Gordon Institute of Business Science
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The effect of organisational culture on knowledge transfer in professional services firms

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

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Abstract

Professional services firms, with their product being the knowledge embedded in their employees, poses a unique challenge in having a sustainable, competitive advantage. The transfer and reutilisation of this knowledge leads to increased performance, growth and the ultimate survival of a firm and therefore, companies spend billions of dollars annually in an attempt to promote knowledge transfer and sharing.

In this research, a quantitative study was conducted to understand the effect of organisational culture on knowledge transfer, specifically within a professional services firm. A survey in the form of an online questionnaire was utilised to gather the data from different professional services firms in South Africa. Organisational culture was measured using Hofstede's six cultural dimension framework, whereas knowledge transfer was assessed on three levels including the frequency and involvement of an individual, implicit and explicit knowledge transfer. The data was statistically analysed and conclusions were drawn from the results.

It was found that certain organisational culture aspects can influence knowledge transfer within professional services firms. Management can therefore, depending on what kind of knowledge transfer is desired within a specific professional services firm, promote certain cultures to enhance this process, which can then increase the overall growth and performance of the firm.

Keywords

Organisational culture, Knowledge transfer, Professional services firms

Declaration

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

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Marita van den Bergh Date

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CHAPTER 1: INTRODUCTION TO RESEARCH PROBLEM

1.1 Introduction

Knowledge intensity is described as one of the most distinctive characteristics of professional services firms, where the product of these firms is the knowledge embedded in their people (von Nordenflycht, 2010). Examples of knowledge intensive or professional services firms include engineering, accounting, architecture and law firms (Fu, Flood, Bosak, Morris, & O'Regan, 2015).

Oliveira, Curado, Maçada & Nodari (2015) defined knowledge sharing as the process of transferring knowledge to where it is needed, to ensure a sustained competitive advantage. Wei & Miraglia (2017) added that knowledge sharing is "the process through which the performance of one unit – a group, department, or division – is affected by the experience of another". Therefore, as knowledge is the base for the product in a professional services firm (Fu, 2015), and knowledge sharing is the method of distributing the knowledge within the firm (Szulanski, 1996), knowledge sharing is critical to the quality of the firm's service and their competitive advantage.

Wei & Miraglia (2017) postulated that the lack of knowledge sharing within an organisation may be caused by the culture of the specific organisation, as the knowledge sharing behaviour is directly influenced by the organisational culture of the firm. However, Greenwood, Li, Prakash & Deephouse (2005) argued that this might be different for professional services firms, because they should be regarded as a completely different category. Therefore, theories of other forms of organisations cannot be applied to professional services firms.

1.2 Motivation for research

Knowledge has been recognised through literature as a key success factor in organisations (Spender & Grant, 1996; Strese, Adams, Flatten, & Brettel, 2016). In addition, it was claimed by Szulanski, Ringov, Llull & Jensen (2016) as the instigator for productivity, growth and ultimately, survival of a firm. Wei & Miraglia (2017) further expanded on this by postulating that knowledge in a firm, specifically the transfer and reutilisation thereof, lead to increased performance and a sustained competitive advantage. This, in turn, gives project-oriented organisations the ability to exploit lessons learned on projects, thereby preventing future mistakes while enhancing

project execution. Szulanski et al. (2016) confirmed this, stating that when organisations transfer knowledge, they are more efficient and competitive and more likely to survive than their equals.

Because of these benefits, it was estimated in a recent study by Z. Wang, Wang & Liang (2014), that sixty percent of organisations worldwide had spent $4.8 billion on processes to effectively promote knowledge sharing within the organisation. However, Witherspoon, Bergner, Cockrell & Stone (2013, p. 269) argued that "professional services firms sometimes struggle to entice professionals to share knowledge" and in the same study, Z. Wang et al. (2014) found that many companies mistakenly thought that their employees will naturally share their knowledge and had not become aware of the major benefits. One estimate revealed that a minimum of $31.5 billion were lost annually by Fortune 500 companies, due to employees not effectively sharing their knowledge (Z. Wang et al., 2014).

In professional services firms, the competence of their employees are required for a competitive advantage (Fu et al., 2015). Professional services firms have been recognised to be especially dependent on knowledge and the management thereof, because their product or output consists of customised solutions, produced by the knowledge embedded in their professional employees (Fu, 2015). By transferring the explicit and tacit knowledge, employees can "accomplish goals, collaborate with others to solve problems, develop new ideas, or implement policies or procedures" (S. Wang, Noe, & Wang, 2014, p. 979).

Organisational culture provides the norms and behaviours of employees in an organisation (Hogan & Coote, 2014). Wei & Miraglia (2017) and Chang & Lin (2015) showed that knowledge sharing behaviour is influenced by the organisational culture of the firm. Wang et al. (2014) noted that companies assumed that employees will share knowledge automatically, which was proved incorrect and thus, these companies did not realise the benefits of knowledge management.

In the context of professional services firms, Malhota, Smets & Morris (2016) further debated that "Individual professionals are the carriers, interpreters, and appliers of knowledge and so how knowledge is distributed – and applied – depends on how professionals are organised". Furthermore, the "billable-hours" culture in Professional services firms' may also incentivise employees to hoard knowledge (Malhotra et al., 2016).

As summarised in Figure 1, by understanding and promoting a culture conducive to knowledge sharing may increase a professional services firm's competitive advantage and therefore, the firm's success.

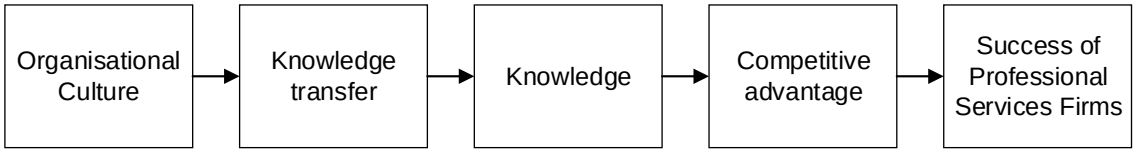

Figure 1.
Influence of Organisational Culture in professional services firms.

Therefore, this research aimed to expand the understanding of the organisational culture that influences the knowledge sharing behaviour in professional services firms. This knowledge may be used by a firm's management to promote a culture that is conducive for knowledge sharing and therefore, the ultimate success of the firm.

1.3 Research gap

To ensure uniqueness and also relevance of the topic, the current literature was consulted to ascertain what the body of knowledge regarding the topic was. Several research studies have been conducted in the past on knowledge management, knowledge transfer, as well as absorptive capability. The effect of organisational culture on these constructs have been done in different contexts, such as "Examining the impacts of organisational culture and top management support of knowledge sharing on the success of software process improvement" (Lee, Shiue, & Chen, 2016) and "The role of organisational culture in the knowledge management process" (Chang & Lin, 2015).

Due to the influence that knowledge sharing has on organisations it is still widely debated today, as the Journal of Organisational Behaviour recently released a special edition dedicated to this subject (Connelly, Černe, Dysvik, & Škerlavaj, 2019).

Given the major benefits on company performance, as mentioned in Section 1.2, one can argue that it is imperative for professional services firms to understand if organisational culture plays a role in knowledge sharing and, if it does, which cultural traits promotes the effective sharing of knowledge.

No existing research was found that evaluated the effect of organisational culture on knowledge transfer within a professional services firm, which as mentioned above, is a critical part of the competitive advantage of such firms. Figure 2 shows existing research that was found, which investigated the relationship between different organisational cultures and other knowledge management categories. The caption of each line describes the context of the research, such as Multi-National Company (MNC) for Ang & Massingham (2007). Only one study was found in the context of professional services firms, where culture was related to innovation. The red line represents this research study. Therefore, there currently exists a research gap investigating the effect that a professional services firm's culture has on the knowledge sharing behaviour within the professional services firm.

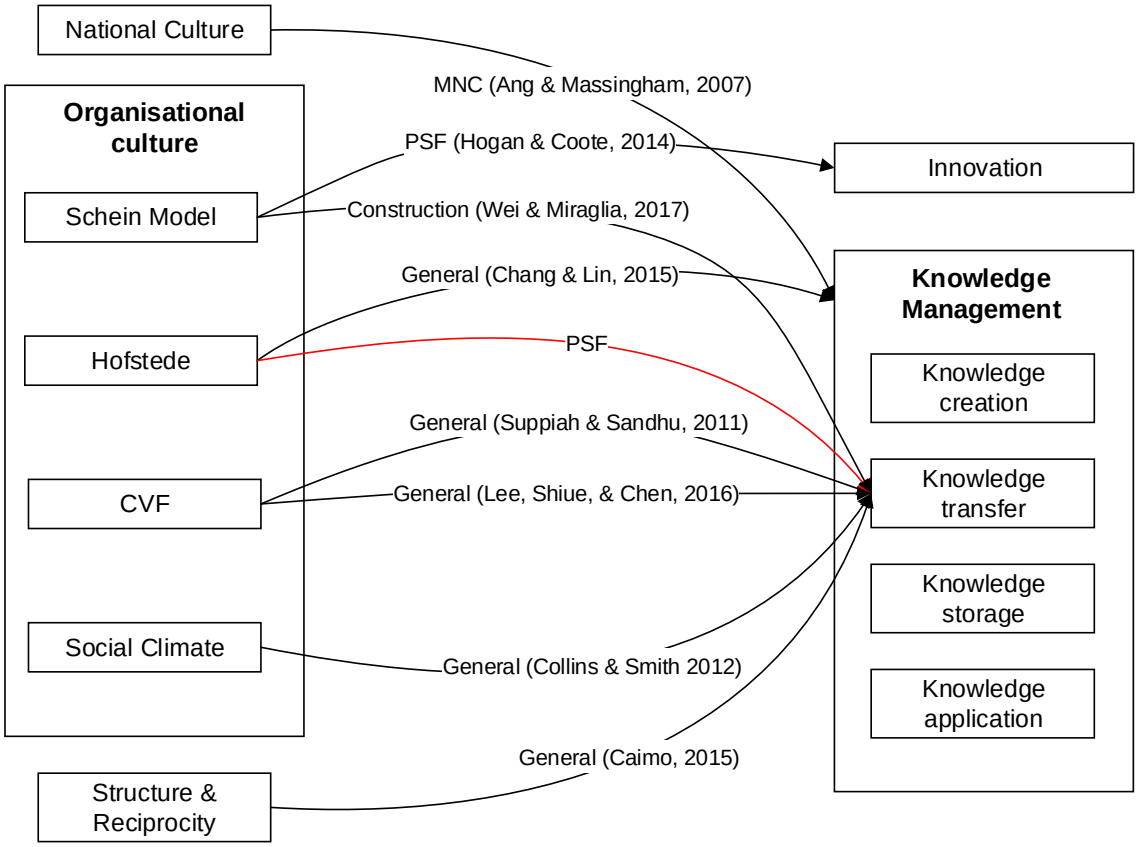

Figure 2.
Studies linking organisational culture to knowledge management

1.4 Research problem and objectives

The objective of this research was to assess if the identified problem of knowledge transfer in professional services firms is influenced by organisational culture, and if so, which organisational culture. Knowledge has been shown to be a competitive

advantage, and organisations in which employees learn and share with each other are more efficient and competitive. Such organisations are more likely to survive than those not proficient in knowledge sharing (Szulanski et al., 2016). Moreover, organisations fail to realise the potential of knowledge transfer, as they lack the expertise in the management thereof (Szulanski et al., 2016).

The lack of knowledge transfer may be caused by the culture of the specific organisation, as the knowledge sharing behaviour is directly affected by the organisational culture of the firm (Suppiah & Sandhu, 2011).

The research question in this proposed study was: “What is the nature of the relationship between organisational culture and knowledge sharing in professional services firms?”. To aid in answering this research question, the research was aimed at answering the following:

- Whether there were relationships/influences/effects between Hofstede’s organisational cultural dimensions and knowledge transfer in professional services firms.
- Understand which dimensions of organisation culture were found to have an effect on knowledge transfer in professional services firms.

In addition to the above-mentioned literature gap, the study is relevant to the professional services firms’ business context. By understanding these relationships, the specific organisational culture might be identified that promotes knowledge transfer. From here, leadership can change the organisational culture according to the model by Kotter (2012). This study was also aimed to add to the growing body of knowledge of knowledge transfer.

1.5 Research scope

The scope of this research was focused on knowledge sharing behaviour as affected by organisational culture in the professional services industry. Professional services firms such as engineering, accounting, law, IT advisory and architecture firms in South Africa were targeted. As only firms in South Africa were targeted, the study might not be globally applicable.

1.6 Structure of the research

In order to provide a clear strategy to answer the research question, the document contains the following sections:

1.6.1 Chapter 2: Theory and Literature review

The relevant literature and theory in the fields of organisational culture and knowledge transfer, within the context of professional services firms, are given. The section highlights the work that has been done in this field. Lastly, the section ends with the proposed hypotheses of the study.

1.6.2 Chapter 3: Research questions and hypotheses

This chapter describes the research question and accompanying hypotheses.

1.6.3 Chapter 4: Proposed research methodology

This section explains and defends the planned execution strategy of the research to answer the research problem. The section includes the methodology, population, sampling, data gathering and analysis of the data.

1.6.4 Chapter 5: Results

This section includes a sample of the results obtained from the survey's, as well as the quantitative, statistical analysis and interpretation of the results.

1.6.5 Chapter 6: Discussion of results

Chapter 6 links the results found in chapter 5 with the research questions and hypotheses listed in chapter 3.

1.6.6 Chapter 7: Conclusion

This chapter includes the main findings of the research and the results are summarised and consolidated into a cohesive set of conclusions. In addition, recommendations, future research and limitations of the research are listed here.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of the literature pertaining to the constructs and context of this research study. Firstly, the importance of knowledge and thus knowledge transfer is expanded on, where the implications of knowledge transfer and the measurement thereof is evaluated.

The second construct, organisational culture, is explored, aiming to assess the concepts and the influence it has in a firm. The different models of culture and organisational culture are contrasted against each other, to aid in defining the construct. The debate regarding the measurement of organisational culture is elaborated on, where the decision of the measurement method is justified.

The context of this study, professional services firms, is expanded on, identifying the distinguishing features of these firms. Lastly, the literature identifying the links between organisational culture and knowledge transfer in this context is explored.

2.2 Knowledge transfer

2.2.1 Importance of knowledge

Knowledge has been described as the most important strategic asset of a firm (Grant, 1996). This may pose the question how this abstract concept can have such an important effect on a firm. Szulanski et al. (2016) argued that this knowledge can entice economic growth, productivity and survival of the firm. This is supported by Wei & Miraglia (2017) who have described knowledge as a crucial organisational resource and that the use and transfer thereof leads to increased productivity and a competitive advantage.

This knowledge in an organisation has been defined by Wang, Noe & Wang (2014, p. 2) as “information processed by individuals, including ideas, facts, expertise and judgments relevant for individual, team and organisational performance”. The ideas and facts can be seen as knowledge that is easily articulated and captured in documents, while expertise and judgements are difficult to write down as they are often captured in people’s minds. One can therefore argue that knowledge should be divided into two categories:

2.2.1.1 Explicit Knowledge

Explicit knowledge is contained in formulas or processes and routines, or standardised documents. Therefore, it is impersonal and applicable to diverse situations and users (Szulanski et al., 2016; S. Wang et al., 2014). Szulanski (2016) further identified in his study that to acquire explicit knowledge, a person could engage in cognitive activities, such as the study of documentation or manuals.

