As such, intra-team knowledge-sharing signifies the success of team management, which in turn impacts on the performance and competitive advantage of an organisation (He *et al*., 2014:949). Noh (2013:1) suggests that teams play an integral role in organisations to perform tasks that influence organisational performance. However, without knowledge-sharing among team members, the diverse knowledge of various members cannot be optimally utilised to the benefit of the team and the organisation (Noh, 2013:3). Consistent with the aforementioned views, Kipkosgei, Kang and Choi (2020:2-3) note that knowledge-sharing among team members have the potential to enhance team and organisational performance.

Knowledge-sharing is particularly important in knowledge-intensive teams for contributing to an organisation's central resources and abilities that are vital for a competitive advantage (Chung & Jackson, 2013:443). Likewise, Hoogeboom and Wilderom (2020:8) also highlight the importance of knowledge-sharing in knowledge-intensive teams to enhance team effectiveness. Examples of knowledge-intensive teams are academic research teams, product development teams, strategic planning teams and research and development teams (Akhavan & Hosseini, 2016:101; Tang & Naumann, 2016:421; Lowik, Kraaijenbrink & Groen, 2016:1083; Chung & Jackson, 2013:443; Cummings & Haas, 2012:325). These teams combine members to take on projects that are too complex and non-routine to be undertaken by a single person. As such, these knowledge-intensive teams undertake challenging knowledge-intensive work by drawing members together with different skill sets, experience and functional expertise (Hong, Zhang, Gang & Choi, 2019:746; Cummings & Haas, 2012:316; Gardner & Kwan, 2012:25).

Against this background, knowledge-intensive teams comprise highly qualified individuals (as characterised by knowledge-intensive businesses where most of the employees are knowledgeable and professional and able to solve complex problems) who utilise their personal knowledge, ideas and creativity to find solutions to complex tasks (Lowik *et al.*, 2016:1083;1089; Torres, 2015:14; Swart & Kinnie, 2003:60-61). Gaining new knowledge and rigorous communication in knowledge-intensive teams are requirements for coordination and problem solving (Lowik *et al*., 2016:1089),

especially given the complex and non-routine nature of activities in these teams (Hoogeboom & Wilderom, 2020:12; Cummings & Haas, 2012:316), thus highlighting the need for knowledge-intensive businesses to encourage knowledge-sharing among members in knowledge-intensive teams.

Having established the background to the research, the problem statement for this study is explained in the next section, followed by the purpose of the study and research objectives. Thereafter, the proposed hypothesised model and associated research hypotheses and questions will be presented. A brief discussion will be given on the literature review (secondary research), as well as the research design and methodology adopted. Moreover, the scope and demarcation of the study will be discussed and its significance highlighted. The chapter will conclude with a discussion of frequently used concepts in this study and a summary of the structure thereof.

1.2 PROBLEM STATEMENT

It is well documented that knowledge-sharing among team members, in particular knowledge-intensive teams, may hold various advantages for teams and organisations in terms of their performance and competitive advantage (Hoogeboom & Wilderom, 2020:7-8; Akhavan & Hosseini, 2016:101; McGrane, 2016:1-7; He *et al*., 2014:949; Tung, 2014:34-35; Noh, 2013:110; Chung & Jackson, 2013:443). However, researchers also acknowledge that individuals are sometimes reluctant to share their knowledge (Kaur, 2016:3; Zhang, 2014:22; He *et al*., 2014:949; Amiri, Pourkiani & Pourrashidi, 2014:121; Noh, 2013:2; Kiniti & Standing, 2013:195-196).

To aggravate this issue, human resource professionals have for years neglected knowledge-sharing in the workplace and its importance in the knowledge-management process has only been acknowledged in the last few years (Asrar-Ul-Haq & Anwar, 2016:2). In particular, encouraging team members to share knowledge is vital for an organisation's competitive advantage, but poses a challenging task as team members may have various reasons to hoard their knowledge (He *et al*., 2014:949; Noh, 2013:2). This is of particular concern given the nature of knowledge-intensive teams that undertake challenging knowledge-intensive work. It is therefore important to identify the factors influencing the knowledge-sharing behaviour of

individual members participating in knowledge-intensive teams (intra-team knowledge-sharing behaviour).

Regrettably, literature reviewed for this current study, as well as the work of other researchers (He *et al*., 2014:951; Noh, 2013:4; Xue, Bradley & Liang, 2011:299-300) acknowledges the lack of research in respect of team-related factors influencing knowledge-sharing behaviour. Although prior research has explored organisational factors (e.g. Osupile & Makambe, 2021; Curado, Henriques, Oliveira & Martins, 2021; Hassan, 2021) and individual-related factors (e.g. Pour & Taheri, 2019; Ibrahim, Mohamad & Shad, 2018) that influence knowledge-sharing, there are still various gaps in knowledge-management literature with regard to team-related factors (e.g. team identification and team psychological safety) influencing knowledge-sharing (Noh, 2013:4). He *et al*. (2014:951) also highlight the lack of research on team-related factors and knowledge-sharing. For example, these authors point out the lack of research on the relationship between within-team competition and team knowledge-sharing (He *et al*., 2014:951). Furthermore, the current literature review reveals additional team-related factors requiring further empirical research in knowledge-sharing. These factors include, amongst others, psychological safety, team diversity, team identification, cultural intelligence and team commitment. The inclusion of selected factors for further research in respect of team knowledge-sharing is justified in the literature review (see Chapter Three).

In a review of knowledge-sharing literature, Obrenovic and Qin (2014:113) concur with the views expressed in the preceding paragraph, that knowledge-sharing has not been comprehensively investigated at a team level; consequently, factors relating to a team-context have not been adequately explored. Consistent with the views of Obrenovic and Qin (2014), other reviews on knowledge-sharing literature (McManus, Ragab, Arisha & Mulhall, 2016:4-7; Asrar-Ul-Haq & Anwar, 2016:4-7) also point toward relatively limited research on team-specific factors influencing knowledge-sharing.

Although limited, existing research examines selected team-related factors influencing knowledge-sharing in isolation (Tung, 2014; Noh, 2013; Chen & Lin, 2013). The literature review in this current study reveals a lack of systematic integrated research on team-related factors influencing intra-team knowledge-sharing, not to mention the

absence of a reliable tool to facilitate holistic identification and measurement of the team-related factors influencing intra-team knowledge-sharing behaviour.

While it is important to encourage intra-team knowledge-sharing behaviour, this is a challenging task given the lack of research in this regard. Consequently there is insufficient understanding of the team-related factors that influence the knowledge-sharing behaviour of team members. More specifically, a systematic integrated approach to intra-team knowledge-sharing could facilitate an all-inclusive comprehension of the team-related factors that influence the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams in knowledge-intensive businesses. Subsequently, the understanding and management of these factors could enhance intra-team knowledge-sharing behaviour and ultimately the performance and competitive advantage of an organisation.

1.3 PURPOSE OF THE STUDY

Given the importance of intra-team knowledge-sharing, and individuals' reluctance to share knowledge, the purpose of this study is to obtain a better understanding of the team-related factors influencing the intra-team knowledge-sharing behaviour of individual members participating in knowledge-intensive teams in knowledge-intensive businesses. Despite the importance of knowledge-sharing in a team context, in particular knowledge-intensive teams, there is still a lack of empirical research on the team-related factors influencing intra-team knowledge-sharing, and a subsequent lack of guidance in terms of encouraging intra-team knowledge-sharing behaviour. Notably, the lack of current systematic, integrated research that pay particular attention to the team-related factors influencing knowledge-sharing behaviour within a team is problematic and calls for further empirical research to better understand the team-related factors influencing intra-team knowledge-sharing behaviour in knowledge-intensive teams. Subsequently, this study investigates the gap in the existing knowledge-sharing literature.

To fill the research gaps in current literature and address the purpose of this study, the researcher will generate and empirically assess a hypothesised model of team-related factors that influence intra-team knowledge-sharing behaviour, with specific emphasis

on knowledge-intensive teams. As far as the researcher is concerned, no comparable study exists that employs a related design and methodology to investigate team-related factors influencing intra-team knowledge-sharing behaviour as suggested in the previous and ensuing paragraphs.

1.4 RESEARCH OBJECTIVES

In the following sections, the primary, secondary and methodological objectives of the study are outlined.

1.4.1 PRIMARY RESEARCH OBJECTIVE

The primary objective in this study is to identify and empirically examine selected team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams in knowledge-intensive businesses. By identifying and empirically investigating these factors, more insight could be obtained into such factors and the management thereof, which could enhance knowledge-sharing in a team context and ultimately an organisation's core resources and capabilities that are vital for a competitive advantage.

1.4.2 SECONDARY RESEARCH OBJECTIVES

In support of the primary objective, several secondary objectives (SO) are formulated, namely:

SO[1] To investigate the relationship between *Within-team competition* (*Team development competition* and *Team hyper-competition*) and *Intra-team knowledge-sharing behaviour*.

SO[2] To investigate the relationship between *Team psychological safet*y and *Intra-team knowledge-sharing behaviour*.

SO[3] To investigate the relationship between *Perceived team diversity*

(*Perceived surface-level diversity* and *Perceived deep-level diversity*) and *Intra-team knowledge-sharing behaviour.*

SO[4] To investigate the relationship between *Team identification* and *Intra-team knowledge-sharing behaviour.*

SO[5] To investigate the relationship between *Cultural intelligence* (*Metacognitive cultural intelligence*; *Cognitive cultural intelligence*; *Motivational cultural intelligence*; *Behavioural cultural intelligence*) and *Intra-team knowledge-sharing behaviour*.

SO[6] To investigate the relationship between *Team commitment* (*Affective team commitment*; *Continuance team commitment; Normative team commitment*) and *Intra-team knowledge-sharing behaviour*.

SO[7] To investigate the relationship between selected *Demographic variables* and *Intra-team knowledge-sharing behaviour*.

1.4.3 METHODOLOGICAL OBJECTIVES

The following methodological objectives (MO) have been formulated to address the primary and secondary objectives of the study:

MO[1] To conduct an extensive theoretical investigation into the nature and significance of *Intra-team knowledge-sharing behaviour*.

MO[2] To conduct an extensive theoretical investigation into the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams.

MO[3] To construct a hypothesised model of team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams, and to propose suitable

hypotheses relating to the relationships illustrated in the proposed model.

MO[4] To establish a research design that would be appropriate for the current study and suitable to address all the research questions.

MO[5] To design a measuring instrument to empirically assess the relationships in the hypothesised model.

MO[6] To conduct an empirical investigation on a sample of employees participating in knowledge-intensive teams.

MO[7] To give an account of the research findings, interpret data, compare findings to former research and focus on possible relationships that originated from the data analysis.

MO[8] To explain and interpret the research findings and provide guidelines and recommendations to knowledge-intensive businesses on how to manage the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams. This could possibly enhance intra-team knowledge-sharing and subsequently provide a competitive advantage to knowledge-intensive businesses.

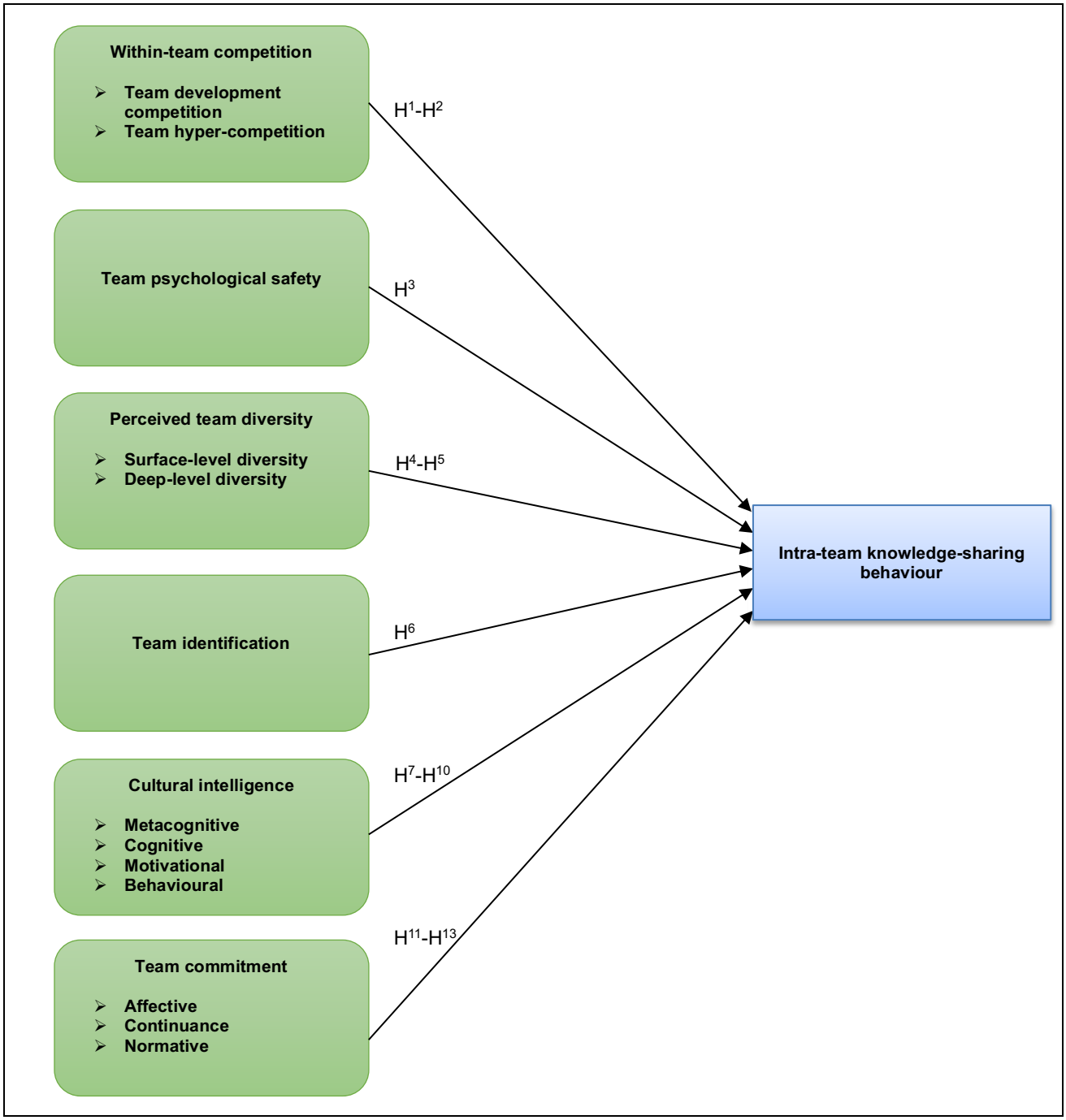
1.5 PROPOSED HYPOTHESISED MODEL, RESEARCH HYPOTHESES AND RESEARCH QUESTIONS

In line with the primary objective of this study, which is to identify and empirically examine selected team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams in knowledge-intensive businesses, the proposed hypothesised model and associated hypotheses and research questions are presented in the following sections.

1.5.1 PROPOSED HYPOTHESISED MODEL

The relationships proposed in the hypothesised model relating to *Team development competition*, *Team hyper-competition*, *Team psychological safety*, *Perceived surface-level diversity*, *Perceived deep-level diversity, Team identification*, *Metacognitive cultural intelligence*, *Cognitive cultural intelligence*, *Motivational cultural intelligence*, *Behavioural cultural intelligence*, *Affective team commitment*, *Continuance team commitment, Normative team commitment* and *Intra-team knowledge-sharing behaviour* were empirically tested in this study. The proposed hypothesised model is illustrated in Figure 1.1.

Figure 1.1: Proposed hypothesised model of team-related factors influencing intra-team knowledge-sharing behaviour



Source: Researcher's own construction

1.5.2 RESEARCH HYPOTHESES

In view of the proposed model (Figure 1.1), the following research hypotheses have been devised to test the relationships depicted in the proposed hypothesised model. These hypotheses were developed based on an extensive review of knowledge-sharing literature.

H^1 There is a positive relationship between *Team development competition* and *Intra-team knowledge-sharing behaviour.*

H^2 There is a negative relationship between *Team hyper-competition* and *Intra-team knowledge-sharing behaviour.*

H^3 There is a positive relationship between *Team psychological safety* and *Intra-team knowledge-sharing behaviour.*

H^4 There is a negative relationship between *Perceived surface-level diversity* and *Intra-team knowledge-sharing behaviour.*

H^5 There is a negative relationship between *Perceived deep-level diversity* and *Intra-team knowledge-sharing behaviour.*

H^6 There is a positive relationship between *Team identification* and *Intra-team knowledge-sharing behaviour*.

H^7 There is a positive relationship between *Metacognitive cultural intelligence* and *Intra-team knowledge-sharing behaviour*.

H^8 There is a positive relationship between *Cognitive cultural intelligence* and *Intra-team knowledge-sharing behaviour*.

H^9 There is a positive relationship between *Motivational cultural intelligence* and *Intra-team knowledge-sharing behaviour*.

H^{10} There is a positive relationship between *Behavioural cultural intelligence* and *Intra-team knowledge-sharing behaviour*.

H^{11} There is a positive relationship between *Affective team commitment* and *Intra-team knowledge-sharing behaviour*.

H^{12} There is a positive relationship between *Continuance team commitment* and *Intra-team knowledge-sharing behaviour*.

H^{13} There is a positive relationship between *Normative team commitment* and *Intra-team knowledge-sharing behaviour*.

In Chapter Four, the hypotheses are discussed in detail. Furthermore, an additional hypothesis is developed to assess the relationships between selected demographic variables and *Intra-team knowledge-sharing behaviour*. For each alternative hypothesis, the null hypothesis (H_o) states that there is no relationship between the variables tested. As such, for the sake of brevity, only the alternative hypotheses are listed.

H^{14} There is a relationship between selected *Demographic variables and Intra-team knowledge-sharing behaviour.*

1.5.3 RESEARCH QUESTIONS

Given the problem statement and research objectives, the following research questions are presented:

RQ^1 What is the relationship between the different types of team competition and *Intra-team knowledge-sharing behaviour*?

RQ^2 What is the relationship between a psychologically safe team environment and *Intra-team knowledge-sharing behaviour*?

RQ^3 What is the relationship between team members' perceptions of team

disparity and *Intra-team knowledge-sharing behaviour?*

RQ[4] What is the relationship between team identification and *Intra-team knowledge-sharing behaviour*?

RQ[5] What is the relationship between various cultural intelligences and *Intra-team knowledge-sharing behaviour*?

RQ[6] What is the relationship between the various types of team commitment and *Intra-team knowledge-sharing behaviour*?

RQ[7] What is the relationship between selected demographic variables and *Intra-team knowledge-sharing behaviour*?

The research design and methodology adopted in the present study is briefly outlined in the following sections, while in Chapter Five a detailed discussion is given in this regard.

1.6 RESEARCH DESIGN AND METHODOLOGY

To achieve the research objectives and to test the research hypotheses of this study, the researcher embarked on an extensive literature review and empirical investigation. In this respect, the primary and secondary research undertaken in this study are briefly discussed in the following sections.

1.6.1 LITERATURE REVIEW (SECONDARY RESEARCH)

Secondary research are previously published sources such as journal articles, books and theses, which are excellent items that provide valuable insight into previous research on a particular research topic (Saunders, Lewis & Thornhill, 2019:83). Secondary data are data that have already been collected by other researchers and Sekaran and Bougie (2016:37-38) advise that criteria such as the timeliness, accuracy and relevance of secondary data should be carefully evaluated before using such data.

In this current study, the researcher reviewed the literature to identify team-related factors that could influence the *Intra-team knowledge-sharing behaviour*. Secondary sources that were used include, amongst others, journal articles, books, dissertations and conference proceedings. These sources were accessed through the Nelson Mandela University (NMU) and through online databases such as EBSCOhost, Emerald, IEEE, JSTOR, Sabinet, SAGE, ScienceDirect and SpringerLink. Internet search engines such as Google and Google Scholar were also used in the literature review process.

1.6.2 EMPIRICAL INVESTIGATION (PRIMARY RESEARCH)

Whereas secondary data are data already collected by other researchers, primary data are collected by a researcher first-hand to give effect to the purpose of his or her current study (Sekaran & Bougie, 2016:37-38). The research philosophy, approach to theory development, methodological choice, research strategy, time horizon, and data collection and analysis techniques and procedures that were adopted in the present study to collect primary data on the team-related factors influencing *Intra-team knowledge-sharing behaviour*, are briefly discussed in the subsequent sections.

1.6.2.1 Research philosophy

Two mainstream philosophies have dominated the natural and social sciences research, namely positivism and interpretivism (Melnikovas, 2018:34; Collis & Hussey, 2014:43). Positivism relates to objectivism and maintains that researchers can factually explain social phenomena (Walliman, 2019:68; Zukauskas, Vveinhardt & Andriukaitiene, 2018:123; Denicolo, Long & Bradley Cole, 2016:32). In contrast to positivism, interpretivism suggests that everyone views the world from different perspectives and that it is subsequently not possible to construct a universal reality (Walliman, 2019:69). Reality, according to interpretivists, is created by society or human beings and therefore based on subjective experiences (Antwi & Hamza, 2015:218).

Several relationships were empirically tested as illustrated in the proposed hypothesised model (see Figure 1.1). The research is scientific in nature, objective, value-free and made use of advanced statistical techniques to analyse the collected data. Accordingly, this study adopted a positivistic research philosophy to develop new knowledge in the field of knowledge-sharing.

1.6.2.2 Methodological approach

Saunders *et al*. (2019:153) identify three approaches to theory development in a research project, namely deduction, induction and abduction. Deduction involves the construction of a theory that is put through an extensive test by means of several propositions. A researcher who adopts a deductive approach thus develops several hypotheses to be empirically tested through collecting quantitative data (Saunders *et al*., 2019:154).

A different approach to developing theory in a research study is by means of an inductive method. Essentially, induction is characterised by the generation of theory after the data have been collected, and not the confirmation or rejection of theory through data collection, as is the case with a deductive approach (Saunders *et al*., 2019:154-155).

With abduction, a researcher alternates between deduction and induction. Saunders *et al*. (2019:155-156) explain that after collecting extensive and rich data on a specific phenomenon, and after identifying themes and patterns in the data, a researcher could generate a theory and express it by means of a conceptual framework (i.e. induction). This theory can subsequently be tested by means of existing or new data (i.e. deduction).

In this study, hypotheses were formulated and quantitative data were collected and analysed to establish whether the proposed hypotheses could be supported or not. Therefore, a deductive approach was adopted.

1.6.2.3 Methodological choice

The methodological choice concerns decisions as to whether the study should be quantitative, qualitative or mixed in nature. Quantitative researchers believe that they are independent from the phenomenon being researched and they focus on collecting and analysing data that can be presented statistically (Al-Ababneh, 2020:86; Antwi & Hamza, 2015:221). Qualitative research is characterised by subjectivism and qualitative researchers express collected data in the form of a descriptive report, as opposed to reporting it statistically (Melnikovas, 2018:39; Antwi & Hamza, 2015:221). Mixed-method research combines the use of quantitative and qualitative data collection and analysis techniques in a single study. Mixed-method research allows researchers to combine deductive and inductive reasoning and to adopt multiple methods and data types to attend to a research problem (Saunders *et al*., 2019:181; Sekaran & Bougie, 2016:106).

This study involved the collection and analysis of quantitative data through advanced statistical techniques to test the hypothesised relationships between the dependent variable and the independent variables.

1.6.2.4 Methodological strategy

Saunders *et al*. (2019:189) state that a research strategy serves as a plan on how a researcher will answer a research question. The strategy can be regarded as a connection between a research philosophy and the researcher's ensuing choices concerning the data collection and analysis methods. Popular research strategies include experiments, surveys, archival research, case studies, ethnography, action research, grounded theory and narrative enquiry (Saunders *et al*., 2019:190; Sekaran & Bougie, 2016:97).

Given the nature of this study, an online survey strategy was adopted to collect primary data on the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams.

1.6.2.5 Time horizon

An important aspect to consider in a research design is whether the research should be a snapshot at a specific point in time (i.e. cross-sectional), or whether it should be a portrayal of affairs over a specific period (i.e. longitudinal) (Saunders *et al*., 2019:212). This study is cross-sectional in design, as the investigation occurred at a specific point in time.

1.6.2.6 Population and sample

A population includes all the cases or elements from which a sample is chosen for data collection purposes (McDaniel & Gates, 2020:100-101; Saunders *et al*., 2019:294). The population of this study was limited to employees of knowledge-intensive businesses in South Africa, especially those participating in knowledge-intensive teams, given that the study focused on the team-related factors influencing *Intra-team knowledge-sharing behaviour*.

The population in this study can thus be described as all employees based in South Africa who participated in knowledge-intensive teams. As a complete database of employees working in knowledge-intensive teams in South Africa was not available at the time of the study, it was not possible to select the whole population to participate in the study. Therefore, a sample had to be chosen, which represents a subset of the population (McDaniel & Gates, 2020:101; Saunders *et al*., 2019:294). This process is discussed in the next section.

For the purpose of this study, the unit of analysis was individual members participating in knowledge-intensive teams in knowledge-intensive businesses. Knowledge-sharing starts with the individual (Rehman, Amin, Gilal & Hashmani, 2019:85; Edwards, 2016:218; Foote, 2016:57; Bui, Baruch, Chau & He, 2016:33) and it is therefore important to understand an individual member's knowledge-sharing behaviour in knowledge-intensive teams.

With regard to sampling, probability and non-probability sampling techniques exist (Parija & Kate, 2018:146). Probability sampling involves the random selection of research participants, whereas in non-probability sampling respondents are actively selected and individuals in the population do not have the same chance of being

selected as respondents (Cassell, Cunliffe & Grandy, 2017:484). For the purpose of this current study, data were obtained from members of the population who were available and willing to participate in the data collection process. Convenience sampling, which is a non-probability sampling technique, was therefore used in this study.

In view of the above, the researcher obtained a database from a leading higher education institution of qualified individuals in South Africa. This database with contact details of professionals working in knowledge-intensive businesses proved to be ideal for the data collection in the present study. More specifically, the database contains contact details of qualified individuals who worked in knowledge-intensive industries such as the banking sector (e.g. ABSA, Nedbank, Investec, FNB, Standard Bank and SARB), retail (e.g. Massmart), government services (e.g. Eskom, Treasury, the SABC and SARS), the mining industry (e.g. AngloGold Ashanti) and the telecommunications sector (e.g. Vodacom and MTN). Considering the minimum sample size required and the likelihood of non-responses, all the individuals on this database were requested via e-mail to participate in an online survey (see section 5.3.7.6 and 5.3.7.7 for more information on the administration of the questionnaire and sample size requirements). In Chapter Six more details are given on the sample and response rate.

1.6.2.7 Measuring instrument design

The measuring instrument used was an online questionnaire comprising scales that measured the dependent and the independent variables of this study.

The measuring instrument used in this current study (see Appendix A) includes a cover letter and six sections. The cover letter, which comprises an ethical clearance number, provided proof to respondents that ethical clearance had been obtained for the research. In the letter, the purpose of the study was also explained to respondents as well as research benefits that they could gain from participating. The respondents were further assured of their confidentiality and that names of individuals would not appear in the research report. In this regard, respondents were informed that only aggregate data and summary statistics were to be reported. Respondents were given clear instructions on how to respond to the statements.

Finally, respondents were informed that they were free to withdraw from the study at any point in time, that there were no right or wrong answers, and that only the perceptions they held were important. The researcher's contact details were made available and respondents were informed of their right to contact the researcher to request a copy of the findings from the research project should they wish to do so. In section one of the questionnaire, informed consent was requested from the respondents to participate in the study. Section two of the questionnaire included a qualifying question to establish whether a respondent met the criteria to participate in the study. In this respect, respondents had to indicate whether they participated (or have participated) in a knowledge-intensive team at their organisation. Section three of the questionnaire determined which type of team or teams the respondents participated (or have participated) in at their organisation.

Sections four and five consisted of statements relating to the dependent variable (*Intra-team knowledge-sharing behaviour*) and independent variables (team-related factors influencing *Intra-team knowledge-sharing behaviour*). Respondents were requested to indicate the extent to which they agreed with each statement using a Likert-type scale. The items for each Likert-type scale were designed based on previous studies and the literature on knowledge-sharing. A seven-point Likert-type interval scale was used in section four and interpreted as 1 = 'strongly disagree' and 7 = 'strongly agree', while in section five a five-point Likert-type scale was used, anchored by descriptors ranging from 1 = 'very similar' to 5 = 'very different'. Likert-type scales, which produce interval data, are more reliable and provide more data than other scales (Cooper, Schindler & Sharma, 2018:335). These scales were therefore deemed ideal for the present study, which employed several statistical techniques such as t-tests and correlation tests.

Section six contained questions pertaining to the demographic information of the respondents. This section solicited information on the respondents' age, gender, language, education, ethnic background and tenure, which could have an impact on respondents' knowledge-sharing behaviour. In Chapter Five (section 5.3.7.4), more information is given pertaining to the scale development and operationalisation of the dependent and the independent variables.

1.6.2.8 Data analysis

In this study, a confirmatory factor analysis (CFA) was performed on each factor to confirm the factor structures by using various goodness-of-fit indices. Subsequent to the CFAs, the validity and reliability of the measuring instrument was assessed. The reliability was evaluated against Cronbach's alpha coefficients, while the assessment of validity involved calculations of the average variance extracted (AVE) estimates and squared correlations between constructs.

Descriptive statistics and correlation results were presented on the constructs in this study, while structural equation modelling (SEM) analysis was the main statistical technique performed to test the significance of the relationships between the dependent and independent variables. The relationships between selected demographic variables and *Intra-team knowledge-sharing behaviour* was assessed by means of general linear modelling (GLM), a subset of SEM. A detailed account of the data analysis is given in Chapter Six.

1.7 SCOPE AND DEMARCATION OF THE STUDY

In the present study, the aim is to identify and empirically examine selected team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams in knowledge-intensive businesses that are based in South Africa. The focus of the study is on intra-team knowledge-sharing (within-team knowledge-sharing behaviour of individual members participating in knowledge-intensive teams) as opposed to inter-team knowledge-sharing (sharing of knowledge between teams).

Although knowledge-sharing takes place at various levels within an organisation (e.g. individual, team, department or organisation level), knowledge-sharing starts with the individual (Rehman *et al*., 2019:85; Edwards, 2016:218; Foote, 2016:57; Xiong & Deng, 2008:1089). Therefore, this study adopted an individual-level analysis to understand an individual's knowledge-sharing behaviour in a team context. It is subsequently not the intention of the study to aggregate individual-level data into team-level data. In this instance, it is important to understand an individual member's

knowledge-sharing behaviour in knowledge-intensive teams.

A distinction can also be made between explicit and tacit knowledge. This study focuses on both explicit and tacit knowledge given their complementary nature. Because the study focuses on knowledge-intensive teams, which undertake challenging knowledge-intensive work by drawing members together with different skill sets, experience and functional expertise, the researcher considered this approach to be ideal for the purpose of the study.

Finally, a distinction or comparison will not be drawn between individuals participating in different types of knowledge-intensive teams (e.g. product development teams, strategic planning teams and research and development teams) with respect to their knowledge-sharing behaviour. The focus will rather be on knowledge-intensive teams in general, which will allow the researcher to obtain a holistic understanding of individuals' knowledge-sharing behaviour within such teams.

1.8 SIGNIFICANCE OF THE STUDY

Although knowledge-sharing among individuals may hold various advantages and positive outcomes at individual, team and organisational level (Lee, 2018:1), it is well documented that individuals may be reluctant to share knowledge (Kaur, 2016:3). Knowledge-sharing among individual team members in knowledge-intensive businesses is especially important as such teams undertake challenging knowledge-intensive work by drawing members together with different skill sets, experience and functional expertise (Hong *et al*., 2019:746; Cummings & Haas, 2012:316; Gardner & Kwan, 2012:25). In fact, teams are extensively utilised in organisations and form an integral part of the organisational structure to complete complex tasks (Kipkosgei *et al*., 2020:2; Jamshed, Nazri, Bakar & Majeed, 2018:72; Men, Fong, Luo, Zhong & Huo, 2019:807), further emphasising the importance of intra-team knowledge-sharing that may benefit the organisation.

Regrettably, there is a lack of current, systematic and integrated research that pay particular attention to team-related factors influencing knowledge-sharing behaviour within a team. For this reason, the purpose of this study was to identify and empirically

examine selected team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams that could ultimately enhance an organisation's competitive advantage.

Besides the practical contributions that this study will make toward knowledge-intensive business (see Chapter Seven section 7.3.3), it includes several theoretical contributions (see Chapter Seven section 7.4) to the body of knowledge-sharing literature by testing a comprehensive hypothesised model of team-related factors that could influence *Intra-team knowledge-sharing behaviour*.

1.9 KEY CONCEPTS

Selected concepts that will be frequently used in this study are explained in the following sections.

1.9.1 INTRA-TEAM KNOWLEDGE-SHARING BEHAVIOUR

In this study, *Intra-team knowledge-sharing behaviour* refers to the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams. The focus is subsequently on the knowledge-sharing behaviour of individual members in a team context.

1.9.2 KNOWLEDGE-INTENSIVE TEAMS

Knowledge-intensive teams, in this study, refer to those teams that comprise highly qualified members who undertake challenging knowledge-intensive work by drawing together different skill sets, experience and functional expertise.

1.9.3 KNOWLEDGE-INTENSIVE BUSINESSES

Knowledge-intensive businesses are those businesses where most of the employees are knowledgeable and professional and able to solve complex problems. As such, most of the work in such businesses is of an intellectual nature.

1.9.4 TEAM-RELATED FACTORS

For the purpose of this study, team-related factors relate to those factors that are directly linked to a team context and could influence the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams.

1.10 STRUCTURE OF THE STUDY

This study comprises the following structure:

Chapter One commenced with an introduction and background to the research, followed by the problem statement, purpose of the study and research objectives. Thereafter, the proposed hypothesised model and associated research hypotheses and questions were presented. A brief discussion was given on the literature review (secondary research), as well as the research design and methodology adopted Moreover, the scope and demarcation of the study was discussed and its significance highlighted. The chapter concluded with a discussion of frequently used concepts in this study and a summary of the structure thereof.

Chapter Two will focus on the nature and importance of intra-team knowledge-sharing. In particular, the concept of knowledge-sharing is defined and the types of knowledge shared within organisations are discussed, as well as the interaction of various types of knowledge to create new knowledge. Furthermore, the importance of intra-team knowledge-sharing are discussed. The chapter concludes by examining various theories that provide insight into individuals' knowledge-sharing behaviour in a team context.

Chapter Three will deal with the factors that influence *Intra-team knowledge-sharing behaviour*. Specifically, various team-related factors influencing the knowledge-sharing behaviour of individual members in a team are identified and discussed. This chapter will provide a comprehensive understanding of possible team-related factors influencing knowledge-sharing in a team context. The need to further explore the identified factors from an empirical perspective is also justified.

Chapter Four will present the conceptual and hypothesised models of selected team-related factors influencing *Intra-team knowledge-sharing*. Hypotheses will be developed and their inclusion in the hypothesised model motivated. These hypothesised relationships will be the basis for the empirical testing in this study.

Chapter Five will provide a detailed discussion on the research design and methodology adopted in this study to empirically test the relationships between the dependent and the independent variables. In addition to providing more detail on the literature review undertaken in this study, the main focus of this chapter will be on the research philosophy, approach to theory development, methodological choice, research strategy, time horizon and techniques and procedures associated with the data collection and analysis.

Chapter Six will report the findings of the reliability and validity tests of the measuring instrument used in this current study. The empirical results, with respect to the relationships between the independent and dependent variables, will also be presented and compared to findings of previous empirical studies. The results pertaining to the influence of selected demographic variables on *Intra-team knowledge-sharing behaviour* are also presented.

Chapter Seven offers an overview of the current research, which includes a discussion of the research process and achievement of the research objectives. Moreover, a summary of the empirical results and managerial recommendations relating to the significant relationships found in this study are presented. In this instance, a summary of the respondents' demographic profile is presented, followed by the findings and recommendations from the validity and reliability analyses. The recommendations resulting from the SEM analysis are also discussed. To conclude this chapter, the contributions and limitations of the study are considered, while recommendations for future research are discussed.

CHAPTER TWO

THE NATURE AND SIGNIFICANCE OF INTRA-TEAM KNOWLEGDE-SHARING BEHAVIOUR

2.1 INTRODUCTION

This chapter addresses the first methodological objective, namely to conduct an extensive theoretical investigation into the nature and significance of *Intra-team knowledge-sharing behaviour*. More specifically, the concept of knowledge-sharing is defined and the types of knowledge that can be shared among individuals are discussed, as well as the interaction of various types of knowledge to create new knowledge. The importance of intra-team knowledge-sharing also comes under the spotlight. The chapter concludes by examining various theories that may shed light on individuals' knowledge-sharing behaviour in a team context. In particular, these theories give insight into why individuals are sometimes reluctant to share knowledge, and therefore informs the main research question and problem statement of this study.

2.2 DEFINING KNOWLEDGE-SHARING

The terms 'knowledge' and 'information' are often used interchangeably, and no real consensus could be found on the definition of knowledge (Al Kurdi, 2017:17). A well-known perspective on knowledge is that it is placed at the top of a hierarchy that includes data and information (Alavi & Leidner, 2001:109). In this regard, Alavi and Leidner (2001:109) assert that data can be viewed as "raw numbers and facts", information as "processed data", and knowledge as "authenticated information". From a strategic perspective, knowledge is a key resource that can ultimately give an organisation a competitive advantage (Zheng, 2017:51). In fact, in today's knowledge economy, intellectual capital plays an important role in establishing a competitive advantage, even a more significant role than physical inputs (Ford, Ziegler, Fang & Holmes, 2018:2). As such, the management of knowledge is of utmost importance. In particular, knowledge-sharing is often considered the most important aspect of knowledge management (Lee, 2018:1; Manamela, 2018:20; Asrar-Ul-Haq & Anwar,

2016:2). Knowledge that is not shared loses its value (Torabi & El-Den, 2017:303; Asrar-Ul-Haq & Anwar, 2016:2).

It should be also noted that knowledge-sharing and knowledge transfer are often used synonymously in knowledge-sharing literature (Gao, Chai & Liu, 2018:47; Paulin & Suneson, 2012:82). However, knowledge-sharing and transfer can be differentiated based on the level of analysis. Paulin and Suneson (2012:87), in their well-known review of knowledge management literature, aimed at identifying suitable demarcations between knowledge-sharing and transfer, note that the term 'knowledge-sharing' is typically used by researchers who engage in an individual level of analysis, whereas 'knowledge transfer' is generally associated with groups, departments, organisations and businesses. In line with this notion, the present study employs an individual level of analysis and focuses on the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams. Subsequently, the term 'knowledge-sharing', instead of 'knowledge transfer', will be adopted.

Knowledge-sharing should not be confused with reporting. While reporting entails systematic and routine sharing of information, knowledge-sharing represents a voluntary exchange of knowledge by individuals who are not obliged to do so (Areekkuzhiyil, 2016:23). Also, knowledge-sharing implies a connection between at least two stakeholders, that is, one party who shares the knowledge and another who obtains the knowledge (Ibrahim, Talib & Jedin, 2018:39; Areekkuzhiyil, 2016:23; Usoro, Sharratt, Tsui & Shekhar, 2007:201). Mohajan (2016:12), similarly, explains knowledge-sharing as a process by which an individual's knowledge is transformed into a suitable format that can be comprehended and utilised by other individuals through networks between providers and seekers of knowledge. Likewise, Aksoy *et al*. (2016:336) describe knowledge-sharing as an activity by which an individual distributes his or her knowledge to other individuals. These authors also identify knowledge-sharing as a voluntary act, which is in line with older well-established research on knowledge-sharing. For example, Bock, Zmud, Kim and Lee (2005:88) clearly emphasise that knowledge-sharing involves the employee's "willingness" to share knowledge with others.

Razmerita, Kirchner and Nielsen (2016:1226) specifically refer to knowledge-sharing as a two-dimensional process of both knowledge donation and knowledge collection. These authors explain that knowledge donation "involves the employees' motivation to actively communicate with colleagues", whereas knowledge collection entails the motivation to "consult with colleagues to learn from them". This definition concurs with older well-documented research on knowledge-sharing (Mogotsi, Boon & Fletcher, 2011:4; Lin, 2007:136-137; De Vries, Van Den Hooff & De Ridder, 2006:131; Van Den Hooff & De Ridder, 2004:118) that emphasise the two dimensions of knowledge-sharing (i.e., knowledge donating and collection).

Manamela (2018:8) notes that knowledge-sharing occurs at various levels in an organisation and provides a comprehensive definition of knowledge-sharing as an "activity through which knowledge is exchanged between and among individuals or within and amongst teams, organisational units or organisations". In line with this definition, Attar, Kang and Sohaib (2019:5578) explain that knowledge-sharing can occur at individual, group or organisational level. Given the preceding discussions it is evident that there is no universal definition for knowledge-sharing. However, in a team context and therefore the present study, knowledge-sharing can generally be described as the sharing of both explicit and tacit knowledge by individual members of a team. In this respect, the present study adopts an individual level of analysis, and subsequently focuses on the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams (i.e. intra-team knowledge-sharing behaviour). The measurement and therefore the operationalisation of *Intra-team knowledge-sharing behaviour* as the dependent variable in this study is discussed in Chapter Five (section 5.3.7.4).

As alluded to in the aforementioned paragraph, the present study also focuses on particular types of knowledge (explicit and tacit knowledge) of individual members of knowledge-intensive teams as discussed in the following section.

2.3 TYPES OF KNOWLEDGE

Generally, two types of knowledge can be shared, namely explicit knowledge and tacit knowledge (Ford *et al*., 2018:2; Torabi & El-Den, 2017:303). Explicit knowledge refers

to knowledge that can easily be shared as it is tangible and relatively easy to document. Explicit knowledge is mainly available in, for example, documents, reports, databases, manuals and directories (Manamela, 2018:14-15; Jamshed *et al*., 2018:73). This type of knowledge can also be created from tacit knowledge through a process called externalisation (see section 2.4).

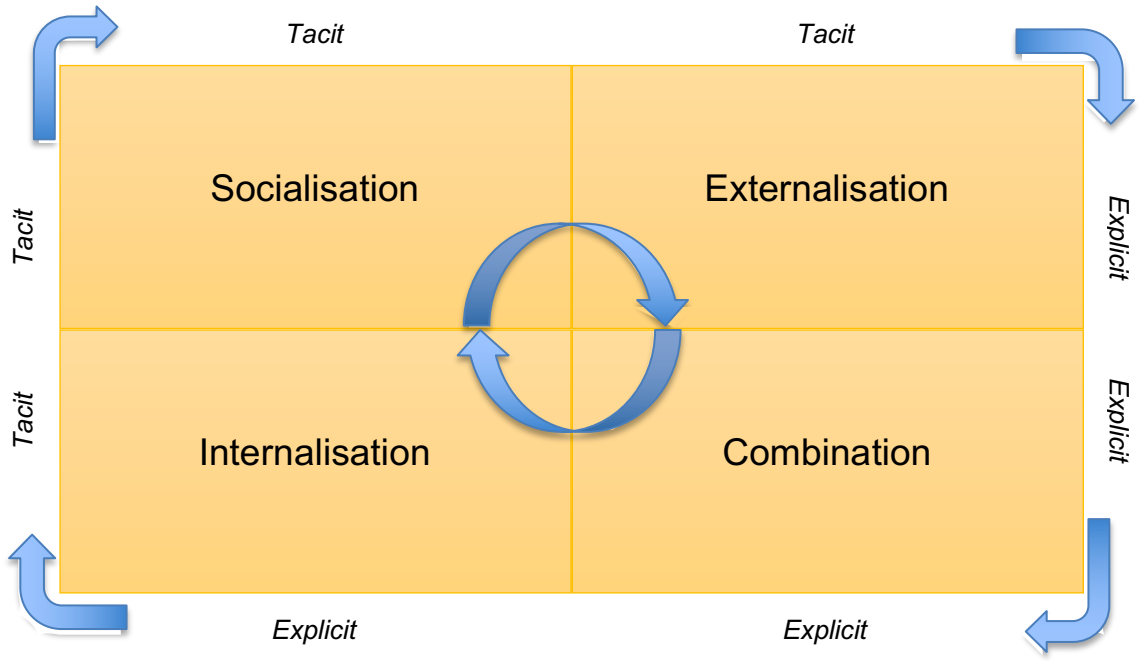
On the other hand, tacit knowledge is difficult to share as it involves personal knowledge that is captured in the 'minds' of individuals. This type of knowledge is therefore not easily documented and intangible in nature (Manamela, 2018:14-15; Jamshed *et al*., 2018:73). Kucharska (2017:522) points out that since tacit knowledge is circumstantial, it cannot be codified, as codified knowledge becomes invalid once the specific context changes. Tacit knowledge is associated with an individual's expertise, skills, know-how knowledge, working knowledge, experience, values, beliefs, viewpoints and intuition (Kucharska, 2017:526; Mohajan, 2016:8-11; He, Cho, Qi, Xu & Lu, 2013:9). As the emphasis of the present study falls on *Intra-team knowledge-sharing behaviour* (see Chapter One section 1.9.1), the focus is on sharing both explicit and tacit knowledge. Both explicit and tacit knowledge-sharing is deemed appropriate as knowledge-intensive teams draw together members who assume projects that are of a non-routine nature and too complex to be undertaken by a single person. These teams undertake challenging knowledge-intensive work by drawing members together with different skill sets, experience and functional expertise (Hong *et al*., 2019:746; Cummings & Haas, 2012:316; Gardner & Kwan, 2012:25).

Various forms of interaction exist between explicit and tacit knowledge, such as explicit knowledge that can be converted into tacit knowledge. It lends further support to investigate the team-related factors that influence both explicit and tacit knowledge-sharing within knowledge-intensive teams. In this instance, Gyamfi (2017:118-119) reasons that existing knowledge can be converted into new knowledge through various forms of interaction between tacit and explicit knowledge. These patterns of interactions are explained in the next section.

2.4 MODES OF KNOWLEDGE CREATION

The different modes (socialisation, externalisation, internalisation and combination) of knowledge creation are illustrated in Figure 2.1, showing the interaction between tacit and explicit knowledge.

Figure 2.1: Modes of knowledge creation



Source: Adapted from Chikono (2018:25)

The first mode of knowledge creation, namely socialisation, allows for the creation of new tacit knowledge from existing tacit knowledge (Abualoush, Masadeh, Bataineh & Alrowwad, 2018:283). Al Kurdi (2017:19) notes that new tacit knowledge can be created from existing tacit knowledge through sharing of experiences during social or informal activities. Nonaka (1994:19) asserts that language is not crucial for the acquisition of tacit knowledge. In fact, individuals can obtain tacit knowledge through observation, imitation and practice. A trainee who works closely with a mentor in the workplace to learn a specific skill, as well as on-the-job training in a business context, are fitting examples of the importance of observation, imitation and practice in acquiring tacit knowledge. Collaboration among individuals is important to convert existing tacit knowledge into new tacit knowledge and Nonaka (1994:19) emphasises the vital role of experience in this regard. Shared experience plays an important role

to allow individuals to share their ways of thinking and subsequently create tacit knowledge (Nonaka, 1994:19).

The second mode of knowledge creation, namely combination, refers to the creation of new explicit knowledge from existing explicit knowledge through the integration and organisation of knowledge (Mazorodze, 2017:22). Social processes play an essential role in this respect. Social processes refer to the integration of various individuals' explicit knowledge. For example, meetings and telephone dialogues create ideal platforms to share and combine knowledge. By reconstructing existing information (e.g. systematically arranging and considering existing explicit knowledge in a different context), new explicit knowledge can be created (Kaoma, 2016:21; Nonaka, 1994:19).

The third and fourth methods of knowledge conversion, namely internalisation and externalisation, concern both tacit and explicit knowledge. These modes of knowledge conversion centre on the notion that tacit and explicit knowledge are complementary to each other (Nonaka, 1994:19). The conversion of tacit knowledge into explicit knowledge is termed externalisation, whereas internalisation refers to the conversion of explicit knowledge into new tacit knowledge (Ayub, Kogeda & Lall, 2018:3). Nonaka (1994:19) further notes that metaphors (understanding one thing with reference to another) are to a great extent associated with externalisation (Ayub *et al*., 2018:3; Nonaka, 1994:19).

Metaphors do not represent a thinking process, but rather enable an individual to understand and experience a certain behaviour through deductions from the framework of a different behaviour. When concepts are represented through metaphors, it is not only possible to understand their similarities, but also to reflect on the extent that they are different (i.e. recognising contradictions). The latter process, in particular, is key in creating new meaning and therefore converting tacit knowledge into new explicit knowledge (externalisation). Also, team members can use metaphors to communicate their own views when they interact with other team members. This enables them to disclose tacit knowledge that is typically difficult to articulate (Nonaka, 1994:20-21). Concerning internalisation, this mode of knowledge conversion relates to "learning by doing" (Ayub *et al*., 2018:3; Nonaka, 1994:20). In this respect, shared

explicit knowledge is steadily converted to tacit knowledge through collaboration and a process of trial and error (experimentation) (Nonaka, 1994:20).

In light of the discussion on the types of knowledge that can be shared, as well as the modes of knowledge creation, it is important to take a closer look at why it is important to share knowledge. Therefore, the importance of knowledge-sharing is discussed in the following section, with particular reference to intra-team knowledge-sharing.

2.5 SIGNIFICANCE OF KNOWLEDGE-SHARING

Knowledge-sharing has been linked to several positive outcomes at individual, team and organisational level (Lee, 2018:1). From an organisational level perspective, knowledge is central to an organisation's competitive advantage, success and survival (Lee, 2018:1). Notably, Lee (2018:1) asserts that knowledge-sharing, which is considered the main activity of knowledge management, benefits an organisation in terms of enhanced efficiency and cost reduction, as well as improved individual performance and teamwork. Knowledge-sharing can further aid an organisation with improved innovation capabilities, collaboration and decision-making of employees. Innovation capability is of particular importance for the survival of knowledge-intensive organisations as they face a cut-throat competitive organisational environment (Lee, 2018:1-2). Concerning the types of knowledge, Attar *et al*. (2019:5580) highlight that tacit knowledge-sharing specifically yields an organisation various benefits, such as enhanced business processes and operational efficiencies, as employees reflect together to share contextual knowledge and experience.

In the context of the present study, and therefore in terms of knowledge-intensive teams, the importance of intra-team knowledge-sharing is of special interest. As previously defined, knowledge-intensive teams include highly qualified individuals who utilise their personal knowledge, ideas and creativity to find solutions to complex tasks. Gaining new knowledge and demonstrating rigorous communication within knowledge-intensive teams are requirements for coordination and problem-solving (Lowik *et al*., 2016:1089), especially given the complex and non-routine nature of activities in these teams (Cummings & Haas, 2012:316). Bron, Endedijk, Van Veelen and Veldkamp (2018:453) also stress the importance of knowledge-sharing within

teams on team performance. This highlights the need for knowledge-intensive organisations to encourage knowledge-sharing among individual members of knowledge-intensive teams.

During knowledge-sharing, individuals benefit from each other's ideas, experience, expertise, judgements and opinions (tacit knowledge) relating to team tasks, which subsequently enable them to develop new skills (Jamshed *et al*., 2018:73). Team creativity, which is key to an organisation's competitive advantage, is positively influenced when individual team members share their skills and expertise (Men *et al*., 2019:807-809). Knowledge-sharing also allows individual team members to gain a better understanding of team responsibilities and objectives, and assists them to achieve the team's goals (Jamshed *et al*., 2018:82). In similar vein, Manamela (2018:2) maintains that knowledge-sharing in a team context is important as less experienced individuals gain the required knowledge from other more experienced individuals to perform tasks better.

In view of the aforementioned, it is evident that the benefits of knowledge-sharing for individuals, such as improved decision-making and better understanding of team responsibilities and objectives, subsequently allows for better team performance. As teams have become an integral part of organisations (Bron *et al*., 2018:450; Jamshed *et al*., 2018:72; Men *et al*., 2019:807), improved team performance can ultimately extend to organisational level. Hence, knowledge-sharing behaviour must be encouraged within knowledge-intensive teams to not only increase the efficiency of less experienced individuals within the team, but to also increase team and ultimately the organisation's performance.

However, knowledge-sharing cannot be forced, and team members may have several reasons for not wishing to share their knowledge with others (He *et al*., 2014:949). The next section sheds more light on individuals' knowledge-sharing behaviour in general and in teams in particular.

2.6 THEORIES ON KNOWLEDGE-SHARING

The literature review in the present study revealed that the social exchange theory, theory of reasoned action, theory of planned behaviour, social cognitive theory and social capital theory are the most frequently used by researchers to understand the knowledge-sharing behaviour of individuals. This conclusion is in line with that of Mahmood, Dahlan, Hussin and Ahmad (2016:3-5) who examined more than 100 studies on knowledge-sharing behaviour, which were retrieved from popular databases such as IEEE Xplore, Science Direct, ACM Digital Library, Web of Science and Emerald. These authors found that the theory of planned behaviour, theory of reasoned action, social exchange theory and social cognitive theory were predominantly used in previous studies pertaining to knowledge-sharing behaviour. Similarly, Li (2017:9) asserts that the mainstream theories commonly used in knowledge-sharing studies include: theory of reasoned action, social cognitive theory, social capital theory and social exchange theory. Several other researchers (Pradeepika & Manjitsingh, 2016:49-50; Razak, Pangil, Zin, Yunus & Asnawi, 2016:545; Richards, 2014:20-21) made use of these well-established theories to better understand knowledge-sharing behaviour. Each of these theories will be discussed in the following sections and contextualised to knowledge-sharing behaviour.

2.6.1 SOCIAL EXCHANGE THEORY

The social exchange theory was introduced by Homans (1961) and Blau (1964) and explains that individuals consider the cost and benefits of their interactions with other individuals (Babalola & Omtayo, 2017:43). In contrast to the economic exchange theory that focuses on extrinsic motivation, the social exchange theory highlights the importance of intrinsic benefits to engage in a particular behaviour (Li, 2017:11; Jing, 2015:12).