2.2.1.2 Implicit Knowledge

Implicit or tacit knowledge is intrinsic “know-how”, which can’t easily be codified (Argote & Guo, 2016; S. Wang et al., 2014). An example may be experience and strategies on a specific task to enhance performance, but can’t be articulated in the steps to follow. Implicit knowledge acquisition was described by Szulanski (2016) as requiring experience and application by a recipient. Implicit knowledge is described as the antecedent of explicit knowledge (Oliveira et al., 2015).

It can therefore be argued that explicit and implicit knowledge are both required in a firm to effectively exploit all of the benefits associated with the knowledge.

2.2.2 Knowledge management

As knowledge is such an essential factor in an organisation, one would expect that it should be carefully managed. Figure 3 shows the range of activities that knowledge management entails, as adapted from Suppiah & Sandhu (2011) and Chang & Lin (2015). The process starts by first identifying the needs and requirements, which may also include a knowledge strategy. Knowledge acquisition relates to getting existing external knowledge. If the knowledge has been acquired, it can be transformed for use or new knowledge can be developed. The codification of knowledge is part of the storage and retrieval stage and is also where implicit or tacit knowledge can be adapted to explicit knowledge. Only thereafter can replication or transfer of knowledge be applied. Lastly, the knowledge can be made practical and utilised (Mehrizi & Bontis, 2009).

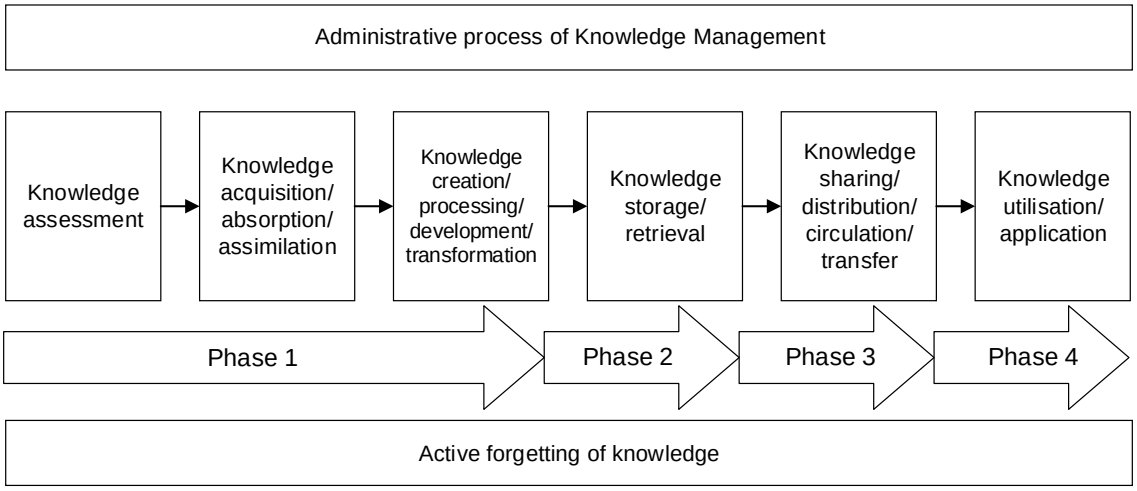

Figure 3.
Knowledge management activities. Adapted from Suppiah & Sandhu (2011) and Chang & Lin (2015)

Of all the steps above, most can be allocated to the four major phases as shown in the figure (Chang & Lin, 2015). The active forgetting dimension of knowledge management has been receiving limited attention in research. The activity does not mean accidental forgetfulness, but rather to unlearn obsolete knowledge (Mehrizi & Bontis, 2009). The repository or storage of knowledge, as well as the sharing thereof, are more effective for codified or explicit knowledge, rather than uncertain tasks or implicit knowledge (Argote & Fahrenkopf, 2016).

However, not one of the two models include knowledge hiding, which was described as individuals actively not sharing and withholding information from colleagues (Connelly et al., 2019). This activity would have formed part of phase three where knowledge transfer would occur. Knowledge hiding was not part of the scope of this project, as knowledge hiding is not only the opposite of knowledge sharing, but also has independent motivations and thus requires a separate study.

The knowledge management processes described by the two studies indicate an agreement on the last three phases, but the initial phase was broken into three separate constructs by Suppiah & Sandhu (2011). For the purposes of this study, the knowledge transfer was described as phase two, which is agreed upon by the studies, although the effect of forgetting of knowledge is not evaluated.

The implementation of the knowledge management function is dependent on three sections: Human Resources (HR), information and communication and organisational issues (Mehrizi & Bontis, 2009). As these categories are inherent to

the firm, the knowledge management activities are dependent on the ownership, the strategy and goals as well as the organisational culture (Mehrizi & Bontis, 2009). Knowledge management will assist in the effective, as well as efficient use of knowledge in an organisation (Chang & Lin, 2015).

The knowledge management process shows that full firm support is required for not only knowledge transfer, but also knowledge management. For the purposes of this study only the knowledge transfer phase was considered, although the same firm support is required.

2.2.3 Knowledge transfer

Knowledge sharing or knowledge transfer is a crucial part of the knowledge management process as mentioned in Section 2.2.1, as it can enhance the application of knowledge and the organisation's competitive advantage (Oliveira et al., 2015; S. Wang et al., 2014). Furthermore, it has been widely assessed, and has shown to be a large contributor to a firm's innovation, leading to economic growth (Szulanski et al., 2016; S. Wang et al., 2014; Witherspoon et al., 2013).

The transfer of knowledge has been described under various terms, called knowledge sharing, replication or transfer, all referring to actions that assist in the exchange of knowledge (Razmerita, Kirchner, & Nielsen, 2016). Building further on this definition, the purpose of knowledge transfer is to create organisational knowledge from individual knowledge, thereby sharing information and experiences between units within an organisation (Argote & Fahrenkopf, 2016; Foss, Husted, & Michailova, 2010).

Although global companies spend billions of dollars annually on the successful transfer of knowledge within an organisation, they constantly fail and experience difficulties (Szulanski et al., 2016; S. Wang et al., 2014). Therefore, it is beneficial to study possible catalysts that will drive successful knowledge sharing within a firm.

2.2.4 Explicit and Implicit knowledge sharing

The sharing of tacit knowledge is required for sharing productive knowledge or knowledge of execution (Szulanski et al., 2016). Implicit knowledge can be transformed into explicit knowledge, like documents and processes, although the codification requires effort (Argote & Guo, 2016).

This was also found in the study by Z. Wang et al. (2014), where the effects of explicit and implicit knowledge were investigated and it was found that explicit knowledge sharing has a positive financial impact on sales and profitability, whereas tacit knowledge sharing was found to have positive effects on the operational performance of the firm, such as productivity and quality.

Therefore, the sharing of both implicit and explicit knowledge is required for the realisation of all benefits of knowledge sharing. As some tacit knowledge can be codified to explicit knowledge, this can be exploited for some knowledge transfer activities.

Oliveira et al. found that implicit knowledge is the antecedent to explicit knowledge, although it has been found that people are more prone to share tacit knowledge than explicit knowledge. Alternatively, Z. Wang et al. (2014) stated that explicit knowledge sharing was most common, as the capturing and thus transferring of the documentation is easier. In this study, these opposing views were investigated to identify which behaviour was more prevalent in the context of this study.

2.2.5 Difficulty with transferring knowledge

Despite global companies investing a huge amount of time and money on knowledge sharing, Z. Wang et al. (2014) estimated that they still lose $31.5 million annually, due to employees not effectively sharing knowledge. One reason for this might be the complex way that knowledge is embedded within a company, as suggested by the model of Argote & Fahrenkopf (2016). This model describes the knowledge of a firm as embedded in three methods including members, tasks and tools and by intertwining these, creates complex networks through which the knowledge gets transferred. Members are the organisation's relations between employees, tasks are the daily sequences of routines and tools can be any knowledge management system. The movement of these items through the networks in the organisation, enforces knowledge transfer in the organisation (Argote & Fahrenkopf, 2016).

Knowledge transfer is embedded in networks and cannot be easily copied, which makes it unique and cannot be imitated (Argote & Fahrenkopf, 2016). Communication influences the knowledge transfer mechanism, as developed in the theory by Szulanski (1996) and how the relationship between donor and receiver influences the knowledge transfer (Argote & Fahrenkopf, 2016). Argote & Fahrenkopf

(2016) argued that individual employees are important instruments to transfer knowledge, as only people can transfer explicit and implicit knowledge.

Although numerous studies and methods have been proposed for the successful transfer of knowledge, it can still be considered as a complex process with multiple phases that takes longer to achieve than the elapsed time for one specific transfer method. Therefore, different methods that are often repeated might be necessary to successfully achieve a completed transfer (Szulanski et al., 2016).

2.2.6 Measuring knowledge transfer

Measuring knowledge transfer has been identified to be challenging and the method chosen is dependent on the context and the goal of the research (Argote & Fahrenkopf, 2016). Several researchers have used the frequency of knowledge sharing behaviour and type of knowledge to assess knowledge transfer (Oliveira et al., 2015). However, in the study of Lee, Shiue & Chen (2016), knowledge sharing was measured by not looking at different types of knowledge, but referring to knowledge donation and knowledge collection. The study was only based in the software process industry and all questions were given in the context of this specific industry.

For the purposes of this study, Oliveira et al.'s (2015) research was used, which noted knowledge transfer as a single process, but included the type of knowledge, as well as the individual's involvement (Oliveira et al., 2015). These two aspects were assessed separately, as different actions are required from management to control them. The individual's involvement and frequency of knowledge transfer should be the first scale to assess. The second scale is the type of knowledge and, as tacit knowledge isn't easy to transfer, the capture of explicit and attempt of tacit transfer should be assessed (Oliveira et al., 2015; Szulanski et al., 2016).

2.3 Organisational culture

Organisational culture has been noted as the "most important enabler of, and impediment to, the management and transfer of organisational knowledge" (Wei & Miraglia, 2017, p. 573). Before the influence of organisational culture on knowledge transfer can be understood, the concept of organisational culture, which has had several definitions and has been debated over the years, needs to be unpacked.

The work by Pettigrew (1979) was the first to regard organisational culture as a separate discipline in the field of culture (Bortolotti, Boscari, & Danese, 2015). Following this work, organisational culture has since been defined in numerous ways (Giorgi, Lockwood, & Glynn, 2015), where the many definitions caused disagreement among scholars (Chatman & O'Reilly, 2016). Verbeke, Volgering & Hessels (1998) acknowledged this by identifying as many as 54 different definitions of organisational culture.

Schein (2010) explained organisational culture as a three layer model, which included the visible artefacts & creations, the awareness of values and the basic assumptions which are taken for granted. Goldberg, Manian & Potts (2016) theorised organisational culture as the language used inside a firm. Organisational culture can also be the form of storytelling by leaders (Giorgi et al., 2015). Furthermore, organisational culture has also been mentioned to have "aspects of business strategy, firms' internal/external and long-term vs short-term orientation, coordination and control, processes, structure and leadership" (Laforet, 2016).

From all these different definitions over the last 30 years, five prominent models of organisational culture seemed to stand out, defined as values, stories, frames, toolkits and categories (Giorgi et al., 2015), which are summarised in Table 1.

Table 1.
Five Dominant Models of Organisational Culture

Culture as	**Definition**
Values	What we prefer, hold dear, or desire.
Stories	Verbal or written narratives with causally linked sequences of events that have a beginning, a middle, and an end.
Frames	Filters or brackets that delimit what we pay attention to.
Toolkits	Sets or "grab bags" of stories, frames, categories, rituals, and practices that actors draw upon to make meaning or take action.
Categories	Social constructions or classifications that define and structure the conceptual distinctions between objects, people and practices.

Note: Data from Giorgi, Lockwood & Glynn (2015)

In addition to the models of organisational culture and Schein's (2010) three layers of organisational culture, a recurring definition of organisational culture is the shared values, assumptions and beliefs (Schneider, Ehrhart, & Macey, 2013). Linking all of these different concepts together as in Figure 4, a centralised definition could be

developed. Values is a recurring theme through the definitions of organisational culture, whereas stories and toolkits can be combined as artefacts. Categories and frames are the assumptions described by Schein (2010). For the purposes of this study, organisational culture was defined as the values, beliefs and assumptions, which influence members' behaviour and also enable sense (Bortolotti et al., 2015; D. Denison, Nieminen, & Kotrba, 2014; Schneider et al., 2013).

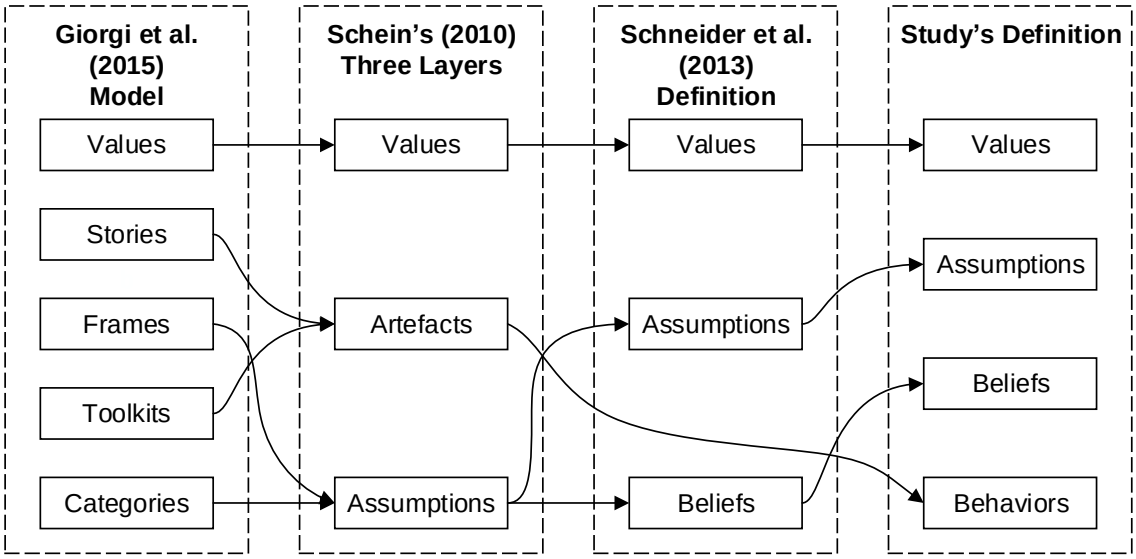

Figure 4.
Culture definition linkages.

2.3.1 Levels of organisational culture

The definition of organisational culture used for this study: the values, beliefs and assumptions, which influence members' behaviour and also enable sense (Bortolotti et al., 2015; D. Denison et al., 2014; Schneider et al., 2013) is based on Schein's model of organisational culture, which is evaluated here.

Values are described as the items that are considered to be important in the organisation and thus drive decision making; ethical and normal. The basic assumptions of organisational culture are the norms that govern the group, which have been proven to be valid and can be taught to new employees. The beliefs of culture is the implicit understanding of items in the organisation and is based on the underlying assumptions (Schein, 1984).

Edgar Schein proposed the three-layer model of organisational culture as shown in figure 3, where the different levels refer to the visibility of the cultural constructs

(Schein, 2010). This model, considered seminal work, is widely accepted and used in the different studies of organisational culture (Chatman & O'Reilly, 2016).