Based on the social exchange theory, individuals aim to take full advantage of their benefits and minimise their cost when interacting with other individuals (Babalola & Omtayo, 2017:43). As mentioned in section 2.2 of this chapter, knowledge-sharing is a voluntary act and individuals cannot be forced to share their knowledge. This implies that individuals willingly share knowledge driven by the belief that there may be some

benefit emanating from such behaviour (Babalola & Omtayo, 2017:43). The social exchange theory is thus central in explaining individuals' motivation to share knowledge, which may include job security, status and future reciprocity (intrinsic benefits). Perceived benefits, social interaction and trust are subsequently key elements that emanate from the social exchange theory to positively influence individuals' willingness to share knowledge (Babalola & Omtayo, 2017:43).

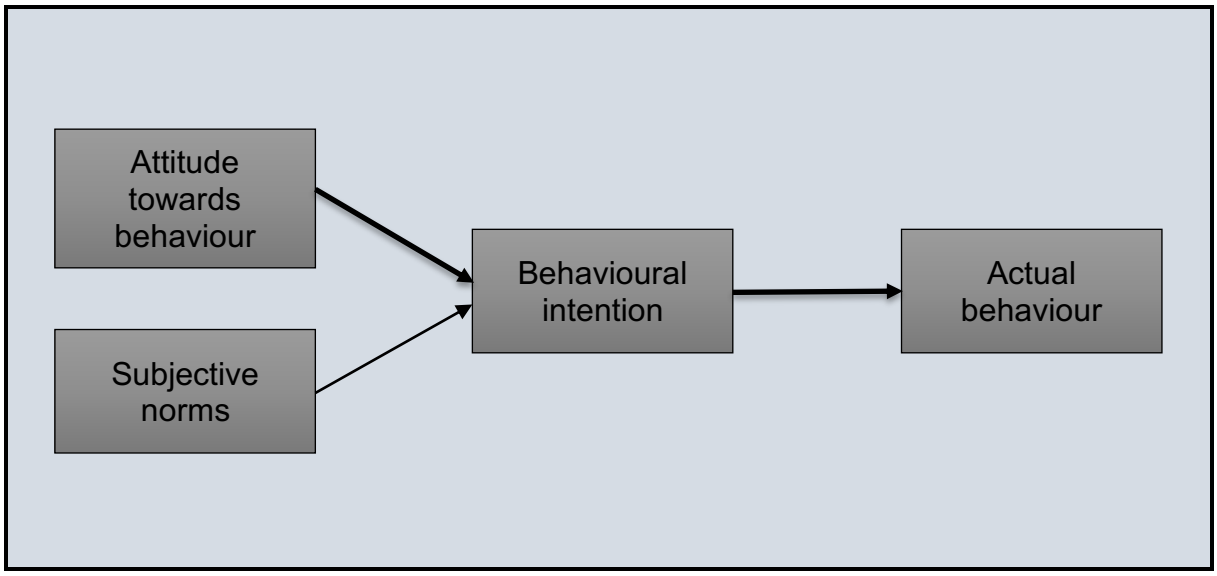
Besides the social exchange theory, the theory of reasoned action and the theory of planned behaviour are arguably the most popular theories that are used in knowledge-sharing research to predict knowledge-sharing behaviour (Mahmood *et al*., 2016:4-5).

2.6.2 THEORY OF REASONED ACTION

The theory of reasoned action of Fishbein and Ajzen's (1975) suggests that there is a relationship between an individual's actual behaviour, behavioural intention, social norms and attitude towards a particular behaviour (see Figure 2.2). In this context, 'social norms' denote the extent to which an individual believes that others will accept his or her engagement in a particular behaviour, whereas 'attitude' refers to the extent to which an individual has a positive or negative appraisal of a particular behaviour (Mahmood *et al*., 2016:5).

In a knowledge-sharing context, this means that a favourable attitude towards knowledge-sharing and social norms can positively influence an individual's intention to share knowledge. A positive intention to share knowledge ultimately leads to actual knowledge-sharing (Hassan, Aksel, Nawaz & Shaukat, 2017:36-37). However, there are limitations associated with this theory, which are further explored in Chapter Three (section 3.3).

Figure 2.2: Theory of reasoned action



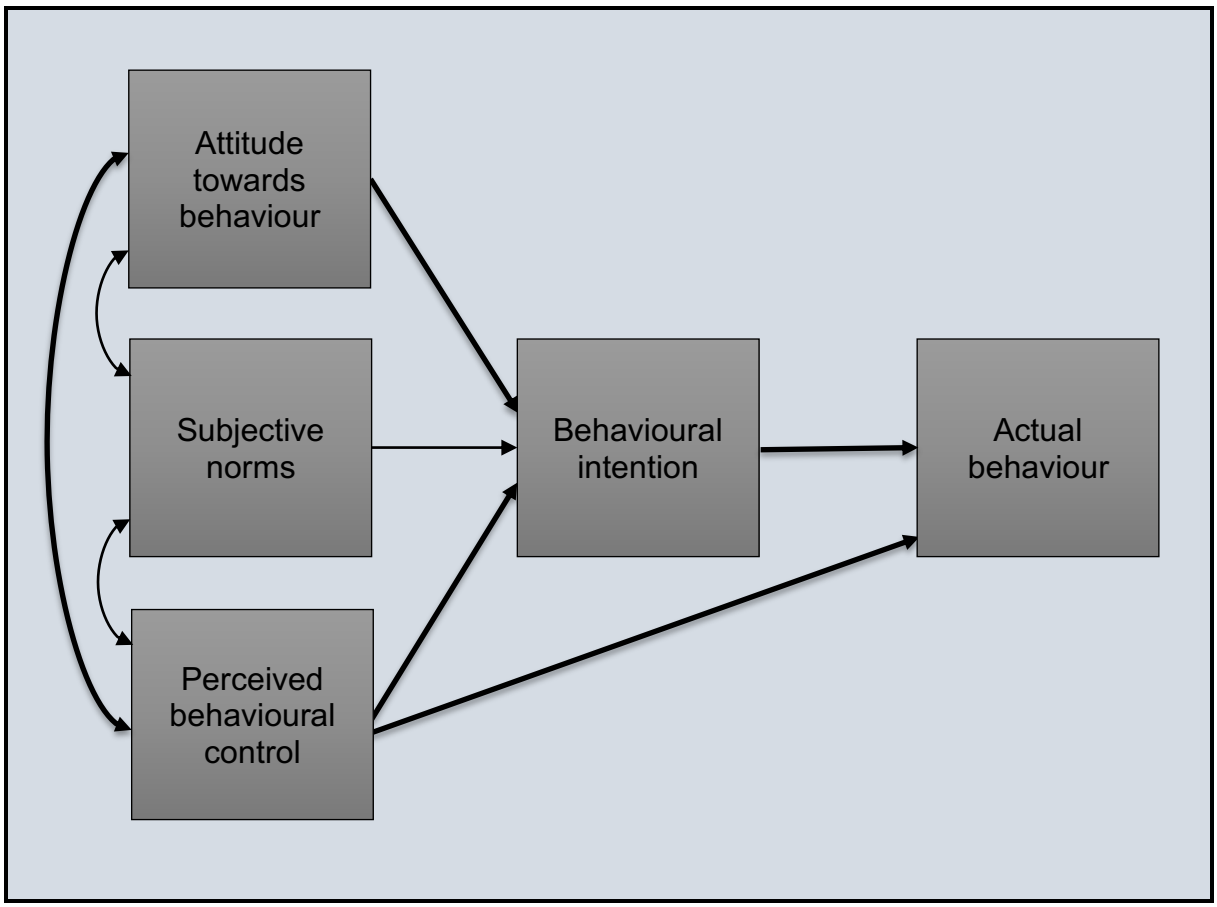
Source: Adapted from Mahmood *et al*. (2016:5)

2.6.3 THEORY OF PLANNED BEHAVIOUR

The theory of planned behaviour (Ajzen, 1985) is merely an extension of the theory of reasoned action. Whereas the four constructs of the theory of reasoned action include attitude towards behaviour, subjective norms, behavioural intention and actual behaviour, the theory of planned behaviour (see Figure 2.3) includes one more construct, namely perceived behavioural control (Mahmood *et al*., 2016:4). Perceived behavioural control refers to an individual's perception of how easy or difficult it is to execute a specific behaviour, and this perception is based on previous experience and expected complications (Abbas, 2017:85). The concept can be linked to an individual's judgement of his or her ability to perform a certain behaviour (Abbas, 2017:85; Razak *et al*., 2016:549). Also, behavioural intention is an additive function of attitude towards behaviour, subjective norms and perceived behavioural control. This relationship suggests that the collective effect of these three constructs on knowledge-sharing may exceed the sum of each individually measured effect (Cheng, 2017:30). In this instance, the theory of planned behaviour implies that an individual's intention to perform a certain behaviour manifests in the attitude towards that behaviour, subjective norms and perceived behavioural control. In turn, these intentions and perceived behavioural control are responsible for the substantial variance in actual behaviour (Ranasinghe & Dharmadasa, 2013:34; Ajzen, 1991:179;184).

In the context of knowledge-sharing, this theory implies that actual knowledge-sharing depends on an individual's intention to share knowledge and his or her perceived behavioural control. On the other hand, the intention to share knowledge is influenced by an individual's attitude towards knowledge-sharing, subjective norms and the perception of how easy or difficult it is to share their knowledge (perceived behavioural control).

Figure 2.3: Theory of planned behaviour



Source: Adapted from Mahmood *et al*. (2016:5)

2.6.4 SOCIAL COGNITIVE THEORY

According to Bandura's (1986) social cognitive theory, the core elements that govern an individual's behaviour are self-efficacy and expectations of outcomes resulting from particular actions. Based on the social cognitive theory, self-efficacy refers to an individual's judgements about his or her own ability to successfully perform certain actions in a specific context. Outcome expectations denote an individual's outlook on

acquiring, for example, admiration and acknowledgement from others, or building relationships and friendships with other individuals (Ford *et al*., 2018:4-5; Li, 2017:10).

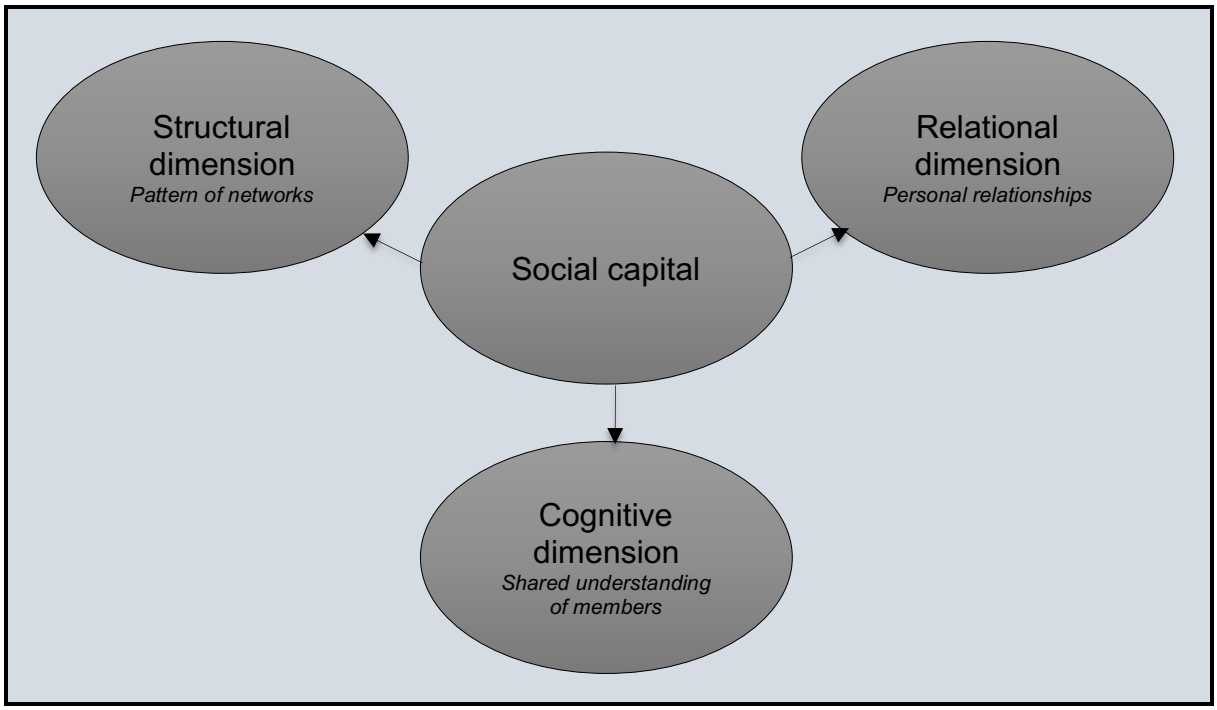
When relating this theory to knowledge-sharing, the social cognitive theory implies that individuals who believe in their ability to share knowledge may be more likely to share their knowledge with others (Ul-Abedeen & Tazlo, 2017:4-5). Conversely, poor outcome expectations (e.g. a lack of incentives, promotions, and bonuses), may lead to a decrease in knowledge-sharing by individuals (Ford *et al*., 2018:4).

2.6.5 SOCIAL CAPITAL THEORY

According to Nahapiet and Ghoshal (1998:243), social capital contains structural, relational and cognitive dimensions that are highly interrelated. The structural dimension relates to the general pattern of networks among individuals (i.e., who one contacts and how one establishes contact). On the other hand, the relational dimension of social capital refers to the personal relationships that individuals have established with others during past collaborations. This dimension centres around the importance of specific relationships among individuals, such as respect and friendship, which essentially bears an impact on their behaviour. Finally, the third dimension of social capital, classified as the cognitive dimension, refers to the shared goals and values of employees (Ford *et al*., 2018:4; Nahapiet & Ghoshal, 1998:243-244).

In line with the social capital theory, everyone within a social network has an exclusive group of resources that contributes with knowledge-sharing. Moreover, the relationships among individuals (social networks) have an impact on their knowledge-sharing behaviour. Through daily social collaborations, individuals can cultivate strong relationships with their co-workers, which in turn are likely to enhance knowledge-sharing among them (Ford *et al*., 2018:4).

Figure 2.4: Social capital theory



Source: Adapted from Nahapiet and Ghoshal (1998:251)

Besides the above-mentioned theories, the similarity attraction theory, transformational leadership theory, social categorisation theory, theory of personal competitive orientation and theory of team adaptation will also be discussed in the following sections. Although these theories are not as popular in knowledge-sharing literature as theories discussed in sections 2.6.1-2.6.5, they also provide valuable insight into the team-related factors identified in the present study that could influence the *Intra-team knowledge-sharing behaviour* of individuals.

2.6.6 SIMILARITY ATTRACTION THEORY

The similarity attraction theory (Byrne, 1971) suggests that there is a relationship between similarity with an individual and attraction to that individual. For example, an individual has an increased attraction to another person with whom he or she shares similar attributes (e.g. race and gender) (Bell & Brown, 2018:357; Robert, Dennis & Ahuja, 2018:3; Van Esch, 2016:26-27). Moreover, the similarity attraction theory argues that individuals will rather communicate with those who are like them because it validates and strengthens their personal attitudes and behaviour (Robert *et al*., 2018:3; Van Esch, 2016:27; Harrison & Klein, 2007:1204).

In the present study, the similarity attraction theory gives valuable insight into the interaction among team members. In line with this theory, team members are more likely to share knowledge with those who share similar attributes with them. This implies that team diversity is detrimental to team knowledge-sharing, which may ultimately lead to negative outcomes such as poor decision-making (Robert *et al*., 2018:3). Byrne's (1971) theory therefore has important implications for organisations when they consider team composition to ensure knowledge-sharing among team members. On the other hand, several diversity scholars (Bodla, Tang, Jiang & Tian, 2018:711, Trueman, 2017:9-10; Srikanth, Harvey & Peterson, 2016:456) assert that the presence of diversity within teams can be beneficial for a team's performance. Teams can benefit from a variety of perspectives and knowledge that emerge from team members as a result of their individual differences (diversity).

2.6.7 TRANSFORMATIONAL LEADERSHIP THEORY

Although not commonly cited in knowledge-sharing literature, the transformational leadership theory (Burns, 1978) sheds valuable light on why team members share knowledge within a team. Motivation lies at the core of the transformational leadership theory. Transformational leadership utilises charismatic actions and inspires employees to perform better. The strategic role of followers, in terms of their values and attitudes, is thus captured in this theory. By improving followers' values and attitudes, a higher degree of effectiveness in the workplace can be achieved (Ghasabeh & Provitera, 2017:6). Solomon and Steyn (2017:9) assert that in a culturally diverse environment, organisations should favour those leaders who base their leadership on setting a vision and who are then capable of inspiring their followers to commit in the achievement of the vision, i.e. transformational leaders.

Under transformational leadership, followers have the liberty to explore innovative ideas and knowledge. This type of leadership therefore drives a learning environment by means of intellectual stimulation that encourages knowledge-sharing (Ghasabeh & Provitera, 2017:11). Also, the transformational leadership theory argues that transformational leaders strengthen shared goals and values, create shared commitment, emphasise the importance of collective interests in the workplace, and

encourage team members to be “team players” (Liu & Li, 2018:4; Noh, 2013:49). Subsequently, transformational team leaders ensure that team members perceive themselves as cooperative rather than secluded individuals. When team members identify with and feel part of a team, they are likely to share their knowledge and thereby contribute to a common goal (Liu & Li, 2018:4; Noh, 2013:49).

2.6.8 SOCIAL CATEGORISATION THEORY

Both the similarity attraction theory (Byrne, 1971) and the social categorisation theory (Tajfel & Turner, 1979) imply that similarity among team members yields higher levels of collaboration, trust and social unification (Williams, 2016:347; Schuster, 2013:19; Harrison & Klein, 2007:1204; Knippenberg & Schippers, 2007:518). In this instance, Ali, Ali, Rodriquez and Morant (2019:563) posit that so-called ‘in-groups’ and ‘out-groups’ are formed as employees compare themselves with others to identify similarities or disparities, especially in the midst of increased employee diversity. The mere perception of two distinct groups, based on social classification, is enough to cause bias behaviour towards the in-group (Tajfel & Turner, 1979:38).

Ali *et al*. (2019:563) suggest that employees are more likely to share knowledge with in-group members than with out-group members given the fewer cultural differences in the in-group. Similarly, Hussain and Kujala (2018:14) note that diversity in teams may lead to social categorisation and ultimately disturb collaboration within the team. Drawing on the social categorisation theory (Tajfel & Turner, 1979) it can therefore be expected that the formation of new smaller groups within a team, consisting of cultural groupings among similar in-group members and dissimilar out-group members, may be detrimental for intra-team knowledge-sharing.

2.6.9 THEORY OF PERSONAL COMPETITIVE ORIENTATION

The theory of personal competitive orientation (Ryckman, Libby, Van Den Borne, Gold & Lindner, 1997; Ryckman, Hammer, Kaczor & Gold, 1996; Ryckman, Hammer, Kaczor & Gold, 1990) is a fairly new addition to competition theory. The theory of personal competitive orientation proposes two unique types of competition, namely hyper-competition and personal development competition. During hyper-competition

an individual pursues personal outcomes with little concern for the welfare of others. Conversely, personal development competition relates to personal growth where an individual does not compete in an unfavourable manner and therefore considers the welfare of others (Star, 2015:41). Similarly, when applied to a team setting, team hyper-competition is likely to lead to conflict as team members pursue goals at the expense of others. On the other hand, when pursuing team development competition, individuals are focused on both personal development and the mutual growth of the team (Star, 2015:41; He *et al*., 2014:953).

In congruence with the personal competitive orientation theory, it is likely that team hyper-competition will have a negative influence on intra-team knowledge-sharing. During hyper-competition, team members may protect their personal assets and thus prioritise self-interest in their pursuit of personal goals instead of team-related goals. On the other hand, team development competition may be more conducive to intra-team knowledge-sharing as members work towards a collective team goal (He *et al*., 2014:953-955).

2.6.10 THEORY OF TEAM ADAPTATION

Burke, Stagl, Sala, Pierce and Kendall (2006:1204) note that teams are prevalent in both private and public sector organisations, and generally, team performance and effectiveness relates to how well a team adapts to the various eventualities that they are confronted with. In their theory of team adaptation, Burke *et al*. (2006) allude to knowledge-sharing as a vital component to team adaptation. In this respect, Burke *et al*. (2006:1199) suggest that expertise, skills and knowledge of team members are of little value if it is not shared at the right time to achieve a team's mutual goals. In other words, adaptive teams comprise team members who work well together, pursue team outcomes and seek input from other team members as opposed to team members who pursue individual goals. Burke *et al*. (2006:1198) further cite the importance of team-learning in team adaptation, which relates to mutual and open conversations among team members concerning mistakes and unanticipated results to reassess their understanding and behaviour appropriately. Subsequently, these authors believe that the extent to which team members recognise their team environment to be safe

in terms of interpersonal risk-taking will influence team-learning, and as such, the likelihood of members to openly discuss errors and share different views.

The theory of team adaptation provides useful insight into the various phases of the team adaptive cycle (Abrantes, 2017:10-11; Burke *et al*., 2006:1190). It also offers a better understanding of the potential circumstances that are conducive to team members openly sharing their knowledge and different views, which forms part of an important phase in the team's adaptive cycle, namely team-learning (Abrantes, 2017:10-11; Burke *et al*., 2006:1198).

Subsequently, in line with the theory of team adaptation, it is likely that team members will share knowledge in a team environment perceived to be safe for interpersonal risk-taking and in so doing, contribute to team-learning. This notion can in fact be linked to the concept of team psychological safety (Millar, Chen & Waller, 2017:264; Edmondson & Lei, 2014:24). Kahn (1990:708), who is well-known for his work on psychological safety and work engagement, describes psychological safety as a perception of being "able to show and employ one's self without fear of negative consequences to self-image, status, or career". A team environment characterised by a high level of psychological safety is of utmost importance, to encourage members to contest the status quo, be innovative, and to feel safe enough to propose their opinions and ideas (Millar *et al*., 2017:264).

Considering the theories presented in this chapter, it should be noted that there is no claim of presenting an exhaustive list of theories to explain individuals' knowledge-sharing behaviour in general and in teams in particular. The theories discussed in this chapter were selected given their prevalence in knowledge-sharing literature and their connection with the team-related factors that could influence *Intra-team knowledge-sharing behaviour*. The theories that best explain the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams, and those that are therefore linked to the team-related factors influencing an individual member's knowledge-sharing behaviour in a team, are highlighted in Chapter Three. In fact, the vast majority of the theories presented in this chapter apply to the context of the present study as discussed in Chapter Three.

2.7 SUMMARY

This chapter defined knowledge-sharing and presented several views in this regard. It was concluded that no universal definition exists for knowledge-sharing. Also, a distinction was made between explicit and tacit knowledge and the relevance of both explicit and tacit knowledge for the present study was rationalised. This was followed by a discussion on how existing knowledge converts into new knowledge through various forms of interaction between tacit and explicit knowledge. The significance of intra-team knowledge-sharing was also highlighted. The chapter was concluded with a discussion of predominant theories most often used by researchers to obtain insight into knowledge-sharing behaviour, including those theories that provide insight into the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individuals.

In Chapter Three, the selected team-related factors influencing *Intra-team knowledge-sharing behaviour* are further examined. The focus of Chapter Three is thus on the independent variables of the study.

CHAPTER THREE

TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING BEHAVIOUR

3.1 INTRODUCTION

Whereas the previous chapter focused on the nature and importance of sharing knowledge in a team, the main purpose of this chapter is to identify and discuss the team-related factors influencing the *Intra-team knowledge-sharing behaviour* (dependent variable) of individual members participating in knowledge-intensive teams. This chapter, therefore, forms the basis for the selection of the independent variables of this study.

Also, as noted in Chapter Two (section 2.2), knowledge-sharing and knowledge transfer are often used synonymously in knowledge-sharing literature (Gao *et al*., 2018:47; Paulin & Suneson, 2012:82). The interchangeable use of these concepts in knowledge-sharing literature is thus taken into account when the team-related factors influencing individuals' knowledge-sharing behaviour in a team context are identified.

This chapter addresses the second methodological research objective, namely to conduct an extensive theoretical investigation into the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams. It should be noted that prior research (e.g. Akosile & Olatokun, 2020:410; Fullwood, Rowley & McLean 2018:1; Obermayer & Toth, 2017:778; Lotfi, Muktar, Ologbo & Chiemeke, 2016:241) has mainly investigated the influence of organisational factors (such as organisational structure and culture) and individual-related factors (such as self-efficacy and personality) on individuals' knowledge-sharing, but various gaps in knowledge-management literature still exists concerning team-related factors influencing knowledge-sharing (He *et al*., 2014:951; Noh, 2013:4; Xue *et al*., 2011:299-300). Various gaps are highlighted relating to the team-related factors identified in this study that can influence individuals' knowledge-sharing behaviour in a team context, thereby justifying the decision to subject these factors to further empirical testing in this study.

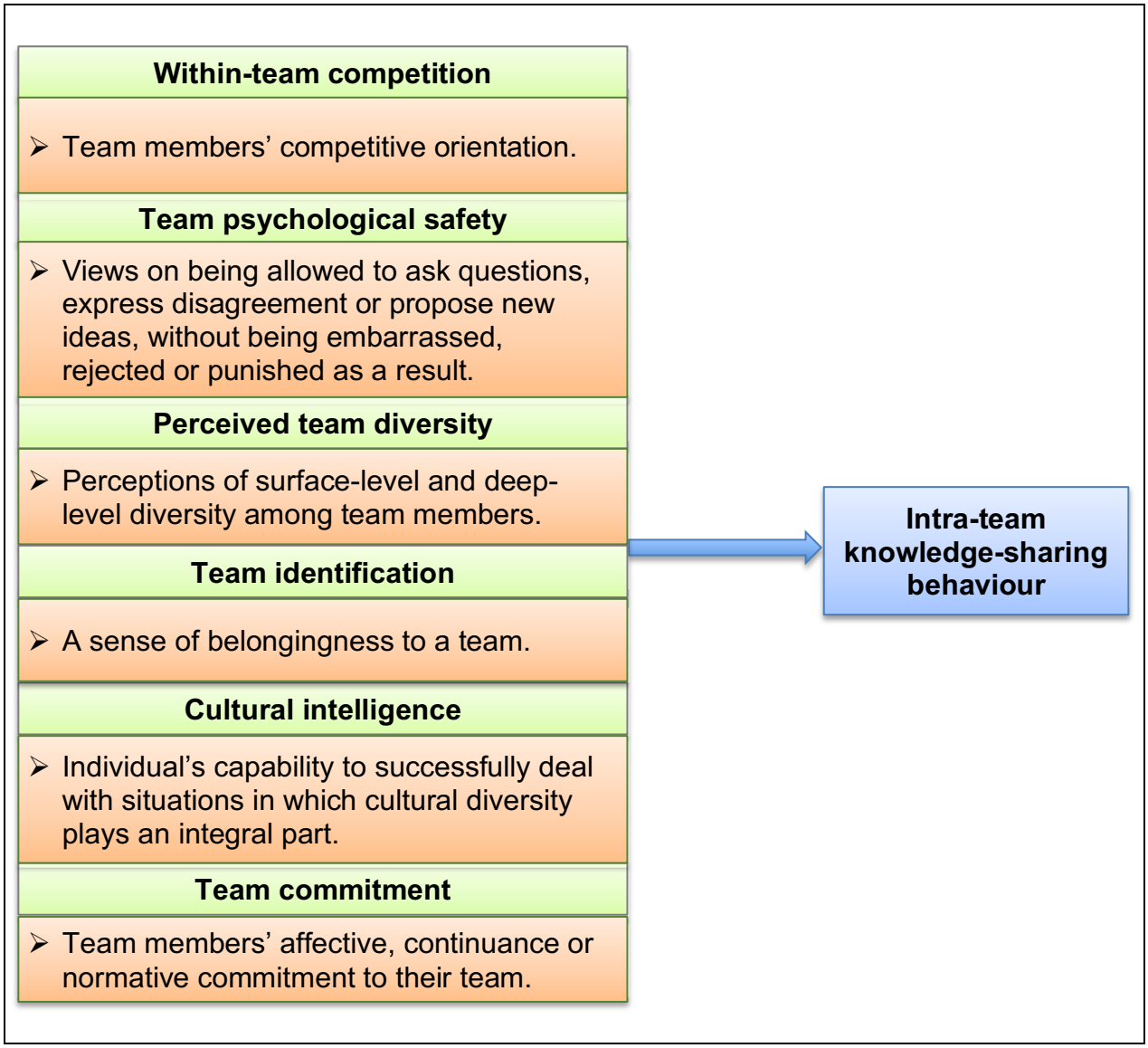
3.2 THEORETICAL FRAMEWORK OF TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING BEHAVIOUR

In Chapter One (section 1.2) it was noted that knowledge-sharing among team members is vital for an organisation to gain a competitive advantage, but at the same time poses a challenging task as team members may have various reasons to hoard their knowledge. This lack of knowledge-sharing is a concern, particularly for knowledge-intensive teams that undertake challenging knowledge-intensive work by drawing members together with different skill sets, experience and functional expertise (Hong *et al*., 2019:746; Cummings & Haas, 2012:316; Gardner & Kwan, 2012:25). It is therefore important to understand and manage the team-related factors that could enhance knowledge-sharing behaviour in a team context and ultimately the performance and competitive advantage of an organisation.

Regrettably, researchers (He *et al*., 2014:951; Noh, 2013:4; Xue *et al*., 2011:299-300) acknowledge various gaps in knowledge-management literature, in particular, research focusing on the team-related factors influencing knowledge-sharing. Also, based on an extensive review of the literature (McManus *et al*., 2016:4-7; Asrar-ul-Haq & Anwar, 2016:4-7), it is evident that relatively limited research exists on team-related factors influencing the knowledge-sharing behaviour of individual members of knowledge-intensive teams. The literature review reveals several team-related factors that require further empirical research with respect to knowledge-sharing. These factors are within-team competition, team psychological safety, perceived team diversity, team identification, cultural intelligence and team commitment.

Figure 3.1 illustrates the team-related factors, which were identified for the purpose of this study, that are likely to influence the knowledge-sharing behaviour of individual members in a team context. Each team-related factor is followed by a brief description.

Figure 3.1: Theoretical framework of team-related factors influencing intra-team knowledge-sharing behaviour



Source: Researcher's own construction

In the following sections, the factors depicted in Figure 3.1 are discussed. Section 3.3 starts by explaining the dependent variable, namely *Intra-team knowledge-sharing behaviour*, followed by a discussion on each of the team-related factors influencing *Intra-team knowledge-sharing behaviour*.

3.3 INTRA-TEAM KNOWLEDGE-SHARING BEHAVIOUR

Intra-team knowledge-sharing behaviour refers to the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams. As explained in

Chapter Two (section 2.2), for the purpose of the present study, knowledge-sharing includes the sharing of both explicit and tacit knowledge by individual members of knowledge-intensive teams. Knowledge-sharing is widely acknowledged as a key component in the knowledge management process (Thakadu, 2018:2226; Asrar-ul-Haq & Anwar, 2016:2; Bock, 2014:22). The sharing of knowledge about tasks that are performed within a team is imperative for team performance (Jamshed *et al*., 2018:73). In a similar vein, Manamela (2018:2) explains that team members gain from others' knowledge and apply it to perform a certain activity or to resolve a specific issue.

Various behavioural concepts can be linked to knowledge-sharing, for example, attitude and intention towards knowledge-sharing, as well as actual knowledge-sharing behaviour. These concepts originate from Fishbein and Ajzen's theory of reasoned action (1975) and Ajzen's theory of planned behaviour (1985), which claim that actual behaviour is linked to a positive attitude and intention towards a particular behaviour. An individual's actual knowledge-sharing behaviour originates from their intention to share knowledge, whereas their intention to share knowledge is derived from their attitude towards knowledge-sharing (see Chapter Two sections 2.6.2. and 2.6.3 for a discussion on these theories) (Ghelichkhani & Khaiami, 2015:3). There are, however, limitations associated with these theories, better known as the intention-behaviour gap (Nguyen, Nham & Hoang, 2019:89; Olatokun & Nneamaka, 2012:8; Xue *et al*., 2002:1), which suggests that behavioural intention is not always an accurate predictor of actual knowledge-sharing behaviour, as has been found in several studies (e.g. Elogie & Asemota, 2013:51; Olatokun & Nneamaka, 2012:8; Ramdhania, 2012:36-37; Kuo & Young, 2008:1230; Yang & Farn, 2007:525). Nguyen *et al*. (2019:89) conducted a systematic review and meta-analysis of studies that employed the theory of planned behaviour to explain knowledge-sharing behaviour. These authors note that although intention is a good predictor of actual knowledge-sharing behaviour, an intention-behaviour gap exists that implies that individuals do not always engage in a behaviour that is in line with their intention. Various reasons account for this inconsistency, for example unforeseen complexity in performing a behaviour and a lack of drive or determination. Nguyen *et al*. (2019:89) further suggest that future research should focus on actual knowledge-sharing behaviour instead of stopping at knowledge-sharing intention. In fact, evidence in the literature insinuates that the intention-behaviour gap is relatively significant given that approximately only

one-half of intentions translate into actual behaviour (Nguyen *et al*., 2019:89; Sheeran & Webb, 2016:511).

Considering the aforementioned, it is evident that although intention is a good predictor of actual behaviour, an intention-behaviour gap still exists, therefore lending merit in testing actual knowledge-sharing behaviour instead of intention towards knowledge-sharing. Subsequently, to give effect to the purpose of this study, the focus, from an empirical perspective, falls on actual knowledge-sharing behaviour, which is consistent with other knowledge-sharing studies (Fullwood *et al*., 2018:1; Brooke, Rasdi & Samah, 2017:144; Wang, 2016:404; Chuang *et al*., 2016:549; He *et al*., 2014:975; Noh, 2013:143; Xue *et al*., 2011:311). The researcher of the present study, however, acknowledges the difficulty in capturing actual behaviour as it would require self-reported knowledge-sharing behaviour by respondents. This could lead to common method variance, which in turn may influence the validity of the data. As such, both procedural and statistical remedies will be employed in this study to minimise the effects of common method variance. More information on common method variance and the remedies that were utilised in the present study to minimise its effect is presented in Chapter Six (section 6.11).

Although the focus, from an empirical perspective, is on the actual knowledge-sharing behaviour of individual members participating in knowledge-intensive teams, it should also be noted that the literature study consists of secondary sources that include several behavioural concepts associated with knowledge-sharing (such as attitude and intention towards knowledge-sharing). This provides an all-inclusive understanding of the team-related factors that are likely to influence the knowledge-sharing behaviour of individual members in a team context. In this instance, secondary sources such as research published in academic journals and books, masters' and doctoral studies, academic working papers and conference papers were all considered to analyse empirical models, frameworks, reviews and theories related to knowledge-sharing. It is also important to stress that it is not the purpose of the study to investigate why individuals share knowledge across teams (inter-team knowledge-sharing behaviour); the focus is on *Intra-team knowledge-sharing behaviour* (within-team knowledge-sharing behaviour of individual members participating in knowledge-intensive teams), which is also the dependent variable.

Moreover, as mentioned in Chapter Two (section 2.3), knowledge can be categorised as either tacit (intangible and captured in the 'minds' of individuals) or explicit (tangible and easy to document). It was deemed appropriate to focus on both explicit and tacit knowledge as various patterns of interaction exist between these two types of knowledge. Sharing both types of knowledge is therefore important in knowledge-intensive teams, which undertake challenging knowledge-intensive work by drawing members together with different skill sets, experience and functional expertise (Hong *et al*., 2019:746; Cummings & Haas, 2012:316; Gardner & Kwan, 2012:25).

In the following sections, selected factors that were identified by the researcher that require further research with regard to *Intra-team knowledge-sharing behaviour* are discussed. As a result, the independent variables of the study are explored and their inclusion in the hypothesised model of team-related factors influencing *Intra-team knowledge-sharing behaviour* (Figure 4.2) is justified.

3.4 TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING BEHAVIOUR

The team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams, and therefore the independent variables of this study, are explained in the following sections.

3.4.1 WITHIN-TEAM COMPETITION

Within-team competition refers to team members' competitive orientation within a team. For example, team members may choose to compete against one another without any feelings of hostility and in 'good sportsmanship' to achieve a collective team goal, whilst at the same time they may strive to outdo fellow team members and focus more on the self to achieve personal goals (Abraham, McCusker & Foti, 2019:2-3; He *et al*., 2014:948). Within-team competition can thus be overshadowed by individual competition, characterised by a dominant drive of individual goals and minimal collaboration among team members (He *et al*., 2014:951-953).

'Coopetition' theory, which involves a simultaneous occurrence of competition and

cooperation among employees, creates a dilemma for knowledge-sharing among individuals. In this respect, individuals face a situations whether to hoard their knowledge to outdo team members, or whether they must share knowledge with rival team members to contribute to collective team goals. Individuals are likely to assume either a dominant competitive view or a collaborative view in a so-called 'coopetitive' situation. Individuals are likely to withhold knowledge as a result of competitiveness (Jarvinen & Ylinenpaa, 2017:58-59). Baruch and Lin (2012:1161), similarly report that a competitive position is negatively related to knowledge-sharing behaviour, whereas a collaborative orientation is positively linked to knowledge-sharing behaviour of team members (Baruch & Lin, 2012:1161).

Heidl, Steensma and Phelps (2014:10-11) suggest that within-team competition can inhibit the knowledge flow among members within a team. In a similar way, Naidoo and Sutherland (2016:85) assert that high levels of internal competition constrain knowledge-sharing, because individuals hold on to what they regard as their competitive advantage. Conversely, internal collaboration encourages knowledge-sharing and innovation by utilising employee diversity (Naidoo & Sutherland, 2016:85). Arzi, Rabanifard, Nassajtarshizi and Omran (2013:117) note that an organisational culture that is characterised by individual competition is likely to be an obstacle to knowledge-sharing, whereas cooperative team orientations generate trust, which is fundamental for knowledge-sharing. These sentiments have been confirmed by various other authors (Kharabsheh, Bittel, Elnsour, Bettoni & Bernhard, 2016:456; Forsman, 2014:23; Bock, 2014:186; Jabbary & Madhoshi, 2014:134; French, 2010:13; Wong, Tjosvold & Liu, 2009:241).

In view of the preceding discussion, the researcher believes that it would be unwise to regard competition as a one-dimensional concept, as competition that encourages the achievement of a team's goals is not a barrier to knowledge-sharing, as is the case with individual competition. Different types of competition can motivate individuals to behave differently when they share knowledge. This notion is in line with the theory of personal competitive orientation (Ryckman *et al*., 1997; Ryckman, *et al*., 1996; Ryckman *et al*., 1990), which proposes two unique types of competition, namely hyper-competition and personal development competition (see Chapter Two section 2.6.9). With hyper-competition, an individual pursues personal outcomes with little concern

for the welfare of others. Personal development competition relates to personal growth where an individual does not compete in an unfavourable manner and therefore also considers the welfare of others (Star, 2015:41). Similarly, when applied to a team setting, team hyper-competition is likely to lead to conflict as team members pursue goals at the expense of other members, whereas during team development competition individuals are focused on both their personal development and the mutual growth of the team (Star, 2015:41; He *et al*., 2014:953). Concurring with the theory of personal competitive orientation, He *et al*. (2014:953) classify within-team competition as both team hyper-competition and team development competition. These authors argue that in different types of competition, team members are motivated to accomplish different objectives (He *et al*., 2014:953).

Against this background discussion it is deemed important to investigate the specific types of competition and not to adopt a one dimensional approach toward competition and knowledge-sharing behaviour within teams. He *et al*. (2014:948) support this notion and posit that a distinction is especially crucial for teams, in that team members may compete to reach their own individual potential (team hyper-competition) at the expense of the team's best interests, or alternatively, team members may pursue a benevolent comparison of accomplishments among team members with the team's combined performance (team development competition) in mind. However, research on the different types of competition is scant, especially empirical research on the influence of within-team competition on team knowledge-sharing (He *et al*., 2014:951). This shortage calls for further research on these two phenomena. Thus, in this study, a distinction is made between team development competition (i.e., fair competition among team members without hostility and with a collective common goal of team success in mind) and team hyper-competition (i.e., team members' urge to surpass other team members with limited interest in the mutual benefit of the team).

In addition, findings concerning the relationships between the different types of competition and intra-team knowledge-sharing have important implications for organisations in designing reward structures for knowledge-intensive teams. For example, when rewards are subject to team performance (collaboration), team members may be jointly supportive and consider each other's interests. As such, team members will share insights with one another for mutual benefit. On the other hand,

when team reward structures are based on individual performance (competitiveness), knowledge-sharing may be constrained. With such reward structures, certain individuals within a team may even interfere with the progress of other team members as they seek to benefit themselves at the expense of the collective (Heidl *et al*., 2014:11).

Forsman (2014:30) in the same manner relates competition to an organisation's reward structure and notes that extrinsic rewards increase the likelihood of competition among employees. Milton (2015) also associates competition and collaboration with an organisation's incentive scheme stating that: "There is no point in planting the seeds of knowledge management and protecting the first shoots of knowledge-sharing, if the company incentive scheme has large elements of internal competition, which will just freeze your efforts dead". With this metaphor, Milton (2015) explains that a competitive incentive scheme that encourages personal efforts instead of a collaborative incentive scheme that encourages team efforts, is likely to hamper knowledge-sharing. In other words, there is no reasonable motive to share knowledge under a competitive incentive scheme as it may put an individual's incentive at risk, subsequently rendering a competitive advantage to an employee. Likewise, Kraiger, Passmore, Dos Santos and Malvezzi (2015:251) note that emphasising individual performance in the workplace can lead to destructive internal competition and subsequently impede knowledge-sharing and learning within groups.

With the aforementioned in mind, the construct of within-team competition can be linked to the social exchange theory (see Chapter Two section 2.6.1). According to this theory, individuals consider the costs and benefits during their interactions with others, by taking full advantage of their benefits and minimising their costs (Babalola & Omtayo, 2017:43).

3.4.2 TEAM PSYCHOLOGICAL SAFETY

Team psychological safety relates to team members' views on being allowed to ask questions, express their disagreement or propose new ideas, without being embarrassed, rejected or punished as a result (Tofte, 2016:16; Noh, 2013:36). Kahn (1990), who is well known for his work on psychological safety and work engagement,

describes psychological safety as a perception of being “able to show and employ one’s self without fear of negative consequences to self-image, status, or career”.

It should be noted that psychological safety does not suggest a relaxed atmosphere where employees are close friends, or in which problems and pressure are not experienced. Instead, it denotes an atmosphere in which team members can effortlessly express their dissimilarities and participate in fruitful exchanges (Noh, 2013:36). In this respect, team members who perceive a psychological safe environment are likely to worry less about the responses of others to behaviour that could result in humiliation or be regarded as a risk. This lack of concern for negative interpersonal consequences could in turn facilitate knowledge-sharing among team members, as well as other constructive learning behaviours such as requesting feedback and speaking openly about concerns (Noh, 2013:36).

Similarly, Millar *et al*. (2017:264) confirm that having a team environment characterised by a high level of psychological safety is of utmost importance, to encourage members to contest the status quo, to be innovative, and to feel safe enough to propose their thoughts and ideas. Frazier, Fainshmidt, Klinger, Pezeshkan and Vracheva (2017:116) echo this view that psychological safety encourages the willingness to share ideas. These sentiments are in line with the theory of team adaptation. As mentioned in Chapter Two (section 2.6.10), the theory of team adaptation (Burke *et al*., 2006) provides useful insight into potential circumstances that are conducive to team members openly sharing knowledge and different views. More specifically, the theory of team adaptation suggests that team members are likely to share knowledge in an environment perceived to be safe for interpersonal risk-taking (psychological safety) and in so doing, contribute to team-learning (Burke *et al*., 2006:1198). The transformational leadership theory (see Chapter Two section 2.6.7) provides further perspective into team psychological safety. In this respect, transformational leaders persuade team members to personalise a team’s vision and goals and subsequently make team members perceive themselves as part of a team and not isolated individuals. Transformational leaders may enhance psychological safety and reduce distress of threat and punishment from other members (e.g. high-power team members) (Noh, 2013:49-50).

Although trust and psychological safety are related as they both encapsulate perceptions of risk and vulnerability in the workplace, a clear distinction can be made between these constructs (Frazier *et al*., 2017:117). Trust can be demarcated as "one's willingness to give the *other person* the benefit of the doubt", whereas psychological safety entails the degree to which one perceives that "*others will give them* the benefit of the doubt when taking risks" (Frazier *et al*., 2017:117). Kessel, Kratzer and Schultz (2012:148) similarly posit that psychological safety encompasses more than individual trust and involves a team environment wherein shared trust and protection triumphs, regardless of outside pressure. Psychological safety is therefore concerned with how the work environment is cognitively judged. This judgement turns into a mutual belief as team members operate in an identical setting and are exposed to similar stimuli and requirements (Kessel *et al*., 2012:148). Psychological safety is becoming progressively more important in today's business environment, in which work activities are increasingly specialised and complex, and where employees need to share knowledge and ideas with team members to achieve mutual goals (Newman, Donohue & Eva, 2017:522). Team size, however, is another factor to consider that may influence team psychological safety. In teams comprising more members, there is a higher likelihood of disagreement with the leader and interpersonal conflicts, resulting in reduced team psychological safety (Midthaug, 2017:12; Schepers, De Jong, Wetzels, Ruyter, 2008:768).

The literature review on psychological safety suggests that most prior research on psychological safety is based on Western perspectives. The researcher in the present study is of the opinion that under different cultural settings, psychological safety may have a stronger influence on work outcomes such as knowledge-sharing. As such, psychological safety can be more important as an antecedent to knowledge-sharing in some cultures than in others. Certain cultures could be more sensitive to possible negative consequences of sharing their views or insights on specific matters. Therefore, in the present study it is argued that research on the link between psychological safety and knowledge-sharing in a South African context, which is known for its cultural diversity, adds significant value to the literature on knowledge-sharing, thus addressing the lack of research in this regard.

The researcher's view on cultural influences and psychological safety is supported by Newman *et al*. (2017:531). In their systematic review of psychological safety literature, Newman *et al*. (2017:531) call for more research on psychological safety in different cultural settings. The motivation is to establish whether psychological safety has a stronger effect on outcomes for individuals, teams and organisations functioning in diverse cultural contexts. More specifically, they reason that the majority of research on psychological safety in organisations has been undertaken in Western contexts. Western cultures are known for their "low levels of collectivism, power distance and uncertainty avoidance" (Newman *et al*., 2017:531), making such individuals more likely to express novel ideas and to participate in teams where high levels of psychological safety are not present. Subsequently, the effect of psychological safety on work outcomes is likely to be more noticeable for team members entrenched in organisations with cultures typified by high levels of collectivism, power distance and uncertainty avoidance. In such cultures, the expression of opinions or the testing of original ideas are not typical as it can increase the social costs. Investigating psychological safety in different settings can permit a more vigorous assessment of the predictive strength of psychological safety. The reason is that the variance in individuals' views of psychological safety may be higher than in Western cultures that are characterised by minimal social costs when individuals of these cultures express their opinions or ideas (Newman *et al*., 2017:531). Ghadirian, Ayub, Silong, Bakar and Zadeh (2014:43) call for further research into psychological safety and knowledge-sharing to gain a deeper understanding of the circumstances under which knowledge-sharing may ensue.

This background on current psychological safety research therefore justifies an investigation into psychological safety in a South African business context, with its rich diversity of cultures. Such research has significant practical implications in supporting managers to create a work atmosphere that enhances psychological safety, and ultimately encourage the sharing of opinions, ideas, personal insights, opinions, know-how, experience and expertise among team members. These aspects will all subsequently enhance a business's competitive advantage.

3.4.3 PERCEIVED TEAM DIVERSITY

Perceived diversity can be classified into perceived surface-level diversity and perceived deep-level diversity (Bodla *et al*., 2018:713). The former refers to the degree to which team members are perceived to be diverse in respect of their obvious features such as gender, age, ethnicity, marital status and team tenure. Perceived deep-level diversity, on the other hand, implies the perceived heterogeneity of team members, which relate to psychological characteristics such as attitudes about work, personality, personal values, learning goals and educational background (Bodla *et al*., 2018:713; Trueman, 2017:9-10; Van Leeuwen, 2017:17; Van Esch, 2016:21).

Whereas research on diversity typically focuses on actual rather than perceived team diversity, this current study focuses on perceived team diversity. The reason is that individuals' perceptions of their social environment have been found to be a better predictor of their behaviour than the actual environment itself (Jaiswal & Dyaram, 2018:799; Noh, 2013:32; Harrison & Klein, 2007:1216). Furthermore, individuals tend to respond to their perception of reality, instead of reality itself (Bodla *et al*., 2018:713). In this instance, actual diversity in terms of demographic characteristics is typically measured by quantitative indicators such as within-group standard deviations, Euclidean distance and coefficient of variance, while perceived diversity measures respondents' beliefs about team diversity (Rico, 2016:19; Hentschel, Shemla, Wegge & Kearney, 2013:41; Noh, 2013:31-32). This study therefore attends to the lack of research on perceived team diversity.

Diversity scholars (Li, Wu, Xiong, 2021:16; Bodla *et al*., 2018:711, Trueman, 2017:9-10; Srikanth *et al*., 2016:456) assert that the presence of diversity within teams is a "double-edged sword", which has both positive and negative effects on a team's performance. Teams can benefit from a variety of perspectives and knowledge that emerge from team members as a result of their individual differences (diversity). On the other hand, and in line with the similarity attraction theory (Byrne, 1971) and the social categorisation theory (Tajfel & Turner, 1979) as explained in Chapter Two (sections 2.6.6 and 2.6.8), a team's diversity can also cause poor cohesion and communication among team members that can subsequently result in undesirable outcomes (Trueman, 2017:9-10; Srikanth *et al*., 2016:456-457). These theories imply

that similarity among team members yields higher levels of collaboration, trust and social unity (Williams, 2016:347; Schuster, 2013:19; Harrison & Klein, 2007:1204). In this regard, Ali *et al*. (2019:563) assert that in-groups and out-groups are formed as employees compare themselves to others to identify similarities or disparities, especially in the midst of increased employee diversity. The mere perception of two distinct groups, based on their social classification, is enough to cause bias behaviour towards the in-group (Tajfel & Turner, 1979:38).

In light of the preceding discussion, it can be concluded that team members who differentiate themselves based on obvious surface-level characteristics (demographics) may be less likely to share knowledge among diverse team members (Bodla *et al*., 2018:714-715). On the other hand, deep-level diversity (i.e., education, experience and knowledge) may potentially be of more value than surface-level diversity and have a positive influence on intra-team knowledge-sharing, especially in cases where team members are highly motivated toward learning and rely on other team members to develop alternative solutions (Bodla *et al*., 2018:715). In a similar way, Najam, Inan, Awan and Abbas (2018:2) indicate that in cases where unexpected events occur that require diverse ideas and experiences to be shared to prevent negative outcomes, diverse teams can be formed and utilised even if diversity in such teams are only temporary (i.e., time-based projects). Both Bodla *et al*. (2018:715) and Najam *et al*. (2018:14-15) therefore suggest that diversity (deep-level diversity) has value for a team and may influence knowledge-sharing positively, especially when this type of diversity is required to solve problems or achieve targets. Men *et al.* (2019:811) explain team diversity as different thinking styles, skills, knowledge, beliefs and values and classify this type of diversity as cognitive team diversity. Men *et al*. (2019:812) believe that knowledge-sharing enables the movement of knowledge and experience among team members and knowledge is more useful to teams with high cognitive team diversity, whereas teams with low cognitive team diversity involve less knowledge-sharing. If high cognitive team diversity is present, team members are more likely to require fellow team members' experience and knowledge to encourage the integration of knowledge.

Regardless of the significance of perceived disparity and knowledge-sharing, the current literature review reveals a lack of recent empirical research in this regard; a

notion supported by Noh (2013:94). The researcher in the present study is therefore of the opinion that research in this regard could add considerable value to the understanding of knowledge-sharing, in particular, intra-team knowledge-sharing.

3.4.4 TEAM IDENTIFICATION

Team identification relates to the "process whereby individuals perceive themselves as one with another person or group" (Akhavan & Hosseini, 2016:99). Alternatively, Huettermann, Doering and Boerner (2017:218) describe team identification as an individual's identification with his or her team. This identification transpires when individuals sense a psychological bond and a feeling of affinity toward their team; label themselves with similar qualities such as norms, values and attitudes; and classify themselves as members of the team that they are assigned to. Similarly, Noh (2013:33) defines team identification as team members' sense of belonging to their team. To create a cooperative team environment in which team members work toward realising the team's goals, it is important that team members identify with their team (Noh, 2013:34).

Leadership, in particular transformational leadership, plays an important role to encourage team identification. The transformational leadership theory as discussed in Chapter Two (section 2.6.7) can be linked to team identification. Under transformational leadership, followers have the liberty to explore innovative ideas and knowledge. This type of leadership therefore drives a learning environment by means of intellectual stimulation that encourages knowledge-sharing (Ghasabeh & Provitera, 2017:11). Furthermore, the transformational leadership theory argues that transformational leaders strengthen shared goals and values, create shared commitment, emphasise collective interests in the workplace and encourage team members to be team players (Liu & Li, 2018:4; Noh, 2013:49). Subsequently, transformational team leaders ensure that team members perceive themselves as cooperative team members instead of secluded individuals, and therefore identify with the team. When team members feel part of a team, they are likely to share their knowledge and contribute to a shared goal (Liu & Li, 2018:4; Noh, 2013:49). On the other hand, conflicting identities within teams can be barriers to knowledge-sharing (Akhavan & Hosseini, 2016:100).

Although cultural differences among team members may influence perceptions regarding knowledge-sharing, team identification has attracted limited empirical research in a multicultural setting. In fact, researchers such as Akhavan and Hosseini (2016:109); Noh (2013:108) and Liu and Phillips (2011:50) who have investigated team identification and knowledge-sharing among team members, suggest that more research should be carried out specifically among culturally diverse samples. In the same way, Chen and Lin (2013:687) encourage more research into team identification and knowledge-sharing. Subsequently, an investigation into the relationship between team identification and knowledge-sharing among members working in knowledge-intensive teams in South Africa addresses the shortcomings of research by focusing on team identification and knowledge-sharing in a multicultural setting as characterised by South African businesses.