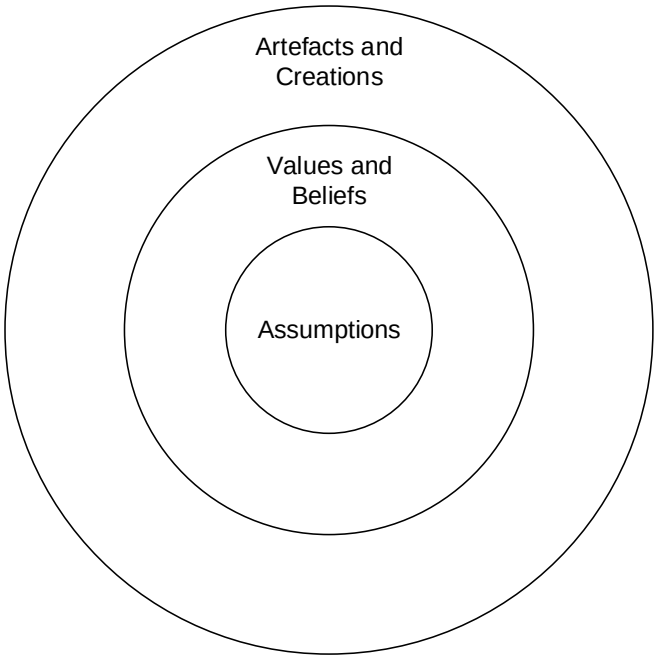

Figure 5.
Schein model (Schein, 2010)

The outside or third level is the artefacts, which are the physical effects of the organisation; what one sees, hears and feels (Schein, 2010). The second level in the model is the advocated beliefs and values and can be the inherent strategy a leader takes (Schein, 2010). This level does not explicitly relate to a level in Hofstede, Hofstede & Minkov (2010) model, as discussed later in Figure 6, but one might argue that this indirectly relates to the "heroes", as these are the examples that are followed. These beliefs, to work in a certain way to reduce uncertainty, are not the group's, but is still the leader's or management in the organisation decision. This level influences the artefacts that can be witnessed on the third level. Values can provide a channel through which management can exercise influence, which can be done by communicating the values and the expected behaviours within the organisation's culture. This can be enhanced by emphasizing values and building equivalent norms and therefore, influence the organisational culture of the firm (Hogan & Coote, 2014). This, in turn, might then lead to the desired behaviours that is beneficial to the company.

The underlying assumptions in the centre of the three layers, are the intrinsic principles or beliefs that guide decisions, which will set the framework for

organisational routines and activities (Hogan & Coote, 2014). Acknowledging the existence of organisational culture and using the previously formulated definition, one can now reason how an organisation's culture is based on an individual's culture, which can be taught and changed.

2.3.2 Individual Culture

After understanding the layers of organisational culture, the integration of individual culture can be assessed. A discussion on organisational culture can only be concluded if the fundamental unit of the construct, the "culture", is investigated. The links between the theory of culture and organisational culture are inferred here.

In their seminal work (Austin & Jin, 2017), Hofstede et al. (2010, p. 535) described culture as a collective phenomenon, and defined it as "the collective programming of the mind that distinguishes the members of one group or category of people from others.".

Every individual has a culture, which are patterns that describe the individuals thinking, feeling and because of this, also their acting, mostly acquired during childhood, although an adult can also learn and unlearn patterns. Culture falls between personality and human nature, derived from the social environment. Because of these patterns being learned by a group of people, it is collective and shared within a group (Hofstede et al., 2010).

Hofstede et al. (2010) further described how a specific culture manifests itself through values, rituals, heroes and symbols using the four-layer model in Figure 6.

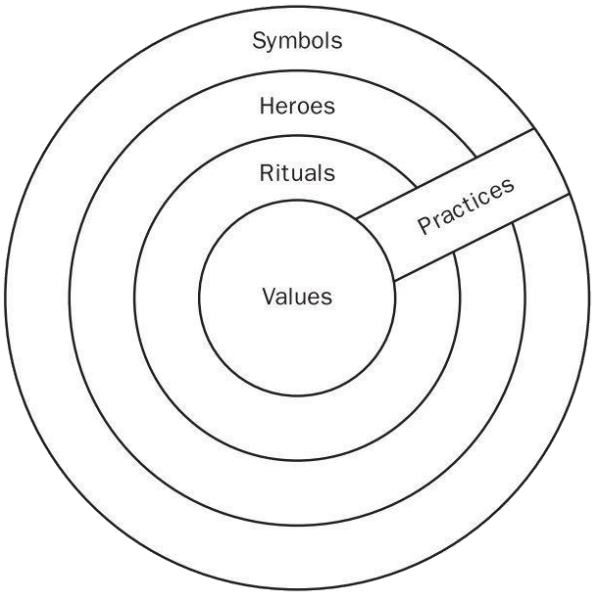

Figure 6.
Hofstede's Culture Model (Hofstede et al., 2010)

The outside level of symbols are words or objects that have specific meaning only in that given culture and can easily be changed or replaced like a flags or certain clothing. This part of the model resonates well with the artefacts of Schein's cultural model in section 2.3.1. and therefore, one can argue that this part should be the used first to bring about cultural change. This is in line with Schein's (2010) explanation of this level where there are processes where behaviour is made routine, using charters, processes, work flows and formal descriptions within the organisation.

Heroes represent the people, real or imaginary, that are seen as role models in the culture. Rituals are activities that are performed by people that are part of a culture, for instance, the different types of religious ceremonies. The three outer values were grouped under the term "practices" and are the visible definition of the culture to people on the outside (Hofstede et al., 2010).

Values, at the core, are feelings and preferences developed early in one's life. These feelings deal with opposites like evil versus good or safe versus dangerous. This is in line with the model of Schein (2010), where this can be seen as the foundation of an individual or organisation and is harder to change the longer it is left to grow strong roots.

For an individual, many levels of different cultures exist, which may even be in conflict with each other (Hofstede et al., 2010). This includes national, gender, generation

and organisation. Therefore, the organisational culture is one of the levels influencing the individual's culture. One can therefore argue that, because an individual's or group's specific culture is not inflexible, they can be taught a new set of desired patterns or behaviours. This can be done by focusing on the "outer layer practices" of rituals, heroes and symbols as it is much easier unlearned, influenced and changed.

Looking at the two similar models of Schein and Hofstede, one can reason that, in order to bring about a cultural shift in a company or firm, one has to start from the outer layer and implement new routines, work processes and work environment, where after the second values layer can be changed.

2.3.3 Importance of organisational culture

Chatman & O'Reilly (2016) claimed that a fundamental requirement of an organisation is to align all employees and activities to a common goal. This can be achieved with formal measures and controls, but sometimes this can fail and thus, social controls such as culture can be used. The same can be argued for the correct organisational culture for addressing a certain behaviour by employees. The different views of organisational culture can reveal different aspects of the organisation, which can then be addressed.

Viewing organisational culture as values, can ensure that firms are consistent internally, but distinct from other firms to generate a strategic advantage (Giorgi et al., 2015). Stories as an organisational culture element can associate appropriate meaning to acts of individuals and offer legitimacy to identities. Frames shape "perceptions, interpretations and evaluations" (Giorgi et al., 2015, p. 15). This is useful during communication of new strategies or visions, by finding resonance with the audience. Hofstede, Neuijen, Ohayv & Sanders (1990) recognised that organisational culture isn't just the shared values, but the perception of the shared daily practices, such as frames. Toolkits as an organisational culture provide a method to use it as a resource, which people can draw on to decide on a plan of action. By having a culture used as a toolkit, it can assist in agreements and in the coordination of actions. Lastly, culture as categories is used for inclusion and legitimacy of members versus non-members. Categories assist to enable judgement of values (Giorgi et al., 2015).

The five models of culture show the influence organisational culture can have and if harnessed correctly, the levers it can have in an organisation. As mentioned by Pettigrew (1979, p. 579), it is the “social tissue” that contributes to cooperative decision making.

Different organisational cultures lead to different results, as Chatman & O’Reilly (2016) proved that innovative cultures leads to higher sales and bureaucratic cultures lead to higher efficiency. Denison & Mishra (1995) postulated that particular organisational culture values can be predictors of performance and effectiveness.

Therefore, the effect of organisational culture on a firm is extensive, while the different cultural dimensions can have adverse effects. It is imperative of the firm to ensure that the organisational culture aligns with their strategic values. It should also be noted that the organisational culture can be a tool to achieve these strategic values.

2.3.4 Measurement of organisational culture

If one looks to utilise and employ the organisational culture as described, to encourage and promote certain beneficial aspects of an organisation, one has to understand and choose the right tool for the effective measurement thereof.

The measurement of organisational culture has been debated under scholars, firstly if it should be measured quantitatively or qualitatively and secondly, according to which dimension (Chatman & O’Reilly, 2016). Denison & Mishra (1995) noted that there were several studies which evaluated organisational culture quantitatively, which assumed culture as a variable. Schein’s (2010) first level of organisational culture relates to assumptions, which is difficult to understand and isn’t visible, thus some scholars argued it can only be assessed with qualitative studies (Chatman & O’Reilly, 2016). Although, by assessing the values on the second and outside level of organisational culture, quantitative methods could be used. Several organisational culture assessments already exist as summarised in Table 2 below and detailed afterwards.

Table 2.
Quantitative Organisational Culture Assessments

Assessment	Description	Reference
Values from literature	Identifying cultural values from various literature. Identifying values from literature has been identified as less prescriptive and may miss deeper meanings. Can be any quantitative methodology.	(Chatman & O'Reilly, 2016; Hogan & Coote, 2014)
Denison Organisational Culture Survey (DOCS)	Used to measure organisational effectiveness. Concerns in measurement questionnaire. Responses recorded with Likert scale.	(Chatman & O'Reilly, 2016; D. R. Denison, 1984)
Competing Values Framework (CVF)	Measures organisational climate. Respondents need to distribute 100 points over four statements. Concerns that values are not competing, but can be complementary.	(Chatman & O'Reilly, 2016)
Organisational Culture Inventory (OCI)	Developed to assess how individuals were trained to think given external pressure in an organisation. Rather an assessment of an individual than an organisation. Methodology is a five-point Likert scale.	(Chatman & O'Reilly, 2016)
Organisational Culture Profile (OCP)	Assess the norms of an organisation. Respondents rate which norms would have been rewarded in organisation. Not all culture traits might be captured and construct validity might be questionable.	(Chatman & O'Reilly, 2016)
Global Leadership and Organisational Behaviour Effectiveness (GLOBE)	Based on Hofstede's national cultures framework, expanded to nine dimensions. Some questions unclear and difficult to understand.	(Bortolotti et al., 2015; Chatman, Caldwell, O'Relly, & Doerr, 2014)
Trompenaars cultural dimensions	Model includes seven cultural dimensions. Model needs more empirical support.	(Hofstede, 2011)
Hofstede Cultural dimensions	Study includes the assessment on six dimensions of organisational culture. Assessed using Likert scale. Regarded	(Chang & Lin, 2015; Eisend, Evanschitzky, & Gilliland, 2016; Hofstede

Assessment	Description	Reference
	as seminal work and used and regularly used in similar studies.	et al., 1990; Tung & Verbeke, 2010)

2.3.4.1 Values from literature

This research method may employ any quantitative methodology and does not rely on a prescriptive cultural topology, but rather makes use of an empirical approach to identify the cultural variables in an organisation from various literature sources (Chatman & O'Reilly, 2016). For example, in a study by Hogan & Coote (2014), the authors identified cultural organisational values from different literature sources, that may support innovation within the organisation. This method may pose the risk that the deeper meaning and underlying assumptions of organisational culture may be missed (Chatman & O'Reilly, 2016).

2.3.4.2 Denison Organisational Culture Survey

The Denison model, developed by Dan Denison, identified four main cultural traits, which influences the effectiveness of an organisation, namely mission, employee involvement, consistency and adaptability. Relying on the Likert scale for data gathering, the Denison Organisational Culture Survey (DOCS) has been used by numerous companies over the last 20 years to measure company effectiveness (Chatman & O'Reilly, 2016).

Three issues with the measurement of the Denison model were identified. Firstly, because the four cultural traits take into account a vast number of organisational elements, it is not clear what is specifically cultural about them. Secondly, the questions to the participants are asked in such a way that they can identify which answer is the most socially acceptable. Lastly, some of the elements in the questionnaire are described using informal or casual language, which may not be interpreted the same in different organisations and cultures (Chatman & O'Reilly, 2016).

2.3.4.3 Competing Values Framework

The Competing Values Framework (CVF) was developed from initial research on indicators of a successful organisation and identified two major dimensions: flexibility

against control and integration against differentiation. From these dimensions four different culture types were classified namely clan, adhocracy, market and hierarchy (Chatman & O'Reilly, 2016).

The CVF makes use of the Organisational Culture Assessment Instrument (OCAI) as measurement tool, which involves a survey with six categories. Hundred points can be divided among the four items that represents the culture types. A concern is that some values proofed to not be competing, but complementing each other. Also, it has been shown that apparent opposing values can co-exist in the same organisation (Chatman & O'Reilly, 2016).

2.3.4.4 Organisational Culture Inventory

The Organisational Culture Inventory (OCI) tool was designed to identify how individuals in an organisation, behaved given the external pressure from the company. The measurement is done using a 5-point Likert scale where respondents rate 120 items, used to identify 12 behavioural styles, which are then used to differentiate three cultures (Chatman & O'Reilly, 2016).

Problems experienced with the measurement include ambiguous questions, questions that force socially acceptable responses and individual assessment rather than assessing the organisation's culture (Chatman & O'Reilly, 2016).

2.3.4.5 Organisational Culture Profile

The Organisational Culture Profile (OCP) is based on the three levels of culture, first described by the Schein model. The tool determines how well a person fits into an organisation. This is measured by the members of an organisation rating how well 54 different behavioural traits are rewarded in the company from high to low (Chatman & O'Reilly, 2016).

A first problem with this study might be that not all the behavioural traits for a certain company are captured in the 54 predetermined traits. Secondly, research has shown that different sample sets may produce different identified cultural factors, therefore the construct validity of the tool may be questionable (Chatman & O'Reilly, 2016).

2.3.4.6 Global Leadership and Organisational Behaviour Effectiveness

In an attempt to create a model to define company culture, the Global Leadership and Organisational Behaviour Effectiveness (GLOBE) model was created by several science and management students globally, which expanded Hofstede's five dimensions to nine (Bortolotti et al., 2015; Hofstede et al., 2010). This tool utilizes extensively researched empirical models and simulation techniques measured with a scale of multiple cultural items (Bortolotti et al., 2015).

The GLOBE model has been criticised for questions being unclear and difficult to understand (Hofstede et al., 2010).

2.3.4.7 Trompenaars Cultural Dimensions

The Trompenaars Cultural Dimensions, developed by Fons Trompenaars, is based on seven cultural dimensions, borrowed from other researchers' studies and literature (Hofstede, 2011).

However, from more than 9000 questionnaires, only two of the dimensions proved to be interpretable and therefore, this model doesn't have enough empirical support (Hofstede, 2011).

2.3.4.8 Hofstede Cultural Dimensions

The Hofstede Cultural Dimensions model identifies six dimensions of corporate culture, incorporating the Likert scale as measurement tool (Hofstede et al., 1990). According to Strese et al. (2016, p. 1159) "the use of the Hofstede dimensions allows us to build on extensively researched and validated measurement instruments within the management and cross-cultural research stream."

Hofstede's work on culture in organisations is world-renowned, considered as seminal work in this field and used extensively in similar studies (Chang & Lin, 2015; Eisend et al., 2016; Tung & Verbeke, 2010). This model will therefore also be used in this study and the different dimensions are discussed in detail in the next section.