3.4.5 CULTURAL INTELLIGENCE

Cultural intelligence is a non-academic intelligence that describes an individual's capability to successfully manage situations in which cultural diversity plays an integral part. For example, teams characterised by cultural diversity can be difficult for team leaders to deal with if employees lack cultural intelligence (Solomon & Steyn, 2017:2; Chen & Lin, 2013:675-676). Having employees who are adept at understanding, and who can work with and manage teams under conditions of cultural diversity is indeed a valuable, but rare resource for organisations (Chen & Lin, 2013:676). Such ability to effectively manage cultural diversity within teams can offer organisations an advantage in terms of increased knowledge within teams, therefore highlighting the significance of cultural intelligence (Chen & Lin, 2013:686).

As described in the literature on diversity (see Chapter Two section 2.6.8), a diverse workforce tends to lead to a social classification process, whereby individuals compare themselves to other team members in terms of their similarities and differences (Bogilovic, Cerne & Skerlavaj, 2017:712). An environment characterised by cultural diversity encourages individuals to create new smaller groups in their workplace, consisting of cultural groupings between similar in-group members and dissimilar out-group members (Bogilovic *et al*., 2017:712). This notion is in fact in congruence with the social categorisation theory (Tajfel & Turner, 1979) as explained in Chapter Two

(section 2.6.8), which implies that similarity among team members yields higher levels of collaboration, trust and social unification (Williams, 2016:347; Schuster, 2013:19; Harrison & Klein, 2007:1204). Moreover, this social classification is likely to have negative consequences in a work environment as it can have a negative impact on an individual's work performance, group processes and interactions within a diverse work group, which includes the sharing of knowledge (Bogilovic *et al*., 2017:712).

In light of the aforementioned, cultural intelligence can reduce the negative impact that social categorisation is likely to have on knowledge-sharing in a culturally diverse setting (Bogilovic *et al*., 2017:713). However, as noted before, from an empirical perspective, research on cultural diversity and team knowledge-sharing is limited (Chen & Lin, 2013:677). More specifically, empirical research on various cultural intelligence dimensions and team knowledge-sharing is extremely scant. In this respect, Chen and Lin (2013:677) assert that research has not sufficiently accounted for the multidimensional nature of cultural intelligence in the context of cross-cultural teams.

Cultural intelligence can be categorised into four interrelated but different dimensions, namely metacognitive, cognitive, motivational and behavioural cultural intelligence (Solomon & Steyn, 2017:3; Bogilovic & Skerlavaj, 2016:59). Metacognitive cultural intelligence denotes the processes that individuals employ to gain and comprehend cultural knowledge. This type of cultural intelligence relates to individuals' cultural alertness throughout social relations with other team members from different cultural backgrounds (Gooden, Creque & Chin-Loy, 2017:224; Chen & Lin, 2013:678). In teams characterised by high metacognitive cultural intelligence, knowledge-sharing is likely to improve, because members are consciously attentive to other team members' cultural inclinations. In fact, team members are aware of their fellow team members' preferences before and throughout social interactions, and thus know how and when to use their cultural knowledge. Metacognitive cultural intelligence therefore refers specifically to a team member's capability to understand and monitor not only his or her own thoughts, but also the consequences and assumptions of his or her group actions (Gooden *et al*., 2017:224; Solomon & Steyn, 2017:3; Chen & Lin, 2013:678). Bogilovic *et al*. (2017:712) observe that individuals with high metacognitive cultural intelligence tend to reduce the adverse effects of the social categorisation process in

diverse team settings. Metacognitive cultural intelligence encourages a fusion culture, i.e., to merge different cultural values into one common culture. In turn, employees who have a shared culture think of themselves more as members of an in-group than an out-group, which is likely to stimulate knowledge-sharing among them (Bogilovic *et al*., 2017:713).

The second dimension of cultural intelligence, namely cognitive cultural intelligence, refers to a general knowledge and understanding of a particular culture, which includes an understanding of cultural commonalities and differences (Solomon & Steyn, 2017:3; Chen & Lin, 2013:678). This type of intelligence involves knowledge of specific behaviour within a team that is rich in cultural diversity. Knowledge-sharing is likely to thrive when team members have high cognitive cultural intelligence, with ample knowledge of resemblances and differences across cultures. Team members with high cognitive cultural intelligence are self-confident about teamwork and knowledge-sharing (Chen & Lin, 2013:678). Because these individuals recognise important similarities with out-group members and can deal with preconceptions derived from surface-level cultural features, they are also likely to cooperate and successfully share knowledge with out-group members. This cultural intelligence dimension is therefore likely to minimise the knowledge-hiding behaviour often associated with cross-cultural differences (Bogilovic *et al*., 2017:713).

Motivational cultural intelligence, the third cultural intelligence dimension, relates to an individual's inherent willingness, curiosity and deliberate efforts to understand different cultures in their attempts to manage challenges associated with cross-cultural interactions (Gooden *et al*., 2017:224; Bogilovic *et al*., 2017:713). An individual possessing high motivational cultural intelligence enjoys and is more confident during interactions with culturally diverse individuals (Gooden *et al*., 2017:224; Bogilovic *et al*., 2017:713). As a result, such individuals tend to interact more with colleagues from diverse cultures and are less likely to uphold robust in-group-out-group distinctions during their interactions. In fact, individuals with high motivational cultural intelligence seek to network more with out-group members and are likely to encourage team knowledge-sharing (Bogilovic *et al*., 2017:713; Chen & Lin, 2013:679).

The fourth dimension, behavioural cultural intelligence, relates to what individuals do instead of what they think or feel. More specifically, this dimension has to do with the use of appropriate verbal and non-verbal skills, e.g. words, tone, gestures and facial expressions, to effectively work together and communicate with individuals from diverse cultural backgrounds (Solomon & Steyn, 2017:3; Gooden *et al*., 2017:225; Chen & Lin, 2013:679). This form of intelligence improves social relations and emphasises how an individual modifies his or her behaviour to adjust to different cultures (Gooden *et al*., 2017:225; Chen & Lin, 2013:679). Individuals with high behavioural cultural intelligence know how to use appropriate words and gestures when communicating with individuals from different cultures, enabling them to easily gain favour with out-group members and therefore increasing interaction with different out-group members (Bogilovic *et al*., 2017:713).

It should be noted that empirical research on these aspects of cultural intelligence and team knowledge-sharing is extremely scant, and the existing research rather outdated (Chen & Lin, 2013:677). In fact, according to the best knowledge of the researcher, no study has been conducted on these dimensions and team knowledge-sharing in South Africa, a country that is characterised by its cultural diversity. This study addresses this gap and therefore makes a valuable contribution to knowledge-sharing literature.

3.4.6 TEAM COMMITMENT

Team commitment can be categorised as affective commitment, continuance commitment and normative commitment (Yalabik, Swart, Kinnie & Van Rossenberg, 2017:421-422; Swart, Kinnie, Van Rossenberg & Yalabik, 2014:288), although not all researchers typically focus on all the types of commitment in a particular study. Affective commitment relates to a member's emotional attachment to his or her team (Swart *et al*., 2014:272;288). Team identification (see section 3.4.4), which relates to the "process whereby individuals perceive themselves as one with another person or group" (Akhavan & Hosseini, 2016:99), can be linked to affective team commitment. In this instance, team identification can be considered a predictor of affective team commitment, in the same way that organisational identification potentially predict affective commitment to the organisation (Arman-Incioglu, 2016:55;65; Stinglhamber, Marique, Caesens, Desmette, Hansez, Hanin & Bertrand, 2015:2). Continuance

commitment, on the other hand, refers to an individual's awareness of the cost to leave his or her team, whereas normative commitment involves a feeling of responsibility to remain part of a team (Nazneen & Miralam, 2017:1428; Swart *et al*., 2014:288).

Committed team members are willing to perform additional activities that could benefit the team; such committed team members attach importance to the success of the team (Arman-Incioglu, 2016:35). Similarly, Buvic and Tvedt (2017:8) assert that team members who are committed to their team value the relationship, interests and goals of the team. Committed team members are willing to assist one another, which may subsequently motivate such members to share appropriate and valuable knowledge with the team. In an older well-documented paper on the combined effects of the three commitment components, Gellatly, Meyer and Luchak (2006:332-333) assert that the three forms of commitment may lead to different behaviour outcomes. For instance, individuals who want to retain membership in the organisation (i.e., affective commitment) and those that feel a sense of obligation towards the organisation (i.e., normative commitment) would exert effort to make the organisation successful. On the other hand, individuals who are committed to the organisation, mainly to avoid costs relating to leaving (i.e., continuance commitment), are not likely to do more than what is expected of them. Although these views relate to organisational commitment, the researcher in the present study is of the opinion that the sentiments can be extended to a team context (i.e. team commitment). As such, different types of team commitment may possibly lead to different knowledge-sharing behaviours among team members.

There is a lack of research that focuses on commitment to teams in general (Buvic & Tvedt, 2017:8), and in particular, the literature review on commitment and knowledge-sharing in this study revealed that studies that investigated the relationship between the various types of team commitment and knowledge-sharing are limited. In the present study all three dimensions of team commitment are measured.

3.5 SUMMARY

Following the discussion in Chapter Two on the nature and importance of *Intra-team knowledge-sharing behaviour*, this chapter focused on the team-related factors that can influence individuals' knowledge-sharing behaviour in a team context. A theoretical

framework was also introduced to illustrate and briefly describe the factors. The decision to subject these factors to further empirical testing in this study was also justified. In this respect, various gaps were highlighted relating to the identified team-related factors and knowledge-sharing.

Based on the discussions in this chapter a hypothesised model is proposed in the following chapter that will be tested empirically.

CHAPTER FOUR

CONCEPTUAL AND HYPOTHESISED MODELS OF TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING BEHAVIOUR

4.1 INTRODUCTION

In the previous chapter a theoretical framework of team-related factors influencing *Intra-team knowledge-sharing behaviour* was presented and discussed. Using this framework as a guideline, a conceptual model of 13 team-related factors influencing *Intra-team knowledge-sharing behaviour* is presented in this chapter, followed by hypotheses development which will result in the proposed hypothesised model.

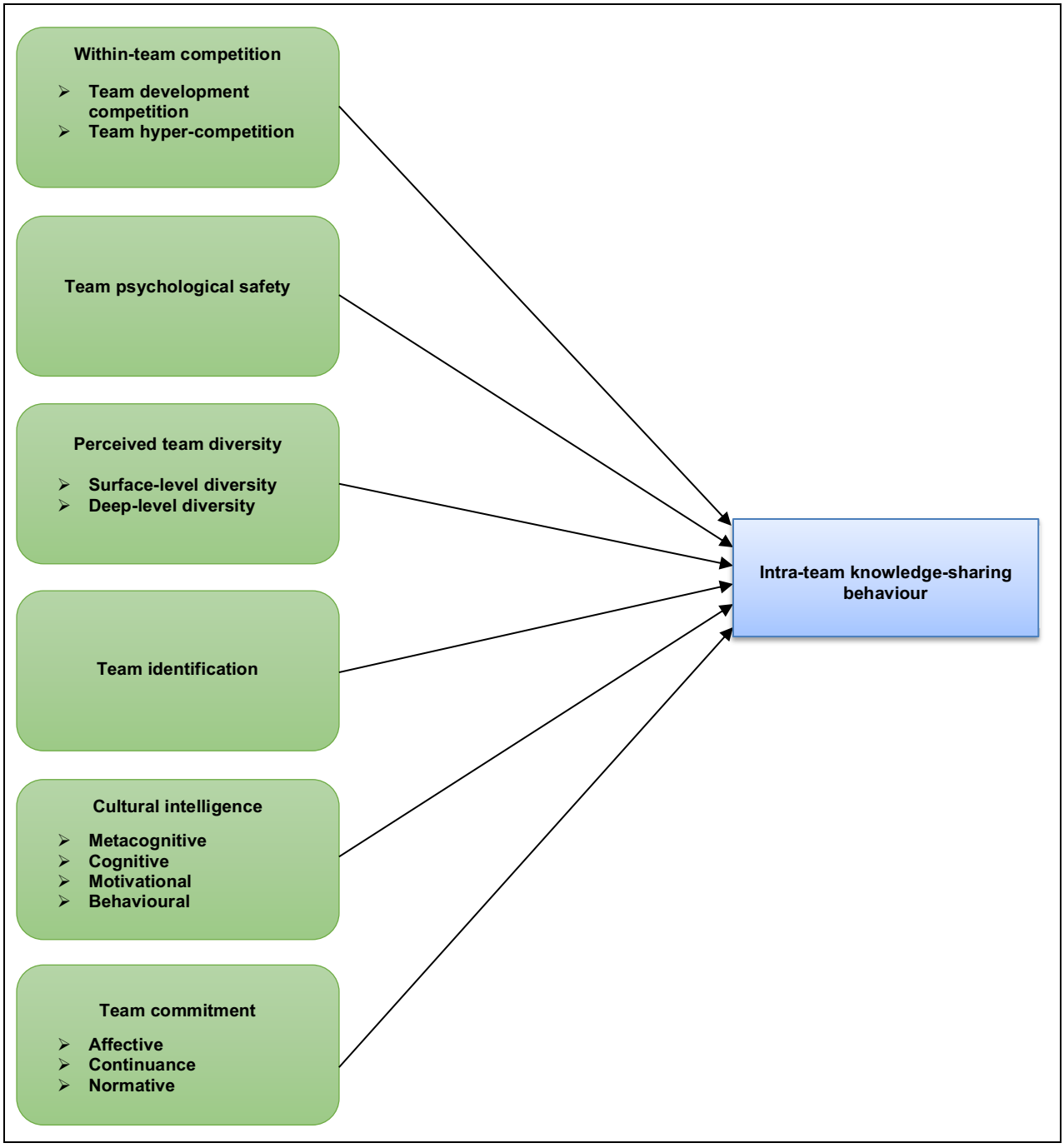
This chapter thus addresses the third methodological research objective, namely to construct a hypothesised model of team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams, and to propose suitable hypotheses relating to the relationships illustrated in the proposed model.

4.2 CONCEPTUAL MODEL

The independent variables of this study, namely *Team development competition*, *Team hyper-competition*, *Team psychological safety*, *Perceived surface-level diversity*, *Perceived deep-level diversity, Team identification*, *Metacognitive cultural intelligence*, *Cognitive cultural intelligence*, *Motivational cultural intelligence*, *Behavioural cultural intelligence*, *Affective team commitment*, *Continuance team commitment* and *Normative team commitment* are illustrated in the conceptual model (Figure 4.1). These variables were identified in Chapter Three as having a potential relationship with *Intra-team knowledge-sharing behaviour*, the dependent variable of this study.

Besides the relationships proposed in Figure 4.1, the influence of demographic variables on *Intra-team knowledge-sharing behaviour* will also be assessed. The need to empirically assess the relationships depicted in Figure 4.1 was justified in Chapter Three, and subsequently attends to various gaps in the knowledge-sharing literature.

Figure 4.1: Conceptual model of team-related factors influencing intra-team knowledge-sharing behaviour



Source: Researcher's own construction

Each team-related factor illustrated in Figure 4.1, and its associated relationship with *Intra-team knowledge-sharing behaviour*, is explained in the subsequent sections.

4.2.1 INTRA-TEAM KNOWLEDGE-SHARING BEHAVIOUR

Following the discussion in Chapter Three (section 3.3), *Intra-team knowledge-sharing behaviour* refers to the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams. In addition, as behavioural intention is not always an accurate predictor of actual knowledge-sharing behaviour (Nguyen *et al*., 2019:89; Sheeran & Webb, 2016:511; Elogie & Asemota, 2013:51; Olatokun & Nneamaka, 2012:8; Ramdhania, 2012:36-37; Xue *et al*., 2011:303; Kuo & Young, 2008:1230; Yang & Farn, 2007:525; Sheeran, 2002:1), the present study focuses on the actual knowledge-sharing behaviour of individual members participating in knowledge-intensive teams. This approach is in line with other studies (Fullwood *et al*., 2018:1; Brooke *et al*., 2017:144; Wang, 2016:404; Chuang *et al*., 2016:549; He *et al*., 2014:975; Noh, 2013:143; Xue *et al*., 2011:311) that also focused on actual knowledge-sharing behaviour.

As explained in Chapter Two (sections 2.2 and 2.3), the focus of this study is on both explicit and tacit knowledge as these knowledge types are complementary to each other. Knowledge-intensive teams undertake challenging knowledge-intensive work by drawing together members with different skill sets, experience and functional expertise (Hong *et al*., 2019:746; Cummings & Haas, 2012:316; Gardner & Kwan, 2012:25), which lends further support to focus on both types of knowledge.

4.2.2 WITHIN-TEAM COMPETITION

Within-team competition relates to team members' competitive orientation within a team. From the discussion in Chapter Three (section 3.4.1) it was evident that competition, depending on its nature, can have both positive and negative effects on team outcomes (e.g. knowledge-sharing behaviour) (Abraham *et al*., 2019:2-3; Naidoo & Sutherland, 2016:77; He *et al*., 2014:948). As noted in Chapter Three (section 3.4.1), findings concerning the relationships between the different types of competition and intra-team knowledge-sharing have important implications for organisations in designing reward structures for knowledge-intensive teams.

Accordingly, this study distinguishes between team development competition (i.e., fair competition among team members without feelings of hostility and with a collective common goal of the team's success in mind) and team hyper-competition (i.e., team members' urge to surpass other team members with little interest in the mutual benefit of the team) (He *et al*., 2014:948).

Theoretical evidence (Kharabsheh *et al*., 2016:456; Naidoo & Sutherland, 2016:77; Heidl *et al*., 2014:11) suggests that when individuals compete with the aim to outshine other team members for personal gain, as opposed to team cooperation and the mutual benefit of the team, knowledge-sharing behaviour is negatively affected. From an empirical perspective, in a study focusing on knowledge-sharing and team performance in work teams based in Taiwan, Liu, Lin, Joe and Chen (2018:1481) found that team development competition had a significant and positive influence on team knowledge-sharing behaviour. Similarly, He *et al*. (2014:953) who investigated the relationships between within-team competition, knowledge-sharing and team flexibility in hybrid-virtual teams based in Taiwan, found a direct negative relationship between team hyper-competition (i.e. a situation characterised by an individual members pursuing their own goals at the expense of team-related goals) and knowledge-sharing behaviour among team members. On the other hand, team development competition (i.e., fair competition among team members without feelings of hostility and with a collective common goal of team success in mind) was positively related to team members' knowledge-sharing behaviour (He *et al*., 2014:963). In another empirical study conducted by Yoon, Kim, Go and Yun (2020:496), findings revealed a significant and negative relationship between hyper-competitiveness and knowledge-sharing behaviour. These authors collected data from several companies in South Korea, which included finance, manufacturing and commerce industries. Although the study was not conducted in a team context, as is the case in the present study, the results nonetheless provide valuable insight into individuals knowledge-sharing behaviour. In fact, the results are congruent with the aforementioned results of He *et al*. (2014:963).

In the light of the preceding discussion and viewing within-team competition as a two-dimensional construct, the following hypotheses are proposed:

H^1: There is a positive relationship between *Team development competition* and *Intra-team knowledge-sharing behaviour.*

H^2: There is a negative relationship between *Team hyper-competition* and *Intra-team knowledge-sharing behaviour.*

4.2.3 TEAM PSYCHOLOGICAL SAFETY

As discussed in Chapter Three (section 3.4.2), team psychological safety can be described as team members' perceptions on being allowed to ask questions, express their disagreement or propose new ideas, without being embarrassed, rejected or punished as a result. A review of the literature on knowledge-sharing (e.g. Al-Farhan, 2018:54-55; Koeslag-Kreunen, Van Der Klink, Van Den Bossche & Gijselaers, 2018:194; Frazier *et al*., 2017:116; Safdar, Badir & Afsar, 2017:82; Edmondson & Lei, 2014:29-31; Zhang, Fang, Wei & Chen, 2010:425-426) point towards a positive relationship between team psychological safety and knowledge-sharing behaviour among members of a team. Frazier *et al*. (2017:116), in their comprehensive meta-analysis on the antecedents and outcomes of psychological safety, found that irrespective of the conceptualisation of psychological safety, the central theme that constantly emerges is the importance of a work environment in which the perceptions of interpersonal risk are reduced.

In the same manner, in his empirical investigation on employees' knowledge-sharing behaviour in work teams in selected Korean companies, Noh (2013:83) found a positive relationship between team psychological safety and knowledge-sharing behaviour among team members. Similarly, Van Den Berg (2010:47), who explored knowledge-sharing behaviour within teams and employees' perceptions of the work environment, found a strong relationship between psychological safety and knowledge-sharing behaviour within a team. Kessel *et al*. (2012:153), who explored psychological safety in German healthcare teams also reported a positive relationship between psychological safety and knowledge-sharing behaviour among team members. More recently, Ter Horst (2016:43) identified team psychological safety as a very strong predictor of intra-team learning processes, which included knowledge-sharing behaviour in the scope of her study that involved the Dutch criminal justice

system. Also, Liu and Keller (2021:43) investigated how psychological safety influences the performance of project teams in Taiwan. They found that team psychological safety positively impacts team members' knowledge-sharing behaviour. Older, but well-documented empirical findings by Siemsen, Roth, Balasubramanian and Anand (2009:443) also point towards a positive relationship between team psychological safety and knowledge-sharing behaviour among individuals.

Based on the discussion presented on team psychological safety, the following hypothesis is subjected to further empirical testing:

H^3: There is a positive relationship between *Team psychological safety* and *Intra-team knowledge-sharing behaviour.*

4.2.4 PERCEIVED TEAM DIVERSITY

As discussed in Chapter Three (section 3.4.3), perceived surface-level diversity relates to perceived differences in terms of gender, age, ethnicity, marital status and team tenure, while perceived deep-level diversity relates to perceived differences in respect of attitudes about work, personality, personal values, learning goals and educational background.

Empirical research by Bodla *et al*. (2018:720) showed that perceived surface-level diversity and perceived deep-level diversity were both negatively and positively related, respectively, to knowledge-sharing behaviour among team members. These researchers investigated the impact of team diversity on team knowledge-sharing behaviour on a sample of 60 cross-national teams at selected universities in China. The findings of Hofhuis, Van Der Rijt and Vlug (2016:1), who investigated whether diversity climate enhances outcomes in the workplace, point toward the positive effect of diversity on knowledge-sharing behaviour in teams. These researchers conducted their study using a sample of 91 employees working in production teams. The sample included respondents from various countries such as Netherland, Norway, Denmark, Belgium, Sweden, South Africa, Philippines and France (Hofhuis *et al*., 2016:5).

Van Esch (2016:21) argues that the functioning of a team should be tested according to deep-level features and not surface-level characteristics. Van Esch (2016:21) believes that employees' perceptions of one another stem from obvious surface-level characteristics at first, but that the importance of these characteristics subside over time. In other words, as employees interact and collaborate more frequently over a period of time, the deep-level characteristics take precedence over surface-level characteristics when employees form perceptions of one another. Contrary to the findings of Bodla *et al*. (2018:720), Van Esch's (2016:50) results revealed that perceived deep-level similarity, as opposed to diversity, has a positive and significant influence on knowledge-sharing behaviour among employees. Van Esch's (2016:34) study was conducted among expatriates from various countries (e.g. Netherlands, United States, China, Australia, Germany and United Kingdom). Well-acknowledged older findings of Makela, Kalla and Piekkari (2007:1) also contradict those of Bodla *et al*. (2018:720) and instead showed that interpersonal similarity is an important driver of knowledge-sharing behaviour among employees. These findings imply that diversity may be an obstacle to knowledge-sharing behaviour among employees. Although diversity may hold advantages in terms of utilising multiple and unique perspectives, team members' comfort levels may decline as they learn more about their colleagues' diverse backgrounds over time, which may subsequently become an obstacle to a team's knowledge-sharing behaviour (Feitosa, 2015:14-15).

Although one cannot ignore that diversity can have both positive and negative effects on knowledge-sharing among members of a team, there is empirical and strong theoretical support (see Chapter Two sections 2.6.6 and 2.6.8) that suggests that a negative relationship exists between diversity and intra-team knowledge-sharing. Therefore, the following hypotheses were formulated:

H^4: There is a negative relationship between *Perceived* s*urface-level diversity* and *Intra-team knowledge-sharing behaviour.*

H^5: There is a negative relationship between *Perceived deep-level diversity* and *Intra-team knowledge-sharing behaviour.*

4.2.5 TEAM IDENTIFICATION

Team identification can be described as an employee's sense of belonging to a team (see Chapter Three section 3.4.4). Despite the limited recent research, existing empirical studies indicate a positive relationship between team identification and knowledge-sharing behaviour. For example, Akhavan and Hosseini (2016:96), who investigated knowledge-sharing among research and development teams in Iran, found a significant relationship between team identification and knowledge-sharing intention using SEM analysis. In another study involving 30 research and development teams in China, Tang, Shang, Naumann and Von Zedtwitz (2014:283) also found that team identification was positively related to knowledge-sharing behaviour. Similarly, Rosendaal and Frankema's (2015:241) empirical findings revealed a positive relationship between team identification and knowledge-sharing behaviour in Dutch school teams. In another empirical study involving 481 Chinese university students who were assigned to 67 teams, Lin, Lin and Ye (2015:1694) found a positive relationship between team identification and knowledge-sharing behaviour. Generally, other well-documented research findings (Ding, Ng & Li, 2014:59; Noh, 2013:77; Liu & Phillips, 2011:49) suggest a positive relationship between these constructs. Based on the above analysis, the following relationship is hypothesised:

H^6: There is a positive relationship between *Team identification* and *Intra-team knowledge-sharing behaviour*.

4.2.6 CULTURAL INTELLIGENCE

As explained in Chapter Three (section 3.4.5), a distinction is made in the present study between metacognitive, cognitive, motivational and behavioural cultural intelligence (Solomon & Steyn, 2017:3; Bogilovic & Skerlavaj, 2016:59). As mentioned earlier, there is strong theoretical (see Chapter Three section 3.4.3) and empirical evidence (see Chapter Four section 4.2.4) that suggest that the presence of a diverse workforce can lead to a social classification process that is detrimental to knowledge-sharing behaviour (Bogilovic *et al*., 2017:712). In these diverse work environments, the different cultural intelligence dimensions play an important role given that the

successful management of cultural diversity can enhance knowledge-sharing within teams. This notion is supported by various empirical studies.

Putranto and Ghazali (2013:5) studied the effects of cultural intelligence on the knowledge-sharing behaviour of Master of Business Administration students in Indonesia. Their findings showed a positive link between all four dimensions of cultural intelligence and knowledge-sharing behaviour. Likewise, Chen and Lin (2013:675) investigated the effects of cultural intelligence on team knowledge-sharing among team leaders in hi-tech firms in Taiwan. These authors established that knowledge-sharing behaviour is directly impacted by metacognitive, cognitive and motivational cultural intelligence. Furthermore, knowledge-sharing was found to be indirectly motivated by behavioural cultural intelligence through the mediation of perceived team efficacy. Older, but well acknowledged research by Messarra, Karkoulian and Younes (2008:128-129) revealed that metacognitive, motivational and behavioural cultural intelligence are predictors of employees' knowledge-sharing intention. However, no relationship was found between the cognitive cultural intelligence dimension and knowledge-sharing intention. The sample in their study comprised employees working in multi-national organisations in Lebanon. In a recent empirical study involving Chinese employees across several industries (e.g. manufacturing, finance and education), Li *et al*. (2021:12) found that cultural intelligence was significantly and positively related to knowledge-sharing behaviour. These authors did not report on each dimension of cultural intelligence. Similarly, Stoica, Florea and Gonsalez (2020:124) found a strong positive relationship between metacognitive cultural intelligence and knowledge-sharing behaviour. These authors investigated the determinants of team cohesiveness for virtual teams using a sample of students from Europe, Brazil, China and the US. Besides metacognitive cultural intelligence, the other dimensions of cultural intelligence were not measured by these authors. Limited, but other recent empirical research (Presbitero & Attar, 2018:40-41; Solomon & Steyn, 2017:5; Isichei, 2017:275) also implies that cultural intelligence has a positive effect on individuals knowledge-sharing behaviour.

In contrast to the aforementioned findings, De Geus (2018:39) concluded that not one of the four cultural intelligence dimensions were significantly related to knowledge-sharing behaviour in multinational project teams. Similarly, Chou (2012:131) did not

find a significant relationship between cultural intelligence and knowledge-sharing behaviour in teams. Apart from these two studies, there is sufficient empirical evidence to suggest a positive relationship between cultural intelligence and intra-team knowledge-sharing. However, based on the aforementioned studies, it is evident that not all research was conducted in a team context. The relationship between cultural intelligence and intra-team knowledge-sharing should therefore be subjected to more testing and as a result the following hypotheses were formulated:

H^7: There is a positive relationship between *Metacognitive cultural intelligence* and *Intra-team knowledge-sharing behaviour*.

H^8: There is a positive relationship between *Cognitive cultural intelligence* and *Intra-team knowledge-sharing behaviour*.

H^9: There is a positive relationship between *Motivational cultural intelligence* and *Intra-team knowledge-sharing behaviour*.

H^{10}: There is a positive relationship between *Behavioural cultural intelligence* and *Intra-team knowledge-sharing behaviour*.

4.2.7 TEAM COMMITMENT

In this study, as discussed in Chapter Three (section 3.4.6), team commitment is classified as team members' affective commitment, continuance commitment and normative commitment (Yalabik *et al*., 2017:421-422; Swart *et al*., 2014:288). Whether in an organisational or team context, commitment is likely to positively influence employees' willingness to share knowledge as suggested by Buvic and Tvedt (2017:8).

From an empirical perspective, Swart *et al*. (2014:281) investigated how different forms of commitment influence knowledge-sharing in a global professional service firm that had its headquarters in the United Kingdom. The findings showed that affective commitment to a team is positively linked to knowledge-sharing behaviour. Yu, Hao, Dong and Khalifa (2013:786) investigated the effects of social capital on individuals' knowledge-sharing behaviour in knowledge-intensive work teams in nine Chinese

organisations. These authors found that an individual's emotional attachment to a team (affective commitment) is significantly and positively related to the sharing of both explicit and tacit knowledge with other team members. Cheema and Javed (2017:11) who investigated the predictors of knowledge-sharing in the Pakistani educational sector, found a significant and positive relationship between affective and continuance commitment and knowledge-sharing behaviour. These authors, however, did not establish a significant relationship between normative commitment and knowledge-sharing behaviour. It should be noted that these authors focused on organisational commitment and not team commitment in particular. Nonetheless, the study contributes to an understanding of the types of commitments and its influence on knowledge-sharing behaviour. In another older and well-documented empirical study (Liu, Keller & Shih, 2011:283) conducted in Taiwan on the impact of team-member exchange, differentiation, team commitment and knowledge-sharing on research and development project team performance, the findings suggested that team commitment enhances the sharing of technical knowledge among team members. Similarly, Bui *et al*. (2016:44) who investigated team learning in a higher education context, found that team commitment has a positive influence on team knowledge-sharing behaviour.

Based on the aforementioned discussion and as alluded to in Chapter Three (section 3.4.6), it is evident that more research is required that investigates the relationship between the various forms of team commitment and knowledge-sharing behaviour of individual team members. Nonetheless, there is strong evidence that suggests a positive relationship between team commitment and knowledge-sharing. Therefore, the following relationships are hypothesised:

H^{11}: There is a positive relationship between *Affective team commitment* and *Intra-team knowledge-sharing behaviour*.

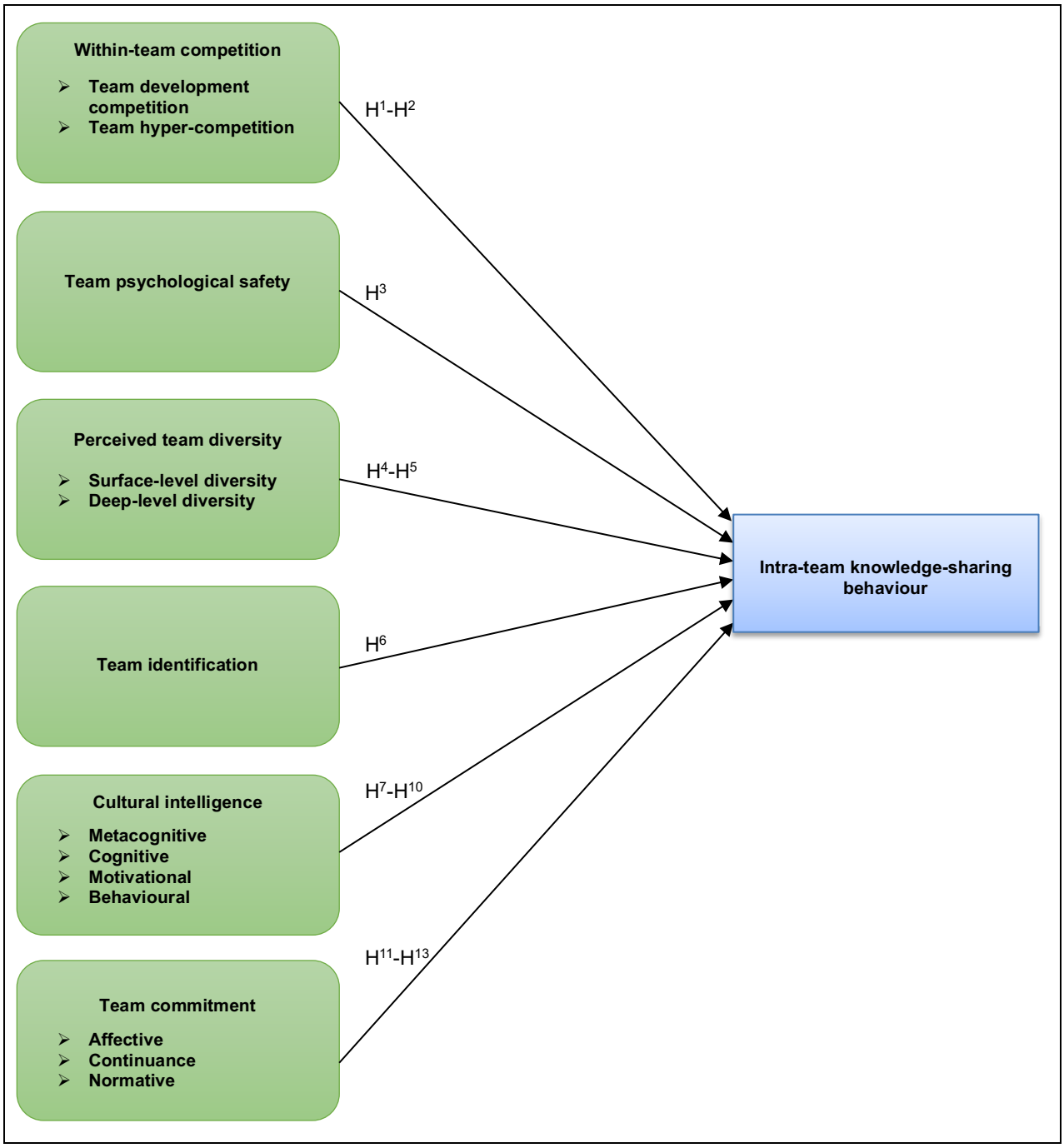
H^{12}: There is a positive relationship between *Continuance team commitment* and *Intra-team knowledge-sharing behaviour*.

H^{13}: There is a positive relationship between *Normative team commitment* and *Intra-team knowledge-sharing behaviour*.

4.3 HYPOTHESISED MODEL

In light of the hypotheses presented, Figure 4.2 illustrates the proposed hypothesised model of team-related factors influencing *Intra-team knowledge-sharing behaviour*. This model serves as the basis for the empirical testing in this study.

Figure 4.2: Proposed hypothesised model of team-related factors influencing intra-team knowledge-sharing behaviour



Source: Researcher's own construction

4.4 DEMOGRAPHIC VARIABLES

In addition to the independent variables, selected demographic variables (i.e., age, gender, language, education, ethnic background, organisational tenure and job tenure) were measured in this study to determine whether these variables influence team members' knowledge-sharing behaviour. Various researchers found relationships between demographic variables and individuals' knowledge-sharing behaviour. For example, Defar's (2015:35-36) study on knowledge-sharing among employees at Wachemo University in Ethiopia, found that female employees were more likely to share knowledge than their male counterparts as females are deemed as being more altruistic than males. This author also found a significant relationship between age, education, working experience and knowledge-sharing behaviour. More specifically, younger employees better understood the importance of knowledge-sharing better; diploma holders were more likely to share knowledge than degree holders; and experienced employees were more likely to share knowledge than less-experienced employees.

Nesic, Matic and Mitrovic (2015:1007-1008), who examined the demographic and organisational factors influencing knowledge-sharing among employees in European organisations, found that gender, the level of education and organisational tenure had a significant influence on knowledge-sharing among employees. Their results showed that females, in particular, were more likely to share explicit knowledge than males, whereas employees with a higher level of education had a lower intention to share tacit knowledge. Furthermore, employees who scored higher on the attitude-towards-knowledge-sharing scale were linked to shorter organisational tenure. These authors did not find any statistically significant relationship between other demographic variables (age and years of experience) and the attitude, intention or actual knowledge-sharing behaviour of employees. Tan and Trang (2017:107) investigated the impact of demographic variables on the knowledge-sharing behaviour of employees in selected Vietnam telecommunication companies. These authors found that males were more likely to share their knowledge than females, whereas older employees aged between 31 and 45 years were more likely to share their knowledge than those aged between 20 to 30 years. Their study did not report any significant

findings concerning the relationships between educational qualification, work experience and knowledge-sharing behaviour (knowledge donating).

A recent study by Kaspersen and Pettersen (2018:28), who investigated whether cohesion influence knowledge-sharing among Norwegian employees working in cross-functional work groups, revealed a negative relationship between age and knowledge-sharing. More specifically, these authors found that groups consisting of younger members were likely to share more knowledge among one another than groups consisting of older members. However, these authors did not test the relationship between other demographic variables (i.e., gender and education) and knowledge-sharing. Consistent with these findings, Perree, Meulenbroek, Arentze and Romme's (2019:118) established that older employees interacted less with their co-workers and were therefore likely to share less knowledge than younger employees. These authors further indicated that male employees more often shared knowledge with other employees through social networking behaviour. These authors conducted their study in the Netherlands and focused on the impact of the physical work environment on social networking and knowledge-sharing behaviour.

In their well-documented qualitative study on knowledge-sharing in a multicultural environment at a South Africa university, Dube and Ngulube's (2012:71) findings revealed that most of the respondents did not have any concerns with sharing their knowledge across race, age and gender. There was, however, an interesting comment from one respondent who asserted that, from his cultural perspective, age is likely to generate unfair relationships. The respondent argued that seniors tend not to attach value to the knowledge of young novices, therefore creating an uneven playing field that does not facilitate the sharing of knowledge.

In another study, Shahid and Naveed (2020:1) investigated the knowledge-sharing behaviour of academics in Pakistan. From a statistical perspective, no significant mean differences were shown in the index of knowledge-sharing behaviour with reference to gender, social background, education, and teaching experience. These authors did however find that as age of academicians increased, the likelihood of knowledge-sharing increased (i.e. through written contributions and organisational communication) (Shahid & Naveed, 2020:8). Kuruppuge, Gregar, Jayawardena and

Kudlacek (2018:279) assessed the influence of demographic, individual and job diversities on the knowledge-sharing intentions of employees working in selected family businesses in Sri Lanka. These authors measured factors such as gender, age, education and work experience. These authors found that age and level of education significantly influenced the knowledge-sharing intention of employees. In particular, older employees tend to share more knowledge than younger employees. In addition, employees who hold a higher education (master's level) tend to share more knowledge than employees holding a diploma. Boateng, Dzandu and Agyemang (2015:222) also studied the effects of demographic variables on knowledge-sharing. These authors focused on high school teachers in Ghana and found that male teachers share more knowledge than female teachers. Also, the findings indicate that first degree holders share more knowledge compared to Higher National Diploma holders. No statistically significant relationship was found between age, working experience and knowledge-sharing behaviour.

Although the research findings are not always consistent, there is nonetheless strong evidence to support a relationship (being either positive or negative) between demographic variables and individuals' knowledge-sharing behaviour. Also, the similarity attraction theory and social categorisation theory as explained in Chapter Two (sections 2.6.6 and 2.6.8) lend further support to believe that demographic variables may have an impact on individuals' knowledge-sharing behaviour. The following hypothesis was subsequently formulated:

H^{14}: There is a relationship between selected *Demographic variables* and *Intra-team knowledge-sharing behaviour*.

4.5 SUMMARY

In this chapter a proposed hypothesised model of team-related factors influencing *Intra-team knowledge-sharing behaviour* was presented and discussed. The relationships proposed in this model pertaining to *Team development competition*, *Team hyper-competition*, *Team psychological safety*, *Perceived surface-level diversity*, *Perceived deep-level diversity, Team identification*, *Metacognitive cultural intelligence*, *Cognitive cultural intelligence*, *Motivational cultural intelligence*, *Behavioural cultural*

intelligence, *Affective team commitment*, *Continuance team commitment, Normative team commitment* and *Intra-team knowledge-sharing* were empirically tested in this study. The examination of these relationships addresses several gaps in knowledge-sharing literature as discussed in the previous chapter.

Various aspects relating to the research design and methodology are discussed in the following chapter.

CHAPTER FIVE

RESEARCH DESIGN AND METHODOLOGY

5.1 INTRODUCTION

In Chapter Four a hypothesised model, consisting of selected team-related factors influencing *Intra-team knowledge-sharing behaviour*, was introduced. Suitable hypotheses relating to the relationships illustrated in the hypothesised model were also proposed.

In this chapter, Chapter Five, the fourth and fifth methodological objectives are addressed. In particular the research design that would be appropriate and suitable to examine the research questions, as well as the design of the measuring instrument to empirically assess the relationships proposed in the hypothesised model, are discussed.

Chapter Five focuses on the research design and methodology adopted in this study to empirically test the relationships between the dependent and the independent variables. The main purpose of this chapter is thus to discuss the research philosophy, approach to theory development, methodological choice, research strategy, time horizon and techniques and procedures associated with the data collection and analysis.

5.2 LITERATURE REVIEW (SECONDARY RESEARCH)

Saunders *et al*. (2019:79) note that it is not possible to evaluate all available literature on a topic before commencing with data collection. As a result, the literature review must involve the most pertinent and important research on the topic being investigated so that the researcher demonstrates familiarity with previous knowledge on the research topic.

Secondary research are previously published sources such as journal articles, books and theses, which are excellent items that provide valuable insight into previous research on a particular research topic (Saunders *et al*., 2019:83). Secondary data are data that have already been collected by other researchers and Sekaran and Bougie (2016:37-38) advise that criteria such as the timeliness, accuracy and relevance of secondary data should be carefully evaluated before using such data.

In the present study, the researcher reviewed the literature to identify team-related factors that could influence individuals' knowledge-sharing behaviour in a team. Secondary sources that were used included, amongst others, journal articles, books, dissertations and conference proceedings. These sources were accessed at the Nelson Mandela University (NMU) and through online databases such as EBSCOhost, Emerald, IEEE, JSTOR, Sabinet, SAGE, ScienceDirect and SpringerLink. Internet search engines such as Google and Google Scholar were also used in the literature review process. In addition, the underlying theory that underpins the research problem and informs the research question in this current study is discussed. It was also important to identify gaps in existing literature relating to the research problem. Based on a detailed literature review, a proposed hypothesised model to be empirically tested was constructed.

In view of the above, Chapter Two provided an overview of the nature and significance of *Intra-team knowledge-sharing behaviour*. Chapter Two subsequently focused on the dependent variable of the study (*Intra-team knowledge-sharing behaviour*) and also elaborated on several theories underpinning the research problem and informing the research question. In Chapter Three the selected team-related factors influencing *Intra-team knowledge-sharing behaviour* were discussed, justifying the need to empirically investigate these factors in relation to *Intra-team knowledge-sharing behaviour*. Chapter Three therefore provided the basis for selecting the independent variables of this study. A proposed hypothesised model of team-related factors that could influence *Intra-team knowledge-sharing behaviour* was presented in Chapter Four. All the variables and proposed relationships in this model were discussed, and the ensuing hypothesised relationships to be empirically tested were presented.

5.3 EMPIRICAL INVESTIGATION (PRIMARY RESEARCH)

Whereas secondary data are data already collected by other researchers, primary data are collected by a researcher first-hand to give effect to the purpose of his or her current study (Sekaran & Bougie, 2016:37-38). Primary data can be collected through, amongst others, surveys, interviews, observation and experimentation to obtain insight into individuals' attitudes, intentions, behaviours, attributes and personalities (Ghauri, Gronhaug & Strange, 2020:159; Sekaran & Bougie, 2016:112). In the present study, the researcher focused on actual knowledge-sharing behaviour as the dependent variable, as opposed to attitudes or intentions towards knowledge-sharing (see Chapter Three section 3.3). In collecting primary data on the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individuals, and subsequently to answer the main research question, the researcher made use of Saunders *et al*. (2019:130) model, which is also referred to as the "research onion". This model is a valuable tool that researchers can use to organise their research and to develop a research design guided by the various stages or "layers" depicted in the research onion (Melnikovas, 2018:34).

5.3.1 RESEARCH DESIGN

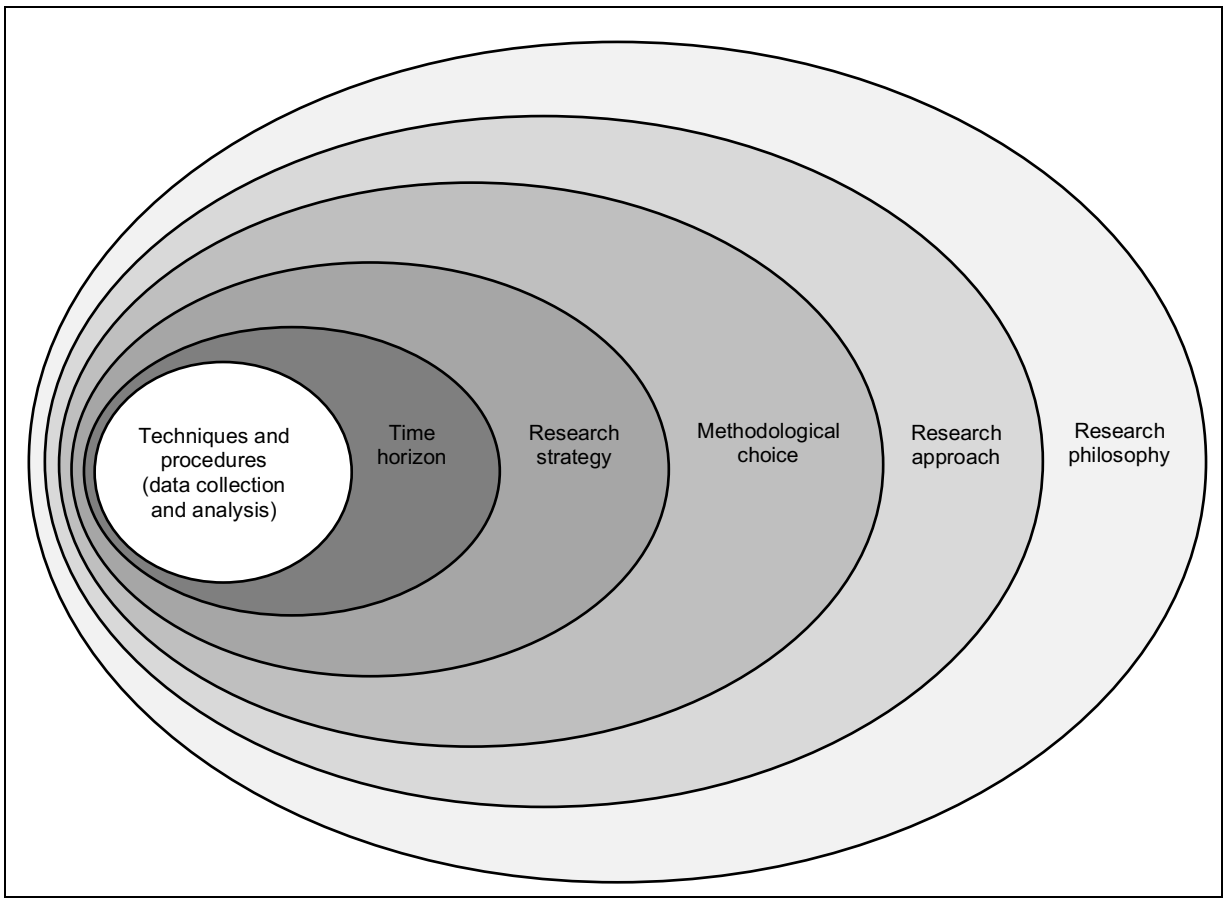
The research design serves as a blueprint for collecting, measuring and analysing data. It serves as a systematic plan that aids the researcher to obtain answers to research questions (Vijayalakshmi & Sivapragasam, 2019:29; Sekaran & Bougie, 2016:95). Selecting a research design can be complex as there are several decisions that the researcher must consider concerning the design. For example, decisions must be taken relating to, amongst others, research strategies, research time horizon, data collection, sampling, the measuring of variables and data analysis (Sekaran & Bougie, 2016:95-96).

Although the central point of the research onion shows the data collection and analysis techniques and procedures, the researcher must have knowledge of and explain the outside layers of the research onion that led to this central point (Saunders *et al*., 2019:128). By explaining these outer layers and their relationship to the central point (data collection and analysis techniques and procedures) of the research onion, the

researcher shows that the study should be reckoned with and not taken lightly. The stages or layers from the outside of the research onion to the central point are (i) research philosophies, (ii) approaches to theory development, (iii) methodological choices, (iv) research strategies, (v) time horizons, and (vi) data collection and analysis techniques and procedures (Saunders *et al*., 2019:130).

Figure 5.1 provides a graphical illustration of the layers or stages of the research onion.

Figure 5.1: Research onion



Source: Adapted from Saunders *et al*. (2019:130)

These stages or layers of the research onion are explained in the subsequent sections in the context of the present study.

5.3.2 RESEARCH PHILOSOPHY

According to Saunders *et al*. (2019:130), not all research studies develop profound theories such as a new theory of human motivation. However, by answering a specific organisational problem, a researcher is nevertheless creating new knowledge. In this regard, research philosophy alludes to a set of beliefs and assumptions concerning the development of new knowledge. Different researchers may have different assumptions about the nature of reality, knowledge and how it should be acquired (Zukauskas *et al*., 2018:123).

Saunders *et al*. (2019:144-151) distinguish between five main research philosophies, namely positivism, critical realism, interpretivism, postmodernism and pragmatism. These philosophies involve different assumptions, which include ontological, epistemological and axiological assumptions. Considering these assumptions one can differentiate between the research philosophies (Saunders *et al*., 2019:144; Melnikovas, 2018:33). Before the research philosophy applicable to this current study is discussed, the following sections will elaborate on the philosophical assumptions that provide insight into these philosophies. The two opposing extremes, namely objectivism and subjectivism, will also be discussed in relation to the research assumptions. Finally, an overview on the relationship between research paradigms and philosophies is provided.

5.3.2.1 Research assumptions

Ontological assumptions relate to the nature of reality and influence how researchers perceive and study their research objects, such as organisations and management. Decisions on what to investigate for research purposes are therefore influenced by a researcher's ontological assumptions (Saunders *et al*., 2019:133; Zukauskas *et al*., 2018:127). In this regard, Sekaran and Bougie (2016:28) note that all research is subject to beliefs about the world and researchers may have opposing views about certain phenomena. For example, some researchers may perceive resistance to organisational change as a negative phenomenon in an organisation. These researchers' ontological assumptions may be that resistance to change is harmful to organisations and a type of misconduct that should be eliminated. The focus of such

research would typically be to identify individuals that would resist change and to make specific recommendations to management on how to prevent resistance. On the other hand, other researchers may believe that resistance to change is always present during organisational change and that organisations can actually benefit by attending to problematic issues associated with change. Subsequently, based on different ontological assumptions, some researchers may view resistance to organisational change as a misbehaviour that should be eliminated, whereas others may consider it as an opportunity that could benefit the organisation (Saunders *et al*., 2019:133). From an ontological perspective, the researcher in the present study views social entities as real in the same manner that physical objects and social phenomena are considered real and not socially constructed. In this study, it is therefore assumed that reality is objective and not socially constructed by individuals employed in knowledge-intensive businesses. This view is in line with the positivistic philosophy as will be explained in section 5.3.2.4 (Tombs & Pugsley, 2020:2; Saunders *et al*., 2019:145).

Epistemology relates to assumptions about the nature of knowledge and what represents admissible and correct knowledge. Questions of interest concerning epistemology include “What is knowledge?”, “How do we acquire knowledge?”, “What is considered acceptable knowledge?” and “What constitutes good-quality data?” (Saunders *et al*., 2019:133; Sekaran & Bougie, 2016:28). Similarly, Zukauskas *et al*. (2018:126) assert that epistemology relates to how a researcher acquires knowledge about a phenomenon being studied and that epistemology is closely linked to ontology. For example, the answer to the question on what is considered acceptable knowledge depends on the ontological assumptions underlying the research. Given the multifaceted nature of management, different types of knowledge (e.g. statistical, visual and textual data) can be deemed acceptable (Saunders *et al*., 2019:133). Epistemologically, the researcher in the present study believes that measurable and observable phenomena can produce appropriate and credible data. As such, quantitative data was collected in this study and subjected to advanced statistical analysis to assess the proposed relationships among the dependent and independent variables (Saunders *et al*., 2019:145).

Finally, axiology concerns the role of values, beliefs and ethics in research (Saunders *et al*., 2019:134; Melnikovas, 2018:33). For example, choosing one topic instead of

another suggests that a researcher believes that a particular topic is more important. The researcher's adoption of a specific philosophy and data collection technique also gives an indication of the researcher's values. For example, a researcher who chooses to interview participants to collect data, is likely to value individual interaction more than perceptions obtained by means of an impersonal questionnaire (Saunders *et al*., 2019:134). From an axiological perspective, the researcher in the present study supports an objective outlook to research to avoid affecting findings. The researcher was subsequently detached and external from the data collection process to avoid influencing findings. This view of the researcher is consistent with a positivistic philosophy (see section 5.3.2.4) (Saunders *et al*., 2019:146).

Objectivism and subjectivism, the two contrasting extremes that provide valuable insight into the aforementioned research assumptions, will be discussed in the following section.

5.3.2.2 Objectivism and subjectivism

Objectivism suggests that the phenomena that researchers investigate exist independently of them and others (i.e. social actors). From an ontological perspective, these social actors have no impact on social reality, and they all face only one common social reality. Objectivism therefore focuses on discovering universal knowledge that explains social behaviour (Saunders *et al*., 2019:135; Walliman, 2019:69-70). Epistemologically, the objectivist investigates the social world by collecting observable and measurable data (i.e. quantitative data) to infer law-like generalisations of social reality (Saunders *et al*., 2019:136; Walliman, 2019:69-70). From an axiological viewpoint, objectivists' research is free of values to avoid influencing findings. As alluded to earlier, social entities and social actors reside independently to one another and objectivists make an effort not to let their values and believes influence the research undertaking (Saunders *et al*., 2019:136; Walliman, 2019:69-70).

The opposing perspective, namely subjectivism, maintains that social reality is based on the views and behaviours of social actors. From an ontological perspective, subjectivism implies that there is no single reality as each individual experiences and views social reality differently. Therefore, multiple realities co-exist under subjectivism

and the phenomena under investigation are constructed by researchers and social actors through, for example, their perceptions and subsequent actions (Saunders *et al*., 2019:137; Melnikovas, 2018:35). Epistemologically, phenomena are investigated in-depth by considering historical, geographical and socio-cultural contexts to obtain a better understanding of social realities, which are constantly changing. With regard to collecting data, subjectivism is typically related to qualitative research and is preoccupied with different viewpoints and narratives that may provide insight into varying realities of different social actors (Saunders *et al*., 2019:137; Maarouf, 2019:2; Melnikovas, 2018:35). Concerning axiological assumptions, subjectivists do not distance themselves from personal values. They constantly reflect and integrate their personal values in their research (Maarouf, 2019:2; Saunders *et al*., 2019:137).

Table 5.1 presents a summary of the philosophical research assumptions and the two contrasting extremes, namely the objectivism–subjectivism dimension, which provides valuable insight into the various philosophical assumptions. Considering the discussions in sections 5.3.2.1 and 5.3.2.2, the researcher in this study adopts an objectivist outlook or objectivism.

Table 5.1: Philosophical assumptions as a multidimensional set of continua

Assumption type	Questions	Continua with two sets of extremes		
		Objectivism	⇔	**Subjectivism**
Ontology	• What is the nature of reality? • What is the world like? • For example: - What are organisations like? - What is it like being in organisations? - What is it like being a manager or being managed?	Real External One true reality (universalism) Granular (things) Order	⇔ ⇔ ⇔ ⇔ ⇔	Nominal/decided by convention Socially constructed Multiple realities (relativism) Flowing (processes) Chaos
Epistemology	• How can we know what we know? • What is considered acceptable knowledge? • What constitutes good-quality data? • What kinds of contribution to knowledge can be made?	Adopt assumptions of the natural scientist Facts Numbers Observable phenomena Law-like generalisations	⇔ ⇔ ⇔ ⇔ ⇔	Adopt the assumptions of the arts and humanities Opinions Narratives Attributed meanings Individuals and contexts, specifics
Axiology	• What is the role of values in research? How should we treat our own values when we do research? • How should we deal with the values of research participants?	Value-free Detachment	⇔ ⇔	Value-bound Integral and reflexive

Source: Saunders *et al*. (2019:135)

5.3.2.3 Research paradigms

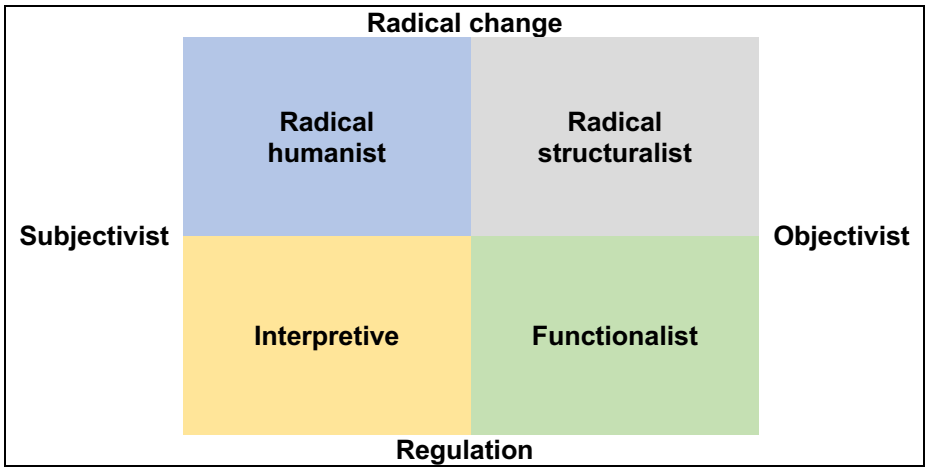
A researcher's ideological viewpoint concerning the phenomena they study is another dimension that is useful to distinguish between research philosophies. This ideological dimension has two opposing extremes, as is the case with objectivism and subjectivism. The ideological extremes relate to regulation and radical change (Saunders *et al*., 2019:138; Burrell & Morgan, 2016:16-17).

Researchers who adopt the regulation perspective are mainly interested in the regulation of human behaviour and communities. Business and management research

is typically orientated towards the regulation perspective in an attempt to improve, as opposed to radically change, existing organisational circumstances. Alternatively, from a radical change perspective, organisational problems are investigated with the aim to overturn the existing circumstances in the organisation. As such, a researcher who adopts a radical change stance, intrinsically questions organisational practices in an effort to provide insight that would change the organisation (Saunders *et al*., 2019:139).

Considering both the objectivism–subjectivism and regulation–radical change dimensions, Figure 5.2 illustrates four paradigms for organisational analysis.

Figure 5.2: Four paradigms for organisational analysis



Source: Saunders *et al*. (2019:140)

The paradigms depicted in Figure 5.2 symbolise four different ways in which societies and organisations can be observed. Saunders *et al*. (2019:140) note that a paradigm relates to "a set of basic and taken-for-granted assumptions which underwrite the frame of reference, mode of theorising and ways of working in which a group operates." This definition, as acknowledged by these researchers, aligns to Burrell and Morgan's (2016:23) interpretation of a research paradigm in their well-cited paper on sociological paradigms and organisational analysis. However, in management research certain terms are at times used interchangeably. The terms 'paradigms' and 'philosophies' are good examples in this regard that are sometimes used equivalently to describe the assumptions that underlie research. Subsequently, one might read about the positivism 'paradigm' instead of 'philosophy'. Research paradigms and

philosophies should be viewed with reference to its “philosophical affinity rather than equivocality”, note Saunders *et al*. (2019:143).

Figure 5.2 is a useful matrix that can be used to explain the relationship between paradigms and philosophies. For example, the bottom right corner of the matrix represents the functionalist paradigm, which is positioned on the objectivist and regulation dimensions (Gunbayi & Sorm, 2018:61; Burrell & Morgan, 2016:25). Business and management research is predominantly associated with the functionalist paradigm. Research in this paradigm involves objective reasoning and the formulation of recommendations for improvement within existing structures. The positivist research philosophy (see section 5.3.2.4) typically underpins the research conducted within the functionalist paradigm (Saunders *et al*., 2019:140-141). Similarly, Gunbayi and Sorm (2018:62) claim that the functionalist paradigm is associated with quantitative research as it assumes an objective approach (e.g. questionnaires and statistical analysis) to investigate a phenomenon. The present study is conducted within a functionalist paradigm as it seeks to investigate the relationships between the dependent and independent variables in an objective manner. Based on the findings of the research the researcher aims to provide recommendations to knowledge-intensive businesses on how to manage the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams.

The bottom left corner of the matrix illustrates the interpretive paradigm, which is located on the subjectivist and regulation dimensions (Gunbayi & Sorm, 2018:63). Consistent with the research philosophy that has an identical name (i.e. interpretivism, see section 5.3.2.4), research conducted within the interpretive paradigm involves the way individuals aspire to understand their environment (Saunders, Lewis & Thornhill, 2016:134). Research undertaken within this paradigm involves uncovering different subjective experiences and is not focused on objectivity. In addition, the focus of research within this paradigm would be to comprehend and explain phenomena as opposed to radically changing things (Saunders *et al*., 2019:141; Gunbayi & Sorm, 2018:63; Burrell & Morgan, 2016:28-31).

The top right corner of the matrix, which integrates the objectivist and radical change dimensions, represents the radical structuralist paradigm (Gunbayi & Sorm, 2018:69; Burrell & Morgan, 2016:33-34). Research within this paradigm follows an objective approach and aims to achieve radical change emanating from the evaluation of problems within organisations. The critical realist philosophy (see Table 5.2) typically underpins the research conducted within the radical structuralist paradigm (Saunders *et al*., 2019:142).

Lastly, the radical humanist paradigm is located in the top left corner of the matrix, combining the subjectivist and radical change dimensions (Gunbayi & Sorm, 2018:67; Burrell & Morgan, 2016:32). Research in this paradigm would focus on fundamental change of present circumstances in organisations, while researchers would approach organisational concerns from a subjectivist perspective. Critical realism as a philosophy can be linked to the radical humanist paradigm. Compared to positivists, critical realists are to a lesser extent objectivist. Critical realists adopt epistemological relativism, which may involve more subjectivist and objectivist research, extending from radical structuralism to radical humanism (Saunders *et al*., 2019:142-143).

Having discussed the assumptions of the research philosophies, the two opposing extremes and research paradigms, the mainstream research philosophies are explained next.

5.3.2.4 Positivism and interpretivism

Although Saunders *et al*. (2019:144-151) identify five research philosophies (i.e. positivism, critical realism, interpretivism, postmodernism and pragmatism), two mainstream philosophies have dominated the natural and social sciences research. These two philosophies, namely positivism and interpretivism (Melnikovas, 2018:34; Collis & Hussey, 2014:43), are discussed next and linked to the ontological, epistemological and axiological assumptions as discussed in the preceding sections. The philosophy adopted in the present study will also be discussed.

(a) Positivism

Positivism relates to objectivism (see section 5.3.2.2) and maintains that researchers can factually explain social phenomena (Walliman, 2019:68; Zukauskas *et al*., 2018:123; Denicolo *et al*., 2016:32). Researchers adopting this philosophy do not interfere or influence the problem under investigation and research is approached objectively. This includes an objective analysis and interpretation of research data (Al-Ababneh, 2020:80). Similarly, Antwi and Hamza (2015:223) explain that positivism pertains to quantitative research and seeks to quantify phenomena by collecting and analysing quantitative data.

From an ontological perspective, Saunders *et al*. (2019:145) note that researchers who adopt a positivist position view social entities as real in the same manner that physical objects and social phenomena are considered real and not socially constructed. Epistemologically, positivists focus on measurable, observable and factual information. Also, positivists seek to identify causal relationships in data to develop law-like generalisations. For example, existing theory could provide a basis to create hypotheses that could be empirically tested and either supported (even partially) or not. From an axiological perspective, positivists would engage in value-free research and insist on an objective outlook to their research to avoid affecting their findings (Saunders *et al*., 2019-145-146).

(b) Interpretivism

In contrast to positivism, interpretivism suggests that everyone views the world from different perspectives and that it is subsequently not possible to construct a universal reality (Walliman, 2019:69). Reality, according to interpretivists, is created by society or human beings and therefore based on subjective experiences (Antwi & Hamza, 2015:218). Similarly, Zukauskas *et al*. (2018:123) note that the interpretivist research philosophy concerns subjective perceptions of the social world based on how it is perceived by different individuals. Al-Ababneh (2020:80) notes that interpretivists perceive each business to be unique and generalisations are not well-suited to this philosophy given that businesses constantly evolve and individuals have differing

interpretations of phenomena. Interviews or observations are examples of research methods that are associated with interpretivism (Antwi & Hamza, 2015:218).

In line with the preceding discussion, and from an ontological perspective, Saunders *et al*. (2019:148-149) assert that interpretivists consider multiple realities that are socially constructed. Interpretivists seek to provide new and rich insights into and interpretations of social reality. Individuals from different cultural backgrounds and environments develop and encounter varying social realities. In this regard, interpretivists consider culture, language and history as important factors in the construction of experiences and interpretations relating to social reality (Saunders *et al*., 2019:149). Epistemologically, interpretivists therefore focus on multiple interpretations, perceptions and narratives. Interpretivists are specifically linked to subjectivism (see section 5.3.2.2). Axiologically, interpretivist researchers deem it important to be part of what they investigate, and their personal values and beliefs form an integral part of the research process (Saunders *et al*., 2019:149).

Although only the mainstream philosophies that have dominated the natural and social sciences research have been explained in the preceding sections, for the sake of completeness, a comparison of the mainstream philosophies (i.e. positivism and interpretivism) and more recent research philosophies (i.e. critical realism, postmodernism and pragmatism) as identified by Saunders *et al*. (2019:144-145) are presented in Table 5.2.

Table 5.2: Comparison of five research philosophies in business and management research

Ontology (nature of reality or being)	**Epistemology** (what constitutes acceptable knowledge)	**Axiology** (role of values)	**Typical methods**
Positivism			
Real, external, independent One true reality (universalism) Granular (things) Ordered	Scientific method Observable and measurable facts Law-like generalisations Numbers Causal explanation and prediction as contribution	Value-free research Researcher is detached, neutral and independent of what is researched Researcher maintains objective stance	Typically deductive, highly structured, large samples, measurement, typically quantitative methods of analysis, but a range of data can be analysed
Critical realism			
Stratified/layered (the empirical, the actual and the real) External, independent Intransient Objective structures Causal mechanisms	Epistemological relativism Knowledge historically situated and transient Facts are social constructions Historical causal explanation as contribution	Value-laden research Researcher acknowledges bias by world views, cultural experience and upbringing Researcher tries to minimise bias and errors Researcher is as objective as possible	Retroductive, in-depth historically situated analysis of pre-existing structures and emerging agency. Range of methods and data types to fit subject matter
Interpretivism			
Complex, rich Socially constructed through culture and language Multiple meanings, interpretations, realities Flux of processes, experiences, practices	Theories and concepts too simplistic Focus on narratives, stories, perceptions and interpretations New understandings and worldviews as contribution	Value-bound research Researchers are part of what is researched, subjective Researcher interpretations key to contribution Researcher reflexive	Typically inductive. Small samples, in-depth investigations, qualitative methods of analysis, but a range of data can be interpreted
Postmodernism			
Nominal Complex, rich Socially constructed through power relations Some meanings, interpretations, realities are dominated and silenced by others	What counts as 'truth' and 'knowledge' is decided by dominant ideologies Focus on absences, silences and oppressed/ repressed meanings, interpretations and voices	Value-constituted research Researcher and research embedded in power relations Some research narratives are repressed and silenced	Typically deconstructive – reading texts and realities against themselves In-depth investigations of anomalies, silences and absences

Flux of processes, experiences, practices	Exposure of power relations and challenge of dominant views as contribution	at the expense of others Researcher radically reflexive	Range of data types, typically qualitative methods of analysis
Pragmatism			
Complex, rich, external 'Reality' is the practical consequences of ideas Flux of processes, experiences and practices	Practical meaning of knowledge in specific contexts 'True' theories and knowledge are those that enable successful action Focus on problems, practices and relevance Problem solving and informed future practice as contribution	Value-driven research Research initiated and sustained by researcher's doubts and beliefs Researcher reflexive	Following research problem and research question Range of methods: mixed, multiple, qualitative, quantitative, action research Emphasis on practical solutions and outcomes

Source: Saunders *et al*. (2019:144-145)

(c) Research philosophy adopted in the present study

Several relationships were empirically tested as illustrated in the proposed hypothesised model (see Figure 4.2). The research is scientific in nature, objective, value-free and made use of advanced statistical techniques to analyse the collected data. Accordingly, this study adopted a positivistic research philosophy to develop new knowledge in the field of knowledge-sharing.

In the subsequent sections, the remaining layers of the research onion will be discussed in line with the features of the chosen research philosophy.

5.3.3 APPROACHES TO THEORY DEVELOPMENT

Saunders *et al*. (2019:153) identify three approaches to theory development in a research project, namely deduction, induction and abduction.

5.3.3.1 Deduction

Deduction involves the construction of a theory that is put through an extensive test by means of several propositions. Deduction is characterised by discovering relationships between variables. A researcher who adopts a deductive approach thus develops several hypotheses to empirically test through collecting quantitative data. Such an approach is highly structured and concepts must be operationalised to ensure that the facts can be measured quantitatively. Another important feature of a deductive approach is generalisation. In order to generalise findings, the selection of the sample (see section 5.3.7.2) plays an important role, the sample size in particular (see section 5.3.7.7) (Saunders *et al*., 2019:154).

In congruence with the views of Saunders *et al*. (2019:154), Sekaran and Bougie (2016:24-26) conclude that in deductive reasoning researchers start with a general theory that is tested with hypotheses. A researcher will thus develop hypotheses and establish measures for the variables of interest to empirically test the hypotheses. Finally, data will be collected, analysed and interpreted to either support or refute the hypotheses.

5.3.3.2 Induction

A different approach to developing theory in a research study is by means of an inductive approach. For example, a researcher may first interview individuals to obtain a better understanding of the research problem. The data collected from the interviews can subsequently be analysed and interpreted to form a theory (presented as a conceptual framework) that can provide more insight into the nature of the problem under investigation. Essentially, induction is characterised by the generation of theory after the data have been collected, and not the confirmation or rejection of theory through data collection, as is the case with a deductive approach (Saunders *et al*., 2019:154-155).

Sekaran and Bougie (2016:26) state that both the testing of theory (deduction) and the formulation of theory (induction) form an integral part of the research process. These authors assert that induction is often used in qualitative studies, whereas deduction is

mostly associated with quantitative studies. A combination of induction and deduction can be applied in an ordered fashion, which is known as abduction.

5.3.3.3 Abduction

With abduction, a researcher alternates between deduction and induction. Saunders *et al*. (2019:155-156) explain that after collecting extensive and rich data on a specific phenomenon, and after identifying themes and patterns in the data, a researcher could generate a theory and express it by means of a conceptual framework (i.e. induction). This theory can subsequently be tested by means of existing or new data (i.e. deduction).

5.3.3.4 Methodological approach adopted in the present study

In this study, hypotheses were formulated and quantitative data were collected and analysed to establish whether the proposed hypotheses could be supported or not. Therefore, a deductive approach was adopted, which is in line with the chosen positivism research philosophy that is typically associated with this approach.

Following the discussions on the research philosophy and approach adopted in the present study, the methodological choice applicable to the present study will be explained in the subsequent sections.

5.3.4 METHODOLOGICAL CHOICE

Melnikovas (2018:33) states that the research onion proposed by Saunders *et al*. (2019:130) is a detailed model that researchers can use to create an effective research methodology. The two outer layers of this model (see Figure 5.1) have already been discussed in the preceding sections and the focus now turns to the third layer, which concerns the methodological choice. This includes decisions as to whether the study should be quantitative, qualitative or mixed in nature (Saunders *et al*., 2019:175).

5.3.4.1 Quantitative research design

Quantitative research is typically related to positivism, which is the research philosophy adopted in this current study (see section 5.3.2.4). From a methodological perspective, quantitative research is generally related to a deductive approach (see section 5.3.3.1) that places emphasis on testing existing theory (Saunders *et al*., 2019:176).

Quantitative research is also underpinned by objectivity (see section 5.3.2.2) and quantitative researchers believe that there is a reality that can be measured that is not socially constructed. Quantitative researchers believe that they are independent from the phenomenon being researched and they focus on collecting and analysing data that can be presented statistically (Al-Ababneh, 2020:86; Antwi & Hamza, 2015:221).

5.3.4.2 Qualitative research design

Typically, qualitative research is linked to an interpretive philosophy (see section 5.3.2.4) as researchers need to interpret subjective, socially constructed opinions concerning a phenomenon under investigation. Qualitative research is also generally associated with an inductive approach to theory generation (see section 5.3.3.2), although many qualitative studies actually adopt an abductive approach to develop theory as discussed in section 5.3.3.3 (Saunders *et al*., 2019:179).

Moreover, qualitative research is characterised by subjectivism (see section 5.3.2.2) and qualitative researchers express collected data in the form of a descriptive report, as opposed to reporting it statistically (Melnikovas, 2018:39; Antwi & Hamza, 2015:221).

5.3.4.3 Mixed-method research design

Mixed-method research combines the use of quantitative and qualitative data collection and analysis techniques in a single study. Mixed-method research allows researchers to combine deductive and inductive reasoning and to adopt multiple

methods and data types to attend to a research problem (Saunders *et al*., 2019:181; Sekaran & Bougie, 2016:106).

Pragmatism, as a research philosophy, is likely to have an impact on a mixed-method research design. Pragmatists' methodological choice is highly influenced by the research question and the context of the research (Saunders *et al*., 2019:181). In fact, pragmatists' research commences with a problem and aims to find a practical solution that adds value to future endeavours. Pragmatists acknowledge that there are several ways to interpret the world and to conduct research. This does not imply that pragmatists always adopt more than one method; they instead use the method or methods that will ultimately benefit the research being undertaken (Saunders *et al*., 2019:151).

5.3.4.4 Methodological choice adopted in the present study

The present study is quantitative in nature, which aligns it to the positivism research philosophy and deductive approach. The study involved the collection and analysis of quantitative data through advanced statistical techniques to test the hypothesised relationships between the dependent variable and the independent variables.

In the following section, the fourth layer of the research onion is discussed, which involves the research strategy.

5.3.5 METHODOLOGICAL STRATEGY

Saunders *et al*. (2019:189) state that a research strategy serves as a plan on how a researcher will answer a research question. The strategy can be regarded as a connection between a research philosophy and the researcher's ensuing choices concerning the data collection and analysis methods. The choice of a particular strategy should be aligned to the research philosophy and approach and be guided by the research questions and objectives. Other aspects such as the availability of time, existing knowledge, and access to prospective research participants also play an important role in the chosen research strategy (Saunders *et al*., 2019:189-190; Sekaran & Bougie, 2016:96).

Popular research strategies include experiments, surveys, archival research, case studies, ethnography, action research, grounded theory and narrative enquiry (Saunders *et al*., 2019:190; Sekaran & Bougie, 2016:97). The focus in this section is on the survey strategy as surveys are associated with quantitative research, in the same way that positivism as a research philosophy and deduction as a research approach are linked to quantitative studies (Saunders *et al*., 2019:193).

5.3.5.1 Survey strategy

A survey strategy enables a researcher to collect a large amount of information. For example, meticulously crafted survey questions can provide the researcher with information about respondents' attitudes, opinions and behaviours (Gravetter & Forzano, 2018:323). Online surveys, in particular, make it possible to reach a geographically dispersed population (Wang, 2018:271), which was the case in the present study. Also, with a survey strategy, the researcher can collect and analyse quantitative data by using both descriptive and inferential statistics. Surveys provide data that are ideal to draw inferences about relationships between variables (Saunders *et al*., 2019:193-194), which served the purpose of the present study to test the relationships between the dependent and the independent variables.

5.3.5.2 Research strategy adopted in the present study

Considering the information presented, primary data on the team-related factors influencing *Intra-team knowledge-sharing behaviour* were collected by means of a survey technique in the form of an online questionnaire. More details on the design of the questionnaire are provided in section 5.3.7.3.

5.3.6 TIME HORIZON

An important aspect to consider in a research design is whether the research should be a snapshot at a specific point in time (i.e. cross-sectional), or whether it should be a portrayal of affairs over a specific period (i.e. longitudinal) (Saunders *et al*., 2019:212).

5.3.6.1 Cross-sectional studies

Research with time constraints is likely to be cross-sectional in nature. Cross-sectional studies usually adopt a survey strategy to, for example, explain the relationship between variables. Qualitative or mixed-method research may, however, also be cross-sectional in nature (Saunders *et al*., 2019:212). Bell, Bryman and Harley (2018:58) state that when respondents complete a questionnaire that collects data on several variables, the information is supplied at a single point in time, which is a key element of a cross-sectional study. However, Sekaran and Bougie (2016:104) assert that in cross-sectional studies data can also be collected over a few days or weeks – or even months – that will enable the researcher to address the research question.

5.3.6.2 Longitudinal studies

Contrary to cross-sectional studies, a researcher may want to investigate a phenomenon over a specific period to address the research question. For instance, a study can be conducted to investigate employees' behaviour before and after a particular intervention in an organisation to assess the impact of the change. In this instance, data will be collected at various points in time and not at a single point in time (Sekaran & Bougie, 2016:105). Melnikovas (2018:34) similarly states that longitudinal research is ideal to compare data, given its collection over a longer period of time. Saunders *et al*. (2019:212) also note the potential to assess change during longitudinal studies as a key advantage. These authors further claim that existing data collected over several years (e.g. published secondary data collected over a 30-year period) can be re-evaluated, making it possible to add a longitudinal dimension to a study.

5.3.6.3 Time horizon adopted in the present study

The present study is cross-sectional in nature as the research involved a survey design to collect quantitative data on the dependent and the independent variables at a specific point in time. The research is therefore a snapshot in time as the data were not collected at various points in time.

Having explored the various stages in the research onion, the remainder of the chapter addresses the final stage, namely the data collection and analysis techniques and procedures.

5.3.7 DATA COLLECTION

Data collection and analysis form the central point of the research onion. Leading up to this central point, the important outer layers must first be explained and justified by the researcher to lend credibility to the research (Saunders *et al*., 2019:128). While the preceding sections addressed these outer layers, the following section focuses on data collection aspects, such as the study population, sampling unit and sampling method. Following this discussion, the development of the measuring instrument is described. Hereafter, the scale development and operationalisation of variables are explained, followed by a discussion on the pilot testing of the measuring instrument, administration of the questionnaire, the requirements in terms of sample size and missing data.

5.3.7.1 Population studied

A population includes all the cases or elements from which a sample is chosen for data collection purposes (McDaniel & Gates, 2020:100-101; Saunders *et al*., 2019:294). The population of this study was limited to employees of knowledge-intensive businesses in South Africa, especially those participating in knowledge-intensive teams, given that the study focused on the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams. It was deemed important to investigate these team-related factors so that knowledge-intensive organisations can better understand and manage intra-team knowledge-sharing, which in turn is vital for the organisation's overall performance and competitive advantage.

The population in this study can thus be described as all employees based in South Africa who participated in knowledge-intensive teams. As a complete database of employees working in knowledge-intensive teams in South Africa was not available at the time of the study, it was not possible to select the whole population to participate

in the study. Therefore, a sample had to be chosen, which represents a subset of the population (McDaniel & Gates, 2020:101; Saunders *et al*., 2019:294). This process is discussed in the following section.

5.3.7.2 Sample unit and sampling method

For the purpose of this study, the unit of analysis comprised individual members of knowledge-intensive teams. Knowledge-sharing starts with the individual and it is therefore important to understand an individual member's knowledge-sharing behaviour in knowledge-intensive teams (Rehman *et al*., 2019:85; Edwards, 2016:218; Foote, 2016:57).

With respect to sampling, probability and non-probability sampling techniques exist (Parija & Kate, 2018:146). Probability sampling involves the random selection of research participants, whereas in non-probability sampling respondents are actively selected and individuals in the population do not have the same chance of being selected as respondents (Cassell *et al*., 2017:484).

For the purpose of the present study, data were obtained from members of the population who were conveniently available and willing to participate in the data collection process. Convenience sampling, which is a non-probability sampling technique, was therefore used in this study. According to Cooksey and McDonald (2019:859), convenience sampling has the advantage of being a quick and cost-effective technique to collect data.

In view of the above, the researcher obtained a database from a leading higher education institution of qualified individuals in South Africa (i.e., current students and alumni at the time of the study period who worked in knowledge-intensive businesses and who were therefore likely to be part of knowledge-intensive teams). This database with contact details of professionals working in knowledge-intensive businesses proved to be ideal for the data collection in the present study. More specifically, the database contained contact details of qualified individuals who worked in knowledge-intensive industries such as the banking sector (e.g. ABSA, Nedbank, Investec, FNB, Standard Bank and SARB), retail (e.g. Massmart), government services (e.g. Eskom,

Treasury, the SABC and SARS), the mining industry (e.g. AngloGold Ashanti) and the telecommunications sector (e.g. Vodacom and MTN). The approximate distribution of respondents per industry was unfortunately not available because of insufficient information on the database. The individuals listed on the database held qualifications that ranged from higher certificates to master's degrees. Considering the minimum sample size required and the likelihood of non-responses, all the individuals on this database were requested via e-mail to participate in an online survey (see section 5.3.7.6 and 5.3.7.7 for more information on the administration of the questionnaire and sample size requirements). The online questionnaire included a qualifying question to ensure that respondents indeed participated in knowledge-intensive teams in their organisations and that they were therefore representative of the population. Given that the database included details of more than 8 000 well-educated and qualified professionals working in a wide range of knowledge-intensive industries, the researcher was confident that these individuals were likely to participate in knowledge-intensive teams and that they were therefore a good representation of the population. In Chapter Six more details are given on the sample and response rate.

5.3.7.3 Measuring instrument development

As outlined in section 5.3.5.2, the present study adopted a survey strategy to answer the research questions. The measuring instrument used was an online questionnaire comprising scales that measured the dependent and the independent variables of this study. Besides the wording of a questionnaire, it is important to present an attractive and neat questionnaire that will make it easy for respondents to answer the questions. A proper introduction and clear instructions are thus important issues that the researcher should consider when developing a questionnaire (Sekaran & Bougie, 2016:150).

The measuring instrument used in the present study (see Appendix A) included a cover letter and six sections. The cover letter, which included an ethical clearance number, provided proof to respondents that ethical clearance had been obtained for the research. In the letter, the purpose of the study was also explained to respondents as well as research benefits that they could gain from participating. The respondents were further assured of their confidentiality and that names of individuals would not

appear in the research report. In this regard, respondents were informed that only aggregate data and summary statistics were to be reported. Respondents were given clear instructions on how to respond to the statements. Finally, respondents were informed that they were free to withdraw from the study at any point in time, that there were no right or wrong answers, and that only the perceptions they held were important. The researcher's contact details were made available and respondents were informed of their right to contact the researcher to request a copy of the findings from the research project should they wish to do so.

In section one of the questionnaire, informed consent was requested from the respondents to participate in the study. Section two of the questionnaire included a qualifying question to establish whether a respondent met the criteria to participate in the study. In this respect, respondents had to indicate whether they participated (or have participated) in a knowledge-intensive team at their organisation. Section three of the questionnaire determined which type of team or teams the respondents participated (or have participated) in at their organisation.

Sections four and five consisted of statements relating to the dependent variable (*Intra-team knowledge-sharing behaviour*) and independent variables (team-related factors influencing *Intra-team knowledge-sharing behaviour*). Respondents were requested to indicate the extent to which they agreed with each statement using a Likert-type scale. The items for each Likert-type scale were designed based on previous studies and the literature on knowledge-sharing. A seven-point Likert-type interval scale was used in section four and interpreted as 1 = 'strongly disagree' and 7 = 'strongly agree', while in section five a five-point Likert-type scale was used, anchored by descriptors ranging from 1 = 'very similar' to 5 = 'very different'. Likert-type scales, which produce interval data, are more reliable and provide more data than other scales (Cooper *et al*., 2018:335), so they were deemed ideal for the present study, which employed several statistical techniques such as t-tests and correlation tests.

Section six contained questions pertaining to the demographic information of the respondents. This section solicited information on the respondents' age, gender, language, education, ethnic background and tenure, which could have an impact on

respondents' knowledge-sharing behaviour in a team. In the following section of this chapter, more information is given pertaining to the scale development and operationalisation of the dependent and the independent variables.

5.3.7.4 Scale development and operationalisation of variables

Measuring variables is an important part of research. If one cannot measure the variables, it is not possible to obtain answers to the research questions. Furthermore, questionnaires are often used to measure the relevant variables in research that employs a survey design (Sekaran & Bougie, 2016:193), which was the case in this current study.

Breaking down abstract concepts and considering the behavioural dimensions or properties represented by a concept is called operationalisation. This enables researchers to measure concepts in a tangible manner. Operationalisation involves several steps, of which the first step is to define the concepts that must be measured. Following this step, the content of the measure must be considered, and therefore items or questions (an instrument) that measure the concepts of interest must be developed. Thereafter, a response format, such as Likert-type scales with descriptors ranging from strongly agree to strongly disagree, is required. Finally, the reliability and validity of the measuring instrument must be assessed (Sekaran & Bougie, 2016:195-196).

Concerning the items that measure the identified variables in a study, researchers can adopt or adapt questions that have been used in other questionnaires or they can develop their own questions (Saunders *et al*., 2019:518). However, care must be taken when adopting or adapting questions that were used in previous studies. In this respect, researchers must ensure that they can still collect suitable data to answer the research questions and objectives of interest (Saunders *et al*., 2019:518-519). Similarly, Hair, Black, Babin and Anderson (2019:627) assert that scales in prior research can be used when operationalising constructs or new scales can be developed if existing scales are not suitable for a specific context.

To operationalise the constructs in the present study, a combination of knowledge-

sharing literature and items from existing measuring instruments that proved to be reliable and valid in previous research studies were used.

The operational definitions of the dependent and the independent variables are presented next, followed by a discussion of the development of the scales that measured these variables.

(a) Dependent variable: Intra-team knowledge-sharing behaviour

Although various behavioural concepts can be linked to knowledge-sharing, for example, attitude and intention towards knowledge-sharing, the present study focused on actual knowledge-sharing behaviour as explained and justified in Chapter Three section 3.3. Given the context and primary objective of this research, the dependent variable was therefore *Intra-team knowledge-sharing behaviour* – the actual knowledge-sharing behaviour of individual members participating in knowledge-intensive teams.

This study also considered the sharing of both tacit and explicit knowledge given the various patterns of interaction that exist between these two types of knowledge and, subsequently, the importance of sharing both types of knowledge (see Chapter Two section 2.4).

In line with the description above, and for the purpose of the present study, *Intra-team knowledge-sharing behaviour* refers to the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams, which include the sharing of specialised knowledge, expertise, work experiences, work-related insights, practical know-how, well-documented manuals, methodologies and models. This operational definition has been derived from drawing on previous knowledge-sharing literature and existing scales that measure individuals' knowledge-sharing behaviour. Therefore, this study consulted previous literature and existing scales on knowledge-sharing to develop the scale that was used to measure *Intra-team knowledge-sharing behaviour* during the empirical investigation. For the sake of completeness, the following sections provide more information on existing scales that measure actual knowledge-sharing behaviour and the attitude and intention towards knowledge-sharing.

In a study involving knowledge-sharing in a higher education context, Al Kurdi (2017:195-203) measured knowledge-sharing attitude, knowledge-sharing intention and knowledge-sharing behaviour. This author developed two four-item Likert-type scales to measure attitudes and intention toward knowledge-sharing, while a six-item Likert-type scale was used to measure actual knowledge-sharing behaviour. More specifically, Al Kurdi (2017:119) developed seven-point Likert-type scales ranging from 'strongly disagree' to 'strongly agree'. The items in these scales relate to both explicit and tacit knowledge. The scales reported satisfactory composite reliability coefficients of 0.89, 0.84 and 0.92 respectively. Considering scale reliability, Cronbach's alpha and composite reliability are the most commonly used measures of scale reliability (Hair *et al*., 2019:763) with a generally accepted threshold of 0.70 (Hair *et al*., 2019:161). Al Kurdi's (2017:119) scales therefore exceeded the recommended threshold of 0.7. Gu and Wang (2013:82-84) similarly used two five-item Likert-type scales to measure attitude (composite reliability = 0.81) and intention (composite reliability = 0.73) towards knowledge-sharing for both explicit and tacit knowledge. These scales indicated sufficient internal reliability. In a similar fashion, Chan (2016:26) used a seven-point Likert-type scale ('strongly disagree' to 'strongly agree') to measure respondents' intention to share tacit and explicit knowledge. This scale consisted of five items and reported a high Cronbach's alpha value of 0.96, showing good internal reliability (Chan, 2016:38). Anwar (2016:34) used two five-point Likert-type scales ('strongly disagree' to 'strongly agree') to measure respondents' intention to share knowledge (Cronbach's alpha coefficient = 0.77) and actual knowledge-sharing behaviour (Cronbach's alpha coefficient = 0.86). Each scale focused on both explicit and tacit knowledge.

Chuang *et al*. (2016:536) measured the extent to which team members shared tacit knowledge in a team context. These authors used a seven-item Likert-type scale that reported good internal reliability (α = 0.90). He *et al*. (2013:9) used separate seven-point Likert scales to measure explicit and tacit knowledge-sharing behaviour. These authors argue that given the few differences and variations concerning the measurement of explicit knowledge they used a two-item scale to measure explicit knowledge-sharing behaviour (α = 0.76), while a six-item scale was used to measure tacit knowledge-sharing behaviour (α = 0.77). These authors, in fact, adapted the two-

item scale (composite reliability = 0.92) used by Bock *et al*. (2005:109) in their well-documented study on individuals' knowledge-sharing intention. In another study, the original eight-item Likert scale developed by Pangil and Nasurdin (2009:40) to measure knowledge-sharing behaviour, split into two components following a factor analysis. The first component, namely tacit knowledge-sharing behaviour, reported a Cronbach's alpha coefficient of 0.80, whereas the explicit knowledge-sharing behaviour component returned a Cronbach's alpha value of 0.70, indicating good internal reliability for both components.

In another study investigating the influence of cultural intelligence on team knowledge-sharing, Chen and Lin's (2013:682) four-item Likert-type scale measuring knowledge-sharing behaviour revealed sufficient internal reliability (Cronbach's alpha coefficient = 0.87). The items in this scale focused on both tacit and explicit knowledge. Focusing on team performance, Choi, Lee and Yoo (2010:860) developed in their study a three-item Likert-type scale to measure team members' knowledge-sharing behaviour, by considering a combination of explicit and tacit knowledge. The scale returned a sufficient Cronbach's alpha coefficient of 0.88 (Choi *et al*., 2010:862). Daniels (2018:23) measured individuals' intention to share both tacit and explicit knowledge by means of a five-item Likert-type scale (reliability = 0.82). Helmy, Adawiyah and Banani (2019:72), similarly, measured knowledge-sharing behaviour by using a single Likert-type scale, which included items relating to both explicit and tacit knowledge. The scale reported a composite reliability coefficient of 0.92, indicating sufficient internal reliability.

Table 5.3 gives a summary of the seven-item Likert-type scale that was developed to measure the dependent variable *Intra-team knowledge-sharing behaviour*. The scale was anchored by descriptors ranging from 1 = 'strongly disagree' to 7 = 'strongly agree'. The scale was based on the scales used in previous empirical studies that returned reliable and valid results (Chuang *et al*., 2016; He *et al*., 2013; Pangil & Nasurdin, 2009). Minor adjustments were made to the wording of previous scales to make the items more suitable for the present study testing *Intra-team knowledge-sharing behaviour.*

Table 5.3: Operationalisation – Intra-team knowledge-sharing behaviour (ITKSB)

Item codes	Items	Sources
ITKSB1	I share my specialised knowledge and expertise with members of my team.	Chuang *et al*. (2016)
ITKSB2	I share my work experiences with members of my team.	Chuang *et al*. (2016)
ITKSB3	I share my work-related insights with members of my team.	Chuang *et al*. (2016)
ITKSB4	I share my practical know-how (for carrying out daily tasks) with members of my team.	He *et al*. (2013)
ITKSB5	I share well-documented manuals (notes regarding work) with members of my team.	Pangil & Nasurdin (2009)
ITKSB6	I share methodologies (methods for completing a particular task) with members of my team.	Pangil & Nasurdin (2009)
ITKSB7	I share models (examples of previously completed projects) with members of my team.	Pangil & Nasurdin (2009)

(b) Independent variables

The independent variables in this study were *Team development competition*, *Team hyper-competition*, *Team psychological safety*, *Perceived surface-level diversity*, *Perceived deep-level diversity, Team identification*, *Metacognitive cultural intelligence*, *Cognitive cultural intelligence*, *Motivational cultural intelligence*, *Behavioural cultural intelligence*, *Affective team commitment*, *Continuance team commitment* and *Normative team commitment.* These variables, were presented in Chapter Four (Figure 4.2) and their hypothesised relationships with the dependent variable *Intra-team knowledge-sharing behaviour.* The operational definitions of the independent variables and an explanation of the scale development for each of these variables are presented in the following sections.

(i) Team development competition and team hyper-competition

In the present study, competition among team members was considered a two-dimensional construct consisting of *Team development competition* and *Team hyper-competition.* These two types of competition may lead to different behavioural outcomes (as stated in Chapter Three section 3.4.1). *Team development competition* refers to competition among team members where team rules are followed and where competing does not hamper the goal outcomes of the team, but rather positively stimulates the functioning of the team. Competing in good spirit and considering the

welfare of other team members when competing with one another is also encompassed in this variable.

Team hyper-competition, on the other hand, refers to competition where there is a 'win-lose' relationship among team members and team members' goals are incompatible with one another. Team members prioritise the goals they want to accomplish and deem it less important what other team members want to accomplish. During rivalry, team members do whatever it takes them to achieve their personal goals. This type of competition can lead to frustration for the entire team.

In previous studies on performance and knowledge-sharing, Baruch and Lin (2012:1155) used a five-item Likert-type scale to measure competition among team members (Baruch & Lin, 2012:1160). These authors focused on intense competition among team members but did not distinguish between the different types of competition, as was done in this current study. The scale used in their study, however, yielded a sufficient Cronbach's alpha value of 0.92 (Baruch & Lin, 2012:1165). In a similar way, Wong *et al*. (2009:242) used a five-item Likert scale to measure competitive goal orientation among team members. The scale returned a high Cronbach's alpha value of 0.87, indicating sufficient scale reliability (Wong *et al.*, 2009:242). Likewise, Zhao (2015:93) used a five-item Likert-type scale to measure a competitive goal structure among team members, which returned a sufficient Cronbach's alpha value of 0.71 (Zhao, 2015:46). Similar to the measurement of the independent variable *Team hyper-competition*, both Wong *et al.* (2009:248) and Zhao's (2015:93) scale focused on competition among team members among whom goals and rewards were incompatible. In a similar fashion, Tsai, Joe, Chen, Lin, Ma and Du (2016:95) used a six-item Likert-type scale to measure hyper-competition among team members. The scale returned a high Cronbach's alpha coefficient of 0.92, indicating sufficient scale reliability. Contrary to these researchers who adopted a unidimensional measure for competition among team members, He *et al*., (2014:958) used different measures of within-team competition. More specifically, these authors used a four-item and a seven-item Likert-type scale ranging from 'strongly disagree' to 'strongly agree' to measure team development-competition and team hyper-competition respectively. The team development competition (α = 0.92) and team hyper-competition (α = 0.87) scales returned high Cronbach's alpha scores, signifying scale reliability.

Based on secondary sources discussed in Chapter Three section 3.4.1 and the scales used in the well-documented study of He *et al*. (2014), two five-item Likert scales (1 = 'strongly disagree' to 7 = 'strongly agree') were developed in this current study to measure *Team development competition* and *Team hyper-competition*. Minor adjustments were made to the wording of He *et al*.'s (2014) scales to make the scales more suitable for the present study. The items used for the two scales are summarised in Tables 5.4.

Table 5.4: Operationalisation – Team development competition (TDC) and team hyper-competition (THC)

Item codes	Items	Source
Team development competition		
TDC1	Members of my team follow team rules when working with one another in the team.	He *et al*. (2014)
TDC2	The competition among members of my team does not hamper the goal outcomes of the team.	He *et al*. (2014)
TDC3	The competition among members of my team positively stimulates the functioning of the team.	He *et al*. (2014)
TDC4	Members of my team compete with one another in good spirit when working in a team.	He *et al*. (2014)
TDC5	Members of my team consider the welfare of other team members when competing with one another in the team.	Self-generated
Team hyper-competition		
THC1	Members of my team have a 'win–lose' relationship.	He *et al*. (2014)
THC2	Members of my team have goals that are incompatible with one another.	He *et al*. (2014)
THC3	Members of my team give high priority to the goals they want to accomplish and low priority to the things other team members want to accomplish.	He *et al*. (2014)
THC4	When there is rivalry among members of my team, they do whatever it takes to achieve their personal goals.	He *et al*. (2014)
THC5	The competition among members of my team results in frustration for the entire team.	He *et al*. (2014)

(ii) Team psychological safety

Team psychological safety in this study refers to the extent to which team members feel they can make a mistake in their team without it being held against them. It also refers to how easy it is for team members to raise controversial issues in their team and to ask team members for work-related assistance. The extent to which team members feel comfortable to openly express opinions in their team, team members' views that other team members would not deliberately undermine their efforts, and

that their skills and talents are valued by other team members, are also incorporated in this variable.

Tofte (2016:22) operationalised team psychological safety as the extent to which team members regard their team environments to be safe in interpersonal risk-taking. Tofte (2016:22-23) measured this construct with a seven-item Likert-type scale, which showed sufficient internal reliability (Cronbach's alpha score = 0.89). In another study focusing on employee knowledge-sharing in work teams, Noh (2013:61) similarly used a seven-item Likert-type scale to measure psychological safety. The scale returned a high Cronbach's alpha coefficient of 0.91, indicating scale reliability.

Ter Horst (2016:30), in a study identifying the antecedents of intra- and inter-team learning processes, measured psychological safety using a five-item Likert-type scale. The scale indicated sufficient internal consistency (Cronbach's alpha score = 0.75). Likewise, Kessel *et al*. (2012:151) used a four-item Likert scale to measure psychological safety. The scale returned a high Cronbach's alpha value of 0.81, providing sufficient evidence of scale reliability. In a similar fashion, Siemsen *et al*., (2009:445) developed a three-item Likert scale to measure psychological safety, which returned a high internal reliability score (α = 0.88).

Consistent with the scales of Tofte (2016) and Noh (2013), a six-item scale (see Table 5.5) with descriptors ranging from 'strongly disagree' (1) to 'strongly agree' (7) was developed to measure *Team psychological safety* in the present study. Minor adjustments were made to the wording of previous scales.

Table 5.5: Operationalisation – Team psychological safety (TPS)

Item codes	Items	Sources
TPS1	If I make a mistake in my team, it is not held against me.	Tofte (2016)
TPS2	It is easy to raise controversial issues in my team.	Tofte (2016)
TPS3	It is easy to ask other members of my team for work-related assistance.	Tofte (2016)
TPS4	I am comfortable to openly express my opinions in my team.	Tofte (2016)
TPS5	No one in my team would deliberately act in a way that would undermine my efforts in the team.	Noh (2013)
TPS6	My unique skills and talents are valued when I work with members of my team.	Noh (2013)

(iii) Perceived surface-level diversity and perceived deep-level diversity

In this study, the construct perceived team diversity was classified into *Perceived surface-level diversity* and *Perceived deep-level diversity*. *Perceived surface-level diversity* refers to the degree to which team members are perceived to be different in their gender, ethnic background, age, marital status and team tenure, whereas *Perceived deep-level diversity* relates to perceived differences in respect of attitudes about work, personalities, personal values, learning goals and educational background.

Bodla *et al*. (2018:717), in a study involving team knowledge- sharing and team diversity, used Likert-type scales to measure perceived surface-level diversity and perceived deep-level diversity. The scales were anchored by descriptors ranging from 1 = 'very similar' to 5 = 'very different' and included four dimensions to measure perceived surface-level diversity and seven dimensions to measure perceived deep-level diversity. Both scales reported sufficient internal reliability with Cronbach's alpha values of 0.76 and 0.73. Van Esch (2016:37), on the other hand, measured perceived deep-level similarity instead of diversity in a study involving expatriates' knowledge-sharing behaviour. The Likert scale reported sufficient internal reliability (Cronbach's alpha coefficient = 0.91). Windeler, Maruping, Robert and Riemenschneider (2015:619) also tested perceived deep-level diversity among team members by using a five-item Likert-type scale that reported sufficient internal consistency (Cronbach's alpha score = 0.90). These authors, however, did not assess perceived surface-level diversity in their study.

Sahin, Van Der Toorn, Jansen, Boezeman and Ellemers (2019:4) measured perceived dissimilarity among employees of a governmental institution in the Netherlands. They measured perceived dissimilarity using two items, one related to perceived surface-level diversity and the other linked to perceived deep-level diversity. No reliability coefficient was reported. In an older, well-documented study on the impact of perceived diversity on team social integration and performance, Newell, Maruping, Riemenschneider and Robert (2008:6) used a Likert scale consisting of thirteen deep-level characteristics (e.g. values, attitudes, and personalities) to measure respondents'

perceived deep-level diversity. The scale returned a high Cronbach's alpha value of 0.92, indicating scale reliability.

In line with the aforementioned scales, Robert (2016:2466-2467) measured perceived surface-level diversity (α = 0.89) and perceived deep-level diversity (α = 0.91) using a three- and four-item Likert-type scale respectively, which returned sufficient Cronbach's alpha scores. Harrison, Price, Gavin and Florey's (2002:1029) study is one of the most well-documented studies involving team diversity and group functioning, with several authors (e.g. Bodla *et al*., 2018:717; Robert, 2016:2466-2467; Windeler *et a*l., 2015:619; Hamedani, 2012:39; Newell *et al*., 2008:6), using or adapting the measurements of perceived surface-level and perceived deep-level diversity of Harrison *et al*. (2002:1029). The Likert-type scales of Harrison *et al*. (2002:1035) (ranging from 'very similar' to 'very different') consisted of three perceived surface-level diversity characteristics (α = 0.68), while seven items related to perceived deep-level diversity (α = 0.82). In the same way, Van Leeuwen (2017) used a six-item Likert-type scale to measure perceived surface-level diversity (α = 0.73) and a four-item scale to measure perceived deep-level diversity (α = 0.68). Although the Cronbach's alpha coefficients of selected scales mentioned above were slightly below the generally accepted threshold of 0.70 (Saunders *et al*., 2019:518; Hair *et al*., 2019:161), Cronbach's alpha coefficients in the range of 0.6 to < 0.7 are also acceptable in exploratory research (Hair *et al*., 2019:161).

The *Perceived surface-level* and the *Perceived deep-level diversity* dimensions measured in the present study were based on those dimensions identified in previous studies (e.g. Van Leeuwen, 2017; Trueman, 2017; Harrison *et al*., 2002). Likert-type scales were designed to measure these dimensions (see Table 5.6). Respondents were requested to indicate how similar or different their team members were in respect of five surface-level characteristics (i.e. gender, ethnic background, age, marital status and team tenure) and five deep-level characteristics (i.e. attitudes about work, personalities, personal values, learning goals and educational background). The scales included descriptors that ranged from 1 = 'very similar' to 5 = 'very different'.

Table 5.6: Operationalisation – Perceived surface-level diversity (SLD) and perceived deep-level diversity (DLD)

Item codes	Items	Source
Perceived surface-level diversity		
SLD1	Gender	Van Leeuwen (2017)
SLD2	Ethnic background	Harrison *et al*. (2002)
SLD3	Age	Harrison *et al*. (2002)
SLD4	Marital status	Harrison *et al*. (2002)
SLD5	Team tenure	Self-generated
Perceived deep-level diversity		
DLD1	Attitudes about work	Van Leeuwen (2017)
DLD2	Personalities	Harrison *et al*. (2002)
DLD3	Personal values	Harrison *et al*. (2002)
DLD4	Learning goals	Van Leeuwen (2017)
DLD5	Educational background	Van Leeuwen (2017)

(iv) Team identification

In this current study, *Team identification* refers to the extent to which team members are interested in what others think about their team. This variable also refers to how proud team members are to be part of their team and whether a team member considers his or her team's successes as their personal successes. Furthermore, the extent to which individual team members consider team compliments as a personal compliment, and the manner in which a team member refers to his or her team (i.e. "we" rather than "they"), is also encompassed in this variable.

Akhavan and Hosseini (2016:103-104), in a study measuring the relationships between social capital, knowledge-sharing intention and innovation capability, used a three-item Likert scale (1 = 'strongly disagree' to 5 = 'strongly agree') to assess team identification. The scale reported sufficient internal reliability, reporting a Cronbach's alpha coefficient of 0.73. Similarly, Tang *et al*. (2014:280) used a six-item Likert-type scale (1 = 'strongly disagree' to 5 = 'strongly agree') to measure team identification. The scale returned a high Cronbach's alpha value (α = 0.89), indicating internal reliability.

In another study involving the enabling and constraining factors of knowledge-sharing within teams, Rosendaal and Frankema (2015:240) used a six-item Likert-type scale to measure team identification. The scale proved to be reliable with a high Cronbach's alpha of 0.81. Lin *et al*. (2015:1690), in their study involving knowledge-sharing behaviours, used four items to assess team identification. In line with previous researchers (e.g. Akhavan & Hosseine, 2016; Tang *et al*., 2014), Lin *et al*. (2015:1690) used a five-point Likert-type scale (1 = 'strongly disagree' to 5 = 'strongly agree') that reported sufficient internal reliability (α = 0.88). Similarly, Ding *et al.* (2014:58) assessed team identification with four items. These researchers' measurement scale returned a high Cronbach's alpha value of 0.82, indicating scale reliability.

For the purpose of the present study, a five-item Likert-type scale (1 = 'strongly disagree' to 7 = 'strongly agree') was developed to measure the construct *Team identification*. This measurement scale was based on previous scales (Akhavan & Hosseini, 2016; Tang *et al*., 2014) that reported high internal reliability. The items used for this scale are summarised in Table 5.7.

Table 5.7: Operationalisation – Team identification (TI)

Item codes	Items	Sources
TI1	When I talk about my team I usually say "we" rather than "they".	Tang *et al*. (2014)
TI2	I am very interested in what others think about my team.	Tang *et al*. (2014)
TI3	I am proud to be a member of my team.	Akhavan & Hosseini (2016)
TI4	My team's successes are my successes.	Tang *et al*. (2014)
TI5	When someone praises my team, it feels like a personal compliment.	Tang *et al*. (2014)

(v) Cultural intelligence

Four dimensions of cultural intelligence, namely metacognitive, cognitive, motivational and behavioural cultural intelligence were measured as independent variables in the present study. The descriptions of these variables that follow are given in the context of the study.