2.3.5 Hofstede Cultural Dimensions

After the IBM studies, in which Geert Hofstede identified four dimensions of national cultures, based on values, the IRIC study's qualitative interviews were used to

develop survey questions to assess practices (Hofstede et al., 2010). Gert Hofstede (1990) defined six cultural dimensions, which have opposite poles of the dimensions, where it is not suggested that one pole is good or one is bad. Patel (2015) indicated that the models of Hofstede (1990) and Trompenaars (1993) were similar and were in line with the definition of the organisational culture construct, defined in Section 2.3.1. Therefore, by measuring the below detailed dimensions, one should be able to determine, by using statistical analysis, which cultural dimension promotes or hinders a certain desirable, organisational artefact.

2.3.5.1 Process-oriented versus results-oriented

The first dimension of process versus results-oriented culture contrasts the means versus the goals. The process-oriented culture is concerned with following the rules and avoiding risk. This is also associated with employees spending limited effort in their job, as the people are concerned with the standard operating procedure of the tasks (Chang & Lin, 2015). The opposite pole is results-oriented, where the goal is celebrated. This culture tends to promote innovation and emphasizes the individuals accomplishing their coal (Chang & Lin, 2015; Hofstede et al., 2010). With results-oriented culture, the people tend to be comfortable in unfamiliar situations, as they are not concerned with the steps to follow to be successful, but rather what needs to be accomplished (Hofstede et al., 2010). The process-oriented culture is also required in a routine-based environment, such as a pharmaceutical firm. The results oriented pole can be encapsulated with the means justifies the end (Hofstede et al., 1990).

2.3.5.2 Employee-oriented versus job-oriented

The employee-oriented versus job-oriented dimension is associated with where the priorities of the organisation lie (Chang & Lin, 2015). The employee-oriented organisation is concerned with their employees above the concern for the job. Companies that went through economic trouble and lay-offs tend to score high on job-oriented, as the actions of the company are perceived to only take into account the well-being of the company (Hofstede et al., 2010). Decisions made by only a few individuals in a company are also perceived as job-oriented. A job-oriented culture tends to place strong pressure on employees to over-perform on tasks and emphasises work flow optimisation (Chang & Lin, 2015).

2.3.5.3 Parochial versus professional

The parochial employee receives his loyalty from the organisation or company, while professional values relate to loyalty for the profession or the work they do (Hofstede et al., 1990). In parochial cultures, the norms that govern behaviour at the firm, influence the individual's in their private lives as well. Additional to this, during the hiring cycle, the firm will take social and family conditions of the individual into account (Hofstede et al., 2010). Employees in parochial cultures, trust the company to look into the future for them and the identity of the employees comes from the company (Chang & Lin, 2015). With professional cultures the employees tend to have more formal education and derive their identity from the profession itself, such as thinking as the profession dictates, for example, as a doctor or lawyer (Chang & Lin, 2015; Hofstede et al., 2010).

2.3.5.4 Open system versus closed system

The open or closed system relates to how open members and the firm are to newcomers as well as outsiders. How easily an outsider fits into the organisation relates to the how open the system is (Hofstede et al., 2010). Hofstede (1990) notes that the open versus closed system also describes the communication climate of the organisation, such as how easily information is passed through the company, or is the culture secretive. In a closed system there tends to be only a few people that "fit in" and only they have all the information (Chang & Lin, 2015).

2.3.5.5 Loose versus tight control

The fifth dimension, loose versus tight control, denotes the level of internal structuring in the firm. In loose-control, costs are not considered and time is not of the essence. In a tight controlled organisation, there would not be jokes about the firm and the people tend to dress formal (Hofstede et al., 2010). Also, in tight controlled organisations there will be written codes of conduct for behaviour to ensure strict control over the behaviour. The strict control from management will be captured in rules, laws and standard operating procedures to emphasize the exact conduct of the employees (Chang & Lin, 2015).

2.3.5.6 Normative versus pragmatic

The last dimension is focused on “customer orientation”. Pragmatic culture associates with a market-driven orientation and normative with rules (Hofstede et al., 1990, p. 313). Normative cultures deem success based on how the rules are followed or on the organisational procedures. The opposite is true for the pragmatic, where the fulfilment of the customer’s needs deems success. This dimension is also related to honesty and ethics where normative tends to follow the rules and not take part in unethical behaviour, while pragmatic will take additional steps to fulfil the needs of the client (Hofstede et al., 2010).

2.3.6 National culture

National culture is described as not only the culture that is prevalent within the firm’s boundaries, but influences the individual’s private, social and professional life. In addition to this, the national culture cannot be changed and is part of the circumstances of a firm (Strese et al., 2016). National cultures have an influence on the organisational culture (Schneider et al., 2013), but as mentioned, it cannot be changed, therefore national cultures will not be considered during this study.

2.3.7 Organisational climate

In addition to the many definitions, literature debated that the concept of organisational climate might also be a role player in culture. Organisational climate was defined as the “shared perceptions of and the meaning attached to the policies, practices and procedures employees experience” (Schneider et al., 2013, p. 362). The organisational climate versus organisational culture debate has been influencing the definition of culture, although both were used to understand behaviours in firm. However, climate is more focused on the perceptions of structures and systems and is more temporary than culture (Chatman & O’Reilly, 2016). For the purpose of this study, it was noted as a separate construct and excluded from the scope.

2.4 Professional services firms

The Resource Based View (RBV) of a firm, as first described by Wernerfelt (1984), can be used to describe a firm by its resources rather than its products. A professional services firm is characterised by high knowledge intensity, low capital intensity and a professionalised workforce (von Nordenflycht, 2010). The products of

these firms are intangible services, customised by educated and professional assets (von Nordenflycht, 2010). Therefore, it can be argued that the professional services firms may be regarded according to the resource based view.

The RBV defines that the competitive advantage of the firms are with valuable, rare, imperfectibly imitable, and non-substitutable resources (Fu et al., 2015). In turn professional services firms are described as knowledge intensive firms, where the competence of their employees are required for a competitive advantage (Fu et al., 2017; Pinnington & Sandberg, 2014). Again, the applicability of the RBV view of the firm can be acknowledged, as the resources are people and not machinery and are unique. The inputs of these firms are the knowledge of the professional employees, which gets transferred to outputs, which are customised solutions (Fu et al., 2015). Professional services firms span several occupations, including “accounting, law, engineering, consultancy, medicine, sports and social work” (Beltagui, Sigurdsson, Candi, & Riedel, 2017, p. 595). Table 3 below shows the characteristics of a professional services firm.

Table 3.
A Taxonomy and Theory of Knowledge Intensive firms

	Characteristics			Challenges & *Opportunities*					Organizational Responses			
Category (with Examples)	Knowledge Intensity	Low Capital Intensity	Professionalized Workforce	Cat Herding	Opaque Quality	*No Investor Protections*	Trusteeship Norm	*Muted Competition*	Alternative Compensation	Autonomy & Informality	No Outside Ownership	Slack
Technology Developers												
Biotech	X			√	√				√	√		
R&D labs												
Neo-PSFs												
Consulting	X	X		√√	√	√			√√	√√√	√	
Advertising												
Professional Campuses												
Hospitals	X		X	√√	√		√	√	√√	√√√	√	√
Classic PSFs (or Regulated PSFs)												
Law	X	X	X	√√√	√	√	√	√	√√√	√√√√	√√	√
Accounting												
Architecture												

Note: Data from von Nordenflycht (2010)

The view of the firm can be broken down more as the Knowledge Based View (KBV) is a subset of the RBV when knowledge is seen as the competitive advantage of professional services firms (Szulanski et al., 2016). Using the RBV, the knowledge and resources should be exploited for competitive advantage in a professional services firm. Furthermore, using the knowledge based view of the firm, it is the knowledge of the employees that should be exploited.

2.4.1 Product

Continuing with the KBV, Greenwood, Li, Prakash & Deephouse (2005, p. 1) defined the outputs of professional services firms as “knowledge encoded in services”. In contrast with retail based or Fast-Moving Consumer Goods (FMCG), the product is not standardised, but is customised. The product is knowledge-based and not manufactured and thus the human intervention is substantial. Von Nordenflycht (2010) further defines the knowledge intensity as person-centric, by explaining that the knowledge resides in the workforce and not in equipment or research and development departments, as with FMCG firms.

The clients of professional services firms are identified as non-experts in the respective field, and the firm and workforce are the experts. As there are knowledge gaps between the client and the professional services firm, the quality of the output is hard to measure, and is thus measured on the perception thereof (Eckardt, Skaggs, & Lepak, 2018). To overcome this gap of not being able to assess the quality, clients would often focus on the signalling mechanisms for the legitimacy claims of the firm (Eckardt et al., 2018; von Nordenflycht, 2010). This emphasises the impact the individual has on the product, where the primary legitimacy is dependent on the person executing the service or presenting the intangible product.

As two of the qualities of the RBV resources are imperfectibly imitable, and non-substitutable, the service offered is unique and client dependent. A positive result of the service offered by a professional service firms is reliant on the interdependence of the client and the firm (Seiders, Flynn, Berry, & Haws, 2015). The clients of professional services firms interact with may also be professional employees, which would require the product or service to be unique for the specific individuals on the client’s side.

2.4.2 Management

Von Nordernflycht (2010) also showed, through his taxonomy, the difference in the management styles required for professional services firms from other retail based firms. This is a consequence of the employees in professional services firms having more autonomy and organisational process than traditional firms. Furthermore, the decision making of these firms tend to be more decentralised and employees are more involved in the firm’s decisions. Again, the resources or employees are non-

imitable, thus unique management styles are required. As management styles forms part of the organisational culture of a firm, these specific circumstances will require different organisational cultures.

2.5 Organisational culture and knowledge transfer

The link between organisational culture and knowledge transfer has been previously identified by Wei & Miraglia (2017), Chang & Lin (2015) and Lee, Shiue & Chen (2016), where the studies have shown that certain organisational culture types may be conducive to knowledge sharing.

The second level of the model of organisational culture by Schein (2010) described organisational culture as values. These values and beliefs in the model of organisational culture have a stake in the willingness for knowledge transfer (Lee et al., 2016). This was emphasised, as several studies have found that high trust cultures promoted knowledge transfer (Lee et al., 2016; Nonaka, Toyama, & Konno, 2000; Suppiah & Sandhu, 2011). Difficulties in the knowledge management processes have been attributed to the "psychological climate" of the firm, which in turn, depends on the organisational culture (Chang & Lin, 2015, p. 434). In the study from Wang & Hou (2015), selflessness for the organisation's benefit encouraged knowledge sharing, which indicates the influence the values of employees can have.

The outer level of the Schein (2010) organisational culture model relates to the physical effects, such as the actions of the employees and the way they interact with each other, which has been described as a "social interaction culture" (Lee et al., 2016, p. 464). Collins & Smith (2012) found in their study that the artefacts such as shared language or codes influence the social climate and, in turn, the knowledge sharing. In the context of this study the actions are the knowledge sharing behaviours, while artefacts might be the explicit, codified knowledge. Therefore, the method of measuring knowledge transfer was assessed looking at the behaviours or artefacts of knowledge sharing.

Although knowledge is described to be difficult to share, because it is embedded in members, tasks and tools and networks can be used for the transfer thereof (Argote & Fahrenkopf, 2016). In the study by Caimo (2015), the networks are described as formal, according to structure and informal based on relations, where both influences the knowledge transfer in an organisation. It can be reasoned that organisational

culture can assist in the transfer as organisational culture influences the communication and networks between members (Hofstede et al., 2010). Organisational culture affects the networks between employees, which was shown in Hofstede et al.'s (2010) study, where a closed or open system is a dimension of organisational culture.

There are significant differences between professional services firms and traditional retail or FMCG as mentioned in Section 2.4. Fu (2015) proposed that the knowledge sharing in professional services firms can enhance the professional services competitive advantage. In contrast, it has also been confirmed in literature, where limited knowledge transfer has been attributed to the billable hours structure of professional services firms (Malhotra et al., 2016). This unique context of knowledge intensive firms shows the requirement for additional research in the relationship between organisational culture and knowledge transfer.

With reference to the previous literature, one can postulate that, as shown in Figure 7, organisational culture might have a noticeable effect on knowledge transfer and therefore, ultimately on a professional services firm's success.

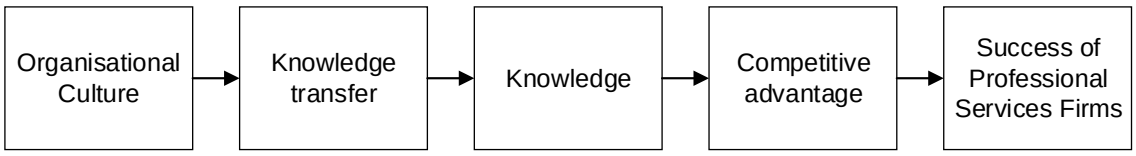

Figure 7.
Influence of Organisational Culture in professional services firms

CHAPTER 3: RESEARCH PROBLEM

3.1 Introduction

Wei & Miraglia (2017, p. 573) stated that: “organisational culture is widely regarded as the most important enabler of, and impediment to, the management and transfer of organisational knowledge”. This study investigated the relationship between organisational culture and knowledge transfer, in the specific context of professional services firms. The overarching objective and thus research question is to determine which organisational culture dimension has an effect on the knowledge transfer behaviour in a firm.

Previous sections detailed the different measurements for organisational culture and knowledge transfer. This section details the research questions for this study, in particular the hypotheses developed out of the literature. The conclusion of this chapter details a model showing the hypothesised relationships.

3.2 Organisational Culture and Knowledge transfer

The overarching research question is to determine which organisational culture dimension has an effect on the knowledge transfer behaviour in a professional services firm, as suggested in multiple studies such as Wei & Miraglia (2017), Chang & Lin (2015) and Lee, Shiue & Chen (2016). To enable the statistical evaluation of this question, the following dimensions were investigated with their relationship to knowledge transfer.

3.2.1 Process-oriented versus results-oriented

The first dimension of Hofstede et al. (1990) relates to the culture of results-orientated or process-oriented. Process-oriented cultures are characterised by bureaucratic routines and procedures that must be followed, whereas results-oriented cultures are concerned with the goal to be achieved. The competitive values framework (CVF) described market culture as a separate culture type, with the core value being competitive (Lee et al., 2016; Suppiah & Sandhu, 2011). The study noted that market culture, which has the same characteristics as a results-oriented culture, found that market culture has a negative relationship on tacit knowledge transfer. Suppiah & Sandhu (2011) further had a similar conclusion that the knowledge

sharing process is negatively affected by a competitive market culture. The reason may be that the competitive nature affects the employees to not want to share or uplift their fellow employees.

This is in contrast with the study of Chang & Lin (2015), who found a positive relationship between results-oriented culture and knowledge transfer. As the study of Chang & Lin (2015) also used Hofstede et al. (1990), it was used for hypotheses formulation. A results-oriented culture dimension is in line with a high-performance work system, where Fu et al. (2015) found a positive relationship to information sharing in the professional services context.

Hypothesis 1: There is a positive relationship between a results-oriented culture and the individual's knowledge transfer.

- H_{1a}: There is a positive relationship between results-oriented culture and the frequency and involvement of an individual participating in knowledge transfer.
- H_{1b}: There is a positive relationship between results-oriented culture and explicit knowledge transfer.
- H_{1c}: There is a positive relationship between results-oriented culture and implicit knowledge transfer.

3.2.2 Employee-oriented versus job-oriented

The clan culture in the CVF refers to a culture that focuses on "values, tradition, teamwork, loyalty, common goals, commitment, and participation by the organisation's members" (Lee et al., 2016, p. 465). This is similar to the second dimension of Hofstede's cultural dimension, which associated employee-oriented with a "concern for people" and job-oriented to "getting the job done" (Hofstede et al., 1990, p. 303). Lee et al. (2016) found a positive relationship between clan culture and software process knowledge sharing, but was contrasted by Chang & Lin's (2015) study, which found a positive relationship to job-oriented culture. Argote & Fahrenkopf (2016) noted that human-resource practices, which were commitment based, affected the knowledge transfer positively. Additionally, Szulanski et al. (2016) found that the quality of the relationship between donor and receiver of knowledge, positively influences the knowledge sharing behaviour. This is also found

in the professional services environment, where the “social capital” or relationships between members promoted knowledge sharing (Fu et al., 2015).

Hypothesis 2: There is a negative relationship between a job-oriented culture and the individual’s knowledge transfer.

- H_{2a}: There is a negative relationship between job-oriented culture and the frequency and involvement of an individual participating in knowledge transfer.
- H_{2b}: There is a negative relationship between job-oriented culture and explicit knowledge transfer.
- H_{2c}: There is a negative relationship between job-oriented culture and implicit knowledge transfer.

3.2.3 Parochial versus professional

A parochial culture is where the employees have loyalty to the organisation, whereas a professional culture is where the people remain loyal to their specific profession (Chang & Lin, 2015). Wang & Hou (2015, p. 1) found in their study that the effect of “altruism for organisational benefits” had a positive relationship on knowledge sharing behaviour, which is in line with a parochial culture, as the loyalty of the employees is not towards the industry. Chang & Lin (2015) found no relationship between professional-oriented culture and knowledge transfer.

Hypothesis 3: There is a negative relationship between a professional-oriented culture and the individual’s knowledge transfer.

- H_{3a}: There is a positive relationship between professional-oriented culture and the frequency and involvement of an individual participating in knowledge transfer.
- H_{3b}: There is a positive relationship between professional-oriented culture and explicit knowledge transfer.
- H_{3c}: There is a positive relationship between professional-oriented culture and implicit knowledge transfer.

3.2.4 Open system versus closed system

An open or closed system relates to the communication flow in the firm (Hofstede et al., 1990). The most challenging part of knowledge transfer is tacit knowledge transfer, which is enhanced with communication (Szulanski et al., 2016). Chang & Lin (2015) found no significant relationship between this dimension and knowledge transfer. Fu (2015) described in his study that in the context of a professional services firm, communication of knowledge is critical for the success of a project, which requires an open system.

Hypothesis 4: There is a negative relationship between a close-system culture and the individual's knowledge transfer.

- H_{4a}: There is a negative relationship between close-system culture and the frequency and involvement of an individual participating in knowledge transfer.
- H_{4b}: There is a negative relationship between close-system culture and explicit knowledge transfer.
- H_{4c}: There is a negative relationship between close-system culture and implicit knowledge transfer.

3.2.5 Loose versus tight control

The fifth dimension of organisational culture refers to the internal structuring of the organisation, with a tight control system associated with strict rules and codes regarding behaviour (Hofstede et al., 1990). Foss, Husted & Michailova (2010) noted that, as soon as guidelines are felt to be controlling, even if they are incentivised, they have a negative effect on knowledge sharing. In addition, Wang & Hou (2015) found that autonomous behaviour enhanced knowledge sharing. This was confirmed by Chang & Lin (2015), who found a negative relationship between tight control and knowledge sharing. In the context of professional services firms, Malhotra et al. (2016) found that the billable hours culture had a negative influence on knowledge transfer, which can be associated with the tight control dimension.

Hypothesis 5: There is a negative relationship between a tight-control culture and the individual's knowledge transfer.

- H_{5a}: There is a negative relationship between tight-control culture and the frequency and involvement of an individual participating in knowledge transfer.
- H_{5b}: There is a negative relationship between tight-control culture and explicit knowledge transfer.
- H_{5c}: There is a negative relationship between tight-control culture and implicit knowledge transfer.

3.2.6 Normative versus pragmatic

A normative culture refers to following the norms and rules, while a pragmatic culture is customer oriented (Hofstede et al., 1990). A pragmatic culture was noted to be "highly relevant for most organisations engaged in services" (Hofstede et al., 1990, p. 314). The CVF, in addition to the market culture being characterised as competitive, is also associated with being customer focused and adaptable (Lee et al., 2016). The study noted that there was a negative relationship between market culture and knowledge sharing. Strese et al. (2016, p. 1153) did not support this hypotheses by noting that the external focus and the constant looking for opportunities should "drive the organisation to effective acquisition and assimilation of knowledge". Fu (2015) proposed that because a professional services firm offers a customised product to the end-user, the work force share knowledge and work together to serve the client.

Hypothesis 6: There is a positive relationship between a pragmatic culture and the individual's knowledge transfer.

- H_{6a}: There is a positive relationship between pragmatic culture and the frequency and involvement of an individual participating in knowledge transfer.
- H_{6b}: There is a positive relationship between pragmatic culture and explicit knowledge transfer.
- H_{6c}: There is a positive relationship between pragmatic culture and implicit knowledge transfer.

3.2.7 Research Question

The overarching research question was not to just assess association between the organisational culture dimensions and knowledge transfer, but also to assess the influence or effect of these cultures on knowledge transfer. The influences of the organisational cultures on knowledge transfer, be it positive or negative, have the same foundations from literature as the relationships hypothesised on above. This can only be achieved by using all hypotheses above and not only assessing association, but also relationship in a one-way aspect. These are as follows:

- H_{1d}: Results-oriented organisational culture positively influences knowledge transfer.
- H_{2d}: Job-oriented organisational culture negatively influences knowledge transfer.
- H_{3d}: Professional organisational culture negatively influences knowledge transfer.
- H_{4d}: Closed system organisational culture negatively influences knowledge transfer.
- H_{5d}: Tight control organisational culture negatively influences knowledge transfer.
- H_{6d}: Pragmatic organisational culture positively influences knowledge transfer.

3.3 Conclusion

The anticipated relationships between the mentioned variables and constructs can be seen in Figure 8 below.

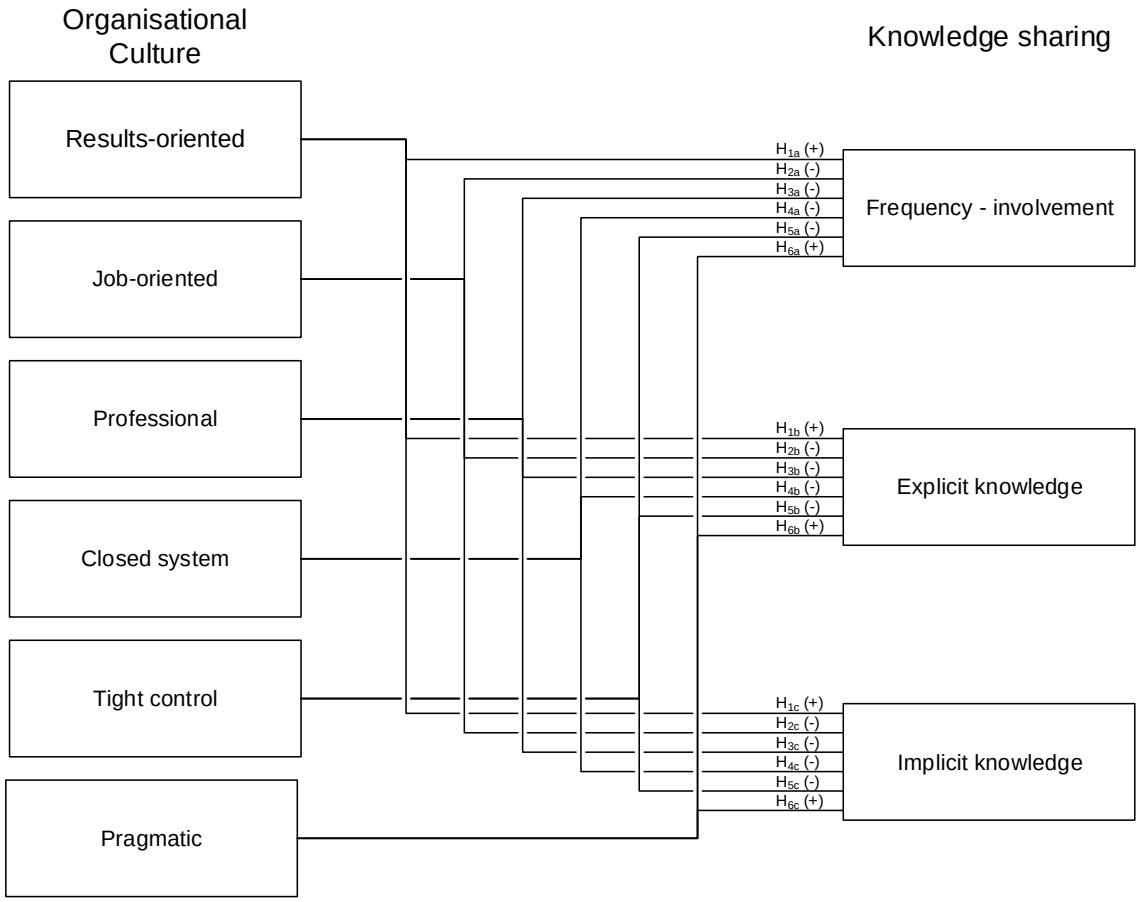

Figure 8.
Research Model

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

The research aim is to determine which organisational culture dimension has an effect on the knowledge transfer behaviour in a firm. This section, the research methodology, describes the steps followed to achieve these objectives of the study. The section describes the sampling techniques, the data collection instrument and the method of analysis, as well as concerns and limitations within the study. The choice of methodology supported the research question and hypotheses noted in Chapter 3 to ensure a credible answer.

4.2 Research design

The purpose of the research was to analyse the effect of organisational culture on knowledge transfer, which entails the evaluation of a relationship between variables. For this research project, the quantitative technique was used, in which numerical data is statistically analysed and conclusions drawn from the results (Saunders, Lewis, & Thornhill, 2009, pp. 414–417). If the results were statistically significant, further analysis would have been done.

Furthermore, different research philosophies including positivism, realism, interpretivism and pragmatism, could have been used. Positivism associates a single type of research philosophy, such as for quantitative data collection and only one type of analysis procedure (Saunders et al., 2009, p. 151). Positivists are further of the view that results should be replicable and thus be measurable, which can only be done with a quantitative study (Sekaran & Bougie, 2016). The positivist paradigm aligns itself closest to the deductive approach of theory development in quantitative research (Bansal, Smith, & Vaara, 2018). For this research project, the positivism philosophy was followed, where only information that was gathered through the instruments of surveys were used to identify the relationships between the professional services firm culture and knowledge transfer variables, which were objective, replicable and measurable.

The deductive theory building approach was used to deduce the hypotheses, express relationships between variables, test the proposed relationships, evaluate the results and, if required, modify the base theory (Saunders et al., 2009, p. 112).

The relationship between all the identified variables was explained using deductive reasoning (Saunders & Lewis, 2018). Again, the deductive reasoning gave a clear and structured methodology to allow for replication. The deductive theory building approach is aligned to this study as hypotheses were developed out of literature, which expresses potential relationships between all the culture and knowledge transfer constructs.

The purpose of the study was descripto-explanatory. The data received from the surveys was described using standard statistical methods, where after the relationships between the professional services firm culture and knowledge sharing variables, as mentioned in the proposed hypotheses, were calculated and evaluated. (Saunders & Lewis, 2018; Saunders et al., 2009).

Following the strategy used by Chang & Lin (2015), surveys were used to capture all the data of the respondents. The surveys were self-administered, structured questionnaires, that were handed to employees of professional services firm in an online format. As it has been shown that different formats of questionnaires can produce different results, only online formats were considered (Andres, 2012). The reliability of the received data was checked and verified to ensure that if the study was to be repeated, it would provide the same results. In addition to the reliability, the validity was analysed to ensure that the correct results and findings were applicable and legitimate (Saunders et al., 2009, p. 273).

The time horizon chosen for this study was a cross-sectional time horizon, as all the respondents from the population would have completed the survey within a specific time period. It was appropriate for this research proposal, as the relationships between the variables (predictor and outcome) would have stayed constant over the time (Fischer, Dietz, & Antonakis, 2017). The limitation of time for the study required a cross-sectional time horizon. A longitudinal approach could have been appropriate to evaluate how the knowledge transfer capabilities of an organisation changes when the culture is changed as per the proposal by Chang & Lin (2015) to assess a knowledge management system. A longitudinal study does have the concern that there is no exact end to the study (Beltagui et al., 2017).

Figure 9 below shows a summary of the research design.

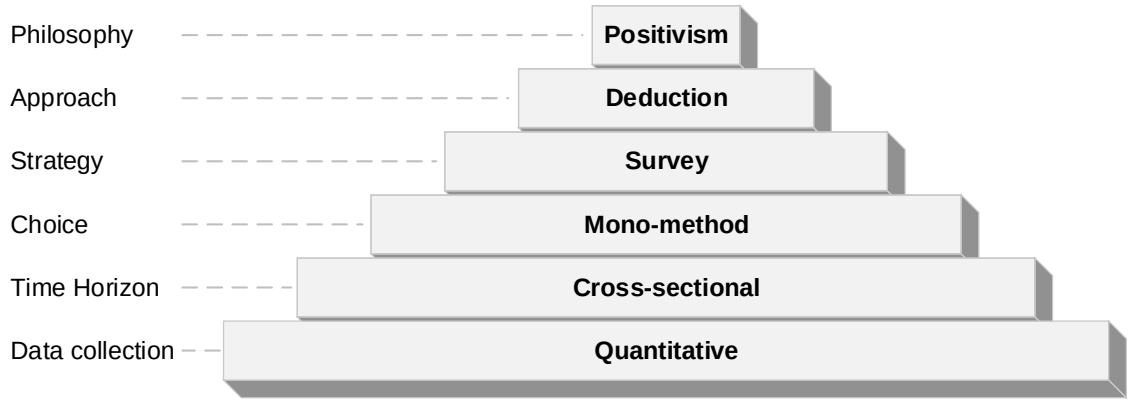

Figure 9.
Research design

4.3 Population

Zikmund (2009, p. 390) defined the target population as the people you want to address, to answer the research question. This proposed research targeted individuals in professional services firms to enhance the knowledge of what role the firm's culture plays in the process of internal knowledge transfer among the firm's employees. Professional services firms, in this study, were aligned with firms displaying the characteristics identified by Nordenflycht (2010), which are high knowledge intensity, low capital intensity and a professional workforce. The target population were employees who have been employed at least one year in the organisation, to ensure the candidate is well versed with how the organisation operates and the company culture.

4.4 Unit of analysis

Zikmund, Babin, Carr and Griffin (2009, p. 660) defined the unit of analysis as "What or who should provide the data and at what level of aggregation it should be analysed". In other words, it is the main object that is being studied. For this research, the primary units of analysis were the employees representing professional services firms, which have been adequately exposed to the firm's culture and knowledge sharing behaviour. The employees were defined as the unit, as they can provide the insights required to prove or disprove the hypotheses in Chapter 3.

4.5 Sampling method and size

The sample is a sub-group of the total or whole population (Saunders & Lewis, 2018), which was identified individuals working in professional services firms. In relation to the deduction process proposed above, the sampling method chosen needed to include samples of sufficient size to allow for the generalisation of conclusions (Saunders et al., 2009, p. 127). The sampling frame to be defined is the portion of the population that can be practically dealt with, called the working population (Zikmund, 2009, pp. 391–392).