Metacognitive cultural intelligence refers to the tendency of a team member to be conscious of and to adjust his or her cultural knowledge when interacting with team

members from different cultural backgrounds. This variable also encompasses a team member's consciousness of the accuracy of their cultural knowledge when interacting with other team members from different cultural backgrounds. The tendency to reflect on the cultural beliefs and values of other team members before interacting with them and the ability to understand different cultural values and norms of other team members are also pertinent to this variable.

Cognitive cultural intelligence relates to the knowledge of a team member of the legal, economic and social systems of other cultures from which other team members come from. Knowing the rules and meaning of other languages of team members and the values of team members from other cultural backgrounds, is also incorporated in this variable.

The third dimension, namely *Motivational cultural intelligence*, refers to a team member's confidence to deal with the stress of adjusting to a diverse team culture and to socialise with team members from other cultural backgrounds. A team member's enjoyment from learning and seeking information about the different cultural backgrounds of team members along with the confidence to get accustomed to the working conditions that are influenced by these team members is also embodied in this variable.

The final dimension of cultural intelligence, namely *Behavioural cultural intelligence*, relates to a team member's change of verbal behaviour (e.g. tone of voice) and non-verbal behaviour (e.g. gestures and facial expressions) when a cross-cultural team interaction requires it. This variable also includes the use of appropriate words, pauses or silence when interacting with team members from diverse cultural backgrounds.

With regard to assessment, Chen and Lin (2013:682) measured all four dimensions of cultural intelligence in their study that investigated the effects of cultural intelligence on team knowledge-sharing. Each of the four dimensions was measured using four items (out of a total of 16 items) on a Likert-type scale. Each of the scales reported sufficient internal reliability, returning Cronbach's alpha values of 0.86 (metacognitive cultural intelligence), 0.80 (cognitive cultural intelligence), 0.80 (motivational cultural intelligence) and 0.89 (behavioural cultural intelligence). In fact, Chen and Lin's

(2013:682) measurements were adapted from Ang, Van Dyne, Koh, Ng, Templer, Tay and Chandrasekar's (2007:335) well-known paper on cultural intelligence and its measurements. Ang *et al*. (2007:344) developed a multidimensional cultural intelligence scale consisting of four (metacognitive cultural intelligence), six (cognitive cultural intelligence), five (motivational cultural intelligence) and five (behavioural cultural intelligence) items. These measurements were used by Ang *et al*. (2007:346-359) in three different studies to assess the various dimensions of cultural intelligence. In all these studies, the scales reported Cronbach's alpha values in excess of 0.70, indicating scale reliability. Messarra *et al*. (2008:128) also adopted the four-dimensional model of cultural intelligence developed by Ang *et al*. (2007:366). Although these authors did not report on the reliability of each scale (i.e., each dimension of cultural intelligence separately), they did report an overall Cronbach's alpha value of 0.79 for the questionnaire.

Consistent with the authors mentioned above, Presbitero and Attar (2018:38) measured cultural intelligence, using a Likert-type scale and 20 items, drawn from Ang and Van Dyne (2008:389). Presbitero and Attar (2018:38) did not report on the reliability of each dimension of cultural intelligence separately, but instead reported an overall Cronbach's alpha value of 0.83 for the questionnaire as a whole measuring cultural intelligence. Likewise, De Geus (2018:30) used items drawn from Ang *et al*. (2007:366) and Chen and Lin's (2013:693) research to measure the various dimensions of cultural intelligence. Each of the four dimensions was measured using four items (out of a total of 16 items for the cultural intelligence measurement) on a seven-point Likert-type scale. De Geus (2018:33) reported an overall Cronbach's alpha value of 0.91 for the cultural intelligence scale, indicating sufficient reliability.

For the purpose of this current study the various dimensions of cultural intelligence were measured using items based on pre-validated scales (Ang *et al*., 2007; Chen & Lin, 2003) and the theory on cultural intelligence (De Geus, 2018) with slight adjustments to the wording to make the items more suitable for the present study. A seven-point Likert-type scale (1 = 'strongly disagree' to 7 = 'strongly agree') was used to measure each dimension of cultural intelligence. More specifically, *Metacognitive cultural intelligence* was measured using five items, *Cognitive cultural intelligence* using four items, *Motivational cultural intelligence* using five items, and *Behavioural*

cultural intelligence using four items. The items used for the respective scales are summarised in Tables 5.8.

Table 5.8: Operationalisation – Metacognitive (MCCI), cognitive (CCI), motivational (MCI) and behavioural cultural intelligence (BCI)

Item codes	Items	Source
Metacognitive cultural intelligence		
MCCI1	I am conscious of the cultural knowledge (i.e., knowledge about a particular culture, including its values, beliefs and norms) I use when interacting with team members from different cultural backgrounds.	Ang *et al*. (2007)
MCCI2	I adjust my cultural knowledge (i.e., knowledge about a particular culture, including its values, beliefs and norms) when I interact with team members from different cultural backgrounds.	Ang *et al*. (2007)
MCCI3	I am conscious of the accuracy of my cultural knowledge (i.e., knowledge about a particular culture, including its values, beliefs and norms) when I interact with team members from different cultural backgrounds.	Ang *et al*. (2007)
MCCI4	I reflect on the cultural beliefs and values of team members before interacting with them.	Self-generated
MCCI5	I am capable of understanding the different cultural values and norms of team members.	Self-generated
Cognitive cultural intelligence		
CCI1	I know the legal and economic systems (e.g. command/socialist, market or mixed economies) of other cultures that members of my team come from.	Ang *et al*. (2007)
CCI2	I know the rules and meaning (i.e., the vocabulary and grammar) of other languages that members of my team use.	Ang *et al*. (2007)
CCI3	I know the social systems (i.e., how society functions as a whole) of other cultures that members of my team come from.	Chen & Lin (2003)
CCI4	I know the values of team members from other cultural backgrounds.	Ang *et al*. (2007)
Motivational cultural intelligence		
MCI1	I am confident that I can deal with the stress of adjusting to a diverse team culture.	Ang *et al*. (2007)
MCI2	I enjoy learning about the cultural background of team members that is different from mine.	Chen & Lin (2003)
MCI3	I actively seek information about the cultural backgrounds of team members that is different from mine.	Self-generated
MCI4	I am confident that I can get accustomed to the working conditions that are influenced by team members from different cultural backgrounds.	Chen & Lin (2003)
MCI5	I am confident that I can socialise with team members from other cultural backgrounds.	Ang *et al*. (2007)
Behavioural cultural intelligence		
BCI1	I change my verbal behaviour (e.g. tone of voice) when a cross-cultural team interaction requires it.	Ang *et al*. (2007)
BCI2	I use appropriate words when interacting with team members from diverse cultural backgrounds.	Self-generated
BCI3	I use pauses and silence differently to suit different cross-cultural situations.	Ang *et al*. (2007)

BCI4	I change my nonverbal behaviour (e.g. gestures, facial expressions) when a cross-cultural team situation requires it.	Ang *et al*. (2007)

(vi) Team commitment

In this study, team commitment includes team members' affective, continuance and normative commitment. *Affective commitment* refers to a team member's sense of belonging to their team. Whether a team member feels part of a 'family' in his or her team and considers the team as having much personal meaning to them is also embodied in this variable. *Continuance team commitment* relates to a team member not leaving their team as it would require them to adjust to new working habits, get used to a new way of working and exerting effort in this regard, and re-adapt to new team norms. *Normative team commitment* alludes to a team member's sense of obligation, loyalty and indebtedness to their team.

Well-known scholars in the field of knowledge-sharing, i.e., Swart *et al*. (2014:270), conducted a study on the various foci of commitment (organisation, profession, team and client) and knowledge-sharing. As, applicable to the present study, Swart *et al*. (2014:276-277) used a seven-point Likert scale (1 = 'strongly disagree' to 7 = 'strongly agree') to measure the various types of team commitment. In this respect, three items were used to measure affective team commitment, four to measure continuance commitment, and three items to measure normative commitment (Swart *et al*., 2014:288). The affective (α = 0.90), continuance (α = 0.85) and normative team commitment (α = 0.87) scales all returned high Cronbach's alpha values, confirming the internal reliability of these measurements (Swart *et al*., 2014:277). Similarly, Cheema and Javed (2017:7) assessed affective, continuance and normative commitment in their study involving knowledge-sharing in the educational sector of Pakistan. Nine items on a five-point Likert scale were used to assess these types of commitment (i.e. three items for each type of commitment).

The Cronbach's alpha coefficients for the affective (α = 0.83), continuance (α = 0.84) and normative commitment scales (α = 0.87) were all in excess of 0.7, indicating satisfactory scale reliability (Cheema & Javed, 2017:8).

In a well-documented older study, Gellatly *et al*., (2006:331) investigated the combined impact of affective, continuance and normative commitment on staying intentions and citizenship behaviour among employees. These authors measured each type of commitment with three items, thus a total of nine items. The affective, continuance and normative commitment scales returned Cronbach's alpha values of 0.89, 0.77 and 0.79 respectively, indicating sufficient internal reliability. Respondents had to provide their responses on a six-point Likert-type scale ranging from 1 = 'strongly disagree' to 6 = strongly agree' (Gellatly *et al*., 2006:336). In fact, the scale of Gellatly *et al*. (2006:336) was based on the seminal work by Allen and Meyer (1990:6) on organisational commitment. In their paper on the measurement and antecedents of the various forms of organisational commitment, Allen and Meyer (1990:6) reported sufficient reliability coefficients for the affective (α = 0.87), continuance (α = 0.75) and normative commitment scales (α = 0.79). Each scale included eight items on a seven-point Likert-type scale to measure the three forms of commitment, totalling 24 items.

For the purpose of this present study, ten items were used to measure the various types of commitment. More specifically, three items were used to measure affective team commitment, four items to measure continuance team commitment and another three items to measure normative team commitment. Seven response choices were given to respondents, ranging from 1 = 'strongly disagree' to 7 = 'strongly agree'. The scales were based on the measures used by well-known scholars Swart *et al*. (2014), with minor adjustments made to the wording to make the items more relevant to the present study. The internal reliability of the scales of Swart *et al.* (2014) has been confirmed. These scales were further adjusted to consider team commitment in particular as opposed to other scales (e.g. Cheema & Javed, 2017; Gellatly *et al*., 2006; Allen & Meyer, 1990), which focus on organisational commitment. The items used for each scale are summarised in Table 5.9.

Table 5.9: Operationalisation – Affective (ATC), continuance (CTC) and normative team commitment (NTC)

Item codes	Items	Source
Affective team commitment		
ATC1	I feel a strong sense of belonging to my team.	Swart *et al*. (2014)
ATC2	I feel like part of a family in my team.	Swart *et al*. (2014)
ATC3	My team has a great deal of personal meaning for me.	Swart *et al*. (2014)
Continuance team commitment		
CTC1	I would not leave my team, because it would require me to adjust to new working habits.	Swart *et al*. (2014)
CTC2	I would not leave my team, because it would require me to get used to a new way of working.	Swart *et al*. (2014)
CTC3	I would not leave my team, because I would have to re-adapt to new team norms.	Swart *et al*. (2014)
CTC4	I would not leave my team, because it would require a great deal of effort from me to adapt to a new way of working.	Swart *et al*. (2014)
Normative team commitment		
NTC1	I would not leave my team right now because I have a sense of obligation to the people who are part of my team.	Swart *et al*. (2014)
NTC2	My team deserves my loyalty.	Swart *et al*. (2014)
NTC3	I owe a great deal to my team.	Swart *et al*. (2014)

(c) Demographic variables

In Chapter Four, section 4.4, several demographic variables (e.g. gender, education, age and experience) were identified and explained with reference to their relationship with knowledge-sharing. In the final section of the research instrument respondents indicated into which grouping their demographic characteristics fell (see Annexure A section 6). This not only enabled the researcher to summarise the demographic profile of the sample, but it also made statistical calculations possible with regard to the influence of selected demographic variables *Intra-team knowledge-sharing behaviour*.

5.3.7.5 Pilot testing of measuring instrument

The questionnaire used to collect data was first pilot-tested among respondents who had similar characteristics than those respondents who actually completed the survey questionnaire (i.e., those who made up the actual sample of the study). The purpose of a pilot test is to identify any issues relating to a questionnaire and to refine it accordingly before it is distributed to the actual participants of the study. Ultimately,

the aim of the pilot test is to ensure that no problems will be encountered with the answering of questions and with data recording (Saunders *et al*., 2019:540). Bell *et al*. (2018:265) assert that a pilot study is especially important when a self-administered questionnaire is used, as was the case in the present study. These authors believe that a pilot study is important to ensure that both the questions and the questionnaire as a whole function effectively.

Saunders *et al*. (2019:540) note that one can even, before the pilot testing, request an expert or group of experts to provide feedback on the suitability of the questions in the research instrument. The feedback can also extend to the structure of the questionnaire to help attain content validity and to allow the researcher to make suitable revisions to the questionnaire before the actual pilot testing can commence. In this current study, experienced researchers, statistical experts and experts in the field of business management were requested to inspect the items in the questionnaire for accuracy, relevance and meaningfulness to improve content validity. Minor amendments to the items were made before the questionnaire was finalised and pilot-tested among respondents.

The questionnaire was then subjected to a pilot study among 34 respondents with similar characteristics than the study population. These respondents were requested to complete the questionnaire and to provide feedback on issues such as ambiguous questions, time required to complete the questionnaire, clarity of instructions, and any other relevant information pertaining to the completion of the questionnaire. The pilot test made it possible for the researcher to establish, to some extent, the face validity of the questionnaire, that is, whether the questionnaire seemed to make sense (Saunders *et al*., 2019:541). Assessing questions and modifying the weaknesses before administering a questionnaire to actual respondents are likely to reduce any bias (Sekaran & Bougie, 2016:155).

Following the present study's pilot testing and the subsequent refinement of the items in the questionnaire, the items were randomly sequenced, after which the actual research respondents were requested to participate in an online survey.

5.3.7.6 Administering the questionnaire

An electronic link to the questionnaire accompanied with a cover letter (see Annexure A), was e-mailed to 8 496 potential respondents whose contact details were obtained from a leading higher education institution in South Africa (see section 5.3.7.2). In this way, respondents were requested to complete an online survey on selected team-related factors influencing *Intra-team knowledge-sharing behaviour*.

As discussed in section 5.3.7.3, the cover letter provided evidence to respondents that ethical clearance has been obtained for the research. The ethical clearance number, H20-BES-BMA-041, was provided to respondents. Other important aspects such as the purpose of the study, research benefits that the participants could gain from participating in this study, assurance of confidentiality and privacy were explained to respondents in the cover letter. In addition, informed consent was requested from respondents before participating in the research, while respondents were given clear instructions on how to respond to the statements in the questionnaire. Importantly, respondents were informed that they are free to withdraw from the study at any time and that the perceptions they hold are important.

5.3.7.7 Sample size requirements

SEM was the statistical technique used in this study to determine the relationships amongst the variables. SEM is a multivariate data analysis technique, which, compared to other advanced statistical analysis techniques, requires larger samples (Karakaya-Ozyer & Aksu-Dunya, 2018:282). SEM has become a popular method to examine the relationship between latent variables. Owing to the high cost involved in obtaining a large number of participants, the number of observations (N) in studies is sometimes low, while a large number of variables (p) are examined. This situation specifically applies to the collection of data using questionnaires or survey data. The application of SEM methods in these cases could lead to misleading results (Deng, Yang & Marcoulides, 2018:1).

Deng *et al*. (2018:2) further note that the problem of a small number of observations with a large number of variables has been investigated by several scholars (e.g. De

Winter, Dodou & Wieringa, 2009; Jackson, 2001; Bentler & Chou, 1987; Barrett & Kline, 1981) who, in some instances aim to provide a rule of thumb concerning the required sample size for using SEM. However, Wolf, Harrington, Clark and Miller (2013:913-914), highlight the limitations of generally cited rules of thumb (e.g. a minimum sample size of 100 or 200; 5 or 10 observations per estimated parameter; and 10 cases per variable). In fact, these authors revealed a range of sample size requirements (from 30 to 460 cases) for SEM. Wolf *et al*. (2013:914) claim that such proposed rules of thumb are problematic as it may lead to over- or underestimation of the sample size required for SEM purposes.

Karakaya-Ozyer and Aksu-Dunya (2018:282-283) reviewed 75 selected studies that applied SEM. In eight per cent of the reviewed studies, these authors found that sample sizes included 150 or fewer participants, while approximately 25 per cent of the articles that were reviewed had between 150 and 300 participants. A further 52 per cent of the reviewed articles reported between 300 and 1000 participants. More or less 15 per cent of the articles that these authors reviewed reported more than 1 000 participants as the sample. Hair *et al*. (2019:633) also note the general variability in sample size requirements (e.g. 100 to 500) from one model to another. In line with Wolf *et al*.'s (2013:914) views on generally cited rules of thumb, Hair *et al*. (2019:633) conclude that general guidelines such as "sample sizes of 300 are required" and "always maximise your sample size" are not acceptable. In fact, Hair *et al*. (2019:633) offer the following suggestions for minimum sample sizes, which are based on the model complexity and the measurement model characteristics in a study:

- Minimum sample size - 100: Models containing five or fewer constructs, each with more than three items (observed variables), and with high item communalities (0.6 or higher).
- Minimum sample size - 150: Models with seven constructs or less, at least modest communalities (0.5), and no underidentified constructs.
- Minimum sample size - 300: Models with seven or fewer constructs, lower communalities (below 0.45), and/or multiple underidentified (fewer than three) constructs.
- Minimum sample size - 500: Models with large numbers of constructs, some with

lower communalities, and/or having fewer than three measured items.

From the above analysis by Hair *et al*. (2019:633) and supported by Gana and Broc (2019:35), it is evident that minimum sample size requirements will differ from one model to another depending on model complexity, reliability and the number of indicators of latent variables, multivariate data normality, item communality and missing data. As a result, the researcher's approach to the present study was that one should caution against the use of generally accepted rules of thumb.

Statistical software can also be used to determine a minimum required sample size. A well-known option in this respect is the sample size calculator by Raosoft Inc., which was also adopted in the present study. According to this calculator, with a margin of error of five per cent; a confidence level of 95 per cent; and a response distribution of 50 per cent, the minimum sample size required for this study was 377 respondents. The actual number of usable responses obtained in the present study was 384. This sample size is not only consistent with the Raosoft calculator specifications, but it is also in line with the guidelines and rules of thumb discussed in the preceding paragraphs and sample sizes reported in previous studies (e.g. Hair *et al*., 2019:633; Karakaya-Ozyer & Aksu-Dunya, 2018:282-283; Wolf *et al*., 2013:914).

The model investigated in this study is based on a sound theoretical foundation and in most cases the variables were measured by at least five items. Guidelines of Hair *et al*. (2019:633) suggest a minimum of 500 responses for a model with a large number of constructs, as was the case in the present study. However, this requirement is also based on some constructs having lower communalities, and/or having fewer than three measured items, which in most instances were not the case in the present study. Therefore, the researcher believed that the present study conformed to some extent to the guidelines provided by Hair *et al*. (2019:633) especially, since there are no criteria given by Hair *et al*. (2019:633) in respect of a minimum sample size of 350-400 respondents. Although the sample size is important in relation to the estimation of the statistical model, the primary consideration of the researcher should be that the sample size appropriately represented the population under investigation (Hair *et al*., 2019:633).

5.3.7.8 Missing data

The online questionnaire in the present study was set up in such a way that the researcher could prevent the submission of incomplete questionnaires. As a result, no missing data were reported.

5.3.8 DATA ANALYSIS

The statistical techniques that were applied in the present study to examine the validity and reliability of the measuring instrument are discussed in the following sections. A brief description of the SEM analysis, which was used to examine the hypothesised relationships, will also be presented.

5.3.8.1 Reliability of the measuring instrument

As is the case with validity, reliability forms an integral part of the quality of quantitative research. Reliability refers to consistency and the replication of a study's findings. For example, if a researcher had to duplicate a previous research design and attain the same findings, then the research can be considered reliable. Unreliable research will affect the validity of the research since any bias or error will influence the results and subsequent interpretations. Reliability is of particular importance in quantitative research and unreliable research could create an element of doubt regarding the means to measure the problem under investigation (Saunders *et al*., 2019:213-214; Bell *et al*., 2018:46).

Reliability or internal consistency is most frequently measured by means of Cronbach's alpha, which is a statistic that assesses the consistency of responses to a particular set of questions (i.e., the interrelation of indicators). This set of questions, combined, forms a scale that measures a specific variable. The commonly accepted minimum threshold for the Cronbach's alpha coefficient is 0.70 or higher (Saunders *et al*., 2019:518; Hair *et al*., 2019:161), although Cronbach's alpha coefficients that range from 0.6 to < 0.7 are also acceptable for exploratory research (Hair *et al*., 2019:161). Cronbach-alpha coefficients were used in this current study to assess the reliability of

the measuring instrument. In this respect, the software program IBM SPSS Statistics version 27 was used.

5.3.8.2 Validity of the measuring instrument

Construct validity refers to whether a set of questions truly measure the existence of a construct that a researcher initially intended them to measure (Saunders *et al*., 2019:517). A scale with both convergent and discriminant validity can be considered to have construct validity (Abu-Bader, 2021:17-18). As such, the present study focuses on convergent and discriminant validity to assess construct validity.

While convergent validity refers to the extent to which different scales measure the same construct or the correlation or overlap between such scales, discriminant validity relates to different scales assessing theoretically distinct constructs, i.e., a lack of correlation or overlap between scales (Abu-Bader, 2021:17; Saunders *et al*., 2019:517). As discussed in section 5.3.7.4, a theoretically sound measuring instrument was developed in the present study for data collection purposes. This instrument was assessed in terms of its convergent and discriminant validity (construct validity).

The convergent validity of the measuring instrument was assessed by means of AVE estimates. In this instance, convergent validity can be confirmed if the AVE estimate of a particular construct exceed the generally excepted threshold of 0.5 (Hair *et al*., 2019:775). The present study applied the Fornell–Larcker criterion to examine the discriminant validity of the measuring instrument. This criterion entails a comparison of the AVE estimates between any two constructs against the squared correlations of the two constructs. To establish discriminant validity, the AVE estimates should be greater than the squared correlations between any two constructs (Hair *et al*., 2019:788). Besides convergent and discriminant validity, the pilot test (see section 5.3.7.5) allowed the researcher to ascertain a degree of face validity of the questionnaire (Saunders *et al*., 2019:541).

In Chapter Six more details are provided regarding the assessment of convergent and discriminant validity.

5.3.8.3 Structural equation modelling

SEM is a popular statistical method that is used in scientific research and, although SEM is similar to regression analysis, it allows a researcher to examine highly complex multivariate models and to detect both direct and indirect relationships among variables (Civelek, 2018:4-6).

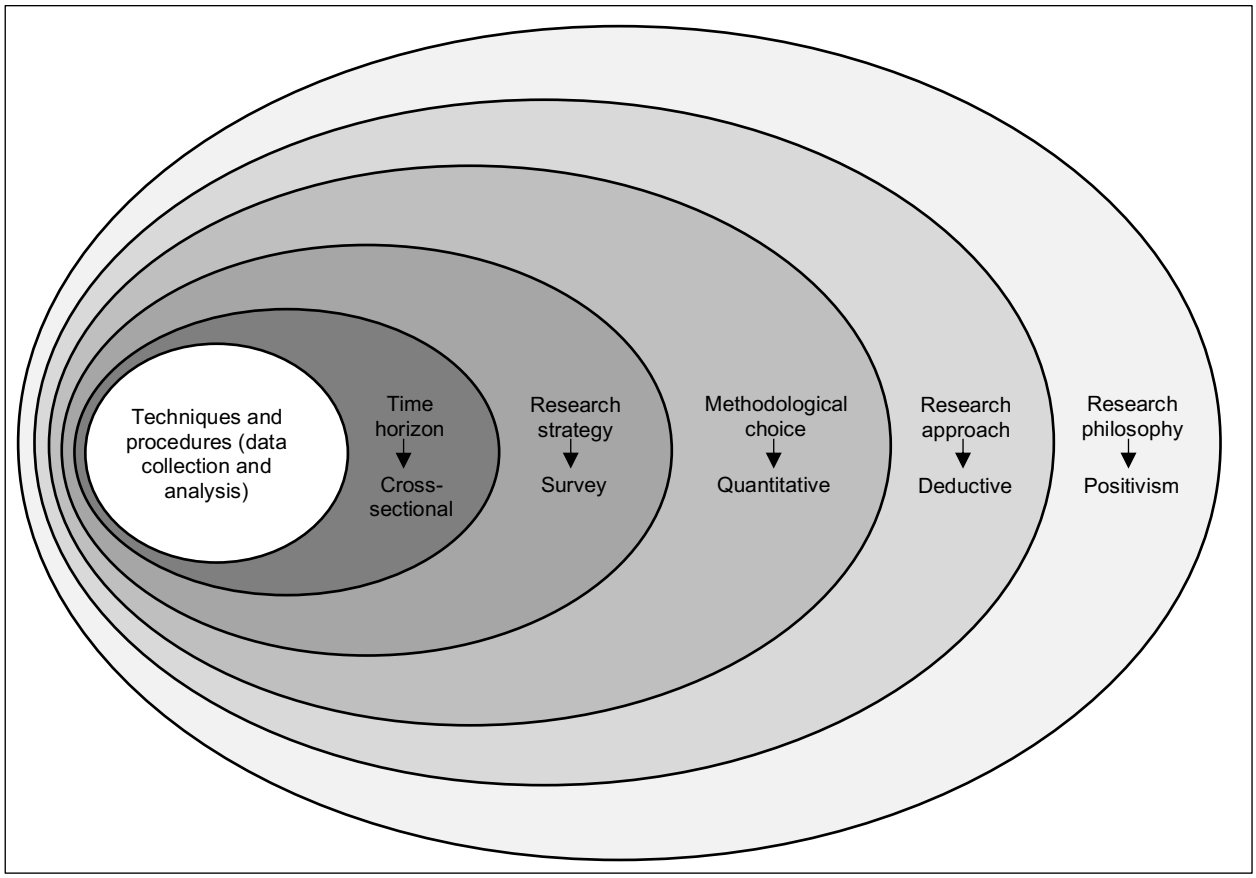
It can be argued that a structural equation model consists of two main components, namely the measurement model and the structural model. While the measurement model connects observed variables to latent variables (i.e. unobserved variables), the structural model connects latent variables to each other by means of a structure of simultaneous equations (Wang & Wang, 2020:4). In fact, Hair *et al*. (2019:703) propose that the measurement model fit should first be assessed and other aspects of construct validity by means of CFA. Once an acceptable measurement model has been realised, the second step involves the assessment of the structural theory. Therefore, the measurement model fit serves as a starting point for testing the validity of the structural theory. Hair *et al*. (2019:703) further point out that although early SEM models were assessed by means of a one-step approach (i.e., assessing the overall fit of the model without considering separate measurement and structural models), it is recommended that the measurement and the structural model be tested separately. It is important to first obtain a valid measurement model because with poor measures the precise meaning of the construct cannot be known.

In the present study, SEM analysis was performed to examine the hypothesised relationships between the dependent variable and the independent variables (see Figure 4.2). In Chapter Four (section 4.4) it was also hypothesised that selected demographic variables would influence *Intra-team knowledge-sharing behaviour*. In this respect, a subset of SEM, namely GLM was used to assess the influence of demographic variables on *Intra-team knowledge-sharing behaviour.* More detail on the SEM analysis and basic descriptive analysis is provided in Chapter Six.

5.4 SUMMARY

In this chapter, a detailed explanation was provided on the research design and methodology adopted in this study. A summary of the researcher's choices in this regard is presented in Figure 5.3.

Figure 5.3: Researcher's choices for the present study



Source: Researcher's own construction

Figure 5.3 indicates that this study adopted a positivist research philosophy and deductive approach to theory building, which aligns to a quantitative study. Moreover, a survey research strategy was used and data were collected from respondents at a particular point in time using an online self-administered questionnaire (i.e., a cross-sectional study).

The population of this study was limited to employees working in knowledge-intensive businesses in South Africa, those participating in knowledge-intensive teams in particular. Data were obtained from members of the population who were conveniently

available and willing to participate in the data collection process. Convenience sampling was therefore used. SEM was the main statistical technique used in the present study to assess the relationships between the dependent and the independent variables. The empirical results and analysis of the data will be presented and discussed in detail in Chapter Six.

CHAPTER SIX

EMPIRICAL RESULTS

6.1 INTRODUCTION

The preceding chapter provided an overview of the research design and methodology that was adopted in the present study to investigate the team-related factors influencing *Intra-team knowledge-sharing behaviour*. The focus was on the research philosophy approach to theory development, methodological choice and strategy, time horizon and data collection and analysis techniques and procedures.

This chapter addresses the sixth and seventh methodological research objectives, namely to conduct an empirical investigation on a sample of employees participating in knowledge-intensive teams. Furthermore, the research findings are reported and compared to the findings of previously reported research, focusing on possible relationships that originated from the data analysis.

In Chapter Six, the sample size, response rate and demographic profile of the respondents are described, after which the results of the CFAs on each factor are presented. The construct validity and reliability of the factors confirmed during the CFAs are assessed and subsequently a revised hypothesised model of team-related factors influencing *Intra-team knowledge-sharing behaviour* is presented. In line with the revised hypothesised model, the descriptive statistics and correlations of the sample data are discussed, followed by a SEM analysis, that is, the main statistical technique that was used in this study to assess the hypothesised relationships.

The chapter concludes with a discussion of the procedural remedies used in this study to control common method variance and the statistical procedure adopted to evaluate the efficacy of the procedural remedies.

6.2 SAMPLE SIZE AND RESPONSE RATE

A total of 384 usable questionnaires were obtained for the purposes of the data analysis. This number is acceptable if judged against the minimum sample size requirements as discussed in the previous chapter (see Chapter Five section 5.3.7.7). Given the structure of the questionnaire used in the present study, no incomplete questionnaires were returned. Missing data were subsequently not reported. Table 6.1 shows the response rate.

Table 6.1: Response rate

Number of questionnaires emailed	11 938
Returned to sender (i.e. not delivered to recipient)	3 442
Partially completed	0
Removed during clean-up	0
Effective population	8 496
Usable questionnaires received	384
Response rate	**4.5%**

6.3 DEMOGRAPHIC PROFILE OF RESPONDENTS

Section 6 of the questionnaire included several questions about the demographic details of the respondents. A summary of the respondents' demographic profile is presented in Table 6.2.

Table 6.2: Demographic profile of respondents

Age	**18–24 Years**	**25–30 Years**	**31–40 Years**	**41–50 Years**	**51–60 Years**	**61–70 Years**	**Older than 70 years**	
	3.6%	9.9%	36.7%	34.4%	14.3%	1.1%	0.0%	
Gender	**Male**	**Female**						
	55.2%	44.8%						
Home language	**Afrikaans**	**English**	**Xhosa**	**Zulu**	**Sotho**	**Other**		
	10.2%	26.8%	7.6%	15.6%	13.5%	26.3%		
Highest academic qualification	**Grade 11 and lower**	**Grade 12 or equivalent qualification**	**Higher Certificate**	**Diploma**	**Bachelor's degree**	**Honours degree**	**Master's degree/ MBA or higher**	**Other**
	0.0%	6.3%	7.0%	13.5%	17.2%	23.7%	26.8%	5.5%
Ethnic background	**White**	**Black**	**Asian**	**Coloured**	**Other**			
	14.1%	65.6%	9.1%	6.3%	4.9%			
Organisational tenure	**Less than a year**	**1–2 Years**	**3–5 Years**	**6–10 Years**	**11–15 Years**	**16–20 Years**	**More than 20 years**	
	4.4%	8.1%	23.7%	19.0%	19.0%	10.4%	15.4%	
Job tenure	**Less than a year**	**1–2 Years**	**3–5 Years**	**6–10 Years**	**11–15 Years**	**16–20 Years**	**More than 20 years**	
	5.7%	14.3%	37.2%	21.1%	13.5%	4.2%	4.0%	

Some of the categories presented in Table 6.2 were regrouped as explained below:

- For the purpose of this study, the age range of respondents was re-categorised into five groups, namely 18–24 years, 25–30 years, 31–40 years, 41–50 years, and older than 50 years. The majority of respondents (36.7 per cent) indicated that they were between 31 and 40 years of age, while 34.4 per cent specified that they were between 41 and 50 years of age. In addition, 15.4 per cent of respondents were older than 50 years of age. A small percentage (9.9 per cent) of respondents reported that they were between 25 and 30 years of age, while only 3.6 per cent of respondents were between 18 and 24 years of age.

- As far as gender is concerned, 55.2 per cent of the respondents were males and 44.8 per cent were females.

- The majority of the respondents were English-speaking (26.8 per cent), while 15.6 per cent of the respondents were Zulu-speaking and 13.5 per cent were Sotho-speaking. A further 10.2 per cent of respondents were Afrikaans-speaking, while 7.6 per cent of the respondents specified their home language as Xhosa. The remainder of the respondents fell into the 'Other' category (26.3 per cent), which

comprised other South African languages such as Shona, Setswana, Sepedi, Tsonga, Ndebele and Venda.

- With reference to the education level, the respondents were regrouped into four categories, namely Grade 12 or equivalent, higher certificate or diploma, bachelor's or honours degree, and master's degree or a higher qualification. The results indicated that the highest number of the respondents (40.9 per cent) held a bachelor's or honours degree, while 26.8 per cent held a master's degree or higher. A further 20.5 per cent held a higher certificate or diploma, while a small percentage (6.3 per cent) held a Grade 12 or equivalent qualification. A further 5.5 per cent of respondents fell into the 'Other' category, which included postgraduate diplomas. Based on the education levels of respondents, it can be concluded that the respondents were generally well educated as more than 50 per cent held a postgraduate qualification.

- Concerning the ethnic background of respondents, they were regrouped into three broad categories, namely White, Black and 'Other'. The majority of the respondents (65.6 per cent) were Black, followed by White respondents (14.1 per cent) as the next single largest group. The remainder of the respondents (20.3 per cent) were grouped into the 'Other' category, which included Asian, Coloured and Indian respondents.

- The organisational tenure of the respondents was regrouped into five categories, namely less than a year, 1–2 years, 3–5 years, 6–10 years and longer than 10 years. The majority of respondents (44.8 per cent) had worked in their organisation for longer than 10 years. A further 23.7 per cent of the respondents had worked in their organisation between three and five years, while 19.0 per cent of the respondents had worked in their organisation between 6 and 10 years. In addition, 8.1 per cent of respondents had worked in their organisation between one and two years. Only 4.4 per cent of the respondents reported that they had worked in their organisation for less than a year.

- In the same way that organisational tenure was re-categorised, the job tenure of the respondents was also regrouped into five categories, namely less than a year, 1–2 years, 3–5 years, 6–10 years and more than 10 years. The majority of the respondents (37.2 per cent) specified that they had worked in their current position/role between three and five years, while 21.7 per cent of the respondents' job tenure was longer than 10 years. In addition, 21.1 per cent had worked in their current position/role between 6 and 10 years, while 14.3 per cent of respondents had worked in their current position/role between one and two years. A small percentage (5.7 per cent) of the respondents had worked in their existing position/role for less than a year.

6.4 CONFIRMATORY FACTOR ANALYSIS

Before performing the construct validity tests (see section 6.5), a CFA was performed on each factor to assess model fit. Table 6.3 shows the indices that were used to assess the model fit. Although the cut-off values provide a guideline for researchers to follow, it should be noted that no particular value on any of the indices can classify models as acceptable or unacceptable. As a result, there is no magic value to distinguish between good and poor models. The researcher therefore has flexibility in the application of the fit criteria and can apply reasoning in assessing the goodness of fit of a model (Hair *et al*., 2019:640-641).

Table 6.3: Goodness-of-fit indices

Index	Cut-off for a good model fit (n > 250)
CMIN/df (x^2/df): Normed Chi-square	< 3.00
GFI: Goodness-of-fit index	> 0.90
CFI: Comparative fit index	> 0.90
SRMR: Standardised root mean residual	< 0.08
RMSEA: Root mean squared error of approximation	< 0.07

In the light of the aforementioned discussion and as illustrated in Table 6.3, the factors in this study were modelled based on their original structures by means of CFAs (using the maximum likelihood technique in AMOS). In this respect, the researcher first

assessed the statistical significance ($p < 0.05$) of the parameter estimates. If all the parameter estimates were statistically significant, the model fit was evaluated against the indices as shown in Table 6.3. Modification indices were used in some structures where the model fit could be improved. A modification index specifies that if two items are highly related and the pathways between those items are opened and allowed to correlate with one another, subsequent modification can improve the fit of the model. Pathways between related items were only allowed to correlate where it was theoretically justifiable. Hair *et al*. (2019:678) note that modification indices in the range of 4.0 or greater indicate that the model fit can be enhanced by opening the pathways between items that are related. In this study, the highest modification indices were considered first in line with the guidelines of Hair *et al*. (2019:678).

For ease of reference, the abbreviations and reference numbers for the items in the questionnaire are discussed first in the following section, followed by the goodness-of-fit assessment of the factor structures.

6.4.1 ABBREVIATIONS AND ITEM NUMBERS

A summary of the constructs measured in the present study and the corresponding item numbers in the questionnaire that measured the constructs are presented in Table 6.4. These constructs were presented in the hypothesised model (see Figure 4.2) that was empirically tested. Table 6.4 also includes abbreviations and reference numbers associated with the various items.

Table 6.4: Summary of abbreviations and reference numbers for items in the questionnaire

Construct	Item numbers in questionnaire	Abbreviation	Reference number
Intra-team knowledge-sharing behaviour	4.10; 4.26; 4.18; 4.31; 4.50; 4.3; 4.6	ITKSB	ITKSB1 – ITKSB7
Team development competition	4.24; 4.1; 4.27; 4.4; 4.45	TDC	TDC1 – TDC5
Team hyper competition	4.37; 4.23; 4.5; 4.28; 4.19	THC	THC1 – THC5
Team psychological safety	4.35; 4.54; 4.40; 4.36; 4.11; 4.44	TPS	TPS1 – TPS6
Team identification	4.14; 4.55; 4.16; 4.9; 4.29	TI	TI1 – TI5
Metacognitive cultural intelligence	4.49; 4.21; 4.33; 4.43; 4.48	MCCI	MCCI1 – MCCI5
Cognitive cultural intelligence	4.12; 4.8; 4.52; 4.51	CCI	CCI1 – CCI4
Motivational cultural intelligence	4.7; 4.56; 4.53; 4.32; 4.47	MCI	MCI1 – MCI5
Behavioural cultural intelligence	4.38; 4.34; 4.20; 4.13	BCI	BCI1 – BCI4
Affective team commitment	4.17; 4.15; 4.2	ATC	ATC1 – ATC3
Continuance team commitment	4.25; 4.39; 4.30; 4.22	CTC	CTC1 – CTC4
Normative team commitment	4.42; 4.46; 4.41	NTC	NTC1 – NTC3
Perceived surface-level diversity	5.6; 5.2; 5.3; 5.5; 5.8	SLD	SLD1 – SLD5
Perceived deep-level diversity	5.1; 5.7; 5.9; 5.10; 5.4	DLD	DLD1 – DLD5

6.4.2 GOODNESS-OF-FIT ASSESSMENT

To address possible multicollinearity concerns associated with the different variables that belong to a shared category, these variables were combined into a single hierarchical variable as suggested by some researchers (Kim, 2019:561; Allen, Bennett & Heritage, 2018:160). For example, *Metacognitive cultural intelligence*, *Cognitive cultural intelligence*, *Motivational cultural intelligence* and *Behavioural cultural intelligence* belong to a common category and were therefore combined to form the variable *Cultural intelligence* (CI). In the same way, *Affective team commitment*, *Continuance team commitment* and *Normative team commitment* were combined into a single variable, namely *Team commitment* (TC). To use a single

common variable that consists of several dimensions is not unusual and previous researchers (e.g. Presbitero & Attar, 2018; De Geus, 2018) have also, for example, reported on cultural intelligence as a single variable while including indicators that relate to the various dimensions of cultural intelligence (i.e., metacognitive, cognitive, motivational and behavioural cultural intelligence). For the purpose of the present study, hierarchical variables were formed where more than two variables related to a common concept.

The parameter estimates, standard errors, test statistic values (CR), p-values and model fit summary for each factor in the study is presented in the following sections. The models refer to the CFAs with modifications to obtain a better fit. Annexure C provides additional information on the modification indices that were considered for selected models and therefore the co-varying of errors to obtain better fitting models.

6.4.2.1 Intra-team knowledge-sharing behaviour (ITKSB)

The ITKSB measure estimates 14 distinct parameters, with 28 distinct sample moments and 14 (28–14) degrees of freedom. Table 6.5 illustrates that all parameter estimates are statistically significant ($p < 0.001$).

Table 6.5: Parameter estimates, standard errors, test statistic values, p-values and model fit (ITKSB)

Item	Estimate	SE	CR	P
I share my specialised knowledge and expertise with members of my team.	1			
I share my work experiences with members of my team.	1.445	0.117	12.378	***
I share my work-related insights with members of my team.	1.236	0.109	11.295	***
I share my practical know-how (for carrying out daily tasks) with members of my team.	1.394	0.122	11.409	***
I share well-documented manuals (notes regarding work) with members of my team.	1.432	0.147	9.767	***
I share methodologies (methods for completing a particular task) with members of my team.	1.109	0.114	9.695	***
I share models (examples of previously completed projects) with members of my team.	1.515	0.143	10.566	***

Model fit summary for ITKSB				
CMIN/df	**GFI**	**CFI**	**SRMR**	**RMSEA**
3.398	0.966	0.961	0.037	0.079

*** $p < 0.001$

The ITKSB scale revealed an acceptable overall fit as the GFI and CFI values are both above 0.90, while the SRMR value is below 0.08. Both the normed Chi-square (x^2/df) and the RMSEA are marginally above the recommended guidelines of 3.0 and 0.07 respectively. Hair *et al*. (2019:641) advise that researchers can be flexible in the application of the fit criteria and that logic should be used when examining the merit of a model. To this end, the researcher in the present study considered the chosen indices in conjunction with other goodness-of-fit indices before making a judgement concerning a model's fit.

6.4.2.2 Team development competition (TDC)

The model for *Team development competition* estimates 10 distinct parameters, with 15 distinct sample moments and 5 (15–10) degrees of freedom. It is evident from Table 6.6 that all parameter estimates are statistically significant ($p < 0.001$).

Table 6.6: Parameter estimates, standard errors, test statistic values, p-values and model fit (TDC)

Item	Estimate	SE	CR	P
Members of my team follow team rules when working with one another in the team.	1			
The competition among members of my team does not hamper the goal outcomes of the team.	0.815	0.125	6.497	***
The competition among members of my team positively stimulates the functioning of the team.	1.068	0.110	9.675	***
Members of my team compete with one another in good spirit when working in a team.	0.890	0.108	8.270	***
Members of my team consider the welfare of other team members when competing with one another in the team.	1.121	0.116	9.695	***

Model fit summary for TDC				
CMIN/df	**GFI**	**CFI**	**SRMR**	**RMSEA**
1.146	0.992	0.994	0.021	0.033

*** $p < 0.001$

The TDC scale revealed an acceptable overall fit as the GFI and CFI values are above 0.90, while the SRMR and RMSEA are below 0.08 and 0.07 respectively. The normed Chi-square (x^2/df) is below the recommended norm of 3.0. These reported goodness-of-fit values suggest that the fit of the TDC scale is a good fit.

6.4.2.3 Team hyper competition (THC)

As was the case with the TDC measure, the THC model also estimates 10 distinct parameters, with 15 distinct sample moments and 5 (15–10) degrees of freedom. Furthermore, all parameter estimates are statistically significant ($p < 0.001$).

Table 6.7: Parameter estimates, standard errors, test statistic values, p-values and model fit (THC)

Item	Estimate	SE	CR	P
Members of my team have a 'win–lose' relationship.	1			
Members of my team have goals that are incompatible with one another.	1.125	0.173	6.485	***
Members of my team give high priority to the goals they want to accomplish and low priority to the things other team members want to accomplish.	0.698	0.130	5.375	***
When there is rivalry among members of my team, they do whatever it takes to achieve their personal goals.	0.763	0.138	5.510	***
The competition among members of my team results in frustration for the entire team.	0.912	0.151	6.034	***

Model fit summary for THC				
CMIN/df	**GFI**	**CFI**	**SRMR**	**RMSEA**
0.800	0.996	1	0.019	0

*** $p < 0.001$

Based on Table 6.7 it can be concluded that the fit of the THC scale is acceptable. The normed Chi-square is < 3.0, the GFI > 0.90, the CFI > 0.90, the SRMR < 0.08 and the RMSEA < 0.070, all indicating a good fit for the THC scale.

6.4.2.4 Team psychological safety (TPS)

The TPS model estimates 13 distinct parameters, with 21 distinct sample moments and 8 (21–13) degrees of freedom. Parameter estimates are all statistically significant ($p < 0.001$) as indicated in Table 6.8.

Table 6.8: Parameter estimates, standard errors, test statistic values, p-values and model fit (TPS)

Item	Estimate	SE	CR	P
If I make a mistake in my team, it is not held against me.	1			
It is easy to raise controversial issues in my team.	1.045	0.149	6.989	***
It is easy to ask other members of my team for work-related assistance.	0.929	0.124	7.523	***
I am comfortable to openly express my opinions in my team.	0.997	0.130	7.667	***
No one in my team would deliberately act in a way that would undermine my efforts in the team.	0.973	0.123	7.915	***
My unique skills and talents are valued when I work with members of my team.	1.056	0.137	7.732	***

Model fit summary for TPS				
CMIN/df	**GFI**	**CFI**	**SRMR**	**RMSEA**
2.817	0.981	0.972	0.031	0.069

*** p < 0.001

From Table 6.8, the normed Chi-square (x^2/df) is below the recommended norm of 3.0, while both the GFI and the CFI are above the suggested level of 0.90. The SRMR and RMSEA values are also within the recommended ranges with values below 0.08 and 0.07 respectively.

6.4.2.5 Team identification (TI)

The TI model estimates 11 distinct parameters, with 15 distinct sample moments and 4 (15–11) degrees of freedom. All parameter estimates are statistically significant as shown in Table 6.9.

Table 6.9: Parameter estimates, standard errors, test statistic values, p-values and model fit (TI)

Item	Estimate	SE	CR	P
When I talk about my team I usually say "we" rather than "they".	1			
I am very interested in what others think about my team.	0.668	0.132	5.058	***
I am proud to be a member of my team.	1.289	0.167	7.737	***
My team's successes are my successes.	0.717	0.097	7.373	***
When someone praises my team, it feels like a personal compliment.	0.487	0.166	2.931	0.003

Model fit summary for TI				
CMIN/df	**GFI**	**CFI**	**SRMR**	**RMSEA**
3.421	0.986	0.959	0.034	0.080

*** $p < 0.001$

By considering the model fit indices in conjunction with one another, it can be concluded that the TI scale showed an acceptable fit. The normed Chi-square (x^2/df) and RMSEA values are marginally above the recommended guidelines of 3.0 and 0.07 respectively. Both the GFI and CFI indices exceed 0.90, while the SRMR also meets the recommended criteria (< 0.08) to suggest an acceptable model fit.

6.4.2.6 Cultural intelligence (CI)

As shown in Table 6.10, all the parameter estimates for cultural intelligence (CI) are statistically significant ($p < 0.001$). The model estimates 45 distinct parameters, with 171 distinct sample moments and 126 (171–45) degrees of freedom.

Table 6.10: Parameter estimates, standard errors, test statistic values, p-values and model fit (CI)

Item	Estimate	SE	CR	P
I am capable of understanding the different cultural values and norms of team members.	1			
I reflect on the cultural beliefs and values of team members before interacting with them.	1.387	0.125	11.106	***
I am conscious of the accuracy of my cultural knowledge (i.e. knowledge about a particular culture, including its values, beliefs and norms) when I interact with team members from different cultural backgrounds.	1.424	0.119	11.942	***
I adjust my cultural knowledge (i.e. knowledge about a particular culture, including its values, beliefs and norms) when I interact with team members from different cultural backgrounds.	1.244	0.115	10.851	***
I am conscious of the cultural knowledge (i.e. knowledge about a particular culture, including its values, beliefs and norms) I use when interacting with team members from different cultural backgrounds.	1.443	0.093	15.529	***
I know the values of team members from other cultural backgrounds.	1.292	0.107	12.115	***
I know the social systems (i.e. how society functions as a whole) of other cultures that members of my team come from.	1.306	0.110	11.829	***
I know the rules and meaning (i.e. the vocabulary and grammar) of other languages that members of my team use.	0.628	0.107	5.873	***
I know the legal and economic systems (e.g. command/socialist, market or mixed economies) of other cultures that members of my team come from.	0.870	0.115	7.584	***
I am confident that I can socialise with team members from other cultural backgrounds.	0.817	0.064	12.799	***
I am confident that I can get accustomed to the working conditions that are influenced by team members from different cultural backgrounds.	0.948	0.091	10.383	***
I actively seek information about the cultural backgrounds of team members that is different from mine.	1.585	0.130	12.229	***
I enjoy learning about the cultural background of team members that is different from mine.	1.032	0.094	11.014	***
I am confident that I can deal with the stress of adjusting to a diverse team culture.	0.645	0.090	7.201	***
I change my nonverbal behaviour (e.g. gestures, facial expressions) when a cross-cultural team situation requires it.	0.845	0.132	6.377	***
I use pauses and silence differently to suit different cross-cultural situations.	1.027	0.132	7.786	***
I use appropriate words when interacting with team members from diverse cultural backgrounds.	0.951	0.088	10.780	***
I change my verbal behaviour (e.g. tone of voice) when a cross-cultural team interaction requires it.	1.030	0.147	6.996	***

Model fit summary for CI				
CMIN/df	**GFI**	**CFI**	**SRMR**	**RMSEA**
2.625	0.906	0.930	0.056	0.065

*** $p < 0.001$

All fit indices meet the recommended guidelines, suggesting a good model fit. More specifically, while both the GFI and the CFI values are above the 0.90 guideline, the normed Chi-square (x^2/df) is below the recommended value of 3.0. In addition, the SRMR is below 0.08 and the RMSEA is below 0.07.

6.4.2.7 Team commitment (TC)

The parameter estimates are all significant as shown in Table 6.11. The TC model estimates 32 distinct parameters, with 55 distinct sample moments and 23 (55–32) degrees of freedom.

Table 6.11: Parameter estimates, standard errors, test statistic values, p-values and model fit (TC)

Item	Estimate	SE	CR	P
My team has a great deal of personal meaning for me.	1			
I feel like part of a family in my team.	1.117	0.343	3.261	0.001
I feel a strong sense of belonging to my team.	0.884	0.305	2.904	0.004
I would not leave my team, because it would require a great deal of effort from me to adapt to a new way of working.	6.258	1.824	3.430	***
I would not leave my team, because I would have to re-adapt to new team norms.	7.634	2.207	3.460	***
I would not leave my team, because it would require me to get used to a new way of working.	6.654	1.933	3.442	***
I would not leave my team, because it would require me to adjust to new working habits.	7	2.026	3.454	***
I owe a great deal to my team.	2.148	0.682	3.150	0.002
My team deserves my loyalty.	1.622	0.471	3.447	***
I would not leave my team right now because I have a sense of obligation to the people who are part of my team.	4.898	1.449	3.381	***

Model fit summary for TC				
CMIN/df	**GFI**	**CFI**	**SRMR**	**RMSEA**
4.266	0.953	0.966	0.061	0.092

*** p < 0.001

Even though the normed Chi-square (x^2/df) and the RMSEA values are slightly higher than the recommended guidelines of 3.0 and 0.07 respectively (see Table 6.11), these values should be considered in conjunction with the other goodness-of-fit indices as illustrated. In this respect, the majority of the reported indices are well within the

recommended guidelines and the model fit indices as indicated by the GFI (> 0.90), the CFI (> 0.90) and the SRMR (< 0.08), indicating an acceptable model fit.

6.4.2.8 Perceived surface-level diversity (SLD)

As shown in Table 6.12, all the parameter estimates are statistically significant (p < 0.001) with the SLD model estimating 11 distinct parameters, with 15 distinct sample moments and 4 (15–11) degrees of freedom.

Table 6.12: Parameter estimates, standard errors, test statistic values, p-values and model fit (SLD)

Item	Estimate	SE	CR	P
Gender	1			
Ethnic background	1.734	0.447	3.882	***
Age	1.862	0.478	3.898	***
Marital status	1.080	0.264	4.083	***
Team tenure	1.496	0.393	3.808	***

Model fit summary for SLD				
CMIN/df	**GFI**	**CFI**	**SRMR**	**RMSEA**
2.266	0.991	0.966	0.031	0.057

*** p < 0.001

All values reported for the respective indices suggest a good model fit for SLD as illustrated in Table 6.12. More specifically, the normed Chi-square (x^2/df) is less than 3.0 and both the GFI and the CFI exceed the 0.90 guideline. The SRMR and the RMSEA are also less than 0.08 and 0.07 respectively, suggesting a good model fit.

6.4.2.9 Perceived deep-level diversity (DLD)

As depicted in Table 6.13, all parameter estimates are statistically significant (p < 0.001) and the DLD model estimates 10 distinct parameters, with 15 distinct sample moments and 5 (15–10) degrees of freedom.

Table 6.13: Parameter estimates, standard errors, test statistic values, p-values and model fit (DLD)

Item	Estimate	SE	CR	P
Attitudes about work	1			
Personalities	0.668	0.081	8.197	***
Personal values	1.255	0.124	10.152	***
Learning goals	1.304	0.132	9.864	***
Educational background	0.626	0.091	6.870	***

Model fit summary for DLD				
CMIN/df	**GFI**	**CFI**	**SRMR**	**RMSEA**
1.459	0.992	0.994	0.024	0.035

*** p < 0.001

From Table 6.13, all reported indices, namely the normed Chi-square (< 3.0), the GFI (> 0.90), the CFI (> 0.90), the SRMR (< 0.08) and the RMSEA (< 0.07) returned values that point towards a good model fit.

Having explained and established good model fits for the respective scales, the following section focuses on the convergent and discriminant validity of the measuring instrument.

6.5 VALIDITY OF THE MEASURING INSTRUMENT

To assess the construct validity of the measuring instrument, its convergent, discriminant and face validity was evaluated as discussed in the subsequent sections.

6.5.1 CONVERGENT VALIDITY

The convergent validity was assessed by comparing the AVE estimates of a particular construct to the generally accepted threshold of 0.5 (Hair *et al*., 2019:775). Convergent validity refers to the degree to which items of a particular construct converge (see Chapter Five section 5.3.8.2).

Table 6.14 illustrates the AVE estimates for all constructs in the present study.

Table 6.14: AVE of all constructs

Factor	AVE
Intra-team knowledge-sharing behaviour (ITKSB)	0.435
Team development competition (TDC)	0.364
Team hyper competition (THC)	0.259
Team psychological safety (TPS)	0.366
Team identification (TI)	0.422
Cultural intelligence (CI)	0.347
Team commitment (TC)	0.369
Perceived surface-level diversity (SLD)	0.208
Perceived deep-level diversity (DLD)	0.392

Besides *Team hyper competition* and *Perceived surface-level diversity* that returned AVE values that were significantly lower than the recommended value of 0.5, all other constructs produced AVE values that were marginally below the recommended guideline of 0.5. Given the theoretical prominence (Chapters Two, Three and Four) of the constructs that returned AVE values that were below the recommended cut-off value of 0.5, it was decided not to reject these constructs based solely on the AVE results. These constructs were likely to play an important role in respect of *Intra-team knowledge-sharing behaviour* given their strong theoretical foundation. In addition, before rejecting these constructs the researcher believes that the reliability of these constructs must also be assessed as reliability is an indicator of convergent validity (Hair *et al*., 2019:676). The reliability of the measuring instrument, which provides additional support for the convergent validity of the measuring instrument, is discussed in section 6.6. Section 6.6 provides additional evidence of convergent validity and to not immediately exclude certain factors from further empirical analysis based on AVE values only.

6.5.2 DISCRIMINANT VALIDITY

Discriminant validity refers to the extent to which a particular construct is different from other constructs (see Chapter Five section 5.3.8.2). In this study, it was measured by

applying the Fornell–Larcker criterion. This criterion entails a comparison of the AVE of any two constructs against the squared correlations between the two constructs. Alternatively, the square root of the AVE values can be compared to the correlation between the two constructs (Hair *et al*., 2019:788; Hair, Hult, Ringle & Sarstedt, 2016:126).

The results pertaining to the discriminant validity in this study is presented in Table 6.15. Column one indicates the factor names, while column two illustrates the square root of the AVE values for each factor. Table 6.15 also illustrates the correlation coefficients between each factor listed in column one and each one of the other factors in columns three to 11.

Table 6.15: AVE versus correlation estimates

1	2	3	4	5	6	7	8	9	10	11
Factor	$\sqrt{\mathbf{AVE}}$	**ITKSB**	**TDC**	**THC**	**TPS**	**TI**	**CI**	**TC**	**SLD**	**DLD**
ITKSB	0.659	1	0.360	-0.028	0.512	0.586	0.475	0.256	0.052	-0.044
TDC	0.603	0.360	1	-0.046	0.681*	0.577	0.383	0.465	-0.024	-0.249
THC	0.509	-0.028	-0.046	1	-0.085	-0.102	0.191	0.310	0.069	0.151
TPS	0.605	0.512	0.681*	-0.085	1	0.644*	0.369	0.489	-0.045	-0.242
TI	0.650	0.586	0.577	-0.102	0.644	1	0.360	0.468	0.029	-0.138
CI	0.589	0.475	0.383	0.191	0.369	0.360	1	0.296	0.037	0.054
TC	0.607	0.256	0.465	0.310	0.489	0.468	0.296	1	-0.068	-0.152
SLD	0.456	0.052	-0.024	0.069	-0.045	0.029	0.037	-0.068	1	0.505*
DLD	0.626	-0.044	-0.249	0.151	-0.242	-0.138	0.054	-0.152	0.505	1

* $\sqrt{\mathbf{AVE}} <$ **construct correlation**

With only a few exceptions as indicated with an asterisk (*) in Table 6.15, the square root of the AVE values of the constructs listed in column one were larger than the absolute value of the correlation coefficient of the given construct with any other construct. In cases where the square root of the AVE value of a particular construct was less than the absolute value of the correlation coefficient of the given construct with any other construct, this was only marginally so, and the researcher therefore did

not exclude any constructs from further empirical analysis. In general, the measuring instrument in the present study displays satisfactory discriminant validity.

6.5.3 FACE VALIDITY

In addition to convergent and discriminant validity, the researcher assessed the face validity of the research instrument by means of a pilot test (see Chapter Five section 5.3.7.5). In this respect, respondents were requested to complete the questionnaire and to provide feedback on issues such as ambiguous questions, time required to complete the questionnaire, clarity of instructions, and any other relevant information pertaining to the completion of the questionnaire. Hair *et al*. (2019:677) consider face validity the most important validity test. These authors argue that face validity must be confirmed before any theoretical testing takes place when conducting a CFA. In this respect, measurement theory cannot be accurately assessed if the meaning and content of each item is not clear.

Considering the discussions on convergent, discriminant and face validity in section 6.5, the measuring instrument used in this study can generally be deemed valid.

6.6 RELIABILITY OF THE MEASURING INSTRUMENT

In this study, Cronbach's alpha coefficients were calculated to assess the reliability of the measuring instrument. Cronbach's alpha is a popular measure to assess the reliability of a measuring instrument, with a generally accepted threshold of 0.70. In exploratory research, it is acceptable for this limit to decrease to 0.60 (Hair *et al*., 2019:161). The Cronbach's alpha coefficients of the different constructs are reported in Table 6.16.

Table 6.16: Cronbach's alpha coefficients of the different constructs

Factor	Cronbach's alpha coefficient
Intra-team knowledge-sharing behaviour (ITKSB)	0.832
Team development competition (TDC)	0.716
Team hyper competition (THC)	0.626
Team psychological safety (TPS)	0.767
Team identification (TI)	0.544
Cultural intelligence (CI)	0.894
Team commitment (TC)	0.859
Perceived surface-level diversity (SLD)	0.566
Perceived deep-level diversity (DLD)	0.750

With the exception of *Team hyper competition*, *Team identification* and *Perceived surface-level diversity*, all other factors reported Cronbach's alpha coefficients in excess of the suggested cut-off point of 0.70, indicating scale reliability for these factors exceeding the 0.7 threshold.

Moreover, as alluded to in section 6.5.1, reliability is also an indicator of convergent validity. In section 6.5.1 where the validity of the constructs was discussed, the constructs returned AVE values below the generally accepted cut-off value of 0.5. For this reason, a decision was made to first evaluate the reliability of all constructs before excluding any factors from further empirical assessment based only on the reported AVE values. Having collected more evidence about the constructs' reliability, the earlier decision to not exclude all the factors with AVE values below 0.5 is supported. More specifically, Fornell and Larcker (1981:46) note that if the AVE values are less than the generally accepted guideline of 0.5, but the composite reliability is higher than 0.6, a construct's convergent validity is still adequate. Although Cronbach's alpha values were used as a measure of reliability in the present study, as opposed to composite reliability values, Hair *et al*. (2019:676) assert that the different reliability coefficients do not generate significantly different estimates. As illustrated in Table 6.16, the majority of the factors returned Cronbach's alpha coefficients in excess of

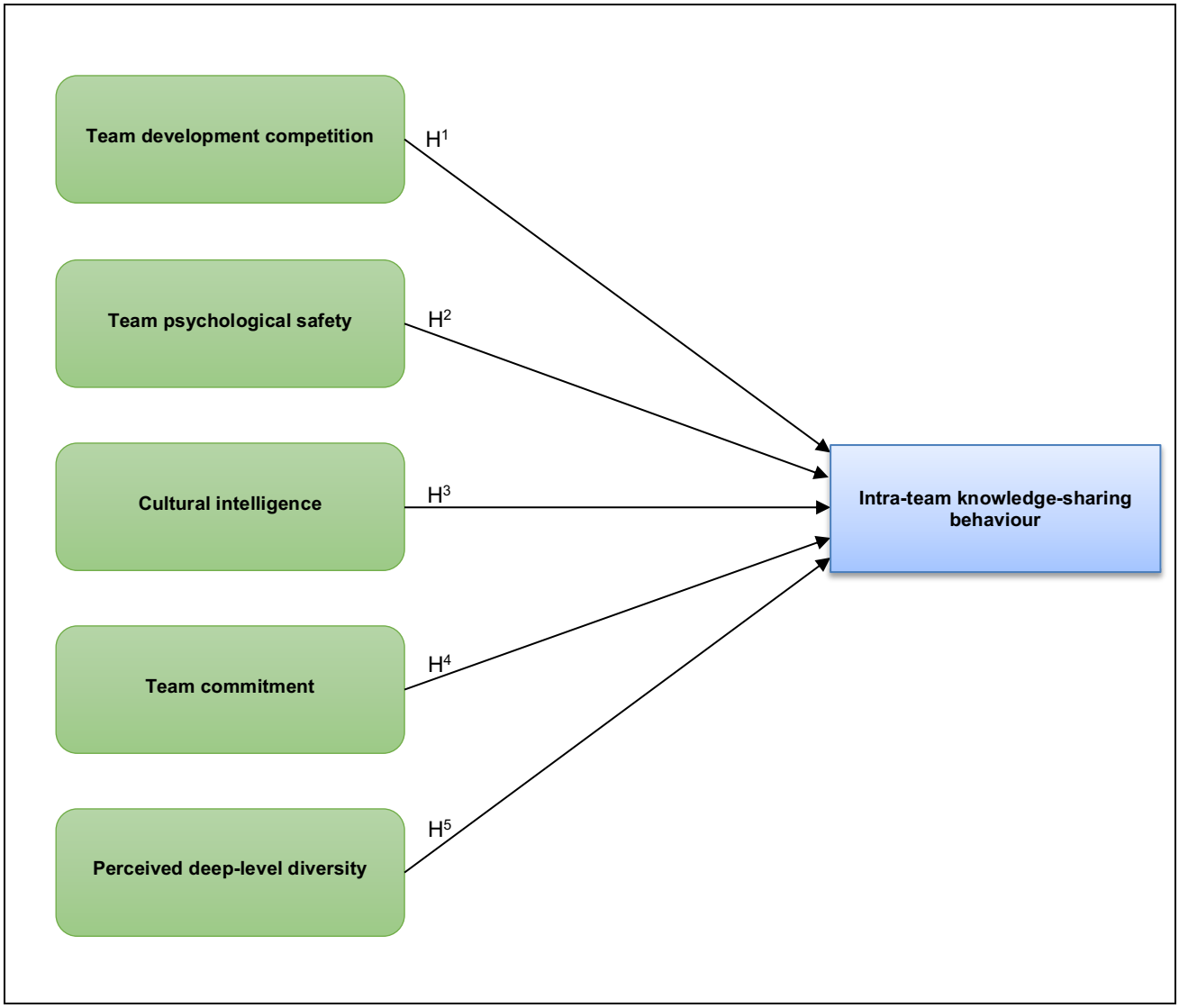
0.6, further supporting the convergent validity of the measuring instrument. More specifically, only two factors (*Team identification* and *Perceived surface-level diversity)* reported Cronbach's alpha values below 0.6, which was a source of concern regarding the convergent validity for these two factors.

Considering the aforementioned discussion, it can be concluded that the constructs *Team identification* and *Perceived surface-level diversity* did not show sufficient evidence of both convergent validity and reliability (i.e., $\alpha < 0.6$). In addition, *Team hyper competition* did not show sufficient internal reliability (i.e., $\alpha < 0.7$) given the strict cut-off value applied in the present study. These three factors were subsequently not considered for further empirical analysis.

6.7 REVISED HYPOTHESISED MODEL AND HYPOTHESES

The general cut-off value of 0.7 was strictly applied to assess the reliability of the constructs in the present study. Considering the reliability results discussed in the preceding section, the original hypothesised model (See Chapter Four Figure 4.2) was revised. The model illustrated in Figure 6.1 and its associated hypotheses were subjected to further empirical testing.

Figure 6.1: Revised hypothesised model of team-related factors influencing intra-team knowledge-sharing behaviour



Based on the revised hypothesised model, the alternative hypotheses illustrated in Table 6.17 were subjected to further empirical testing. For each alternative hypothesis, the null hypothesis (H_o) states that there is no relationship between the variables tested. As such, for the sake of brevity, only the alternative hypotheses are listed in Table 6.17. As selected demographic variables (e.g. age, gender and highest academic qualification) could also influence *Intra-team knowledge-sharing behaviour* as discussed in Chapter Four section 4.4, an alternative hypothesis relating to the demographic variables were included.

Table 6.17: Summary of the alternative hypotheses

Hypothesis number	Hypotheses
H^1:	There is a positive relationship between *Team development competition* and *Intra-team knowledge-sharing behaviour.*
H^2:	There is a positive relationship between *Team psychological safety* and *Intra-team knowledge-sharing behaviour.*
H^3:	There is a positive relationship between *Cultural intelligence* and *Intra-team knowledge-sharing behaviour.*
H^4:	There is a positive relationship between *Team commitment* and *Intra-team knowledge-sharing behaviour*.
H^5:	*There is a negative relationship* between *Perceived deep-level diversity and Intra-team knowledge-sharing behaviour.*
H^6:	There is a relationship between *Age* and *Intra-team knowledge-sharing behaviour*.
H^7:	There is a relationship between *Gender* and *Intra-team knowledge-sharing behaviour*.
H^8:	There is a relationship between *Home language* and *Intra-team knowledge-sharing behaviour*.
H^9:	There is a relationship between *Highest academic qualification* and *Intra-team knowledge-sharing behaviour*.
H^{10}:	There is a relationship between *Ethnic background* and *Intra-team knowledge-sharing behaviour*.
H^{11}:	There is a relationship between *Organisational tenure* and *Intra-team knowledge-sharing behaviour*.
H^{12}:	There is a relationship between *Job tenure* and *Intra-team knowledge-sharing behaviour.*

6.8 DESCRIPTIVE STATISTICS AND CORRELATIONS

In the subsequent sections the descriptive statistics and correlations of the sample data are described.

6.8.1 DESCRIPTIVE STATISTICS OF THE SAMPLE DATA

The mean, standard deviation and frequency distributions relating to the various constructs in this current study are summarised in Table 6.18. For the purpose of the present study and in the interest of brevity, the mean scores for the respective factors were classified as Disagree [1 - 3), Neutral [3 - 5] and Agree (5 - 7]. Considering that a five-point Likert-type scale was used to measure *Perceived deep-level diversity*, the scores obtained from this scale were statistically transformed in line with the aforementioned classification.

Table 6.18: Descriptive statistics of the dependent and independent variables (N = 384)

Factor	Mean	Std. Dev.	Disagree %	Neutral %	Agree %
Intra-team knowledge-sharing behaviour (ITKSB)	6.188	0.689	0.00	7.80	92.20
Team development competition (TDC)	5.353	1.001	2.30	30.70	67.00
Team psychological safety (TPS)	5.548	0.961	1.60	25.80	72.60
Cultural intelligence (CI)	5.651	0.760	0.30	17.40	82.30
Team commitment (TC)	4.832	1.135	4.70	50.00	45.30
Perceived deep-level diversity (DLD)	4.618	1.409	10.70	54.90	34.40

Except for *Team commitment* and *Perceived deep-level diversity,* most of the respondents agreed with the statements measuring the different variables. More specifically, the agreement levels ranged between 92.20 per cent for the dependent variable *Intra-team knowledge-sharing behaviour* and 67.00 per cent for *Team development competition*. The highest mean score was reported for *Intra-team knowledge-sharing behaviour* (6.188)*,* while *Perceived deep-level diversity* returned the lowest mean score (4.618). Moreover, the individual responses to *Intra-team knowledge-sharing behaviour* had the lowest deviation from the mean (standard deviation = 0.689), while the responses relating to *Perceived deep-level diversity* varied the most from the mean (standard deviation = 1.409).

6.8.2 PEARSON'S PRODUCT MOMENT CORRELATIONS

The Pearson's product moment correlation test was performed to measure the strength of the relationships between the variables (Saunders *et al*., 2019:605). For the purpose of this study, the following guidelines were used to interpret the correlation coefficients:

- $|r| < 0.3$ Weak relationship
- $0.3 \leq |r| < 0.5$ Moderate relationship
- $|r| \geq 0.5$ Strong relationship

According to Table 6.19, the majority of factors are weakly to moderately correlated with each other. In some instances, strong relationships are evident between the factors. For example, *Team psychological safety* has a strong relationship with *Intra-team knowledge-sharing behaviour*. The insignificant correlation coefficients are indicated by an asterisk (*) in Table 6.19. All other correlation estimates are significant at $p < 0.01$.

Table 6.19: Pearson's product moment correlation coefficients

Factor	ITKSB	TDC	TPS	CI	TC	DLD
ITKBS	1	0.360	0.512	0.475	0.256	-0.044*
TDC	0.360	1	0.681	0.383	0.465	-0.249
TPS	0.512	0.681	1	0.369	0.489	-0.242
CI	0.475	0.383	0.369	1	0.296	0.054*
TC	0.256	0.465	0.489	0.296	1	-0.152
DLD	-0.044*	-0.249	-0.242	0.054*	-0.152	1

* Insignificant correlation estimates

Based on these correlation coefficients it is realistic to expect a poor (or no) linear relationship between the variables that produced low (or insignificant) correlations.

6.9 STRUCTURAL EQUATION MODELLING

Having discussed the descriptive statistics in the preceding section, this section presents the findings related to the revised hypothesised model of team-related factors influencing *Intra-team knowledge-sharing behaviour* (see Figure 6.1). In this study, SEM was the main statistical technique used to test the hypotheses associated with the revised hypothesised model. With SEM the relationships among multiple variables can be evaluated (Hair *et al*., 2019:603), which is ideal in the context of this current study that aims to explain the relationships among the dependent and the independent variables as proposed in Figure 6.1.

In addition, a subset of SEM, namely GLM was used to assess the impact of selected demographic variables on *Intra-team knowledge-sharing behaviour*. Based on the results from the SEM and GLM analyses, the hypotheses (see Table 6.17) could be either supported or not supported.

6.9.1 SEM ANALYSIS TO DETERMINE BEST MODEL FIT

For the purpose of the SEM analysis, the goodness-of-fit indices, as depicted in Table 6.20, were used. As noted in section 6.4, the cut-off values are not strict rules as no particular value on any of the indices can group models into acceptable or unacceptable fits. The researcher used logical reasoning when interpreting the fit indices to examine the merit of a model (Hair *et al*., 2019:641).

Table 6.20: Goodness-of-fit indices

Index	Cut-off for a good model fit (n > 250)
CMIN/df (x^2/df): Normed Chi-square	< 3.00
GFI: Goodness-of-fit index	> 0.90
CFI: Comparative fit index	> 0.90
SRMR: Standardised root mean residual	< 0.08
RMSEA: Root mean squared error of approximation	< 0.07

To identify the best fitting model considering the aforementioned indices, the revised hypothesised model (Model One) (Figure 6.1) was first analysed. Following this analysis, Model One was modified and the resulting Model Two (Adapted model) was subjected to further assessment. Additional adjustments were made to Model Two subsequent to its evaluation, resulting in Model Three (Proposed model).

6.9.1.1 Model One (Complete model)

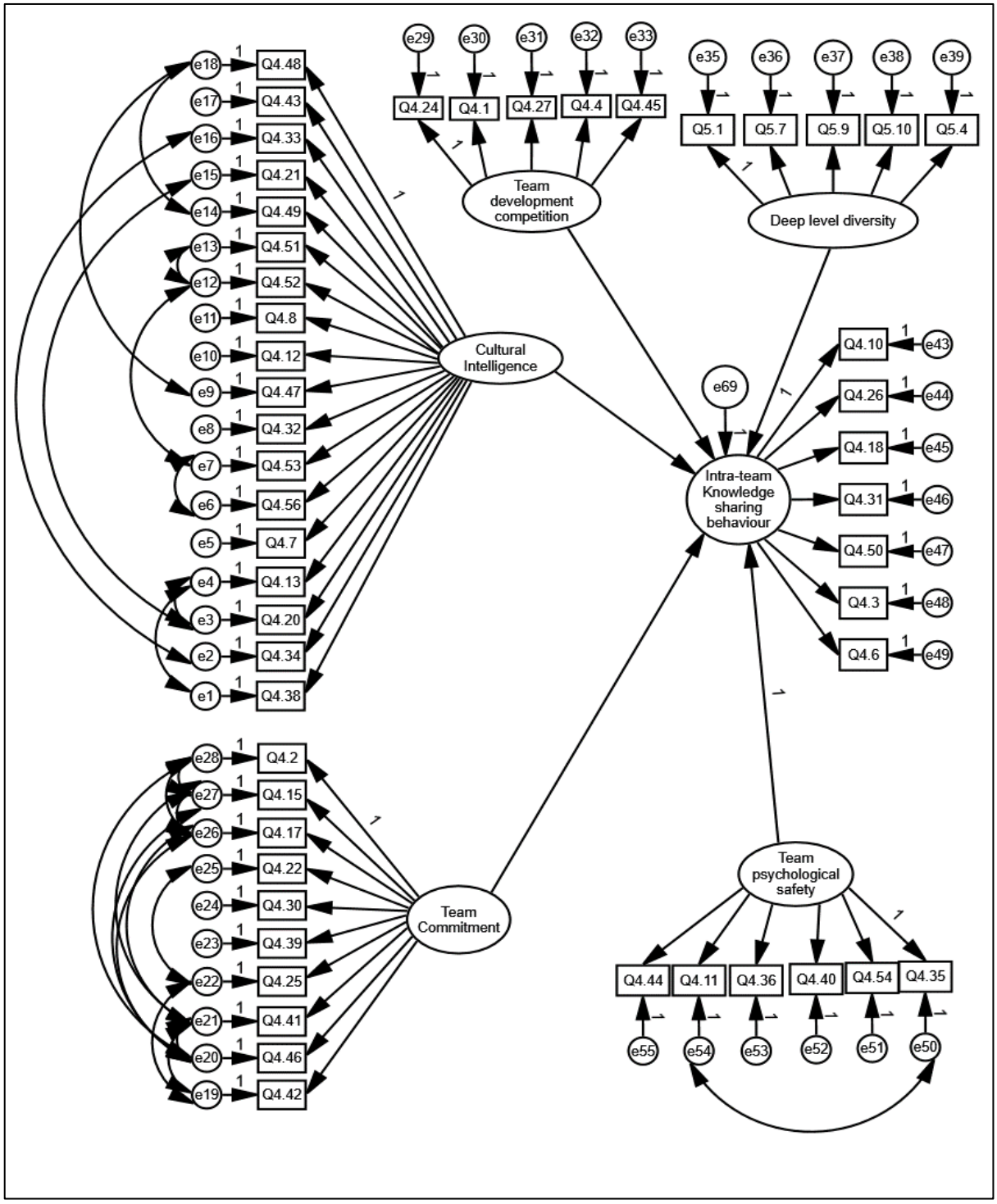
The revised hypothesised model illustrated in Figure 6.1 was subjected to SEM analysis. In the context of the SEM analysis, the revised hypothesised model is denoted as Model One (see Figure 6.2). The model estimates 128 distinct parameters, with 1 326 distinct sample moments and 1 198 (1 326–128) degrees of freedom.

The following abbreviations (indicated in brackets) will be used in the subsequent tables.

- Intra-team knowledge-sharing behaviour (ITKSB)
- Team development competition (TDC)
- Team psychological safety (TPS)
- Cultural intelligence (CI)
- Team commitment (TC)
- Perceived deep-level diversity (DLD)

The covariance depicted in Model One relating to the constructs *Cultural intelligence*, *Team Commitment* and *Team psychological safety* resulted from the CFAs as discussed in section 6.4.

Figure 6.2: Model One (Complete model)



As can be seen in Table 6.21, the normed Chi-square of 2.737 and the RMSEA of 0.067 indicate a good model fit, while the GFI and the CFI indices are marginally below the norm value of 0.90. The SRMR exceeds the 0.08 norm and can be improved.

Table 6.21: Model One goodness-of-fit indices

Index	Cut-off for good model fit (n > 250)	Results for Model One
CMIN/df (x^2/df)	< 3.00	2.737
GFI	> 0.90	0.730
CFI	> 0.90	0.774
SRMR	< 0.08	0.169
RMSEA	< 0.07	0.067

Although the overall fit of Model One is respectable, it could be improved, especially since it specifies an insignificant relationship (see Table 6.22). Model Two (Adapted model) was therefore defined with insignificant variables being removed and only significant relationships retained in the model. More specifically, the *Perceived deep-level diversity* variable was removed from the model (p = 0.466). At this stage, the *Team commitment* variable was still retained as it was significant at the p < 0.10 level. Model Two was defined based on the parameter estimates, standard errors, test statistic value (CR) and the p-values of Model One as illustrated in Table 6.22.

Table 6.22: Model One parameter estimates, standard errors, test statistic values and p-values

			Estimate	SE	CR	P
ITKSB	<---	TPS	1			
ITKSB	<---	DLD	0.022	0.031	0.728	0.466
ITKSB	<---	TDC	-0.104	0.029	-3.549	***
ITKSB	<---	CI	0.245	0.039	6.284	***
ITKSB	<---	TC	-0.183	0.102	-1.784	0.074

*** p < 0.001

As is evident from Table 6.22, *Perceived deep-level diversity* is not significantly related (0.022, p = 0.466) to *Intra-team knowledge-sharing behaviour* and therefore hypothesis H^5 could not be supported. This finding suggests that the respondents' perceptions of how similar or different their team members were with respect to their attitudes about work, personalities, personal values, learning goals and education background did not influence their knowledge-sharing behaviour in a team context.

This insignificant result is incongruent with previous empirical findings that did find a significant relationship between deep-level diversity among team members and knowledge-sharing among team members. For example, Bodla *et al*. (2018:720) showed that perceived deep-level diversity was positively related to knowledge-sharing among team members. The findings of Hofhuis *et al*. (2016:1) also point towards the positive effect of diversity on knowledge-sharing in teams. Van Esch's (2016:50) results revealed that perceived deep-level similarity, as opposed to diversity, has a positive and significant influence on knowledge-sharing among employees.

A possible reason for this insignificant finding in this study is that most respondents were probably not aware of the deep-level differences or similarities among their team members. These differences or similarities are often not easily observable, unlike surface-level characteristics such as age. Subsequently, deep-level diversity (e.g. diversity in personality and values) did not influence respondents' knowledge-sharing behaviour in their teams. This argument by the researcher is supported by the descriptive statistics presented in Table 6.18, which show that more than half of the respondents (54.9 per cent) were neutral in respect of their responses to the statements measuring *Perceived deep-level diversity* of team members.

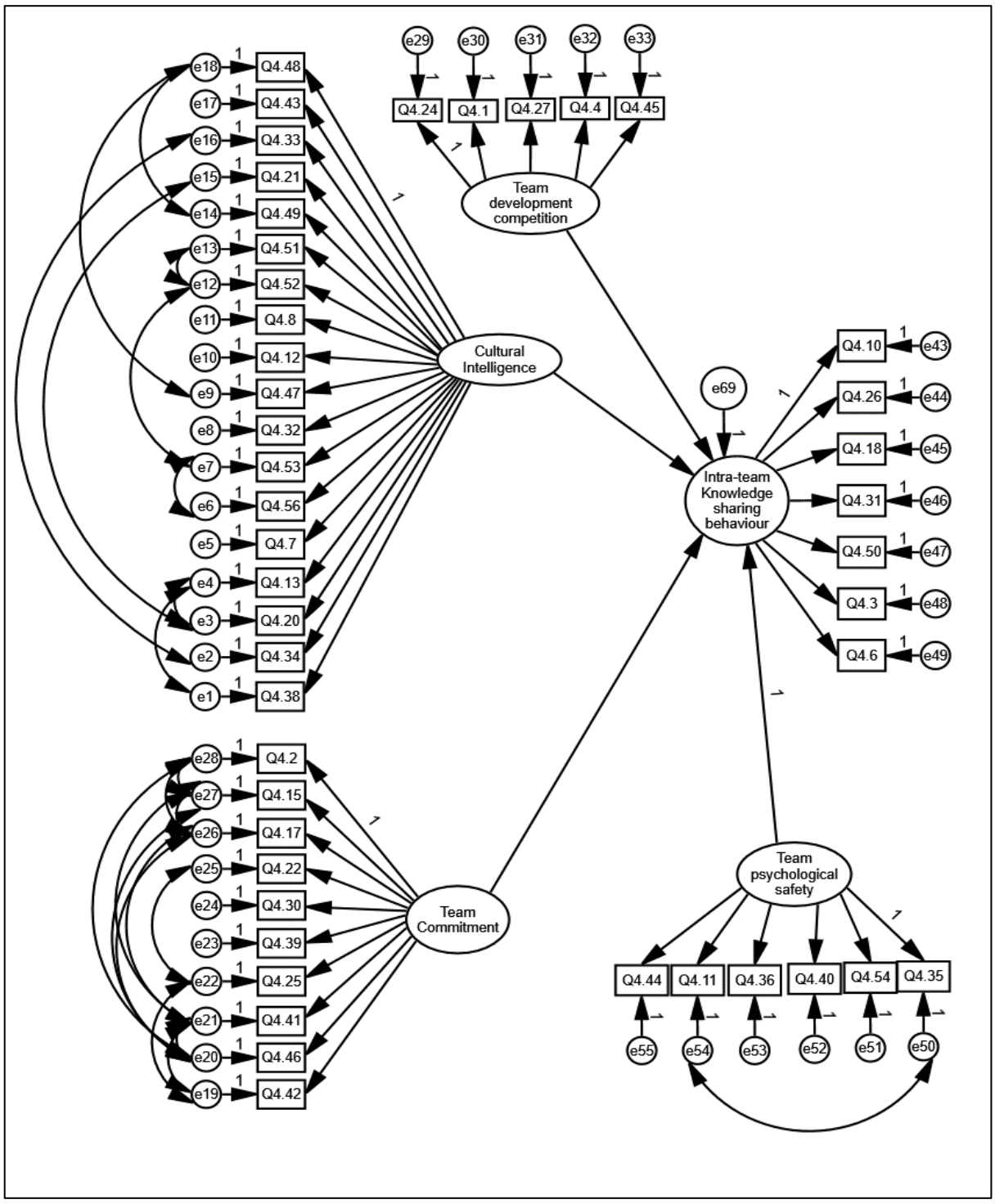
As explained in Chapter Three section 3.4.3, the literature review on knowledge-sharing revealed a scarcity of recent empirical research on the relationship between diversity (surface and deep-level) and knowledge-sharing within a team. The researcher in the present study therefore recommends that more focus is placed on these concepts in future research, especially given the inconclusive finding in this respect.

Against this background, the researcher attempted to improve the fit of Model One (see Table 6.21) by defining Model Two (Adapted model). Model Two excludes the insignificant relationship between *Perceived deep-level diversity* and *Intra-team Knowledge-sharing behaviour* as discussed in the preceding paragraphs.

6.9.1.2 Model Two (Adapted model)

Figure 6.3 illustrates Model Two, which was constructed based on only the significant relationships.

Figure 6.3: Model Two (Adapted model)



Model Two estimates 117 distinct parameters, with 1 081 distinct sample moments and 964 (1 081–117) degrees of freedom. The goodness-of-fit indices that were calculated for Model Two are presented in Table 6.23.

Table 6.23: Model Two goodness-of-fit indices

Index	Cut-off for good model fit (n > 250)	Results for Model Two
CMIN/df (x^2/df)	< 3.00	3.027
GFI	> 0.90	0.735
CFI	> 0.90	0.775
SRMR	< 0.08	0.181
RMSEA	< 0.07	0.073

The parameter estimates, standard errors, test statistic value (CR) and p-values of Model Two are presented in Table 6.24.

Table 6.24: Model Two parameter estimates, standard errors, test statistic values and p-values

			Estimate	SE	CR	P
ITKSB	<---	TPS	1			
ITKSB	<---	TDC	-0.110	0.029	-3.729	***
ITKSB	<---	CI	0.251	0.039	6.391	***
ITKSB	<---	TC	-0.183	0.102	-1.784	0.074

*** p < 0.001

The goodness-of-fit indices, as illustrated in Table 6.23, suggest that the model fit can be improved. The normed Chi-square value of Model Two is marginally above the recommended norm of 3.0, while the GFI and the CFI are slightly lower than the norm value of 0.90. In addition, the RMSEA is marginally above the recommended value of 0.07, while the SRMR exceeds the norm of 0.08. In an attempt to improve the model fit, the insignificant relationship between *Intra-team knowledge-sharing behaviour* and *Team commitment* were excluded for further analysis. Although limited, as discussed in Chapter Three section 3.4.6, there is existing empirical evidence (e.g. Swart *et al*., 2014:281; Yu *et al*., 2013:786; Liu *et al*., 2011:283) that suggests a positive relationship between team commitment and knowledge-sharing.

This finding on *Team commitment* in the present study is therefore not in line with previous studies. A possible reason for this unexpected finding is that most respondents in this study were possibly committed to different internal and external stakeholders. Although the respondents could show commitment toward their teams, they could be more committed toward another party (e.g. client commitment). For example, Swart *et al*. (2014:269) assert that a lawyer may be highly committed to their client and subsequently has no need or incentive to share knowledge with co-workers. Individuals' knowledge-sharing may therefore be restricted if they have to decide between their commitment to various stakeholders. Similarly, Van Der Capellen, Koppius and Dittrich (2011:9) note that some individuals may be committed to several groups in an organisation, which can impede knowledge-sharing because of the increased competition this divided commitment creates between groups. In the context of the present study, this could imply that although team members are committed to their teams, they are possibly even more committed toward another party (e.g. a department or the organisation as a whole).

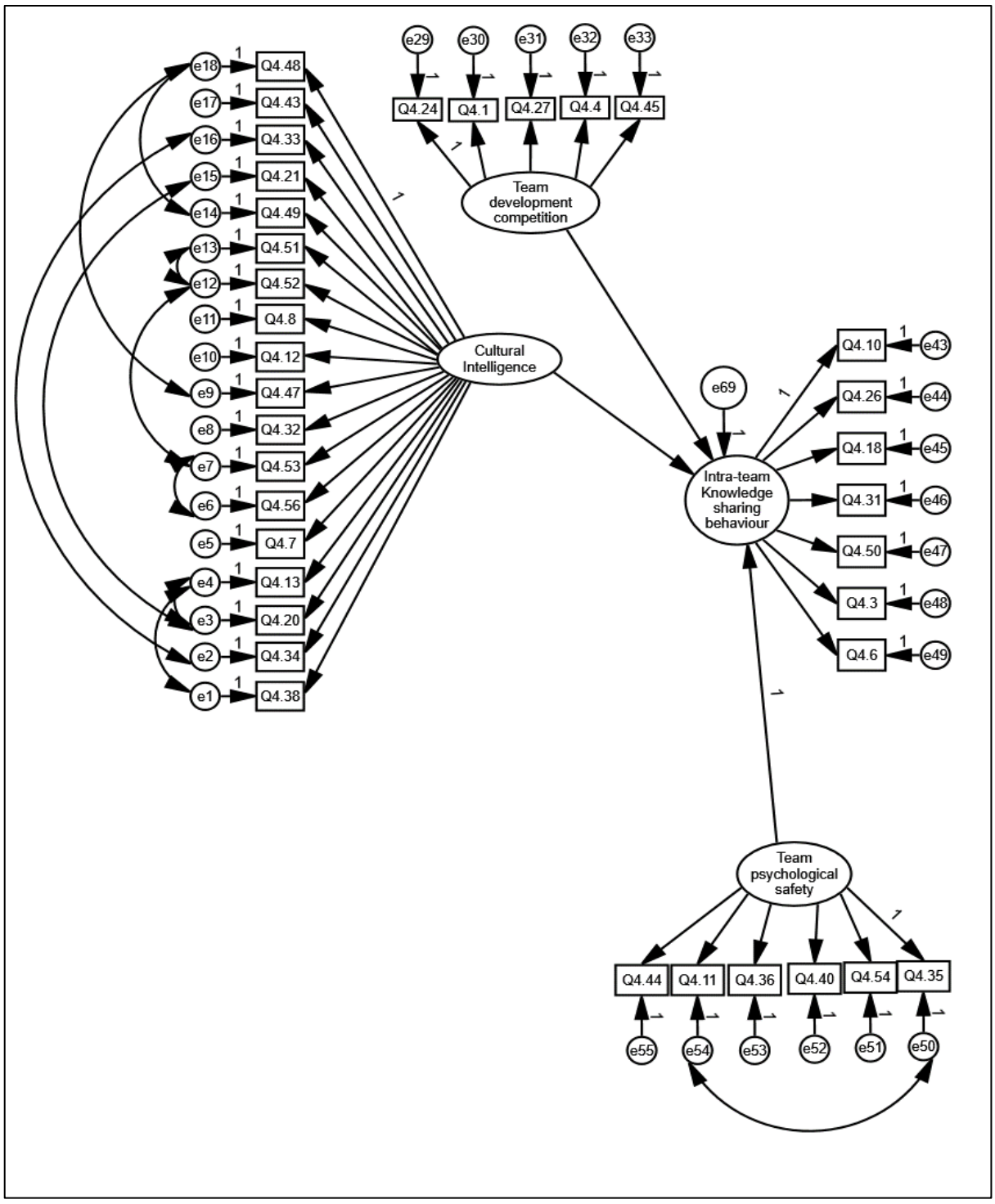
A higher level of commitment toward another party and ensuing competition between different groups, may lead to less knowledge-sharing. This view of the researcher is consistent with the SEM results that suggest a significant negative relationship between *Intra-team knowledge-sharing behaviour* and *Team commitment* if assessed against a 10 per cent level of significance ($p < 0.10$). Nonetheless, the said relationship was assessed at $p > 0.05$ in an attempt to obtain a more parsimonious model. It should also be noted that 50 per cent (see Table 6.18) of the respondents remained largely neutral in their perceptions of the statements that measured *Team commitment*. The possibility that respondents did not understand the *Team commitment* items in the questionnaire, which could lead to distorted results, can therefore not be discarded.

In view of the above discussion, Model Three (Proposed model) was constructed without considering the insignificant relationship ($p > 0.05$) between *Intra-team knowledge-sharing behaviour* and *Team commitment*.

6.9.1.3 Model Three (Proposed model)

Figure 6.4 depicts Model Three, which includes only the significant relationships as shown in Table 6.24.

Figure 6.4: Model Three (Proposed model)



Model Three depicts the proposed model and estimates 84 distinct parameters, with 666 distinct sample moments and 582 (666–84) degrees of freedom. The goodness-of-fit indices for Model Three (see Table 6.25) were calculated again to compare them to the previous models.

Table 6.25: Model Three goodness-of-fit indices

Index	Cut-off for good model fit (n > 250)	Results for Model Three
CMIN/df (x^2/df)	< 3.00	2.982
GFI	> 0.90	0.791
CFI	> 0.90	0.799
SRMR	< 0.08	0.165
RMSEA	< 0.07	0.072

The goodness-of-fit indices for Model Three, as listed in Table 6.25, shows a normed Chi-square value below the recommended norm of 3.0, while the GFI and the CFI are only marginally lower than the norm value of 0.90. In addition, the RMSEA is barely higher than 0.07, while the SRMR is slightly higher than the norm of 0.08. Overall, considering all the goodness-of-fit indices, Model Three shows and acceptable to good fit. In summary, no particular value of any index can classify models as acceptable or unacceptable. The characteristics (e.g. model complexity and data distribution) of the model should be taken into account when interpreting goodness-of-fit indices (Hair *et al*., 2019:640-641).

Modification indices were not used as part of the SEM process to construct another model (e.g. Model 4) in an attempt to further improve the fit of Model Three. Although model fit is important and should be interpreted as discussed in the preceding paragraph, it is more important to investigate statistically significant relationships. The application of modification indices to define another model does not yield any significant relationships and Model Three was subsequently proposed as the final model in this study. Table 6.26 presents the parameter estimates, standard errors, test statistic value (CR) and p-values of Model Three.

Table 6.26: Model Three parameter estimates, standard errors, test statistic values and p-values

			Estimate	SE	CR	P
ITKSB	<---	TPS	0.431	0.063	6.865	***
ITKSB	<---	TDC	-0.121	0.030	-4.064	***
ITKSB	<---	CI	0.247	0.039	6.300	***

*** $p < 0.001$

The findings reported in Table 6.26 show that *Team psychological safety* is positively and significantly (0.431; $p < 0.001$) related to *Intra-team knowledge-sharing behaviour*. Hypothesis H^2 could therefore be supported. Moreover, the standardised estimates as shown in Table 6.27 give an indication as to which factor has the strongest effect on the dependent variable. In this regard, *Team psychological safety* has a standardised estimate of 0.747 on *Intra-team knowledge-sharing behaviour*, indicating that it has the strongest effect of the three factors on the dependent variable.

Table 6.27: Standardised estimates

			Estimate
ITKSB	<---	TPS	0.747
ITKSB	<---	TDC	-0.200
ITKSB	<---	CI	0.306

The significant relationship between *Team psychological safety* and *Intra-team knowledge-sharing behaviour* means that a work environment in which team members feel they can make a mistake in their team without it being held against them, has a positive influence on individuals' knowledge-sharing with members of their team. Also, knowledge-sharing behaviour is likely to be influenced positively when team members believe it is easy for them to raise controversial issues in their team and to ask team members for work-related assistance. The extent to which team members feel comfortable to openly express opinions in their team, that their views will not be deliberately undermined, and that their skills and talents are valued by other team members, also have a positive influence on their knowledge-sharing behaviour with other members of their team. This finding is consistent with those of previous empirical studies (e.g. Liu & Keller, 2021:43; Noh, 2013:83; Kessel *et al*., 2012:153; Van Den

Berg, 2010:47).

In addition, Table 6.26 reveals a negative relationship (-0.121, $p < 0.001$) between *Team development competition* and *Intra-team knowledge-sharing behaviour*. Even though this relationship is statistically significant, the direction of the relationship was not anticipated. As explained in Chapter Four section 4.2.2, a distinction was made between team development competition and team hyper-competition in this study, given the notion that different types of competition can lead to different team outcomes such as knowledge-sharing. It was therefore hypothesised, in line with previous empirical findings (see Liu *et al*., 2018:1481; He *et al*., 2014:963), that team development competition, as opposed to hyper-competition, has a positive relationship with *Intra-team knowledge-sharing behaviour.*

This finding in the present study suggests that even when competition among team members is of such a nature that team rules are followed and where competition among members do not hamper the goal outcomes of the team, but rather positively stimulates the functioning of the team, knowledge-sharing behaviour of team members are negatively influenced by competition. Moreover, regardless of whether competition is practised in good spirit and considering the welfare of team members when competing with one another, the competition has a negative influence on the knowledge-sharing behaviour of team members. A possible explanation for the negative relationship is that respondents in this study did not distinguish between team developmental and team hyper-competition. It is possible that respondents could have viewed competition as a unidimensional concept. In a knowledge-intensive environment, characterised by competition among team members, despite being developmental, knowledge could be regarded as a source of power and competitive advantage. In other words, knowledge-sharing in a competitive environment may be viewed as ceding power and competitive advantage. The researcher is of the view that this relationship must be further explored in future research, given the lack of empirical research in this regard.

Given the findings on *Team development competition* and *Intra-team knowledge-sharing behaviour* in this study, hypothesis H^1 was only partially supported. This relationship could not be ignored simply because the direction of the established

relationship is inconsistent with the hypothesised relationship. A statistically significant relationship was still found at $p < 0.001$ and by excluding this relationship in light of the evidence presented, there was a risk of making a Type II error.

Lastly, *Cultural intelligence* was found to be positively related to *Intra-team knowledge-sharing behaviour* (0.247, $p < 0.001$), suggesting that hypothesis H^3 could be supported. This finding indicates that metacognitive, cognitive, motivational and behavioural cultural intelligence has a positive influence on a team member's knowledge-sharing behaviour. More specifically, individuals' cultural alertness during social relations with other members from different cultures has a positive influence on their knowledge-sharing behaviour with members of their team. A general knowledge and understanding of a particular culture, which includes an understanding of cultural commonalities and differences, also positively affects knowledge-sharing behaviour with team members. In addition, an individual's inherent willingness, curiosity and deliberate efforts to understand different cultures in their attempts to manage challenges associated with cross-cultural interactions is likely to have a positive influence on the knowledge-sharing behaviour of team members. Finally, the use of appropriate verbal and non-verbal skills (e.g. words, tone, gestures and facial expressions) to effectively work together and communicate with team members from diverse cultural backgrounds is positively related to knowledge-sharing behaviour. This finding on the relationship between *Cultural intelligence* and *Intra-team knowledge-sharing behaviour* echoes the findings of previous empirical research (e.g. Stoica *et al*., 2020:124; Presbitero & Attar, 2018:40-41; Solomon & Steyn, 2017:5; Isichei, 2017:275; Chen & Lin, 2013:675; Putranto & Ghazali, 2013:5) that suggests a positive relationship between individual's cultural intelligence and knowledge-sharing behaviour.

Following the SEM analysis, Model Three was recommended as the most appropriate model for this study. Table 6.28 presents a comparison of the goodness-of-fit indices of the three models that formed part of the SEM analysis.

Table 6.28: Comparison of goodness-of-fit indices

Index	Cut-off for good model fit (n > 250)	Results for Model One	Results for Model Two	Results for Model Three
CMIN/df (x^2/df)	< 3.00	2.737	3.027	2.982
GFI	> 0.90	0.730	0.735	0.791
CFI	> 0.90	0.774	0.775	0.799
SRMR	< 0.08	0.169	0.181	0.165
RMSEA	< 0.07	0.067	0.073	0.072

From the SEM analysis, all the revised hypotheses (see Table 6.17) could not be confirmed at the five per cent level of significance ($p < 0.05$). As a result, a number of proposed hypotheses were not supported as illustrated in Table 6.29.

Table 6.29: Summary of supported and not supported hypotheses

Hypothesis number	Hypothesis	Supported/ Not supported	Comment
H^1:	There is a positive relationship between *Team development competition* and *Intra-team knowledge-sharing behaviour.*	Partially supported	See Table 6.26 and subsequent discussion
H^2:	There is a positive relationship between *Team psychological safety* and *Intra-team knowledge-sharing behaviour.*	Supported	See Table 6.26
H^3:	There is a positive relationship between *Cultural intelligence* and *Intra-team knowledge-sharing behaviour.*	Supported	See Table 6.26
H^4:	There is a positive relationship between *Team commitment* and *Intra-team knowledge-sharing behaviour*.	Not supported	See Table 6.24
H^5:	*There is a negative relationship between Perceived deep-level diversity* and *Intra-team knowledge-sharing behaviour.*	Not supported	See Table 6.22
H^6:	There is a relationship between *Age* and *Intra-team knowledge-sharing behaviour*.	*	*
H^7:	There is a relationship between *Gender* and *Intra-team knowledge-sharing behaviour*.	*	*
H^8:	There is a relationship between *Home language* and *Intra-team knowledge-sharing behaviour*.	*	*
H^9:	There is a relationship between *Highest academic qualification* and *Intra-team knowledge-sharing behaviour*.	*	*
H^{10}:	There is a relationship between *Ethnic background* and *Intra-team knowledge-sharing behaviour*.	*	*
H^{11}:	There is a relationship between *Organisational tenure* and *Intra-team knowledge-sharing behaviour*.	*	*

H^{12}:	There is a relationship between *Job tenure* and *Intra-team knowledge-sharing behaviour*.	*	*

* Still to be tested

A subset of SEM, namely GLM analysis, were conducted to assess the influence of the demographic variables (hypotheses H^6–H^{12}) on *Intra-team knowledge-sharing behaviour*.

6.9.2 GLM ANALYSIS OF THE INFLUENCE OF DEMOGRAPHIC DATA

In section 6 of the questionnaire the following demographic information was obtained from the respondents:

- Age of respondent
- Gender of respondent
- Home language of respondent
- Highest academic qualification of respondent
- Ethnic background of respondent
- Organisational tenure
- Job tenure

GLM analysis was performed to assess the influence of these demographic variables on the dependent variable *Intra-team knowledge-sharing behaviour.*

Based on the results of the GLM analysis, it was concluded that only the demographic variable *Age of respondent* has an influence on *Intra-team knowledge-sharing behaviour*. More specifically, Table 6.30 shows that there is a significant difference ($p < 0.05$) in the *Intra-team knowledge-sharing behaviour* of respondents who were 30 years of age or younger compared to respondents who were 51 years of age or older. Annexure D provides a summary of the other demographic variables' insignificant relationships with *Intra-team knowledge-sharing behaviour.*

Table 6.30: GLM: Age of respondent

Age post hoc						
Multiple comparisons						
Dependent variable: Intra-team knowledge-sharing behaviour Tukey HSD						
(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
30 years or younger	31–40 years	-0.1780	0.11038	0.373	-0.4629	0.1070
	41–50 years	-0.2869	0.11139	0.051	-0.5744	0.0007
	51 years or older	**-0.4214***	**0.12941**	**0.007**	-0.7554	-0.0873
31–40 years	30 years or less	0.1780	0.11038	0.373	-0.1070	0.4629
	41–50 years	-0.1089	0.08240	0.550	-0.3216	0.1038
	51 years or older	-0.2434	0.10549	0.098	-0.5157	0.0289
41–50 years	30 years or less	0.2869	0.11139	0.051	-0.0007	0.5744
	31–40 years	0.1089	0.08240	0.550	-0.1038	0.3216
	51 years or older	-0.1345	0.10655	0.588	-0.4095	0.1406
51 years or older	**30 years or younger**	**0.4214***	**0.12941**	**0.007**	0.0873	0.7554
	31–40 years	0.2434	0.10549	0.098	-0.0289	0.5157
	41-50 years	0.1345	0.10655	0.588	-0.1406	0.4095

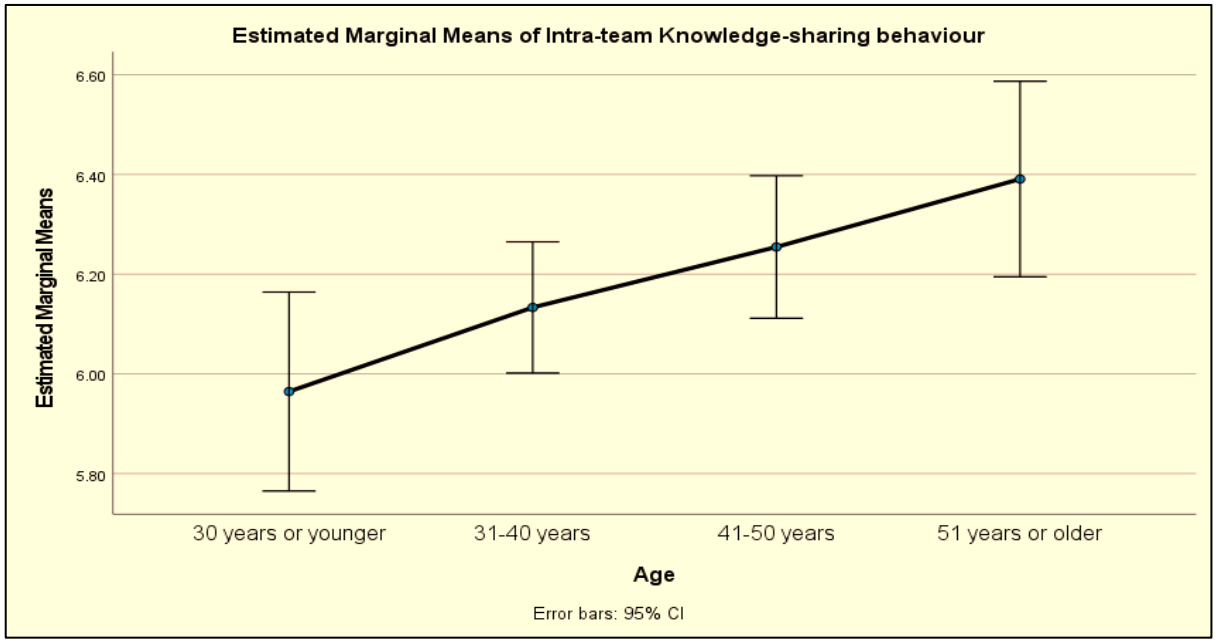
Based on observed means

The error term is Mean Square (Error) = 0.463

*The mean difference is significant at the 0.05 level

The estimated marginal means presented in Figure 6.5 suggest that younger respondents (30 years or younger), as opposed to older respondents (51 years or older), tended to engage significantly less in *Intra-team knowledge-sharing behaviour.* In other words, younger respondents (30 years or younger) tended to share less specialised knowledge, expertise, work experiences, work-related insights, practical know-how, well-documented manuals, methodologies and models with their team members compared to their older counterparts (50 years or older). Hypothesis H^6 was therefore supported, whereas while $H^{7-}H^{12}$ were not supported (see Table 6.29 for formulation of these hypotheses).

Figure 6.5: GLM: Age of respondents



It is also worth noting that there was a significant difference at the 10 per cent ($p < 0.10$) level between the *Intra-team knowledge-sharing behaviour* of respondents who were 30 years old or younger and those who were between 41 and 50 years old. The actual level of significance for the difference in knowledge-sharing behaviour between the mentioned groups was marginally above the five per cent level ($p = 0.051$).

A possible explanation for these findings is that younger respondents might share less of their knowledge with other team members because of a lack confidence in the value of their knowledge (e.g. specialised knowledge, expertise, work experiences, work-related insights, methodologies for completing a task and models of previously completed projects) at a young age. Alternatively, they might consider their knowledge as power in their team and organisation, and therefore a competitive advantage that could be forfeited if they shared their knowledge with other team members.

Conversely, respondents who were 50 years or older might realise that it is important for the organisation to share knowledge with team members and also have more confidence in the value of, for example, their specialised knowledge, expertise and work-related insights that they have gained during their career. Older respondents might be approaching retirement and possibly did not, to the same degree as their

younger counterparts, consider it important to hold onto knowledge as a means of power and competitive advantage in an organisation. The researcher's reasoning is consistent with the knowledge-sharing literature that suggests that some individuals may view their knowledge as a source of power, competitive advantage and safeguard it against layoffs in the workplace during volatile circumstances (Bilginoglu, 2019:62).