The sampling frame for this research were professional service firms in South Africa. This sample frame was large, and it would have been impractical to make contact with all the candidates in all the service firms in South Africa. Non-probability sampling was therefore employed, as it is suitable technique when you do not have a complete list of the population and therefore, can't select a sample randomly from the population (Saunders & Lewis, 2018). Furthermore, purposive sampling was used, where the most suitable candidates that can answer the research question were selected from different professional services firms. Personal networks in the researcher's working, professional, educational and social circles were used to reach suitable candidates. This may present a bias as the personal network of the researcher may not represent the population. The researcher attempted to overcome this by reaching out to networks in various industries. Snowball sampling was also employed thereafter, where the purposively selected candidates could have identified and provided contact details of other suitable participants (Saunders & Lewis, 2018).

4.5.1 Sample size

In similar studies sample sizes of 330 (Chang & Lin, 2015) and 91 (Hogan & Coote, 2014) were used, with a response rate 98.78% and 14% respectively. Chang & Lin (2015), Based on these figures, judgement and that only professional services firms in South Africa were considered, a sample of 150 participants was suggested. This is also appropriate for the statistics to be employed.

4.5.2 Survey response

The online web survey tool, Google Forms, was used to capture the answers. The response rate can be seen in Table 4.

Table 4.
Response rate

	Polled	Responses	Valid responses	Response rate
Total	347	175	159	45.82 %

Invalid responses included candidates, which indicated that they do not work for a professional services firm and have less than a year's experience in the firm. This caused that 16 responses were disregarded. The response rate was higher than other studies, as all emails and messages sent out were followed up on after two weeks to request completion of the anonymous survey.

4.6 Data collection tool

As previously mentioned, the proposed data gathering tool was a self-administered, structured questionnaire. The data collection method required to be efficient, low cost while providing quick response rates, therefore a questionnaire was used (Zikmund, 2009, pp. 226, 227). A questionnaire method was preferred to interviews, as there was limited time and the cost of interviews are much higher (Zikmund, 2009, p. 212). The questionnaire method was also more fitting for this research, as the location of the respondents was dispersed across multiple geographic locations (Zikmund, 2009, p. 219).

The disadvantages of self-administered surveys were acknowledged. The first of which is that the respondents should understand and complete the questionnaire, which was not a problem in this study, as the respondents were educated, professional employees (Andres, 2012). The second problem of response rates is evident in the self-administered surveys, as no guarantee is given to who is completing the survey. To increase the response rates of the mail survey, a follow up was done with respondents (Andres, 2012). In the survey design, the amount of questions on the screen were limited to reduce the nonresponse rate and the time of the survey (Toepoel, Das, & van Soest, 2012).

The questionnaire was developed and structured to ensure all the research hypotheses were covered and all the statistical hypotheses' variables could have been calculated as per chapter 3. There were multiple questions assessing the same construct to ensure that a multi-item scale could have been constructed, with which the reliability could be assessed (Dawson, 2017).

Table 5 provides a summary of the variables in used in the questionnaire, where after the three main sections including demographics, organisational culture and knowledge are detailed. The complete questionnaire is available in Appendix A.

Table 5.
Variables associated with questions

Variable	Description	Questions
Demographic	-	Q1-7
OC1	Process-Oriented versus Results-Oriented	Q8-12
OC2	Employee-Oriented versus Job-Oriented	Q13-Q17
OC3	Parochial versus Professional	Q18-22
OC4	Open System versus Closed System	Q23-27
OC5	Loose Control versus Tight Control	Q28-31
OC6	Normative versus Pragmatic	Q32-36
KT1	Frequency and involvement of Knowledge transfer	Q37-39
KT2	Explicit Knowledge transfer	Q40-41
KT3	Implicit Knowledge transfer	Q42-43

4.6.1 Demographics

The demographic section of the survey had the purpose of providing background to the client and to ensure that the candidate adheres to the target population. This was achieved by comparing the demographics of the sample to the demographics of the target population (Zikmund, 2009, p. 191). The demographics were required to enable the descriptive statistics of the research and caused some responses to be disregarded.

Table 6.
Demographic questions

Question number	Variable name	Question
1	PSF	Do you work for a Professional services firm:
2	OT	Organisation type:
3	AG	Age:
4	YS	Years of service in organisation:
5	JL	Job level:
6	EL	Highest level of education:
7	CN	Company name

4.6.2 Organisational culture

The section on organisational culture in the questionnaire was adapted from the study by Hofstede, Neuijen, Ohayv & Sanders (1990). As mentioned, Strese et al. (2016, p. 1159) stated that “the use of the Hofstede dimensions allows us to build on extensively researched and validated measurement instruments within the management and cross-cultural research stream”. Twenty-nine questions were posed to evaluate the six constructs proposed by Hofstede et al (1990).

Table 7.
Organisational culture questions (Hofstede et al., 1990)

Question number	Variable name	Question
8	OC1a	Employees are comfortable in taking risks.
9	OC1b	Each day at work brings new challenges
10	OC1c	People put in maximum effort to achieve results.
11	OC1d	Employees receive positive feedback when a job is well done.
12	OC1e	A typical employee executes tasks as fast as possible.
13	OC2a	The firm is only interested in the work people do.
14	OC2b	Decisions are made in a group and not by top management.
15	OC2c	There is little concern for the personal problems of employees.
16	OC2d	New employees are left to find their own way
17	OC2e	No special ties with local community.
18	OC3a	Private lives are considered employees own business.
19	OC3b	Job competence is the only criteria considered during hiring processes

Question number	Variable name	Question
20	OC3c	The planning for work is done three years ahead or more.
21	OC3d	Employees are aware of competitors of the firm.
22	OC3e	There is cooperation and trust between departments.
23	OC4a	Only a few special people fit in the organisation.
24	OC4b	Organisation and people are closed and secretive.
25	OC4c	New employees need more than a year to feel at home.
26	OC4d	Management is unnecessarily cost-conscious on small things
27	OC4e	Attention is given to physical work environment.
28	OC5a	Meeting times are kept punctually.
29	OC5b	Everybody is cost-conscious.
30	OC5c	Employees always speak seriously of organisation and job.
31	OC5d	A typical employee is well-groomed.
32	OC6a	Major emphasis is placed on meeting customer needs.
33	OC6b	Results are more important than procedures.
34	OC6c	Ethical decisions are governed by rules.
35	OC6d	Organisation contributes little to society.
36	OC6e	Employees talk about history and traditional way of doing things in organisation.

4.6.3 Knowledge transfer

To measure knowledge transfer, this questionnaire section was adapted from Oliveira, Curado, Maçada, & Nodari (2015). There were two main constructs to be measured: the frequency of knowledge transfer and the propensity of an individual to transfer explicit and implicit knowledge. The construct of explicit and implicit knowledge transfer was split because of the EFA analysis. There were seven questions measuring these constructs, by using the seven-point Likert scale.

Table 8.
Knowledge transfer questions (Oliveira et al., 2015)

Question number	Variable name	Question
37	KT1a	I often participate in knowledge sharing activities in my team.
38	KT1b	I usually spend a lot of time conducting knowledge sharing activities in my team.

Question number	Variable name	Question
39	KT1c	I usually share my knowledge with the other members of my team.
40	KT2a	I often share the reports and official documents from my work with the members of my team.
41	KT2b	I always share my manuals, methodologies and models with the members of my team.
42	KT3a	I often share my experience or know-how with the members of my team
43	KT3b	I always share my know-where and know-whom when prompted by the members of my team.

4.6.4 Likert scale

A seven-point Likert scale was selected for this study, ranging from 1 (Completely disagree) to 7 (Completely agree), for the quantification of all constructs (Oliveira et al., 2015). Likert scales rate degrees of opinion and quantitative data can be easily extracted and analysed (Elias, 2015). A 7-point Likert scale facilitated the sensitive measurement of the variance (Oliveira et al., 2015). The Likert scale also classified each item as an ordinal variable, although it was treated as a numerical continuous variable (Dawson, 2017). As the Hofstede study measured two opposing ideas for each construct, each construct had a one allocated to an organisational culture type and seven being the opposite, as an example, process-oriented was one and results-oriented was a seven.

4.6.5 Accuracy of research instrument

The reliability and internal consistency of the measurement instrument, the survey in this research, needed to be confirmed satisfactory. To test the internal consistency and reliability of each question in the questionnaire within their construct, the Cronbach alpha test was performed (Saunders et al., 2009, p. 372). Bonett & Wright (2015) stated that the Cronbach's alpha test "correctly describes the reliability of the sum or average of q measurements that satisfy the parallel assumption". The model score for the reliability should be above 0.80, but if between 0.70 and 0.08, can be accepted. Below 0.70 would require an amendment to the scale (Dawson, 2017). In the context of this study, the Cronbach alpha test was run on all the items that

measure the construct of the relationship between culture and knowledge transfer. From here the factor analysis and inferential statistics could be completed.

4.6.6 Questionnaire pre-testing

As both instruments were recognised and validated already, only the demographic questions were assessed by a research professional at GIBS. A pre-test was used for the questionnaire to ensure all questions were understandable, unambiguous and clear (Zikmund, 2009, p. 468), as was done in similar studies (Razmerita et al., 2016). During the pre-test some questions were identified to be changed to modern language, which corrected some of the problems associated with the DOCS questionnaire (Chatman & O'Reilly, 2016). An example of a question changed is "Pragmatic, not dogmatic in matters of ethics" (Hofstede et al., 1990, p. 19), which was rephrased using modern English.

4.7 Data gathering

The online web survey tool, Google Forms, was used as the distribution mechanism, and the questionnaire was the data gathering tool. The questionnaire was initiated with either an e-mail request, providing a link to the survey or by using the web-based platform, LinkedIn, to purposively contact the identified candidates in the researchers' personal network. The survey was anonymous, which provided the respondents more comfort to disclose honest answers to the questions (Zikmund, 2009, p. 230).

4.8 Analysis approach

The data received from the surveys was subjected to a descriptive and explanatory analysis. The first step in the analysis approach was the editing, coding and producing of a data file, where after the statistical analysis could have been done (Zikmund, 2009, p. 462).

The editing of the data involved checking the completeness of the answers, as the survey only allowed for multiple choice answers or numerical values (Dawson, 2017).

4.8.1 Data coding

After invalid responses were removed, the coding of the data was done to enable the conversions to numerical answers, which could then be statistically analysed (Zikmund, 2009, p. 463). The Likert scale values were replaced with numerical values and negatively phrased questions were inverted. From here a data file was made, capturing all the coded answers.

4.8.2 Descriptive statistics

The data in the data file was categorised according to the independent variables associated with the statistical hypotheses. When the reliability and validity were adequate, the descriptive statistics of each variable could then be calculated (Dawson, 2017). The descriptive statistics involved the tests, such as central tendency, distribution, and variance (Zikmund, 2009, p. 486). The central tendency and distribution statistics are required when assessing which statistical test can be used based on a normal distribution (Zikmund, 2009, p. 534).

4.8.3 Quality controls

The validity of the questionnaire was tested on three fronts: content validity, criterion-related validity and discriminant validity (Dawson, 2017). In this research, the content validity was if the questions regarding company culture and knowledge transfer, matched the theoretical definitions (Dawson, 2017). As both constructs were adapted from peer reviewed articles, the content validity was achieved. Criterion-related validity verified the similarity between variables that are expected to be similar (Dawson, 2017). This was tested with statistical tests such as correlation, for example, to check the latent variables, knowledge sharing and firm culture. The last validity check was to differentiate variables that are related but not the same, with exploratory factor analysis (Dawson, 2017; Fu, 2015).

4.8.3.1 Confirmatory factor analysis

The discriminant validity was tested with Confirmatory Factor Analysis (CFA) as done by Zhao, Liu, Li & Yu (2019) to confirm if the questions and the associated constructs fit the required model. The Chi-Square, fit index, Root Mean Square Error of Approximation and Root Mean Square Residual to check the model fit of the constructs to the latent variables. The Chi-Square test is commonly used, but is

dependent on sample size (van de Schoot, Lugtig, & Hox, 2012). The test runs a null hypothesis of the model to fit, therefore if the p-value is significant, e.g. < 0.05, the null hypotheses is rejected. The values required for the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) must be more than 0.95. After the fit index, the closeness of the fit, is checked by the Root Mean Square Error of Approximation (RMSEA), which is suggested to be less than 0.08 (van de Schoot et al., 2012).

4.8.3.2 Exploratory factor analysis

Exploratory factor analysis is defined as "an exploratory procedure that searches for relationships among the variables (items), and assigns items to scales (factors) purely on the basis of these relationships." (Dawson, 2017), as were done by Fu et al. (2017). Factor analysis ensures that the data collection instrument adequately measures what it is intended to measure and that the constructs are reflected in the questions (Pett, Lackey, & Sullivan, 2003). A factor is defined as a "linear combination or cluster of related observed variables that represents a specific underlying dimension of a construct" (Pett et al., 2003, p. 2). Therefore, by using factor analysis, the construct can be correctly analysed. Factor analysis was used on each construct of the measurement of organisational culture dimensions, as well as the two constructs in knowledge transfer. The inter-item correlations were confirmed to be at least 0.3.

4.8.3.3 Kaiser-Meyer-Olkin Test

To ensure that the sampling frequency of the data was adequate for factor analysis, the Kaiser-Meyer-Olkin (KMO) test was used (Dawson, 2017). The test enables this evaluation by comparing the magnitudes of the correlation coefficients. A KMO value higher than 0.6 is required to ensure factor analysis can be completed (Pett et al., 2003). Figure 10, below shows guidelines for interpreting the KMO index.

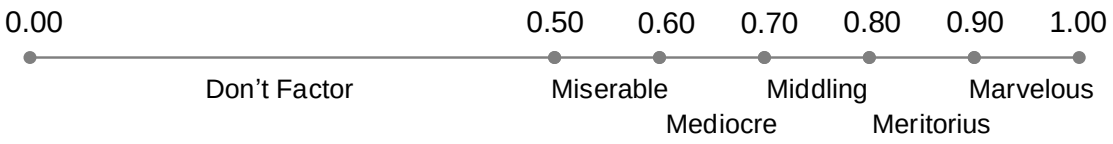

Figure 10.
KMO Interpretation table. Adapted from Beavers et al. (2013).

4.8.3.4 Bartlett's Test

Bartlett's test of sphericity, tests if the correlation matrix between elements is equal to the identity matrix, which by inference means there is no relationship among all the questions (Pett et al., 2003). The larger the number in the Bartlett's test, the greater the likelihood that there are relationships among the items. Through KMO and Bartlett's test, the application of factor analysis can be evaluated. Bartlett's test is an analysis of the null hypotheses of an the correlation matrix that is equal to the identity matrix (Beavers et al., 2013). Therefore, a significance level less than 0.05 is required to reject the null hypotheses.

Therefore, these tests needed to be run, before the factor analysis could be performed.

4.8.3.5 Shapiro-Wilk test

The Shapiro-Wilk test is classified as a goodness-of-fit test for normality. As most of the statistics used are based on the assumption that the underlying data is normally distributed, this had to be tested (Belhekar, 2016). The Shapiro-Wilk test uses a null hypothesis to predict that the data is normally distributed, therefore if the p-value is significant, i.e. less than 0.05, the data can be assumed to be normal (Belhekar, 2016)

4.8.4 Measuring means across subgroups

To ensure if there are major differences between demographic groups, mean scores per construct were compared across categories. For non-normal data Kruskal Wallis tests was used was used across the subgroups of age, job level and Education.

The independent t-test is the normal-data statistical test, while the Mann-Whitney U Test is applicable for this data as it is a non-parametric test for the differences between means of two groups (Saunders et al., 2009, p. 458). The Kruskal Wallis test is an alternative to the ANOVA test, as the ANOVA test has the assumption of normal data for the test to be applied correctly (McKight & Najab, 2010). Only the Mann-Whitney U test was used, as multiple groups were assessed.