Despite the inconsistent and sometimes inconclusive findings (e.g. Shahid & Naveed, 2020:8; Perree *et al*., 2019:118; Kaspersen & Pettersen, 2018:28; Kuruppuge *et al*., 2018:279; Tan & Trang, 2017:107; Nesic *et al*., 2015:1007-1008) between age and knowledge-sharing behaviour reported in the literature, the findings make a valuable contribution to this field. The findings in the present study are, however, in line with selected previously reported studies that suggest a positive relationship between age and knowledge-sharing behaviour (e.g. Shahid & Naveed, 2020:8; Kuruppuge *et al*., 2018:279; Tan & Trang, 2017:107).

A summary of the hypotheses that were tested in the present study is presented in the next section.

6.10 SUMMARY OF HYPOTHESISED AND SIGNIFICANT RELATIONSHIPS

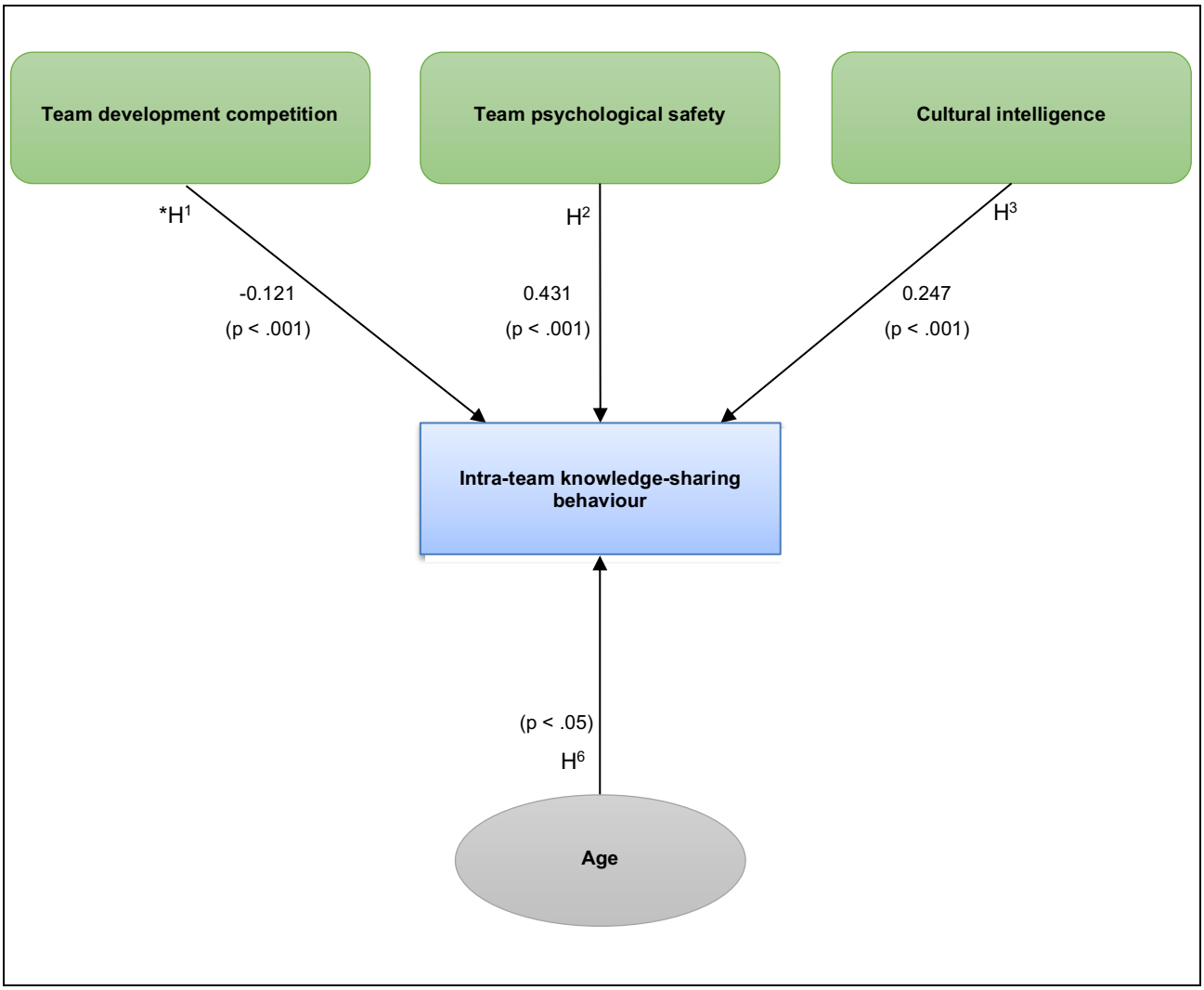
Table 6.31 presents a final summary of all the hypothesised relationships and indicates which hypotheses were supported or not supported.

Table 6.31: Final summary of supported and not supported hypotheses

Hypothesis number	Hypothesis	Supported/ Not supported	Comment
H^1	There is a positive relationship between *Team development competition* and *Intra-team knowledge-sharing behaviour.*	Partially supported	See Table 6.26 and subsequent discussion
H^2	There is a positive relationship between *Team psychological safety* and *Intra-team knowledge-sharing behaviour.*	Supported	See Table 6.26
H^3	There is a positive relationship between *Cultural intelligence* and *Intra-team knowledge-sharing behaviour.*	Supported	See Table 6.26
H^4	There is a positive relationship between *Team commitment* and *Intra-team knowledge-sharing behaviour*.	Not supported	See Table 6.24
H^5	*There is a negative relationship between Perceived deep-level diversity and Intra-team knowledge-sharing behaviour.*	Not supported	See Table 6.22
H^6	There is a relationship between *Age* and *Intra-team knowledge-sharing behaviour*.	Supported	See Table 6.29 and Figure 6.5
H^7	There is a relationship between *Gender* and *Intra-team knowledge-sharing behaviour*.	Not supported	See Annexure D
H^8	There is a relationship between *Home language* and *Intra-team knowledge-sharing behaviour*.	Not supported	See Annexure D
H^9	There is a relationship between *Highest academic qualification* and *Intra-team knowledge-sharing behaviour*.	Not supported	See Annexure D
H^{10}	There is a relationship between *Ethnic background* and *Intra-team knowledge-sharing behaviour*.	Not supported	See Annexure D
H^{11}	There is a relationship between *Organisational tenure* and *Intra-team knowledge-sharing behaviour*.	Not supported	See Annexure D
H^{12}	There is a relationship between *Job tenure* and *Intra-team knowledge-sharing behaviour*.	Not supported	See Annexure D

It should be noted that hypothesis H^1 was partially supported because the relationship between *Team development competition* and *Intra-team knowledge-sharing behaviour* was statistically significant ($p < 0.001$), but in the opposite direction of the hypothesised relationship. Nonetheless, a significant relationship that was adequately justified was still found as presented in Table 6.26. Figure 6.8 summarises the significant relationships found through the SEM analysis.

Figure 6.6: Summary of significant relationships based on the SEM analysis



* A significant relationship (p < 0.001) was found between this independent variable (*Team development competition*) and the dependent variable (*Intra-team knowledge-sharing behaviour)*, although the direction of the relationship found was inconsistent with the hypothesised relationship.

6.11 COMMON METHOD VARIANCE

This current study made use of a questionnaire for data collection purposes. Questionnaires, which measure the constructs in a study, are generally self-administered and used to collect data from a single sample over a specific period. The use of a self-reported questionnaire to measure the constructs in a cross-sectional study may lead to distorted results owing to common method variance. Common method variance creates bias (i.e. common method bias) that may inflate the estimated relationships among constructs. In this regard, common method variance may lead to inaccurate estimates of the reliability and convergent validity of the constructs in the study. The parameter estimates of the assessed relationships among

constructs may also be inaccurate (Rodriguez-Ardura & Meseguer-Artola, 2020:1; Tehseen, Ramayah, Sajilan, 2017:142-144).

Questionnaire fatigue resulting from a long questionnaire may be a potential source of common method variance. Other possible causes of common method variance include the complexity and ambiguity of scale items, the arrangement of scale items in the questionnaire, the tendency among respondents to show socially acceptable behaviour, the inclination among respondents to agree or disagree with scale items irrespective of its content and the respondents' beliefs about a topic. The consistency motif, which relates to respondents' inclination to supply consistent responses for all survey questions, is another potential cause of common method variance. Furthermore, the emotional state of respondents and their propensity to select or avoid extreme options in the questionnaire may also cause common method variance (Rodriguez-Ardura & Meseguer-Artola, 2020:1; Tehseen *et al*., 2017:145).

In the present study, procedural remedies suggested by researchers such as Rodriguez-Ardura and Meseguer-Artola (2020:1), Tehseen *et al*. (2017:147) and Jordan and Troth (2020:7) were used to possibly limit the occurrence of common method variance. For example, from a procedural perspective, the respondents were informed of their confidentiality and that names of respondents would not appear in the research report. The respondents were therefore assured that their anonymity would be protected. Respondents were also informed that there were no right or wrong answers. These procedures should have limited evaluation apprehension that is a possible cause of common method variance (Rodriguez-Ardura & Meseguer-Artola, 2020:2; Tehseen *et al*., 2017:147).

In addition, the purpose of the study was also explained to respondents and the research benefits that they could gain from participating. The respondents were also informed of their right to contact the researcher to request a copy of the findings from the research project should they wish to do so. By explaining to respondents how the findings of the study could benefit them, and by promising feedback, the likelihood of accurate responses is increased (Jordan & Troth, 2020:7).

Moreover, to avoid any misinterpretation and confusion among respondents that could lead to random responses, the questionnaire was subjected to a pilot study. The feedback obtained from the pilot study was used to minimise any concerns relating to ambiguous questions and instructions, and to ensure that unfamiliar concepts were defined with examples (Jordan & Troth, 2020:7; Rodriguez-Ardura & Meseguer-Artola, 2020:2; Tehseen *et al*., 2017:147). Regarding the consistency motif, the items in the questionnaire were randomised to possibly limit respondents from providing consistent answers to all the scale items (Rodriguez-Ardura & Meseguer-Artola, 2020:2).

To assess the efficacy of the aforementioned procedural remedies, Harman's single-factor test was employed in this study to detect any evidence of common method variance. This statistical test assesses whether one single factor explains the majority of variance in the data. More specifically, the items from all constructs measured in the study were loaded onto a factor analysis to establish whether one factor arises or whether a single factor explains the majority of the covariance among the construct measures (Tehseen *et al*., 2017:151; Eichhorn, 2014:4). No single factor emerged that could suggest influence of possible common method variance.

Although no major influence of common method variance could be detected in this study, the possibility cannot be completely eliminated.

6.12 SUMMARY

This chapter commenced with a discussion of the sample size and response rate of the study. A brief summary was given on the demographic profile of the 384 respondents, followed by CFAs that confirmed the fit of the factor structures by using several goodness-of-fit indices.

Following the CFAs, the validity and reliability of the respective scales were examined. Based on the results from the validity and reliability tests, the hypothesised model that was first presented in Chapter Four (Figure 4.2) was adjusted accordingly and presented in Figure 6.1. In congruence with the revised hypothesised model, which included the factors *Team development competition*, *Team psychological safety*,

Cultural intelligence, *Team commitment* and *Perceived deep-level diversity*, selected descriptive statistics and correlations results were presented.

In the final part of this chapter the hypothesised relationships presented in the revised hypothesised model (Figure 6.1) was assessed by means of an SEM analysis. In this respect, the first SEM model (Model One) was assessed by using several goodness-of-fit indices to establish how well the model represented the data. The model was adjusted accordingly until a satisfactory model (Model Three) emerged.

The main SEM analysis was followed by examining the influence of selected demographic variables on *Intra-team knowledge-sharing behaviour*. GLM, which is a subset of SEM, was used to conduct the analysis on the demographic variables and *Intra-team knowledge-sharing behaviour*. In light of these analyses, it was concluded that *Team psychological safety, Team development competition*, *Cultural intelligence* and *Age* have a significant influence on *Intra-team Knowledge-sharing behaviour*. Finally, a discussion on common method variance was presented and no major influence of common method variance could be established in this study.

In the next and final chapter, Chapter Seven, the empirical results reported in this chapter will be interpreted. The contributions and limitations of this study will also be discussed followed by recommendations for future research.

CHAPTER SEVEN

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 INTRODUCTION

In Chapter Six, the empirical results and analysis of the data were presented and discussed. In the concluding chapter of this study, Chapter Seven, an overview of the current research is presented, which includes a discussion of the research process and achievement of the research objectives. In other words, this chapter will address the eighth methodological research objective, namely to explain and interpret the research findings. It will also provide guidelines and recommendations to knowledge-intensive businesses on how to manage the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams.

Moreover, a summary of the empirical results and managerial recommendations relating to the statistically significant relationships that emerged are presented. A summary of the respondents' demographic profile is also presented, followed by the findings and recommendations from the validity and reliability analyses. The recommendations resulting from the SEM analysis are also discussed. To conclude this chapter, the contributions and limitations of the study are considered and recommendations for future research are offered.

7.2 OVERVIEW OF RESEARCH

It is important to encourage team members to share knowledge as it is vital for an organisation's competitive advantage. More specifically, knowledge-sharing is vital in knowledge-intensive teams that undertake challenging knowledge-intensive work by drawing members together with different skill sets, experience and functional expertise. Knowledge-sharing within teams may, however, be challenging as some team members may have various reasons to hoard their knowledge.

Regrettably, there is a lack of current, systematic, integrated research that pay particular attention to team-related factors influencing the knowledge-sharing behaviour within a team. For this reason, the purpose of this study was to identify and empirically examine selected team-related factors that could enhance *Intra-team knowledge-sharing behaviour* and ultimately the competitive advantage of an organisation.

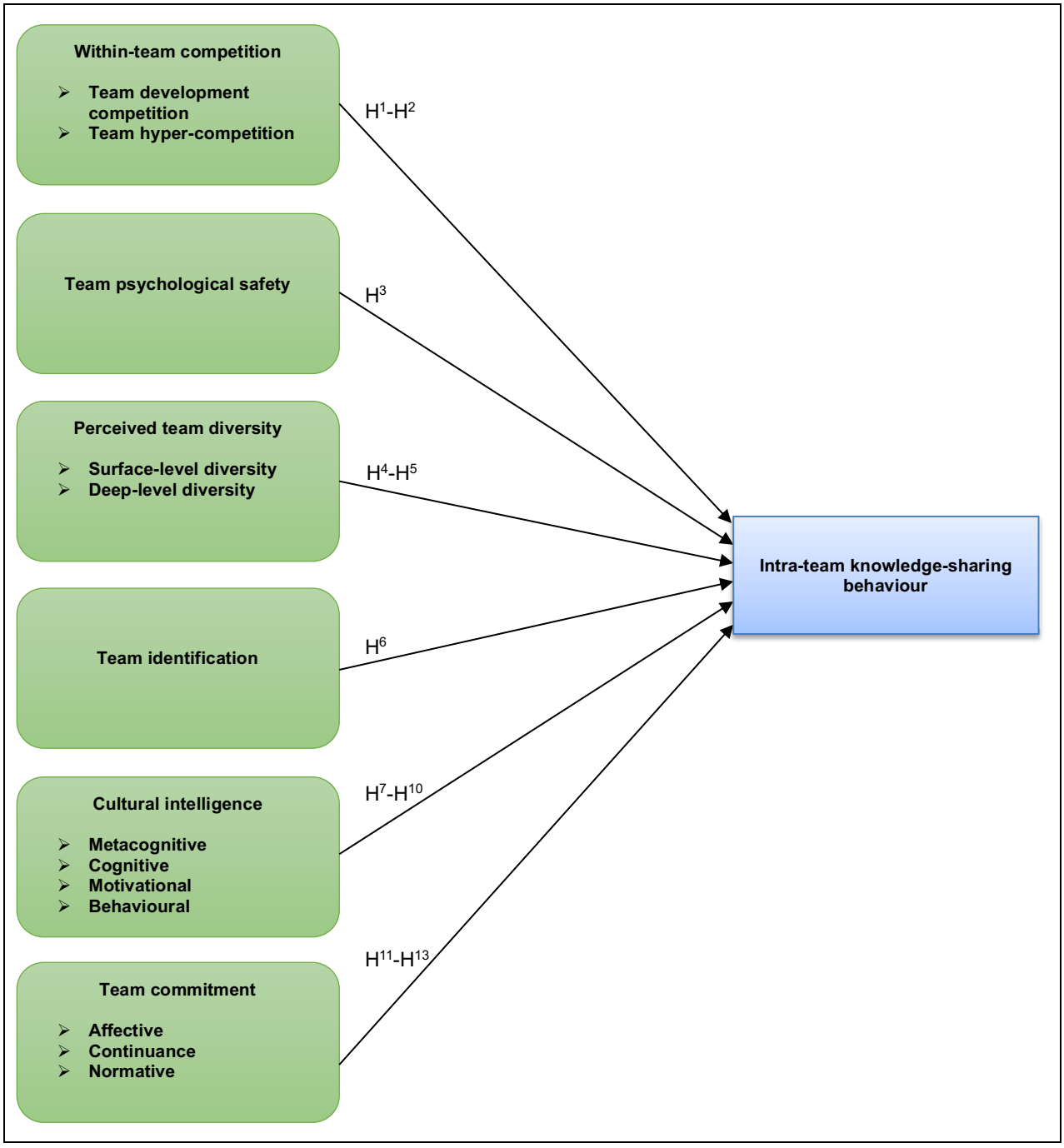
The following sections outline the research process that was followed to pursue the purpose of this study. These sections also indicate how each research objective was achieved.

7.2.1 RESEARCH PROCESS

To give effect to the purpose of this study, the researcher commenced with a comprehensive theoretical investigation into the nature and significance of knowledge-sharing in a team context. The mainstream theories, which provide insight into knowledge-sharing behaviour and the selected team-related factors that could influence the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams, were identified and discussed in detail. Based on the extensive literature review, a hypothesised model of 13 team-related factors that could influence *Intra-team knowledge-sharing behaviour* was developed. More specifically, the independent variables of this study, namely *Team development competition*, *Team hyper-competition*, *Team psychological safety*, *Perceived surface-level diversity*, *Perceived deep-level diversity, Team identification*, *Metacognitive cultural intelligence*, *Cognitive cultural intelligence*, *Motivational cultural intelligence*, *Behavioural cultural intelligence*, *Affective team commitment*, *Continuance team commitment* and *Normative team commitment* were included in the proposed hypothesised model as having a potential relationship with *Intra-team knowledge-sharing behaviour*, the dependent variable of this study.

For ease of reference, the proposed model is presented in Figure 7.1.

Figure 7.1: Proposed hypothesised model of team-related factors influencing intra-team knowledge-sharing behaviour



Source: Researcher's own construction

Following the construction of the proposed hypothesised model, the researcher proceeded to develop a research design that would be suitable to address the research questions. For the purpose of this study, a positivist research philosophy and deductive approach to theory building were adopted, which are typically associated with a quantitative study. In addition, a survey research strategy was used and data

were collected from respondents at a particular point in time (i.e. a cross-sectional study).

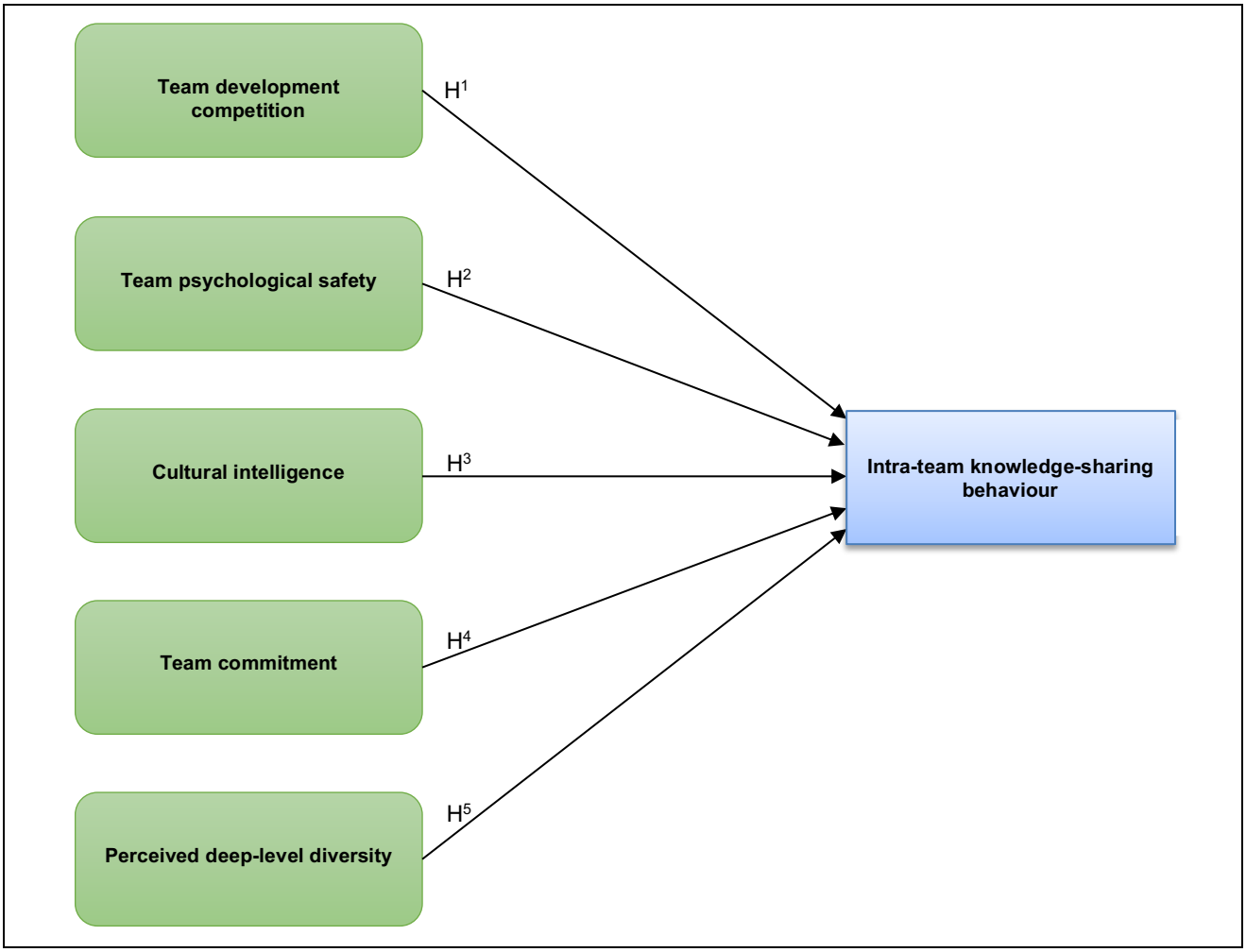
Concerning the development of the measuring instrument, the constructs in the hypothesised model were operationalised using items from pre-validated scales. The items from these existing scales were amended accordingly to make them more appropriate for the current study. In some instances, self-generated items were developed based on secondary sources (see Chapter Five section 5.3.7.4). The items measuring each construct in the hypothesised model collectively represented the measuring instrument that was used in this study to examine the relationships between the dependent and independent variables, as illustrated in Figure 7.1.

The measuring instrument, which was in the form of a self-administered online questionnaire, was subjected to a pilot study. Minor adjustments were made to the questionnaire before an electronic link to the final version, accompanied with a cover letter (see Annexure A), was e-mailed to 8 496 potential respondents. These potential respondents, who were identified using a convenience sampling technique, were likely to participate in knowledge-intensive teams and be representative of the population, as explained in Chapter Five section 5.3.7.2. A total of 384 usable responses were received.

Following the data collection, the data were analysed to examine the proposed relationships as depicted in the hypothesised model. To address possible multicollinearity concerns associated with different variables that belong to a shared category, such variables were first combined into a single hierarchical variable. Thereafter, CFAs were conducted that confirmed the factor structures by using various goodness-of-fit indices. Subsequent to the CFAs, the validity and reliability of the measuring instrument was assessed. The reliability of the measuring instrument was evaluated using Cronbach's alpha coefficients, while the assessment of validity involved calculations of the AVE estimates and squared correlations between constructs. Based on the results of the reliability and validity assessments, the hypothesised model, as illustrated in Figure 7.1, was revised accordingly. The revised model, which included *Team development competition*, *Team psychological safety*,

Cultural intelligence, *Team commitment* and *Perceived deep-level diversity*, is presented in Figure 7.2.

Figure 7.2: Revised hypothesised model of team-related factors influencing intra-team knowledge-sharing behaviour



Descriptive statistics and correlation results were presented on the constructs depicted in the revised hypothesised model, while a SEM analysis was the main statistical technique used to test the significance of the relationships between the dependent and the independent variables. The relationships between selected demographic variables and *Intra-team knowledge-sharing behaviour* were assessed by means of GLM analysis, a subset of SEM. The researcher essentially gave an account of all research findings, interpreted the data, compared the findings to earlier reported research, and focused on possible relationships that originated from the data analysis.

As mentioned in section 7.1, in this chapter the researcher explains and interprets the research findings and provides guidelines and recommendations to knowledge-intensive businesses on how to manage the team-related factors influencing the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams. This conclusion could possibly enhance *Intra-team knowledge-sharing* and subsequently provide a competitive advantage to knowledge-intensive businesses.

The next section highlights the achievement of the research objectives.

7.2.2 ACHIEVEMENT OF THE RESEARCH OBJECTIVES

Table 7.1 indicates the relevant chapters in which the study's objectives were addressed and discussed.

Table 7.1: Objectives addressed in the relevant chapters

Primary objective	Relevant chapter
To identify and empirically examine selected team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams in knowledge-intensive businesses.	All chapters
Secondary objectives	**Relevant chapter**
To investigate the relationship between *Within-team competition* (*Team development competition* and *Team hyper-competition*) and *Intra-team knowledge-sharing behaviour*.	Chapter Three Chapter Four Chapter Six
To investigate the relationship between *Team psychological safety* and *Intra-team knowledge-sharing behaviour*.	Chapter Three Chapter Four Chapter Six
To investigate the relationship between *Perceived team diversity* (*Perceived surface-level diversity* and *Perceived deep-level diversity*) and *Intra-team knowledge-sharing behaviour.*	Chapter Three Chapter Four Chapter Six
To investigate the relationship between *Team identification* and *Intra-team knowledge-sharing behaviour.*	Chapter Three Chapter Four Chapter Six
To investigate the relationship between *Cultural intelligence* (*Metacognitive cultural intelligence*; *Cognitive cultural intelligence*; *Motivational cultural intelligence*; *Behavioural cultural intelligence*) and *Intra-team knowledge-sharing behaviour*.	Chapter Three Chapter Four Chapter Six
To investigate the relationship between *Team commitment* (*Affective team commitment*; *Continuance team commitment; Normative team commitment*) and *Intra-team knowledge-sharing behaviour*.	Chapter Three Chapter Four Chapter Six
To investigate the relationship between selected *Demographic variables* and *Intra-team knowledge-sharing behaviour*.	Chapter Four Chapter Six
Methodological objectives	**Relevant chapter**
To conduct an extensive theoretical investigation into the nature and significance of *Intra-team knowledge-sharing behaviour.*	Chapter Two
To conduct an extensive theoretical investigation into the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams.	Chapter Three
To construct a hypothesised model of team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams, and to propose suitable hypotheses relating to the relationships illustrated in the proposed model.	Chapter Four
To establish a research design that would be appropriate for the current study and suitable to address all the research questions.	Chapter Five
To design a measuring instrument to empirically assess the relationships in the hypothesised model.	Chapter Five Annexure A
To conduct an empirical investigation on a sample of employees participating in knowledge-intensive teams.	Chapter Six

To give an account of the research findings, interpret data, compare findings to former research and focus on possible relationships that originated from the data analysis.	Chapter Six
To explain and interpret the research findings and provide guidelines and recommendations to knowledge-intensive businesses on how to manage the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams. This could possibly enhance intra-team knowledge-sharing and subsequently provide a competitive advantage to knowledge-intensive businesses.	Chapter Seven

The significant empirical results and managerial recommendations are discussed in the next section.

7.3 SUMMARY OF THE EMPIRICAL RESULTS AND RECOMMENDATIONS

Before discussing the SEM analysis results, a summary is provided of the demographic profile of the respondents and the findings and recommendations relating to the validity and reliability assessments.

7.3.1 DEMOGRAPHIC PROFILE OF THE RESPONDENTS

The majority of respondents (36.7 per cent) in this study were between 31 and 40 years of age, while 55 per cent of them were males and 45 per cent females. Also, most of the respondents (26.8 per cent) were English-speaking and held a bachelor's or honours degree. In fact, the respondents were generally well educated as more than 50 per cent of them held a postgraduate qualification. Concerning their ethnic background, most of the respondents (65.6 per cent) were Black. Most respondents (44.8 per cent) had worked in their organisation for longer than 10 years, while the majority (37.2 per cent) specified that they had worked in their current position for between three and five years.

From the demographic information it can thus be concluded that most respondents who participated in this study were well qualified and familiar with their organisational environment and their role. The researcher is therefore of the opinion that the sample was a good representation of the population and that respondents were well informed to participate in the study.

7.3.2 FINDINGS AND RECOMMENDATIONS FROM THE VALIDITY AND RELIABILITY TESTING

To evaluate construct validity, the measuring instrument employed in this study was assessed in terms of its convergent, discriminant and face validity. With regard to convergent validity, a construct's AVE estimate was compared to the generally accepted threshold of 0.5. This study also employed reliability estimates to assess the convergent validity of the measuring instrument. If a construct returned an AVE value that was less than the generally accepted guideline (not rule) of 0.5, but its reliability was higher than 0.6, the construct's convergent validity was deemed adequate, as discussed and justified in Chapter Six section 6.5. Thus, by jointly considering a construct's AVE and its reliability estimate, the measuring instrument used in this study generally provided sufficient evidence of convergent validity.

Concerning the discriminant validity of the measuring instrument, the square root of the AVE values of any two constructs was compared to the correlation between the two constructs. With only a few exceptions (see Chapter Six Table 6.15), the square root of the AVE values of any two constructs was larger than the absolute value of the correlation coefficient between the two constructs. In these instances where the square root of the AVE value of a specific construct was less than the absolute value of the correlation coefficient of the given construct with any other construct, it was only marginal. Therefore, the measuring instrument in the present study reported satisfactory discriminant validity.

The face validity of the measuring instrument was assessed by means of a pilot study in which respondents were requested to complete the questionnaire and to provide feedback on issues such as ambiguous questions, time required to complete the questionnaire, clarity of instructions, and any other relevant information pertaining to the completion of the questionnaire. The face validity of the questionnaire was therefore, to some extent, established by means of a pilot test.

Besides validity, Cronbach's alpha coefficients were calculated to assess the reliability of the measuring instrument. The general cut-off value of 0.7 was strictly applied to evaluate the reliability of the scales measuring each construct in this study. As alluded

to earlier in this section, this study also made use of reliability estimates to evaluate the convergent validity of the measuring instrument. Based on the results pertaining to the validity and reliability of the measuring instrument, the scales measuring the constructs *Team identification* and *Perceived surface-level diversity* did not show enough evidence of both convergent validity and reliability with Cronbach's alpha values of less than 0.6. In addition, the scale measuring *Team hyper competition* returned a Cronbach's alpha value of less than 0.7, therefore not showing sufficient internal reliability given the strict guideline applied in this study. Subsequently, the aforementioned factors were not considered for further empirical analysis. The constructs *Intra-team knowledge-sharing behaviour*, *Team development competition*, *Team psychological safety*, *Cultural intelligence*, *Team commitment* and *Perceived deep-level diversity* were all considered for further empirical analysis as the scales measuring these factors were deemed valid and reliable with high Cronbach's alpha values reported in excess of 0.7.

7.3.3 DISCUSSION AND RECOMMENDATIONS FROM THE SEM ANALYSIS

An SEM analysis was the main statistical technique employed to assess the relationships between the dependent and independent variables. The statistically significant relationships emanating from the SEM analysis were presented in Figure 6.6 of Chapter Six. These significant relationships are summarised in the following sections, after which suitable recommendations are offered to knowledge-intensive businesses on how to manage the team-related factors influencing the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams. These recommendations could enhance the knowledge-sharing behaviour of individual team members in a team context and as a result provide a competitive advantage to knowledge-intensive businesses.

7.3.3.1 Team development competition

Team development competition refers to competition among team members whereby team rules are followed and competing does not hamper the goal outcomes of the team, but rather positively influences the functioning of the team. Competing in good

spirit and considering the welfare of other team members when competing with one another is also incorporated in this variable.

The findings in this study show that *Team development competition* is significantly and negatively related to *Intra-team knowledge-sharing behaviour*. This finding implies that as *Team development competition* increases, the competition has a negative influence on the knowledge-sharing behaviour of individual members in knowledge-intensive teams. This knowledge-sharing behaviour includes the sharing of specialised knowledge, expertise, work experiences, work-related insights, practical know-how, well-documented manuals, methodologies and models. A possible explanation for the negative relationship found is that respondents in this study did not distinguish between team developmental and team hyper-competition. In other words, respondents might have viewed competition as a unidimensional concept. In a knowledge-intensive environment characterised by any form of competition among team members, knowledge could be regarded as a source of power and as an individual member's competitive advantage. Therefore, knowledge-sharing in a competitive environment may be viewed as ceding both power and a competitive advantage.

In view of this result on *Team development competition*, the following recommendations are proposed:

- Management's efforts to create an environment in which team members compete in good spirit and promote the functioning of the team should be managed carefully. The results in this study indicate that team members do not necessarily distinguish between hyper- and development competition. As a result, an environment characterised by any competition may hamper the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams. For example, in an effort to acknowledge top performers in a team and to create 'friendly competition' among team members, management may reveal individual team members' contributions towards team performance targets. Although such actions by management may be well intended, development competition may be detrimental towards the knowledge-sharing behaviour of individual members participating in knowledge-intensive teams.

- Team members should not be encouraged, nor should they perceive to be competing with one another when working in teams. Instead, team leaders should encourage team interactions as a form of collaboration. For example, team leaders may pair team members when allocating specific team tasks. In this way, different skill sets and expertise of team members are brought together, creating a conducive environment in which members can collaborate and share knowledge to jointly address certain tasks.

- Management should carefully oversee the integration process of new employees into the business. During this process of integrating new employees into the organisation or business and its culture, management must clearly explain its commitment to a collaborative team culture, rather than focusing on a competitive outlook. Possible team leaders and mentors should also be identified who can encourage such a collaborative team culture among new team members.

7.3.3.2 Team psychological safety

Team psychological safety refers to the extent to which team members feel they can make a mistake in their team without being held accountable. It also refers to how easy it is for team members to raise controversial issues in their team and to ask other team members for work-related assistance. The extent to which team members feel comfortable to openly express opinions in their team, team members' views that other team members would not deliberately undermine their efforts, and that their skills and talents are valued by other team members, are also incorporated in this variable.

The findings of this study indicate a significant and positive relationship between *Team psychological safety* and *Intra-team knowledge-sharing behaviour*. This finding suggests that as *Team psychological safety* increases, *Intra-team knowledge-sharing behaviour* increases as well. In other words, the sharing of specialised knowledge, expertise, work experiences, work-related insights, practical know-how, well-documented manuals, methodologies and models will increase if the team experience psychological safety. In fact, compared to the other independent variables (i.e., *Team development competition* and *Cultural intelligence*), which have a significant

relationship with *Intra-team knowledge-sharing behaviour*, the results show that *Team psychological safety* has the strongest influence of the three variables on the dependent variable.

In the light of these results, the following recommendations are provided that could increase team psychological safety and subsequently the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-sharing teams.

- Leadership style plays an integral role to enhance team psychological safety. It is recommended that leaders in knowledge-intensive teams adopt a transformational leadership style. Transformational leaders are characterised by charismatic actions and inspire employees to perform better. The transformational leadership theory argues that transformational leaders strengthen shared goals and values, create shared commitment, emphasise the importance of collective interests in the workplace, and encourage team members to be 'team players'. Under transformational leadership, members have the freedom to explore innovative ideas and knowledge (see Chapter Two section 2.6.7). This type of leadership may subsequently increase team psychological safety, a notion also supported by other researchers (Kim, Park & Kim, 2019:100; Noh, 2013:49-50).

- It is also recommended that team leaders are regularly trained on how to create and/or enhance a psychologically safe team environment. For example, team leaders should instil a team culture in which they communicate to members that mistakes made in the team will not be held against them. Team members should be encouraged and feel safe to raise controversial issues in their team and to ask other team members for work-related assistance. Team members should feel comfortable to openly express opinions in their team and know that other team members would not deliberately undermine their efforts. Furthermore, team leaders must regularly communicate to team members that their skills and talents are valued by other team members.

- It is further recommended that leadership development programmes focus on the development and refinement of the leadership skills of existing and future leaders.

As alluded to earlier, the importance of transformational leadership should be a priority in such programmes, as well as the development of leaders to cultivate a team culture characterised by team psychological safety. Moreover, several higher education institutions in South Africa offer customised short courses that are tailored for the specific needs of an organisation. Knowledge-intensive businesses are encouraged to make use of these opportunities as part of the training and development of their team leaders. Customised programmes that include content on leadership styles (e.g. transformational leadership) and psychological safety provide an ideal opportunity to develop the appropriate skills of team leaders.

- Finally, team size should be carefully considered when forming a team. It can be reasoned that team members would be more comfortable to interact with team members in smaller teams than when teams become too large. In teams that include more members, there is a higher likelihood of lower trust between members and a higher likelihood of conflict, given the different personalities, with a subsequent negative influence on team psychological safety (see Chapter Three section 3.4.2). In fact, there is strong empirical evidence that shows a negative relationship between team size and psychological safety (e.g. Midthaug, 2017:23; Tofte, 2016:26; Van Den Berg, 2010:48; Schepers *et al*., 2008:768).

7.3.3.3 Cultural intelligence

In this study, metacognitive, cognitive, motivational and behavioural cultural intelligence dimensions were combined into a single construct or variable labelled *Cultural intelligence* (see Chapter Six section 6.4.2). *Metacognitive cultural intelligence* refers to the tendency of a team member to be conscious of and to adjust their cultural knowledge when interacting with other team members from different cultural backgrounds. This variable also incorporates a team member's consciousness of the accuracy of their cultural knowledge when interacting with other team members from different cultural backgrounds.

The tendency to reflect on the cultural beliefs and values of other team members before interacting with them and the ability to understand different cultural values and

norms of other team members are also pertinent to this variable. *Cognitive cultural intelligence* relates to the knowledge of a team member of the legal, economic and social systems of other cultures from which other team members come from. Knowing the rules and meaning of other languages of team members and the values of team members from other cultural backgrounds, is also incorporated in this variable.

The third dimension, namely *Motivational cultural intelligence*, refers to a team member's confidence to deal with the stress of adjusting to a diverse team culture and to socialise with team members from other cultural backgrounds. A team member's enjoyment from learning and seeking information about the different cultural backgrounds of team members along with the confidence to become accustomed to the working conditions that are influenced by these team members is also embodied in this variable. The final dimension of cultural intelligence, namely *Behavioural cultural intelligence*, relates to a team member's change in verbal behaviour (e.g. tone of voice) and in non-verbal behaviour (e.g. gestures and facial expressions) when a cross-cultural team interaction requires it. This variable also includes the use of appropriate words, pauses or silence when interacting with team members from diverse cultural backgrounds.

The findings in this study suggest a positive relationship between *Cultural intelligence* and *Intra-team knowledge-sharing behaviour*. This finding implies that individuals' cultural alertness during social relations with other team members from different cultures has a positive influence on their knowledge-sharing behaviour with members of their team (*Metacognitive cultural intelligence*). A general knowledge and understanding of a particular culture, which includes an understanding of cultural commonalities and differences, also positively affects knowledge-sharing behaviour with team members (*Cognitive cultural intelligence*). In addition, an individual's inherent willingness, curiosity and deliberate efforts to understand different cultures to manage challenges associated with cross-cultural interactions are likely to have a positive influence on knowledge-sharing behaviour of team members (*Motivational cultural intelligence*). Finally, the use of appropriate verbal and non-verbal skills (e.g. words, tone, gestures and facial expressions), to effectively work together and communicate with team members from diverse cultural backgrounds, is positively related to knowledge-sharing behaviour of team members (*Behavioural cultural*

intelligence). As mentioned earlier, in the context of this study, knowledge-sharing includes the sharing of specialised knowledge, expertise, work experiences, work-related insights, practical know-how, well-documented manuals, methodologies and models among team members.

Although team leaders are ultimately responsible for guiding and leading their team members toward the attainment of specific goals, it is important that both team leaders and team members are aware of the nature and importance of cultural intelligence. In the light of these findings, the following recommendations are offered:

- Team leaders should have a clear vision to develop and improve the various dimensions of cultural intelligence of team members to improve the knowledge-sharing behaviour of individual team members. In this instance, transformational leadership is important to inspire and create shared commitment towards the vision (i.e., among team members) that could subsequently play an integral role in advancing cultural intelligence among team members (see Chapter Two section 2.6.7). For example, with respect to the *Metacognitive cultural intelligence* dimension, team leaders should lead by example and encourage team members to heighten their cultural alertness during social relations with other members from different cultures. This leadership includes advising team members to be conscious of and to adjust their cultural knowledge when interacting with other team members from different cultural backgrounds. They should also be encouraged to be conscious of the accuracy of their cultural knowledge and reflect on the cultural beliefs and values of team members before interacting with other team members from different cultural backgrounds.

- Concerning *Cognitive cultural intelligence*, a general knowledge and understanding of a particular culture, which includes an understanding of cultural commonalities and differences, should also be driven by team leaders as part of their vision to develop and improve the various dimensions of cultural intelligence among team members. For example, team leaders can host special social events such as ‘cultural days’ during which team members can be requested to dedicate a lunch hour or afternoon to display some of their traditions. If appropriate, team

members can exchange food items and even wear clothing that signifies their cultural background. In this way, team members can obtain a better understanding of different cultures in a relaxed social environment. Also, team leaders can instil a team culture in which team members can learn more about the legal, economic and social systems of other cultures from which other team members come from. Knowledge about the rules and meaning of other languages of team members and the values of team members from other cultural backgrounds can also be enhanced during such interactions. The above-mentioned events can also contribute towards team members' *Motivational cultural intelligence*. For example, a team member's confidence to deal with the stress of adjusting to a diverse team culture and to socialise with team members from other cultural backgrounds can also improve by means of social gatherings. A team member's enjoyment from learning and seeking information about the different cultural backgrounds of team members along with the confidence to get accustomed to the working conditions that are influenced by these team members can also benefit from such activities.

- Finally, resources in knowledge-intensive businesses could also be directed in such a manner that it allows for cultural immersion initiatives. These immersions can contribute to the realisation of a team member's vision to develop and improve the various dimensions of cultural intelligence among team members, *Behavioural cultural intelligence* in particular. To illustrate: in an effort to develop future leaders, team members can be encouraged to attend leadership development programmes that not only focus on developing leadership skills, but also provide an opportunity for them to visit other countries and be exposed to different cultural backgrounds. Subsequently, team members can get accustomed to verbal and non-verbal skills (e.g. words, tone, gestures and facial expressions) to effectively work together and communicate with individuals from diverse cultural backgrounds. International secondments is another valuable opportunity that can be afforded to team members to gain international exposure and experience of diverse cultural environments.

7.3.3.4 Demographic variables

The effect of selected demographic variables on *Intra-team knowledge-sharing behaviour* was assessed by means of GLM analysis. Based on the analysis, it emerged that *Age* has a significant influence on *Intra-team knowledge-sharing behaviour*. More specifically, younger respondents (30 years or younger), as opposed to older respondents (51 years or older), tend to engage in significantly less *Intra-team knowledge-sharing behaviour.* In other words, younger respondents tend to share less specialised knowledge, expertise, work experiences, work-related insights, practical know-how, well-documented manuals, methodologies and models with their team members compared to the older respondents. A lack of confidence in the value of their knowledge and fear of forfeiting competitive advantage are possible reasons for younger employees' tendency to share less knowledge compared to their older counterparts (see Chapter Six section 6.9.2). None of the other demographic variables was found to significantly influence *Intra-team knowledge-sharing behaviour.*

In view of these findings concerning the relationship between *Age* and *Intra-team knowledge-sharing behaviour*, team leaders should make a conscious effort to communicate the importance of their knowledge-sharing efforts to all team members. Older employees can be paired with younger employees to increase younger employees' confidence in the value of their knowledge.

7.4 CONTRIBUTIONS OF THE STUDY

This study investigated the team-related factors that could influence the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams. In section 7.3 practical recommendations have been made to knowledge-intensive businesses, to possibly increase team-members' knowledge-sharing behaviour in a team context. As explained in Chapter Two section 2.5, the benefits of knowledge-sharing, such as improved decision-making and better understanding of team responsibilities and objectives, could subsequently lead to better team performance. As teams have become an integral part of most organisations, improved team performance will not only increase the efficiency of less

experienced team members, but will also improve the team's performance and ultimately the overall performance of the organisation.

Besides these practical contributions, this study makes several theoretical contributions. More specifically, the study does not only contribute to the body of knowledge-sharing research in general, but also to knowledge-sharing behaviour in a team context in particular. In addition, a comprehensive hypothesised model of team-related factors that could influence *Intra-team knowledge-sharing behaviour* was developed and empirically tested. The researcher could not find any evidence of a similar, extensive model that has been empirically tested before in a South African context or globally. The inclusion of each team-related factor in this model was justified appropriately by highlighting several gaps in the knowledge-sharing literature pertaining to the selected team-related factors. Using advanced statistical analyses, including SEM, to provide insight into the team-related factors that could influence the knowledge-sharing behaviour in a team context is another valuable contribution.

With specific reference to the relationships that were found to be statistically significant in this study, additional empirical support was provided for limited previous findings on the positive influence of *Team psychological safety* and *Cultural intelligence* on the knowledge-sharing behaviour in a team context (e.g. Liu & Keller, 2021:43; Solomon & Steyn, 2017:5; Noh, 2013:83; Chen & Lin, 2013:675).The significant but unexpected negative relationship between *Team development competition* and *Intra-team knowledge-sharing behaviour,* further adds value to the knowledge-sharing literature. In this instance, it was concluded that some team members may view competition as a unidimensional concept that has a negative influence on their team members' knowledge-sharing behaviour. This view adds a new perspective to the knowledge-sharing literature that suggests that hyper-competition, instead of development competition, has a negative relationship with knowledge-sharing behaviour (e.g. Yoon *et al*., 2020:496; He *et al*., 2014:963).

Concerning the role of demographic variables, this study found that *Age* has a significant influence on *Intra-team knowledge-sharing behaviour*. This finding is another valuable contribution to the knowledge-sharing literature, given the inconsistent and sometimes inconclusive findings (see Chapter Six section 6.9.2)

concerning the relationship between age and knowledge-sharing behaviour reported in the knowledge-sharing literature.

This study focused on both tacit and explicit knowledge-sharing behaviour. The researcher acknowledges the complementary nature of these knowledge types and the interaction that exists between them (see Chapter Two section 2.3). A detailed account of the knowledge-sharing behaviour within a team context was therefore provided, which adds to several existing studies that sometimes only focused on one type of knowledge (e.g. Jiang & Xu, 2020:1; Obrenovic, Jianguo, Tsoy, Obrenovic, Khan & Anwar, 2020:7; Kucharska, 2017:526; Mohajan, 2016:6).

This study also contributes to the literature pertaining to the development of a reliable instrument that measures team-related factors that could influence *Intra-team knowledge-sharing behaviour*. Following the data analysis process, the researcher is, however, of the opinion that the research instrument can be further enhanced in future studies, as recommended in section 7.5.

7.5 LIMITATIONS OF THE STUDY AND RECOMMENDATIONS FOR FUTURE RESEARCH

The purpose of this study was to identify and empirically examine the influence of selected team-related factors on the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams. Given the results of this study, a better understanding emerged on how to manage selected team-related factors that could enhance the knowledge-sharing behaviour of team members. However, some limitations should be taken into account when interpreting, concluding and generalising the findings of the study. In this section the limitations of the present study are acknowledged and possibilities for future research are discussed.

Even though the researcher is of the view that the sample size of 384 respondents is large enough to generalise the findings to some extent, it should be done with caution given the use of a non-probability sample. Nonetheless, the researcher believes that the sample was a good representation of the population given that more than 8 000 well-educated and qualified professionals working in a wide range of knowledge-

intensive industries were invited to participate in this study (see Chapter Five section 5.3.7.2).

Another limitation of this study relates to the use of a self-administered questionnaire to collect data from a single sample over a specific period of time (i.e. cross-sectional), which could have led to distorted results due to common method variance (see Chapter Six section 6.11). In addition, the questionnaire used in the current study measured several constructs because of the complexity of the hypothesised model that was empirically tested. As a result, the questionnaire used in this study was rather long, which may have led to questionnaire fatigue and subsequently bias responses. It should, however, be noted that Harman's single-factor test was employed to detect any evidence of common method variance. Although no major influence of common method variance could be identified, the possibility thereof cannot, however, be ignored. Future researchers could limit response bias by considering a shorter questionnaire (i.e. a less complex model to be empirically tested). A longitudinal study could be a good option and will enable future researchers to collect more precise data over an extended period of time.

Although it was not the purpose of this study, the measuring instrument did not account for team size or team tenure of the respondents. Future researchers could consider adding these categories to their measuring instrument that would allow for an assessment of the relationship between these variables and *Intra-team knowledge-sharing behaviour*. It would also be worth investigating whether respondents from different teams (e.g. virtual teams and face-to-face teams) would have varying perceptions with regard to knowledge-sharing behaviour.

Despite these limitations, the results of this study make a valuable contribution to the knowledge-sharing literature. Selected recommendations have already been presented in line with the identified limitations, but several other ideas can be recommended for future studies. For example, this study focused on the actual knowledge-sharing behaviour of individual members participating in knowledge-intensive teams as discussed and justified in Chapter Three section 3.3. The current study could therefore be extended to include knowledge-sharing attitudes and intentions. It would be worthwhile investigating whether different team-related factors

would influence team members' attitudes, intentions and actual knowledge-sharing behaviour in knowledge-intensive teams.

In addition, it could be valuable to investigate whether certain moderating variables play a role in respect of team members' knowledge-sharing behaviour. For instance, a significant and negative relationship was found between *Team development competition* and *Intra-team knowledge-sharing behaviour*. It could be worth investigating whether intrinsic or extrinsic rewards for knowledge-sharing could moderate (i.e., mitigate) the negative relationship found between *Team development competition* and *Intra-team knowledge-sharing behaviour*. These findings could have implications for an organisation's reward structure.

Another recommendation would be for future researchers to further explore the relationship between team competition and *Intra-team knowledge-sharing behaviour*. Although this study makes an unexpected but valuable contribution concerning the relationship between *Team development competition* and *Intra-team knowledge-sharing behaviour* (see section 7.4), there is still a lack of research that focuses on different types of competition and *Intra-team knowledge-sharing behaviour*. The construct *Team hyper-competition* was excluded for further empirical analysis in this study because of its reliability assessment. In this respect, the general cut-off value of 0.7 was strictly applied to assess the reliability of the scales measuring the constructs. Therefore, even though the construct *Team hyper-competition* returned a Cronbach's alpha value of 0.62, which could be regarded as acceptable for exploratory research, it was decided to exclude it from further assessment. It would be valuable to investigate whether team members would respond in a different manner (i.e. knowledge-sharing behaviour) when they experienced different types of competition, and to explore the subsequent implications for an organisation.

The hypothesised model that was empirically tested in this study included 13 independent variables and one dependent variable. A complex model like this lends itself to possible multicollinearity. Against this background, it was decided to combine certain variables that belong to a shared category into a single hierarchical variable (see Chapter Six section 6.4.2). For example, *Metacognitive cultural intelligence*, *Cognitive cultural intelligence*, *Motivational cultural intelligence* and *Behavioural*

cultural intelligence belong to a common category and were therefore combined to form the variable *Cultural intelligence*. In the same way, *Affective team commitment*, *Continuance team commitment* and *Normative team commitment* were combined into a single variable, namely *Team commitment*. By investigating these dimensions independently (i.e. not as a unidimensional construct) as part of a less complex model holds potential for future research. In this way, future researchers can establish whether different cultural intelligence dimensions will have a different impact on *Intra-team knowledge-sharing behaviour*. In similar fashion, the relationship between different types of team commitment and *Intra-team knowledge-sharing behaviour* can also be explored in future studies.

Finally, an in-depth qualitative study or a mixed-method study investigating *Intra-team knowledge-sharing behaviour* can also be considered in future research. For example, 50 per cent and 54.9 per cent of respondents remained largely neutral in their perceptions of the statements that measured *Team commitment and Perceived deep-level diversity* respectively (see Chapter Six Table 6.18). A quantitative study does not necessarily provide concrete answers as to why respondents provide uncommitted responses. Therefore, an in-depth qualitative study or a mixed-method study may provide thought-provoking insights into these responses and subsequently the relationships between the aforementioned constructs and *Intra-team knowledge-sharing behaviour*.

7.6 CONCLUDING REMARKS

The sharing of explicit and tacit knowledge by individual team members, which includes specialised knowledge, expertise, work experiences, work-related insights, practical know-how, well-documented manuals, methodologies and models, is well documented in this study. To better understand the influence of selected team-related factors on the *Intra-team knowledge-sharing behaviour* of individual members participating in knowledge-intensive teams, several recommendations have been presented in this chapter.

Of all the significant relationships identified in this study, *Team psychological safety* had the strongest effect on *Intra-team knowledge-sharing behaviour*. One should,

however, not lose sight of the impact that competition and cultural intelligence could have on the knowledge-sharing behaviour of individual members in a team context. In addition, the transformational leadership theory featured prominently to provide insight on how to enhance the knowledge-sharing behaviour of individual team members.

Above and beyond the recommendations provided in this chapter, the researcher of this study believes that the true value of knowledge is realised only when it is shared, not shrouded. In the words of business magnate Bill Gates:

“Power comes not from knowledge kept, but from knowledge shared.”

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ANNEXURE A - COVER LETTER AND QUESTIONNAIRE

NELSON MANDELA
UNIVERSITY

Room 1112, Main Building, South Campus
School of Management Sciences
Tel. +27 (0)41 504 2204/+27 (0)41 504 2201

Dear Respondent

RESEARCH PROJECT: TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING IN KNOWLEDGE-INTENSIVE BUSINESSES

The purpose of this study is to obtain a better understanding of the team-related factors influencing knowledge-sharing behaviour of individual members of knowledge-intensive teams. Despite the importance of knowledge-sharing in a team context, in particular knowledge-intensive teams, there is still a lack of empirical research on the team-related factors influencing intra-team knowledge-sharing, and a subsequent lack of guidance in terms of encouraging intra-team knowledge-sharing. Understanding and management of such factors, could contribute to an increase in knowledge-sharing among team members and subsequently enhance the competitive advantage of the business.

It would be greatly appreciated if you could respond to a few questions so as to assist in the completion of this project. The questions solicit information about factors influencing your knowledge-sharing behaviour in a team context. The questionnaire should take about ten (10) minutes to complete.

Ethical clearance has been obtained for the research and the ethical clearance number is: **H20-BES-BMA-041.** Please complete the questionnaire independently and **without** consultation with other colleagues by clicking on the following link: **http://forms.nmmu.ac.za/websurvey/q.asp?sid=1875&k=stmhnmtxro**

NELSON MANDELA
UNIVERSITY

Please indicate the **extent of your agreement** with the statements by clicking in the appropriate column. There are no right or wrong answers and only the **perceptions** you hold are important. You are also free to withdraw from the study at any time.

Even though no confidential information is required, your responses will be treated with the strictest confidentiality. Also, you are under no obligation to participate and names of individuals will not appear in the research report.

Only aggregate data and summary statistics will be reported. You will also be given an option to receive a summary of the findings, which may assist you to better manage the team-related factors influencing intra-team knowledge-sharing. Understanding and management of such factors, could contribute to an increase in knowledge-sharing among team members and subsequently enhance the competitive advantage of your business.

Thank you once again for your willingness to contribute to the success of this important research project. If you have any questions or require information on the results of the study you are welcome to contact me on 0726971805 or conradvg@gmail.com

Yours faithfully
Conrad van Greunen (Principal Investigator) and Prof Elmarie Venter (Supervisor).

SECTION 1: INFORMED CONSENT FOR PARTICIPATION IN THE RESEARCH PROJECT

I understand the nature of this study and the purpose of the research has been explained to me. I am aware that this study is voluntary and anonymous. I also understand that even though no confidential information is required, my responses will be treated with the strictest confidentiality. I understand that my responses will be stored electronically for data verification and analysis purposes. I know that I am under no obligation to participate and that I have the right to withdraw my participation at any point in time. I am also aware that I have the right to contact the researcher (provided below) to request a copy of the findings from this research project should I wish to do so.

As a respondent I agree to these conditions and consent to participate in this study entitled "**Team-Related Factors Influencing Intra-Team Knowledge-Sharing in Knowledge-Intensive Businesses**".

Yes	No

CONTACT DETAILS OF RESEARCHER:

Name: Conrad van Greunen
Phone number: +27 72 6971805
Email: conradvg@gmail.com

SECTION 2: TEAM PARTICIPATION

Please indicate whether you participate/have participated in a knowledge-intensive team (i.e., a team that consists of members with different skill sets, experience and expertise who perform knowledge-intensive tasks) in your organisation. Examples of such teams include: product development teams, strategic planning teams, project management teams and research and development teams.

Yes			1
No			2

If you answered “yes” to the question above, please complete the rest of the questionnaire. If you answered “no” to the question above, there is no need to complete the rest of the questionnaire.

SECTION 3: TEAM TYPES

Please indicate the type of team(s) that you participate/have participated in within your organisation (more than one option can be selected).

Product development		1
Strategic planning		2
Research and development		3
Project management		4
Other. Please specify below:		5

SECTION 4: VARIABLES INFLUENCING KNOWLEDGE-SHARING BEHAVIOUR

Below are a number of statements pertaining to selected team-related variables influencing the knowledge-sharing behaviour of individual members of knowledge-intensive teams. Please indicate the extent to which you agree or disagree with the following statements by selecting one option for each statement. A (1) indicates “strongly disagree”, (2) “disagree”, (3) “somewhat disagree”, (4) “neutral or no opinion”, (5) “somewhat agree”, (6) “agree” and (7) “strongly agree”. Note that there are no correct or incorrect answers.

	Statements pertaining to selected team-related variables influencing the knowledge-sharing behaviour of individual members of knowledge-intensive teams	**Strongly disagree**	**Disagree**	**Somewhat disagree**	**Neutral or no opinion**	**Somewhat agree**	**Agree**	**Strongly agree**
4.1	The competition among members of my team does not hamper the goal outcomes of the team.	1	2	3	4	5	6	7
4.2	My team has a great deal of personal meaning for me.	1	2	3	4	5	6	7
4.3	I share methodologies (methods for completing a particular task) with members of my team.	1	2	3	4	5	6	7
4.4	Members of my team compete with one another in good spirit when working in a team.	1	2	3	4	5	6	7
4.5	Members of my team give high priority to the goals they want to accomplish and low priority to the things other team members want to accomplish.	1	2	3	4	5	6	7
4.6	I share models (examples of previously completed projects) with members of my team.	1	2	3	4	5	6	7
4.7	I am confident that I can deal with the stress of adjusting to a diverse team culture.	1	2	3	4	5	6	7
4.8	I know the rules and meaning (i.e., the vocabulary and grammar) of other languages that members of my team use.	1	2	3	4	5	6	7
4.9	My team’s successes are my successes.	1	2	3	4	5	6	7
4.10	I share my specialised knowledge and expertise with members of my team.	1	2	3	4	5	6	7
4.11	No one in my team would deliberately act in a way that would undermine my efforts in the team.	1	2	3	4	5	6	7
4.12	I know the legal and economic systems (e.g. command/socialist, market or mixed economies) of other cultures that members of my team come from.	1	2	3	4	5	6	7
4.13	I change my nonverbal behaviour (e.g. gestures, facial expressions) when a cross-cultural team situation requires it.	1	2	3	4	5	6	7
4.14	When I talk about my team I usually say “we” rather than “they”.	1	2	3	4	5	6	7

Statements pertaining to selected team-related variables influencing the knowledge-sharing behaviour of individual members of knowledge-intensive teams		Strongly disagree	Disagree	Somewhat disagree	Neutral or no opinion	Somewhat agree	Agree	Strongly agree
4.15	I feel like part of a family in my team.	1	2	3	4	5	6	7
4.16	I am proud to be a member of my team.	1	2	3	4	5	6	7
4.17	I feel a strong sense of belonging to my team.	1	2	3	4	5	6	7
4.18	I share my work-related insights with members of my team.	1	2	3	4	5	6	7
4.19	The competition among members of my team results in frustration for the entire team.	1	2	3	4	5	6	7
4.20	I use pauses and silence differently to suit different cross-cultural situations.	1	2	3	4	5	6	7
4.21	I adjust my cultural knowledge (i.e., knowledge about a particular culture, including its values, beliefs and norms) when I interact with team members from different cultural backgrounds.	1	2	3	4	5	6	7
4.22	I would not leave my team, because it would require a great deal of effort from me to adapt to a new way of working.	1	2	3	4	5	6	7
4.23	Members of my team have goals that are incompatible with one another.	1	2	3	4	5	6	7
4.24	Members of my team follow team rules when working with one another in the team.	1	2	3	4	5	6	7
4.25	I would not leave my team, because it would require me to adjust to new working habits.	1	2	3	4	5	6	7
4.26	I share my work experiences with members of my team.	1	2	3	4	5	6	7
4.27	The competition among members of my team positively stimulates the functioning of the team.	1	2	3	4	5	6	7
4.28	When there is rivalry among members of my team, they do whatever it takes to achieve their personal goals.	1	2	3	4	5	6	7
4.29	When someone praises my team, it feels like a personal compliment.	1	2	3	4	5	6	7
4.30	I would not leave my team, because I would have to re-adapt to new team norms.	1	2	3	4	5	6	7
4.31	I share my practical know-how (for carrying out daily tasks) with members of my team.	1	2	3	4	5	6	7
4.32	I am confident that I can get accustomed to the working conditions that are influenced by team members from different cultural backgrounds.	1	2	3	4	5	6	7
4.33	I am conscious of the accuracy of my cultural knowledge (i.e., knowledge about a particular culture, including its values, beliefs and norms) when I interact with team members from different cultural backgrounds.	1	2	3	4	5	6	7
4.34	I use appropriate words when interacting with team members from diverse cultural backgrounds.	1	2	3	4	5	6	7

Statements pertaining to selected team-related variables influencing the knowledge-sharing behaviour of individual members of knowledge-intensive teams		Strongly disagree	Disagree	Somewhat disagree	Neutral or no opinion	Somewhat agree	Agree	Strongly agree
4.35	If I make a mistake in my team, it is not held against me.	1	2	3	4	5	6	7
4.36	I am comfortable to openly express my opinions in my team.	1	2	3	4	5	6	7
4.37	Members of my team have a 'win–lose' relationship.	1	2	3	4	5	6	7
4.38	I change my verbal behaviour (e.g. tone of voice) when a cross-cultural team interaction requires it.	1	2	3	4	5	6	7
4.39	I would not leave my team, because it would require me to get used to a new way of working.	1	2	3	4	5	6	7
4.40	It is easy to ask other members of my team for work-related assistance.	1	2	3	4	5	6	7
4.41	I owe a great deal to my team.	1	2	3	4	5	6	7
4.42	I would not leave my team right now because I have a sense of obligation to the people who are part of my team.	1	2	3	4	5	6	7
4.43	I reflect on the cultural beliefs and values of team members before interacting with them.	1	2	3	4	5	6	7
4.44	My unique skills and talents are valued when I work with members of my team.	1	2	3	4	5	6	7
4.45	Members of my team consider the welfare of other team members when competing with one another in the team.	1	2	3	4	5	6	7
4.46	My team deserves my loyalty.	1	2	3	4	5	6	7
4.47	I am confident that I can socialise with team members from other cultural backgrounds.	1	2	3	4	5	6	7
4.48	I am capable of understanding the different cultural values and norms of team members.	1	2	3	4	5	6	7
4.49	I am conscious of the cultural knowledge (i.e., knowledge about a particular culture, including its values, beliefs and norms) I use when interacting with team members from different cultural backgrounds.	1	2	3	4	5	6	7
4.50	I share well-documented manuals (notes regarding work) with members of my team.	1	2	3	4	5	6	7
4.51	I know the values of team members from other cultural backgrounds.	1	2	3	4	5	6	7
4.52	I know the social systems (i.e., how society functions as a whole) of other cultures that members of my team come from.	1	2	3	4	5	6	7
4.53	I actively seek information about the cultural backgrounds of team members that is different from mine.	1	2	3	4	5	6	7
4.54	It is easy to raise controversial issues in my team.	1	2	3	4	5	6	7
4.55	I am very interested in what others think about my team.	1	2	3	4	5	6	7

Statements pertaining to selected team-related variables influencing the knowledge-sharing behaviour of individual members of knowledge-intensive teams		Strongly disagree	Disagree	Somewhat disagree	Neutral or no opinion	Somewhat agree	Agree	Strongly agree
4.56	I enjoy learning about the cultural background of team members that is different from mine.	1	2	3	4	5	6	7

SECTION 5: VARIABLES INFLUENCING KNOWLEDGE-SHARING BEHAVIOUR

Below are a number of questions pertaining to selected team-related variables influencing the knowledge-sharing behaviour of individual members of knowledge-intensive teams. Please indicate the extent to which you perceive your team members to be similar to or different from one another by selecting one option for each question. Note that there are no correct or incorrect answers.

	Questions pertaining to selected team-related variables influencing knowledge-sharing behaviour of individual members of knowledge-intensive teams ***How similar or different are the members of your team with respect to their….***	**Very similar**	**Similar**	**Not determinable**	**Different**	**Very different**
5.1	attitudes about work	1	2	3	4	5
5.2	ethnic background	1	2	3	4	5
5.3	age	1	2	3	4	5
5.4	educational background	1	2	3	4	5
5.5	marital status	1	2	3	4	5
5.6	gender	1	2	3	4	5
5.7	personalities	1	2	3	4	5
5.8	team tenure	1	2	3	4	5
5.9	personal values	1	2	3	4	5
5.10	learning goals	1	2	3	4	5

SECTION 6: DEMOGRAPHIC DETAILS

The following questions request information about you. Please indicate your response by selecting the appropriate box. Note that there are no correct or incorrect answers.

6.1 Please indicate your age

18-24 years		1
25-30 years		2
31-40 years		3
41-50 years		4
51-60 years		5
61-70 years		6
Older than 70 years		7

6.2 Please indicate your gender

Male		1
Female		2

6.3 Please indicate your home language

Afrikaans		1
English		2
Xhosa		3
Zulu		4
Sotho		5
Other. Please specify below:		6

6.4 Please indicate your highest academic qualification

Grade 11 or lower		1
Grade 12 or an equivalent qualification		2
Higher certificate		3
Diploma		4
Bachelor's degree		5
Honours degree		6

Master's degree/MBA or a higher qualification		7
Other. Please specify below:		8

6.5 Please indicate your ethnic background

White		1
Black		2
Asian		3
Coloured		4
Other. Please specify below:		5

6.6 Please indicate how many years you have worked at your organisation. Please round off to the nearest year. For example, 2.5 years would count as 3 years, and would thus fall in the 3-5 years category)

Less than a year		1
1-2 years		2
3-5 years		3
6-10 years		4
11-15 years		5
16-20 years		6
More than 20 years		7

6.7 Please indicate how many years you have worked in your current position/role. Please round off to the nearest year. For example, 2.5 years would count as 3 years, and would thus fall in the 3-5 years category)

Less than a year		1
1-2 years		2
3-5 years		3
6-10 years		4
11-15 years		5
16-20 years		6
More than 20 years		7

All information will be treated with the strictest confidentiality.

Thank you for your time and cooperation!

ANNEXURE B – ETHICS CLEARANCE FORM

NELSON MANDELA
UNIVERSITY

PO Box 77000, Nelson Mandela University, Port Elizabeth, 6031, South Africa mandela.ac.za

Chairperson: Research Ethics Committee (Human)
Tel: +27 (0)41 504 2347
sharlene.govender@mandela.ac.za

NHREC registration nr: REC-042508-025

Ref: [H20-BES-BMA-041] / Amendment]

21 September 2020
Prof E Venter Faculty: BES

Dear Prof Venter

TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING IN KNOWLEDGE-INTENSIVE BUSINESS

PRP: Prof E Venter
PI: Mr C van Greunen

The request for an amendment to the above-entitled application served at the Research Ethics Committee (Human) for approval. The study is classified as a medium risk study. The ethics clearance reference number remains **H20-BES-BMA-041** and approval is subject to the following conditions:

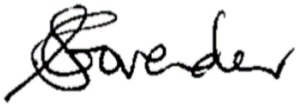
1. The immediate completion and return of the attached acknowledgement to Imtiaz.Khan@mandela.ac.za, the date of receipt of such returned acknowledgement determining the final date of approval for the study where after data collection may commence.
2. Approval for data collection is for 1 calendar year from date of receipt of above mentioned acknowledgement.
3. The submission of an annual progress report by the PRP on the data collection activities of the study (form RECH-004 available on Research Ethics Committee (Human) portal) by 15 November this year for studies approved/extended in the period October of the previous year up to and including September of this year, or 15 November next year for studies approved/extended after September this year.
4. In the event of a requirement to extend the period of data collection (i.e. for a period in excess of 1 calendar year from date of approval), completion of an extension request is required (form RECH-005 available on Research Ethics Committee (Human) portal)
5. In the event of any changes made to the study (excluding extension of the study), completion of an amendments form is required (form RECH-006 available on Research Ethics Committee (Human) portal).
6. Immediate submission (and possible discontinuation of the study in the case of serious events) of the relevant report to RECH (form RECH-007 available on Research Ethics Committee (Human) portal) in the event of any unanticipated problems, serious incidents or adverse events observed during the course of the study.
7. Immediate submission of a Study Termination Report to RECH (form RECH-008 available on Research Ethics Committee (Human) portal) upon expected or unexpected closure/termination of study.

8. Immediate submission of a Study Exception Report of RECH (form RECH-009 available on Research Ethics Committee (Human) portal) in the event of any study deviations, violations and/or exceptions.
9. Acknowledgement that the study could be subjected to passive and/or active monitoring without prior notice at the discretion of Research Ethics Committee (Human).

Please quote the ethics clearance reference number in all correspondence and enquiries related to the study. For speedy processing of email queries (to be directed to Imtiaz.Khan@mandela.ac.za), it is recommended that the ethics clearance reference number together with an indication of the query appear in the subject line of the email.

We wish you well with the study.

Yours sincerely



Dr S Govender
Chairperson: Research Ethics Committee (Human)

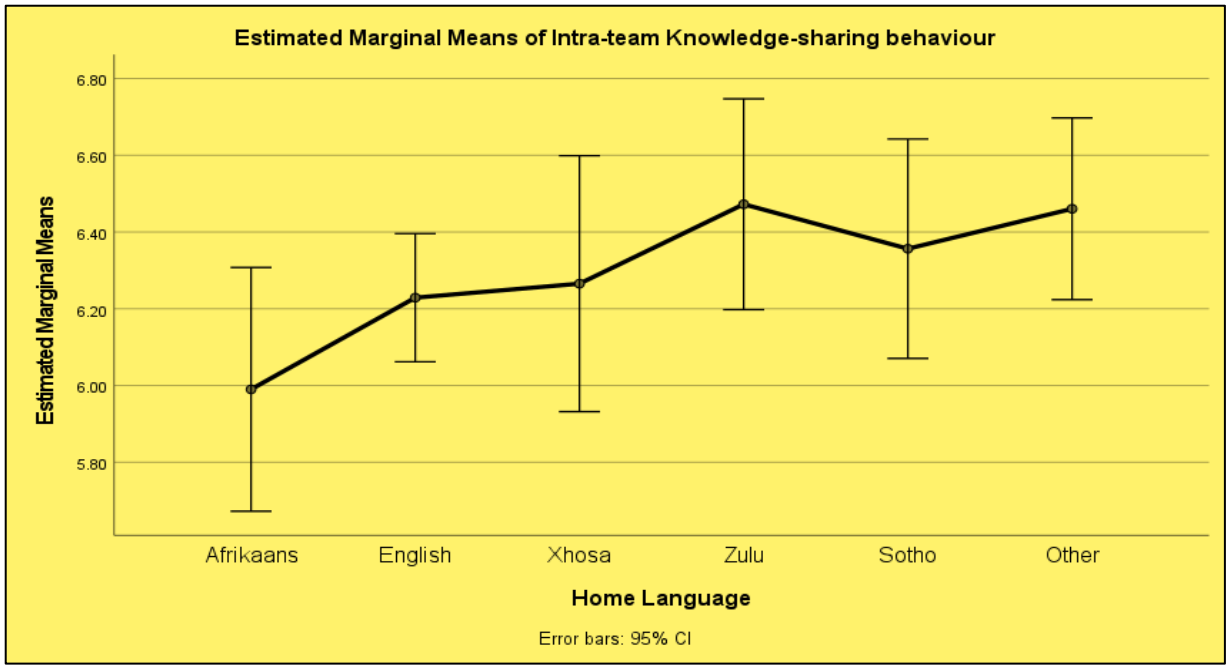
Cc: Department of Research Capacity Development
Faculty Manager: BES

ANNEXURE C – MODIFICATION INDICES

Correlation	M.I.	Par Change
Team psychological safety (TPS)		
e1 <--> e5	17.079	0.423
Team identification (TI)		
e4 <--> e5	8.793	0.204
Perceived surface-level diversity (SLD)		
e1 <--> e4	12.947	0.177
Cultural intelligence (CI)		
e1 <--> e4	99.354	1.221
e12 <--> e13	107.922	0.379
e18 <--> e9	80.546	0.268
e6 <--> e7	25.308	0.216
e16 <--> e2	16.952	0.162
e14 <--> e18	26.389	0.123
e3 <--> e4	13.144	0.33
e12 <--> e7	16.167	0.152
e15 <--> e3	22.96	0.352
Team commitment (TC)		
e2 <--> e3	66.254	0.683
e9 <--> e3	63.898	0.691
e9 <--> e2	74.059	0.649
e9 <--> e10	57.853	0.653
e8 <--> e3	74.108	0.745
e8 <--> e2	72.037	0.64
e8 <--> e9	236.531	1.194
e1 <--> e3	19.684	0.428
e4 <--> e1	15.535	-0.309
e4 <--> e7	19.301	0.267
e10 <--> e2	9.606	0.221
e8 <--> e10	12.694	0.182

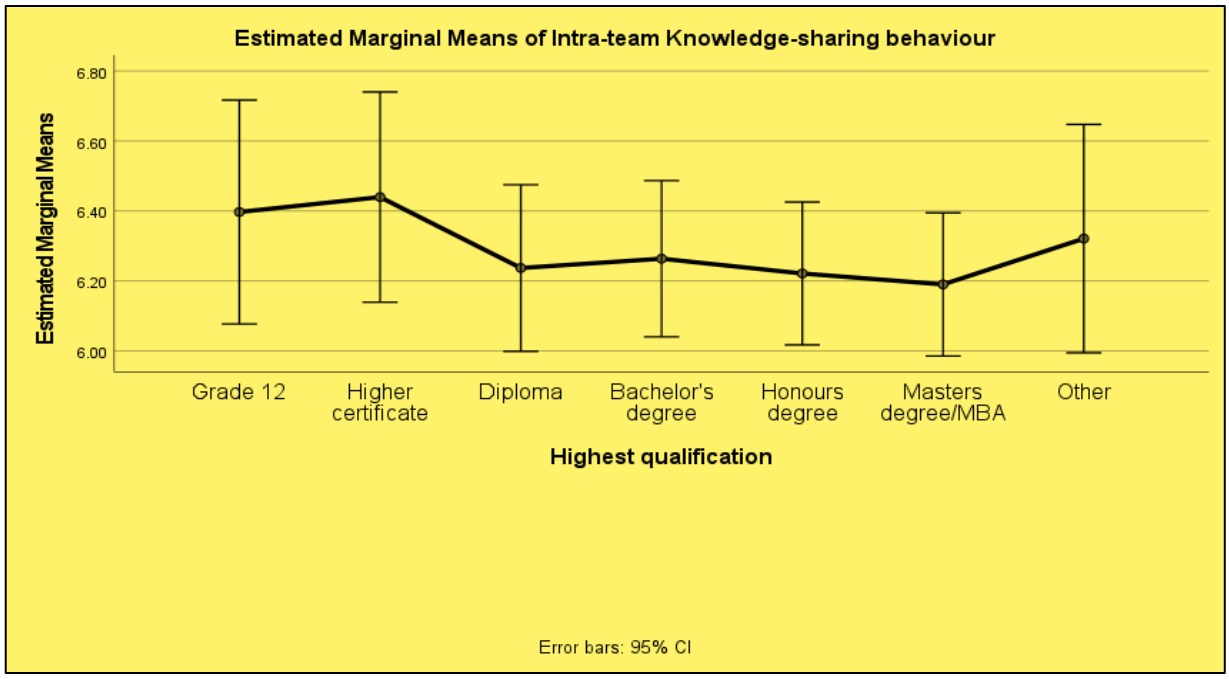
ANNEXURE D – GLM ANALYSIS (DEMOGRAPHIC VARIABLES)

Home Language post hoc						
Multiple comparisons						
Dependent variable: Intra-team knowledge-sharing behaviour Tukey HSD						
(I) Home Language	(J) Home Language	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Afrikaans	English	-0.0857	0.12792	0.985	-0.4522	0.2809
	Xhosa	0.0705	0.16682	0.998	-0.4076	0.5485
	Zulu	-0.1187	0.13994	0.958	-0.5197	0.2823
	Sotho	-0.0302	0.14412	1	-0.4432	0.3828
	Other	-0.1419	0.12826	0.879	-0.5094	0.2257
English	Afrikaans	0.0857	0.12792	0.985	-0.2809	0.4522
	Xhosa	0.1562	0.14302	0.884	-0.2537	0.566
	Zulu	-0.033	0.11049	1	-0.3496	0.2836
	Sotho	0.0555	0.11574	0.997	-0.2762	0.3871
	Other	-0.0562	0.09527	0.992	-0.3292	0.2168
Xhosa	Afrikaans	-0.0705	0.16682	0.998	-0.5485	0.4076
	English	-0.1562	0.14302	0.884	-0.566	0.2537
	Zulu	-0.1892	0.15387	0.822	-0.6301	0.2518
	Sotho	-0.1007	0.15768	0.988	-0.5525	0.3511
	Other	-0.2124	0.14333	0.676	-0.6231	0.1984
Zulu	Afrikaans	0.1187	0.13994	0.958	-0.2823	0.5197
	English	0.033	0.11049	1	-0.2836	0.3496
	Xhosa	0.1892	0.15387	0.822	-0.2518	0.6301
	Sotho	0.0885	0.1289	0.983	-0.2809	0.4578
	Other	-0.0232	0.1109	1	-0.341	0.2946
Sotho	Afrikaans	0.0302	0.14412	1	-0.3828	0.4432
	English	-0.0555	0.11574	0.997	-0.3871	0.2762
	Xhosa	0.1007	0.15768	0.988	-0.3511	0.5525
	Zulu	-0.0885	0.1289	0.983	-0.4578	0.2809
	Other	-0.1117	0.11612	0.93	-0.4444	0.2211
Other	Afrikaans	0.1419	0.12826	0.879	-0.2257	0.5094
	English	0.0562	0.09527	0.992	-0.2168	0.3292
	Xhosa	0.2124	0.14333	0.676	-0.1984	0.6231
	Zulu	0.0232	0.1109	1	-0.2946	0.341
	Sotho	0.1117	0.11612	0.93	-0.2211	0.4444

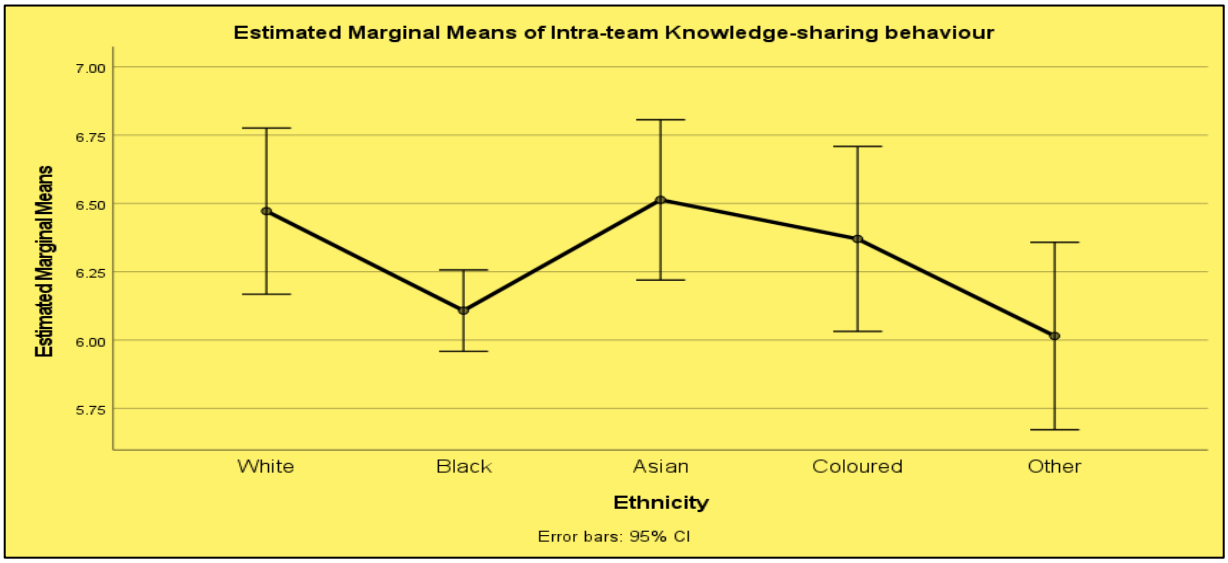

Estimated Marginal Means of Intra-team Knowledge-sharing behaviour
Estimated Marginal Means
6.80
6.60
6.40
6.20
6.00
5.80
Afrikaans
English
Xhosa
Zulu
Sotho
Other
Home Language
Error bars: 95% CI

Qualification post hoc						
Multiple comparisons						
Dependent variable: Intra-team knowledge-sharing behaviour Tukey HSD						
(I) Highest Qualification	(J) Highest Qualification	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Grade 12	Higher certificate	-0.0126	0.19087	1	-0.5786	0.5534
	Diploma	0.0701	0.16789	1	-0.4278	0.5679
	Bachelor's degree	0.0925	0.16217	0.998	-0.3884	0.5735
	Honours degree	0.0889	0.15612	0.998	-0.3741	0.5519
	Master’s degree/MBA	0.1222	0.15421	0.986	-0.3351	0.5795
	Other	0.0366	0.20329	1	-0.5663	0.6394
Higher Certificate	Grade 12	0.0126	0.19087	1	-0.5534	0.5786
	Diploma	0.0826	0.16139	0.999	-0.396	0.5612
	Bachelor's degree	0.1051	0.15543	0.994	-0.3558	0.566
	Honours degree	0.1015	0.1491	0.994	-0.3407	0.5436
	Master’s degree/MBA	0.1348	0.1471	0.97	-0.3014	0.571
	Other	0.0491	0.19795	1	-0.5379	0.6362
Diploma	Grade 12	-0.0701	0.16789	1	-0.5679	0.4278
	Higher certificate	-0.0826	0.16139	0.999	-0.5612	0.396
	Bachelor's degree	0.0225	0.12615	1	-0.3516	0.3966
	Honours degree	0.0188	0.11827	1	-0.3319	0.3696
	Master’s degree/MBA	0.0522	0.11574	0.999	-0.2911	0.3954
	Other	-0.0335	0.17591	1	-0.5551	0.4882
Bachelor’s degree	Grade 12	-0.0925	0.16217	0.998	-0.5735	0.3884
	Higher certificate	-0.1051	0.15543	0.994	-0.566	0.3558
	Diploma	-0.0225	0.12615	1	-0.3966	0.3516
	Honours degree	-0.0036	0.11	1	-0.3298	0.3226
	Master’s degree/MBA	0.0297	0.10727	1	-0.2884	0.3478
	Other	-0.056	0.17046	1	-0.5615	0.4495
Honours degree	Grade 12	-0.0889	0.15612	0.998	-0.5519	0.3741
	Higher certificate	-0.1015	0.1491	0.994	-0.5436	0.3407
	Diploma	-0.0188	0.11827	1	-0.3696	0.3319
	Bachelor's degree	0.0036	0.11	1	-0.3226	0.3298
	Master’s degree/MBA	0.0333	0.09788	1	-0.2569	0.3236
	Other	-0.0523	0.16471	1	-0.5408	0.4361
Master’s degree/MBA	Grade 12	-0.1222	0.15421	0.986	-0.5795	0.3351
	Higher certificate	-0.1348	0.1471	0.97	-0.571	0.3014
	Diploma	-0.0522	0.11574	0.999	-0.3954	0.2911
	Bachelor's degree	-0.0297	0.10727	1	-0.3478	0.2884
	Honours degree	-0.0333	0.09788	1	-0.3236	0.2569
	Other	-0.0857	0.1629	0.998	-0.5687	0.3974
	Grade 12	-0.0366	0.20329	1	-0.6394	0.5663

Other	Higher certificate	-0.0491	0.19795	1	-0.6362	0.5379
	Diploma	0.0335	0.17591	1	-0.4882	0.5551
	Bachelor's degree	0.056	0.17046	1	-0.4495	0.5615
	Honours degree	0.0523	0.16471	1	-0.4361	0.5408
	Master's degree/MBA	0.0857	0.1629	0.998	-0.3974	0.5687

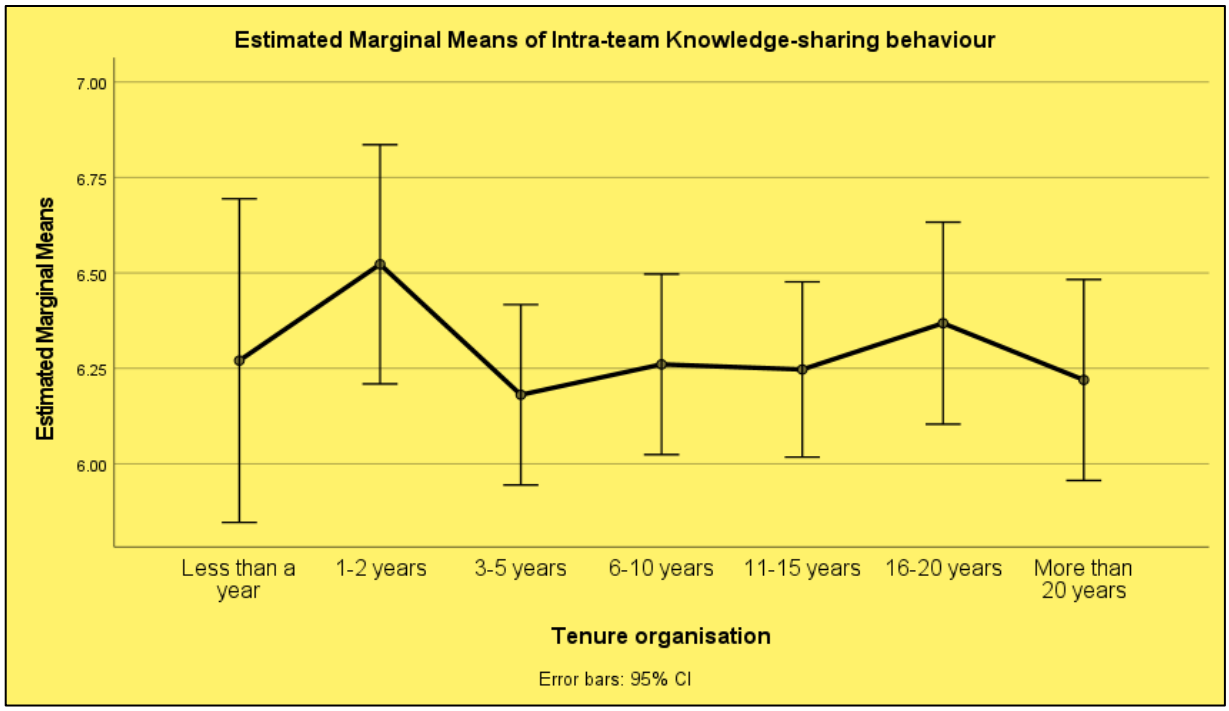


Ethnicity post hoc						
Multiple comparisons						
Dependent variable: Intra-team knowledge-sharing behaviour Tukey HSD						
(I) Ethnicity	(J) Ethnicity	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
White	Black	0.0333	0.10202	0.998	-0.2465	0.313
	Asian	-0.1461	0.14764	0.86	-0.5509	0.2587
	Coloured	0.0007	0.16691	1	-0.457	0.4583
	Other	0.2616	0.18148	0.601	-0.236	0.7592
Black	White	-0.0333	0.10202	0.998	-0.313	0.2465
	Asian	-0.1794	0.12273	0.588	-0.5159	0.1572
	Coloured	-0.0326	0.14534	0.999	-0.4311	0.3659
	Other	0.2284	0.16186	0.621	-0.2155	0.6722
Asian	White	0.1461	0.14764	0.86	-0.2587	0.5509
	Black	0.1794	0.12273	0.588	-0.1572	0.5159
	Coloured	0.1468	0.18031	0.926	-0.3476	0.6412
	Other	0.4077	0.19387	0.221	-0.1239	0.9393
Coloured	White	-0.0007	0.16691	1	-0.4583	0.457
	Black	0.0326	0.14534	0.999	-0.3659	0.4311
	Asian	-0.1468	0.18031	0.926	-0.6412	0.3476
	Other	0.261	0.20892	0.722	-0.3119	0.8338
Other	White	-0.2616	0.18148	0.601	-0.7592	0.236
	Black	-0.2284	0.16186	0.621	-0.6722	0.2155
	Asian	-0.4077	0.19387	0.221	-0.9393	0.1239
	Coloured	-0.261	0.20892	0.722	-0.8338	0.3119



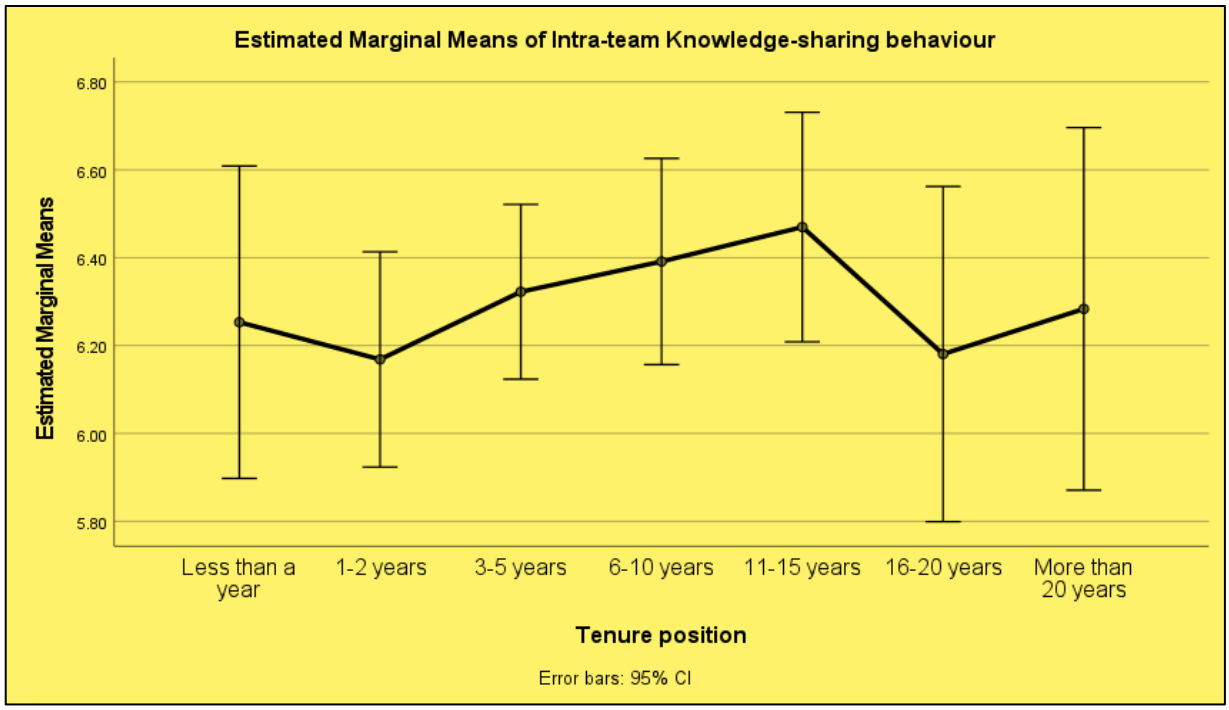
Tenure Organisation post hoc						
Multiple comparisons						
Dependent variable: Intra-team knowledge-sharing behaviour Tukey HSD						
(I) Tenure Organisation	(J) Tenure Organisation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Less than a year	1-2 years	-0.1773	0.20533	0.978	-0.7862	0.4316
	3-5 years	0.1082	0.17976	0.997	-0.4249	0.6413
	6-10 years	-0.0702	0.18322	1	-0.6136	0.4731
	11-15 years	-0.1094	0.18322	0.997	-0.6527	0.434
	16-20 years	-0.2038	0.19698	0.946	-0.7879	0.3804
	More than 20 years	-0.1681	0.18728	0.973	-0.7234	0.3873
1-2 years	Less than a year	0.1773	0.20533	0.978	-0.4316	0.7862
	3-5 years	0.2855	0.14149	0.405	-0.1341	0.7051
	6-10 years	0.1071	0.14585	0.99	-0.3255	0.5396
	11-15 years	0.0679	0.14585	0.999	-0.3646	0.5004
	16-20 years	-0.0265	0.1628	1	-0.5093	0.4563
	More than 20 years	0.0092	0.15092	1	-0.4383	0.4568
3-5 years	Less than a year	-0.1082	0.17976	0.997	-0.6413	0.4249
	1-2 years	-0.2855	0.14149	0.405	-0.7051	0.1341
	6-10 years	-0.1784	0.1069	0.637	-0.4955	0.1386
	11-15 years	-0.2176	0.1069	0.394	-0.5346	0.0994
	16-20 years	-0.312	0.12907	0.194	-0.6948	0.0707
	More than 20 years	-0.2763	0.11372	0.189	-0.6135	0.0609
6-10 years	Less than a year	0.0702	0.18322	1	-0.4731	0.6136
	1-2 years	-0.1071	0.14585	0.99	-0.5396	0.3255
	3-5 years	0.1784	0.1069	0.637	-0.1386	0.4955
	11-15 years	-0.0391	0.11261	1	-0.3731	0.2948
	16-20 years	-0.1336	0.13384	0.954	-0.5305	0.2633
	More than 20 years	-0.0978	0.11911	0.983	-0.4511	0.2554
11-15 years	Less than a year	0.1094	0.18322	0.997	-0.434	0.6527
	1-2 years	-0.0679	0.14585	0.999	-0.5004	0.3646
	3-5 years	0.2176	0.1069	0.394	-0.0994	0.5346
	6-10 years	0.0391	0.11261	1	-0.2948	0.3731
	16-20 years	-0.0944	0.13384	0.992	-0.4913	0.3025
	More than 20 years	-0.0587	0.11911	0.999	-0.4119	0.2945
16-20 years	Less than a year	0.2038	0.19698	0.946	-0.3804	0.7879
	1-2 years	0.0265	0.1628	1	-0.4563	0.5093
	3-5 years	0.312	0.12907	0.194	-0.0707	0.6948
	6-10 years	0.1336	0.13384	0.954	-0.2633	0.5305
	11-15 years	0.0944	0.13384	0.992	-0.3025	0.4913
	More than 20 years	0.0357	0.13935	1	-0.3775	0.4489
	Less than a year	0.1681	0.18728	0.973	-0.3873	0.7234

More than 20 years	1-2 years	-0.0092	0.15092	1	-0.4568	0.4383
	3-5 years	0.2763	0.11372	0.189	-0.0609	0.6135
	6-10 years	0.0978	0.11911	0.983	-0.2554	0.4511
	11-15 years	0.0587	0.11911	0.999	-0.2945	0.4119
	16-20 years	-0.0357	0.13935	1	-0.4489	0.3775



Tenure Position post hoc						
Multiple comparisons						
Dependent variable: Intra-team knowledge-sharing behaviour Tukey HSD						
(I) Tenure Position	(J) Tenure Position	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Less than a year	1-2 years	0.0766	0.17163	0.999	-0.4323	0.5856
	3-5 years	0.0285	0.15581	1	-0.4336	0.4905
	6-10 years	-0.0581	0.16357	1	-0.5432	0.4269
	11-15 years	-0.2195	0.17304	0.866	-0.7327	0.2936
	16-20 years	-0.0162	0.22354	1	-0.6791	0.6467
	More than 20 years	-0.1043	0.22781	0.999	-0.7799	0.5712
1-2 years	Less than a year	-0.0766	0.17163	0.999	-0.5856	0.4323
	3-5 years	-0.0482	0.10795	0.999	-0.3683	0.272
	6-10 years	-0.1347	0.11887	0.917	-0.4873	0.2178
	11-15 years	-0.2962	0.1316	0.272	-0.6864	0.0941
	16-20 years	-0.0929	0.19325	0.999	-0.6659	0.4802
	More than 20 years	-0.181	0.19818	0.97	-0.7686	0.4067
3-5 years	Less than a year	-0.0285	0.15581	1	-0.4905	0.4336
	1-2 years	0.0482	0.10795	0.999	-0.272	0.3683
	6-10 years	-0.0866	0.09461	0.97	-0.3672	0.194
	11-15 years	-0.248	0.11017	0.271	-0.5747	0.0787
	16-20 years	-0.0447	0.17935	1	-0.5766	0.4872
	More than 20 years	-0.1328	0.18465	0.991	-0.6804	0.4148
6-10 years	Less than a year	0.0581	0.16357	1	-0.4269	0.5432
	1-2 years	0.1347	0.11887	0.917	-0.2178	0.4873
	3-5 years	0.0866	0.09461	0.97	-0.194	0.3672
	11-15 years	-0.1614	0.1209	0.835	-0.5199	0.1971
	16-20 years	0.0419	0.18613	1	-0.5101	0.5939
	More than 20 years	-0.0462	0.19124	1	-0.6133	0.5209
11-15 years	Less than a year	0.2195	0.17304	0.866	-0.2936	0.7327
	1-2 years	0.2962	0.1316	0.272	-0.0941	0.6864
	3-5 years	0.248	0.11017	0.271	-0.0787	0.5747
	6-10 years	0.1614	0.1209	0.835	-0.1971	0.5199
	16-20 years	0.2033	0.1945	0.943	-0.3735	0.7801
	More than 20 years	0.1152	0.1994	0.997	-0.4761	0.7065
16-20 years	Less than a year	0.0162	0.22354	1	-0.6467	0.6791
	1-2 years	0.0929	0.19325	0.999	-0.4802	0.6659
	3-5 years	0.0447	0.17935	1	-0.4872	0.5766
	6-10 years	-0.0419	0.18613	1	-0.5939	0.5101
	11-15 years	-0.2033	0.1945	0.943	-0.7801	0.3735
	More than 20 years	-0.0881	0.24452	1	-0.8132	0.637
	Less than a year	0.1043	0.22781	0.999	-0.5712	0.7799

More than 20 years	1-2 years	0.181	0.19818	0.97	-0.4067	0.7686
	3-5 years	0.1328	0.18465	0.991	-0.4148	0.6804
	6-10 years	0.0462	0.19124	1	-0.5209	0.6133
	11-15 years	-0.1152	0.1994	0.997	-0.7065	0.4761
	16-20 years	0.0881	0.24452	1	-0.637	0.8132



Difference between Genders		
Independent Samples Test		
Dependent variable: Intra-team knowledge-sharing behaviour Levene's Test for Equality of Variances		
t	df	Sig. (2-tailed)
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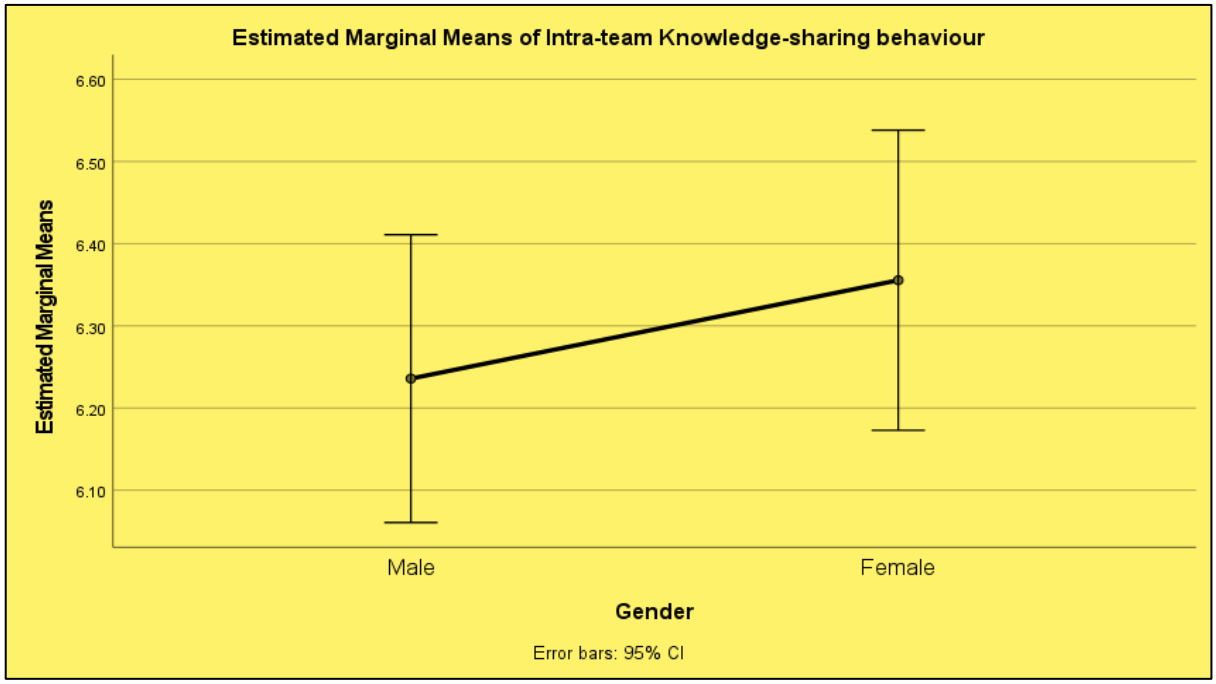
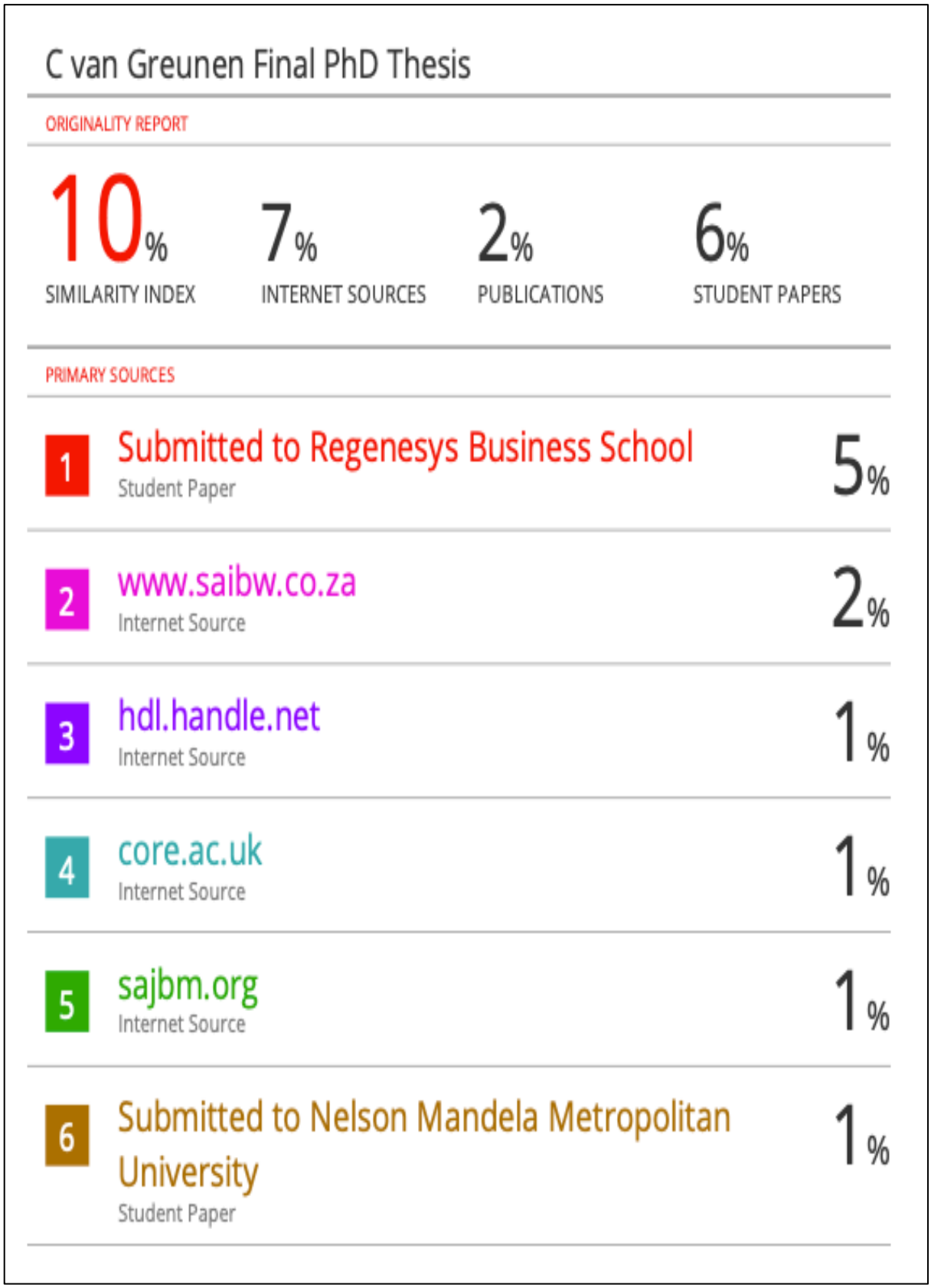
-1,268	371,822	0,206



ANNEXURE E - TURNITIN REPORT



C van Greunen Final PhD Thesis

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ANNEXURE F - PROOF OF TECHNICAL AND LANGUAGE EDITING

15 Sherwood Manor
Lancing Road
SHERWOOD
Port Elizabeth
6025

TO WHOM IT MAY CONCERN

I, Fredrick C. Geel, declare that I have completed the technical and language editing of this Thesis of:

Conrad van Greunen

entitled:

TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING IN KNOWLEDGE-INTENSIVE BUSINESSES

I cannot guarantee that the changes that I have suggested have been implemented nor do I take responsibility for any other changes or additions that may have been made subsequently.

Signed at Port Elizabeth on 31 July 2021

EDITING CERTIFICATE

I hereby confirm that I have language-edited
Chapters 2–7 of a PhD thesis entitled

Team-related factors influencing intra-team knowledge-sharing in knowledge-intensive businesses

by

Dr Conrad van Greunen

Editorial suggestions were made with track changes in the text and the author has the prerogative to change, delete, or accept the proposals.

As per agreement, the UK/SA English spelling style was applied.

Date: 30 July 2021

Michèle Boshoff BA (Hons) UPE ATE
Text editor | proofreader | translator
Accredited Text Editor

✉36 Brandwacht Street
Stellenbosch, SA 7602
actnow@adept.co.za
Tel: (27)82-340-0648

CONFIRMATION OF PROOFREADING

To whom it may concern

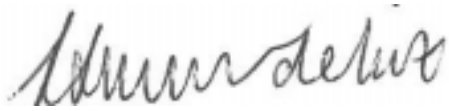
I, Linda Snyman-de Wit hereby confirm that I have proofread the thesis:

TEAM-RELATED FACTORS INFLUENCING INTRA-TEAM KNOWLEDGE-SHARING IN KNOWLEDGE-INTENSIVE BUSINESSES

By

CONRAD VAN GREUNEN

Date: 12 August 2021



Dr Linda Snyman-de Wit

DLitt (University of Pretoria, 1992)

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