4.8.5 Inferential analysis

4.8.5.1 Pearson Correlation

The hypotheses mentioned in section 3.1 were tested by developing a model between the independent variables and the dependent variables. To establish the relationships between the variables, Pearson correlation tests were run between different subsections of organisational culture and knowledge transfer items, as described by Denison et al. (2014). The strength of the relationship is indicated with a value r, ranging from -1 to 1. One being a perfect positive relationship and -1 indicating a negative relationship (Zikmund, 2009, p. 559). The significance value required for the test is 0.05. The strength of the correlation was assessed according to the scale in Figure 11.

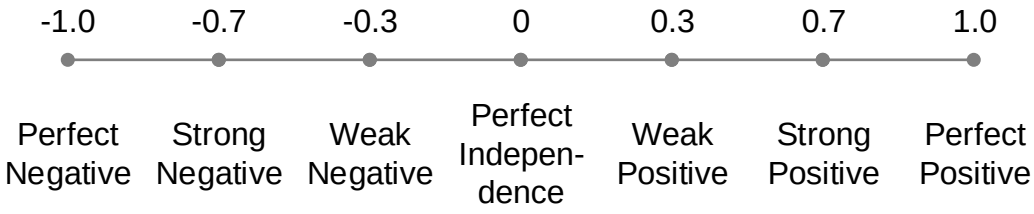

Figure 11.
Correlation strength. Adapted from Saunders et al. (2009, p. 459)

The result of the correlation test, only indicates a relationship and not causation (Courtney, 2018). In addition, the following assumptions regarding the underlying data is required, these are described by Courtney (2018) as follows:

1. Linearity of variables: Variables are assessed linearly, therefore a quadratic relationship cannot be assessed.
2. Normally distributed: Jointly normally distributed variables are required.
3. Interval or ratio values: The underlying data should be continuous

4.8.5.2 Linear Regression

In addition a simple linear regression was conducted to characterise the relationships, as was done by Evans, Hendron & Oldroyed (2015). A coefficient of determination (r^2) will enable to assess the relationship with the dependent knowledge transfer variable and the independent organisational culture variables (Saunders et al., 2009, p. 461). The measures of variation in knowledge transfer can be explained with the organisational culture variable.

As the organisational culture variable is not a univariate variable, canonical correlation is not appropriate.

Linear regression will enable a multi variable influence on the knowledge transfer constructs. A basic formula is used to predict the effect of the independent variables on the dependent variable. The assumption of a regression analysis is that there exists a perfect formula, which cannot be achieved due to the error terms (Shaikh, 2017). There are several assumptions taken to enable the application of linear regression as noted by Shaikh (2017):

1. Homoscedasticity: All variables tend to have the same variance.
2. Independent Errors: All variables are not influenced by the same errors.
3. Normal distribution of errors: Errors are normally distributed across all data.
4. Multicollinearity: The independent variables are correlated with each other.

4.8.5.3 Type I and Type II errors

Type I and Type II errors can occur, as we are only using a sample, representing the whole population. A type I error can occur when the null hypothesis is rejected when it should have been accepted. A type II error is the opposite of a type I where the null hypothesis is accepted when it should be rejected. The statistical significance influences the type I errors (Saunders et al., 2009, p. 450). Therefore a 95% confidence interval is chosen and not a 90%.

4.9 Limitations

The proposed research only focused on professional service firms within South-Africa. This may not be an accurate representation of professional services firm in other countries as different national cultures and institutional contexts influence knowledge sharing behaviours (Foss et al., 2010).

The use of snowball sampling might also pose a potential problem, as a person that had been nominated by another person, had a higher probability of having similar views than the first person, leading to biased results (Zikmund, 2009, p. 398).

By using a cross-sectional design, the inference of causality from the hypotheses could be prevented (Z. Wang et al., 2014). Further research using longitudinal or experimental methods will be necessary to determine causality.

CHAPTER 5: RESULTS

5.1 Introduction

The aim of the research was to investigate which organisation culture provides a conducive environment for knowledge transfer, in the context of professional services firms. The survey method was used to retrieve data from employees working in professional services firms, as described in Chapter 4. The findings from the survey data are presented in this chapter. The statistical analysis described in this chapter provides the necessary evidence for analysis in chapter 6. The chapter is structured by first giving the descriptive statistics of the data, evaluating the reliability and validity of the research instrument, where after the results of the relationships between the constructs of organisational culture and knowledge transfer are presented.

5.2 Descriptive statistics

5.2.1 Response rate

The data was collected from the 31st of July 2019 to the 28th of August 2019, where 347 candidates were polled to complete the survey. From this, 175 responses were received, where 159 of the responses were valid. This equates to a response rate of 45.82%. Invalid responses included the candidates that were not working for a professional services firm and candidates that had less than 1 year of experience at the firm. All questions were answered excluding question CN, concerning the company name, where only 151 responses were received. The original target of 150 valid questionnaires was achieved.

5.2.2 Age

Several biographic variables were received and used to profile the respondents, the first of which was the age distribution of candidates, as shown in Figure 12. The majority of the respondents were in the category of 30 - 39 years old (N = 70), with the lowest percentage in the older than 59 years category (N = 4). The other categories reported 21 - 29 years old with N = 33, 40-49 years old with N = 34, and 50 - 59 with N = 18. This does not include invalid data that did not form part of the final dataset.

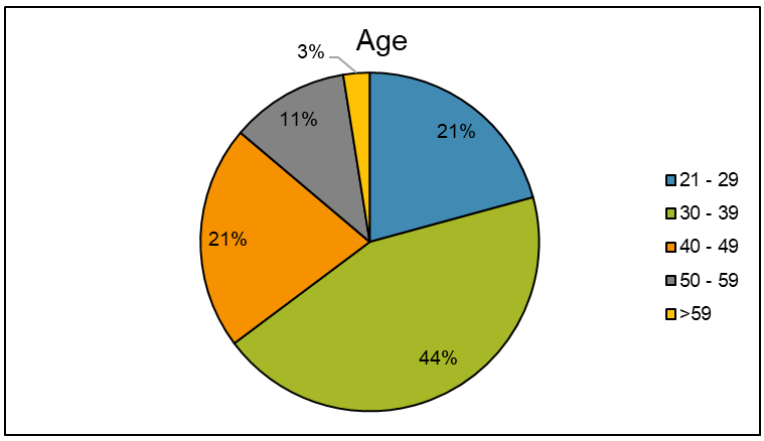

Figure 12.
Age of sample

5.2.3 Job level

The job level of the respondents, shown in Figure 13 was categorised from Entry level to Senior Management level. Most of the respondents were in the Professional category (N = 75) representing 47%, Mid-management represented 29% of the sample with N = 46. Senior management had N = 31 candidates and lastly, Entry level was only represented by 7 participants. This does not include invalid data, that did not form part of the final dataset.

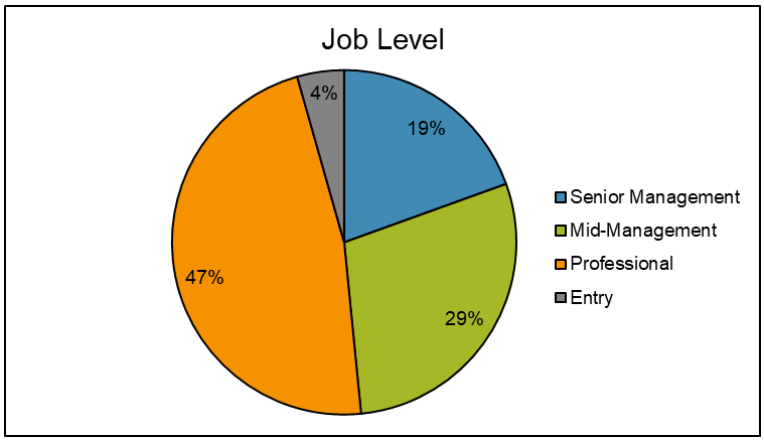

Figure 13.
Job level of sample

5.2.4 Years of service in company

The years of service category was divided as shown in Figure 14. The biggest selection of 37% (N = 65), were people that were 1 to 5 years with the company. Secondly, 5 to 10 years was represented by 51 candidates, the third largest

percentage had more than 10 years' service (N = 43). Lastly, the less than 1 year service were 16 people, and were 9% of the total sample. The less than 1 year experience category was classified as invalid data, as the respondents would not have had adequate exposure to the company culture. The total respondents in the chart were 175.

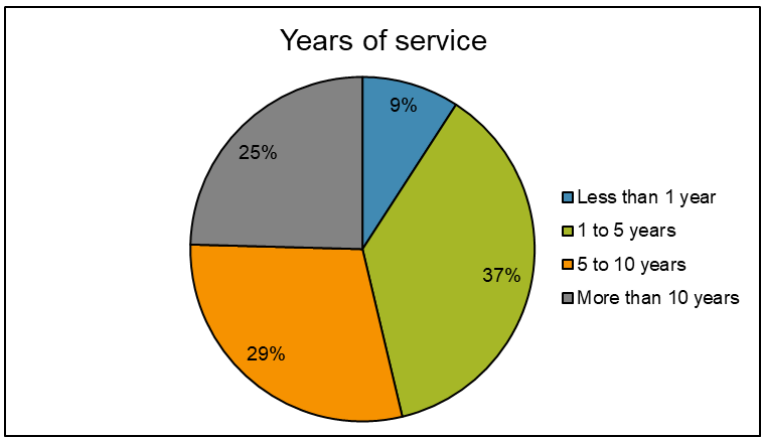

Figure 14.
Years of experience of sample

5.2.5 Education

Analysing the education level of the sample showed 41% (N = 65) of the respondents having a post-graduate degree and 39% (N = 62) of the respondents having at least a degree. 14% (N = 23) of the respondents had a diploma, while only 6% (N = 9) had a senior certificate. The distribution is shown in Figure 15.

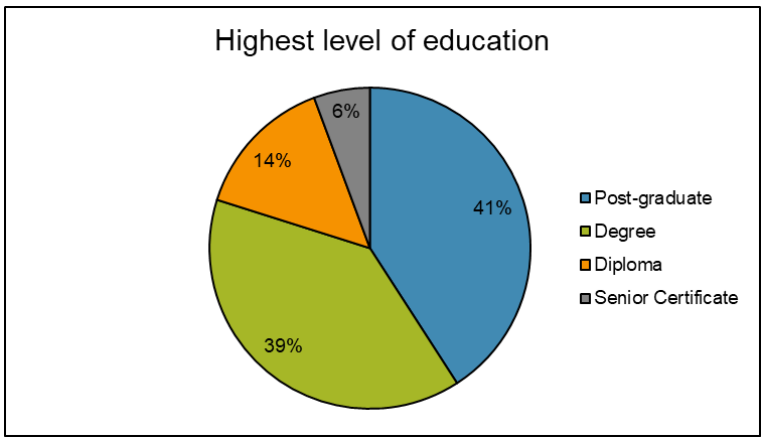

Figure 15.
Education level of sample

5.2.6 Organisation type

The organisation type question showed 68% (N = 108) of the respondents working in the engineering field, 13% (N = 20) in accounting, 8% (N=13) in IT advisory, 6% (N = 10) in architecture, 5% (N = 5) in attorneys and only 2% (N = 3) in interior design companies. Figure 16 shows the distribution of the type of companies. Within the engineering section, there was a distribution 18 companies.

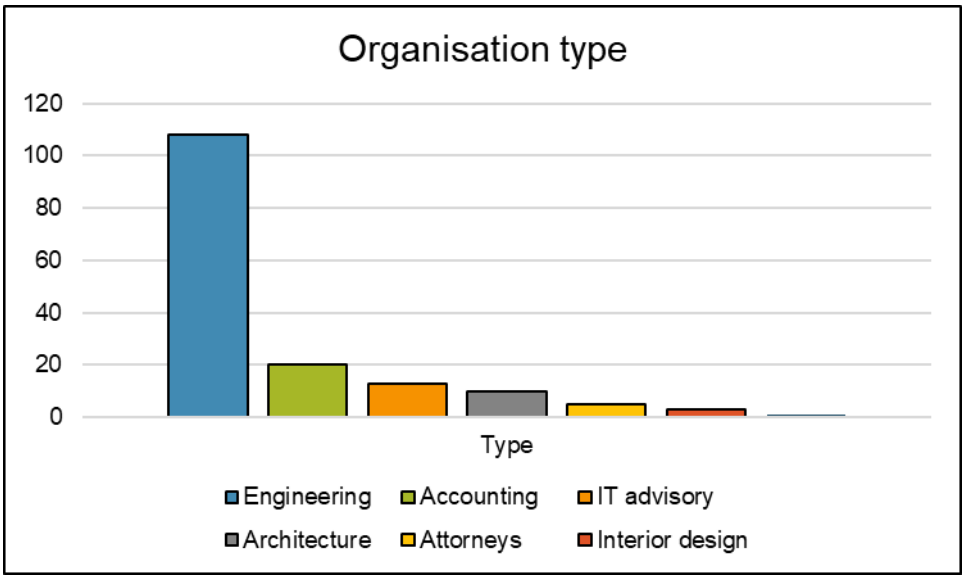

Figure 16.
Organisation type of sample

5.3 Instrument Validity and Reliability

As detailed in Section 4.8.3, quality controls were employed on the instrument to ensure the reliability and validity of the instrument. Firstly, CFA analysis was completed, where after EFA and reliability analysis were done.

5.3.1 Confirmatory Factor Analysis

Confirmatory factor analysis was completed to assess the model fit of the constructs which were measured in this study.

5.3.1.1 Organisational Culture

The organisational culture model was built in IBM AMOS. Figure 17 shows the standardised regression weights of each construct. If the construct is incremented by one standard deviation, the variable goes up by the value indicated on the line and the variance of the calculated errors are shown on the error terms.

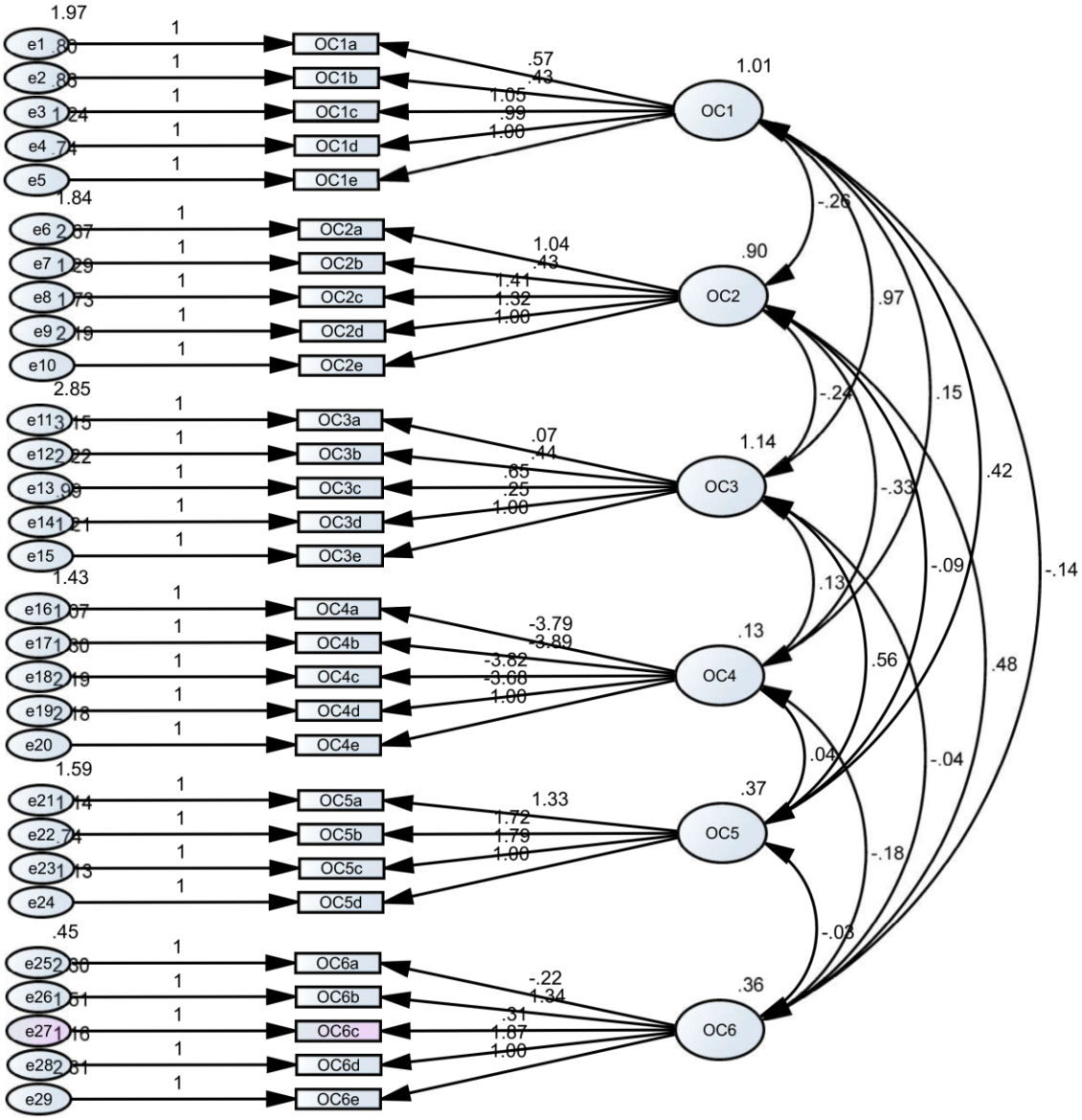

Figure 17.
CFA analysis of Organisational culture constructs

Table 9 shows the output of the CFA analysis, where the “Minimum was achieved” column shows that the model was successfully calculated. The model shows a p-value of less than 0.05, which shows that the null hypotheses, indicating that the model is a good fit, can be rejected. This might be because the sample size was not large enough (Beavers et al., 2013) or the model is not fitting. As suggested in Section 4.8.3.1, the CFI and TLI should be at least 0.95, which was not reached here. Additionally, the RMSEA value has to be less than 0.08, where in this model, it was larger.

Table 9.
CFA analysis of organisational culture

Measure	Value
Result	Minimum was achieved
Model Chi Square	108.067
Degrees of Freedom	13
Chi Square P-value	0.000
CFI	0.729
TLI	0.562
RMSEA	0.215

5.3.1.2 Knowledge Transfer

Knowledge transfer was tested in a similar method as the organisational culture model using IBM AMOS, although there were only two constructs to be measured. Figure 18 shows the standardised regression weights of each construct. If the construct is incremented by one standard deviation, the variable goes up by the value indicated on the line and the variance of the calculated errors are shown on the error terms. The variable KT2c was referred to as KT3a and KT2d was referred to as KT3b after EFA.

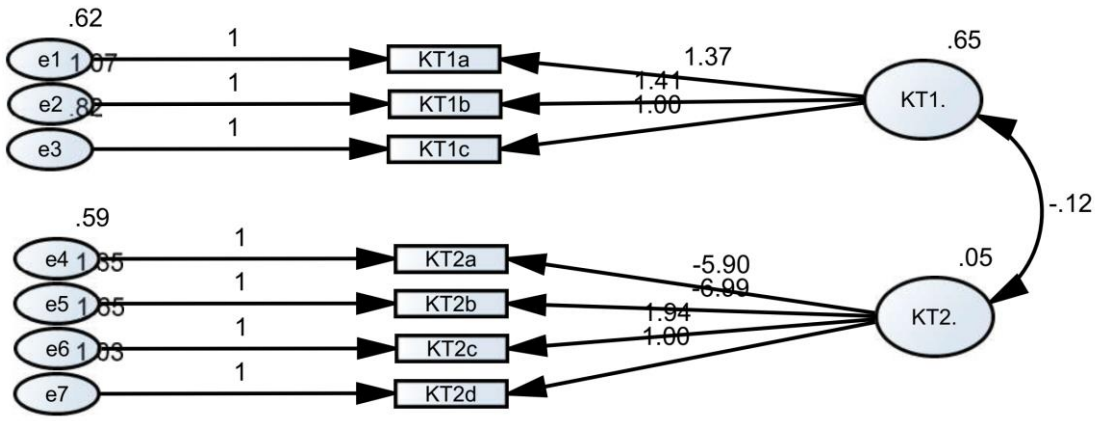

Figure 18.
CFA analysis of knowledge transfer constructs

Table 10 shows the output of the CFA analysis, where the “Minimum was achieved” shows that the model was successfully calculated. The model shows a p-value of less than 0.05, which indicates that the null hypotheses can be rejected and that the model is a good fit. This may be because the sample size was not large enough

(Beavers et al., 2013) or the model is not fitting. As suggested in Section 4.8.3.1, the CFI and TLI should be at least 0.95, which was not reached. Additionally, the RMSEA value has to be less than 0.08, which in this model, was 0.095.

Table 10.
CFA analysis of knowledge transfer

Measure	Value
Result	Minimum was achieved
Model Chi Square	116.562
Degrees of Freedom	13
Chi Square P-value	0.000
CFI	0.742
TLI	0.584
RMSEA	0.225

Therefore, the two models did not pass the confirmatory factor analysis and further exploratory factor analysis was proposed.

5.3.2 Exploratory Factor analysis and Cronbach Alpha

Exploratory Factor analysis was used to reduce the number of factors as described in section 4.8.3.2. As organisational culture is a multidimensional instrument, each construct was evaluated individually. Additionally, Cronbach Alpha tests for reliability were run to indicate which components should be kept for each construct. Appendix B in section 9.2 shows all the results from the EFA and the reliability analysis concluded for the constructs. Table 11 below shows a summary of the final Cronbach Alpha results of each construct, where after it is discussed.

Table 11.Cronbach Alpha results

Construct	Label	Cronbach Alpha
Organisational culture construct 1	OC1	0.771
Organisational culture construct 2	OC2	0.736
Organisational culture construct 3	OC3	0.807
Organisational culture construct 4	OC4	0.789
Organisational culture construct 5	OC5	0.734
Organisational culture construct 6	OC6	0.731
Knowledge Transfer 1 (Frequency)	KT1	0.774

Construct	Label	Cronbach Alpha
Knowledge Transfer 2 (Explicit)	KT2	0.797
Knowledge Transfer 3 (Implicit)	KT3	0.744

5.3.2.1 Organisational Culture – Construct 1

The first construct analysed using EFA and Cronbach Alphas was the process-oriented versus results-oriented construct. All items were coded with seven being results-oriented and one referring to process-oriented.

Exploratory Factor analysis

The Principle Component Analysis (PCA) was performed by first ascertaining if the analysis is viable, where after the KMO and Bartlett's test were completed. The KMO test's results were "Middling" with a result of 0.772 and the significance of the Bartlett's test was 0.000, indicating a significant result. Therefore, the tests confirmed that Exploratory Factor analysis could be completed. The Total Variance Explained table had covered 53.59% of the variance and only one component was extracted.

Cronbach Alpha

The Cronbach Alpha or reliability was assessed with a score of 0.772, which is acceptable as per Section 4.6.5. The item-total statistics showed that only if question OC1a is removed will the Cronbach Alpha be improved, but as the value is already acceptable, it was left as is.

Therefore, the first construct could be estimated with the mean of all five variables. Figure 19 shows the histogram of the combined variable.

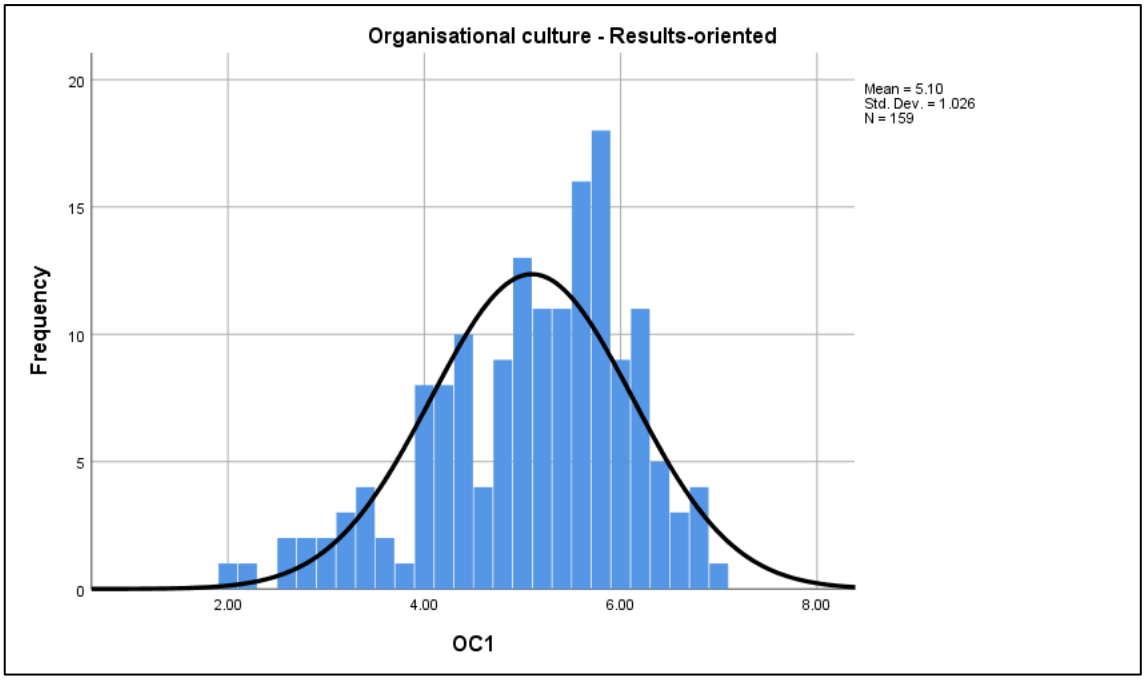

Figure 19.
Histogram of results oriented organisational culture

5.3.2.2 Organisational culture – Construct 2

Construct two of organisational culture is employee-oriented versus job-oriented. One question was reversed in the questionnaire, and coded correctly for the validity and reliability analysis. On the Likert scale, seven indicated Job-oriented and one indicated Employee oriented.

Exploratory Factor analysis

Again, initial checks were run before PCA could continue. The KMO test had a result of 0.714 and the Bartlett's test had a significant outcome of 147.6. This is a "Middling" result and thus, further analysis could continue. The result of the total variance explained had a result of 45.55% of the variance covered and the correlation matrix showed item OC2b with an inter-item correlation of less than 0.3 for all variables. Only one component was extracted and thus no rotation was performed.

Cronbach Alpha

The result of the Cronbach Alpha analysis was 0.670, which is not above the recommended 0.7. The item-total statistics indicated that if item OC2b was removed the reliability would be 0.736. Therefore, the item was removed and the reliability test was run again, where after the result was acceptable. The item-total statistics

indicated that by deleting any more variables would have a detrimental effect on the reliability.

Therefore, one component was extracted from four of the variables. Figure 20 shows the histogram of the combined variable.

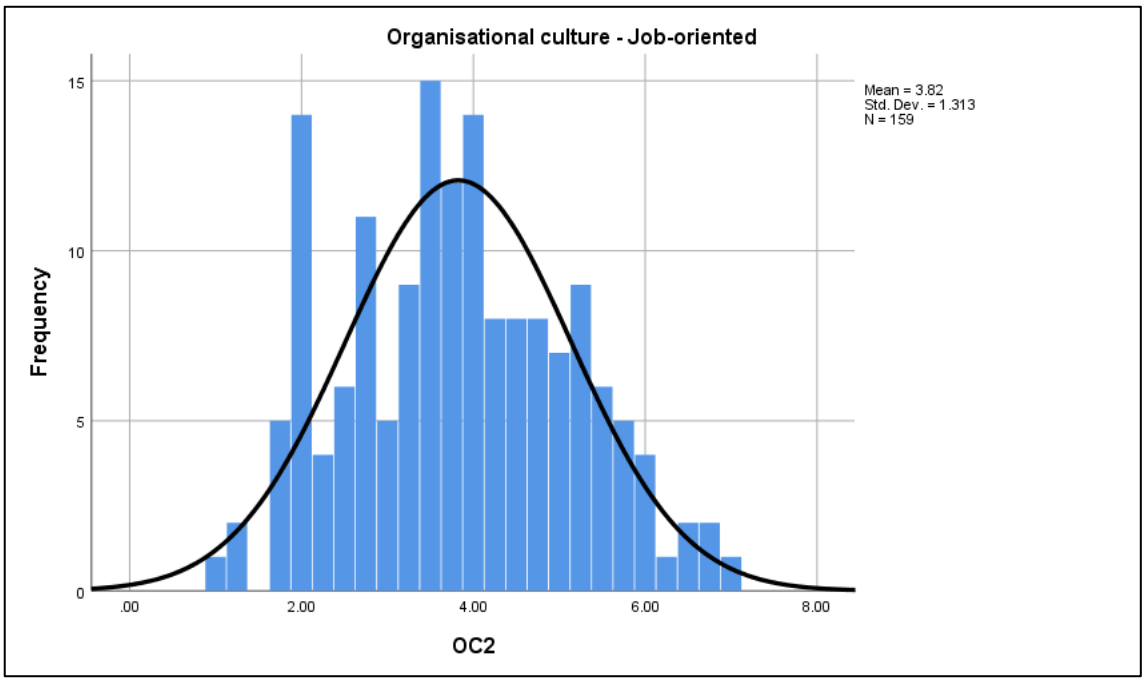

Figure 20.
Histogram of job-oriented organisational culture

5.3.2.3 Organisational culture – Construct 3

Parochial and professional organisational culture were represented with construct 3, where seven on the Likert scale was professional culture and parochial was represented with a one.

Exploratory Factor analysis

The EFA analysis for the third construct started with the KMO and Bartlett's test, giving a result of 0.671. This is a "Mediocre" value, but still acceptable as the Bartlett's test was significant. The PCA analysis was completed and two factors were extracted and item OC3d and OC3e loaded on a separated construct. The loading of the first three terms accounted for 43.99% of the variance and the last two terms only 24.2%. The inter-item correlation matrix showed that OC3d and OC3e had an inter-item correlation with each other of 0.186. Further reliability checks were first performed to ensure the reliability.

Cronbach Alpha

The Cronbach Alpha check was completed for the construct and a result of 0.628 was achieved, which is not acceptable. The item-total statistics indicated that item OC3d would have the biggest influence when deleted. Thereafter, the test was run for a second time and 0.699 was achieved. OC3e was then deleted and a final result of 0.807 was achieved. A reliability test of the OC3d and OC3e as a separate dimension was checked and a result of 0.284 was attained, which is not acceptable.

Therefore, the third construct of organisational culture was achieved by the mean of OC3a, OC3b and OC3c. If OC3d and OC3e were left in the analysis, they would have to be analysed separately as an additional two items. Figure 21 shows the histogram of the combined variable.

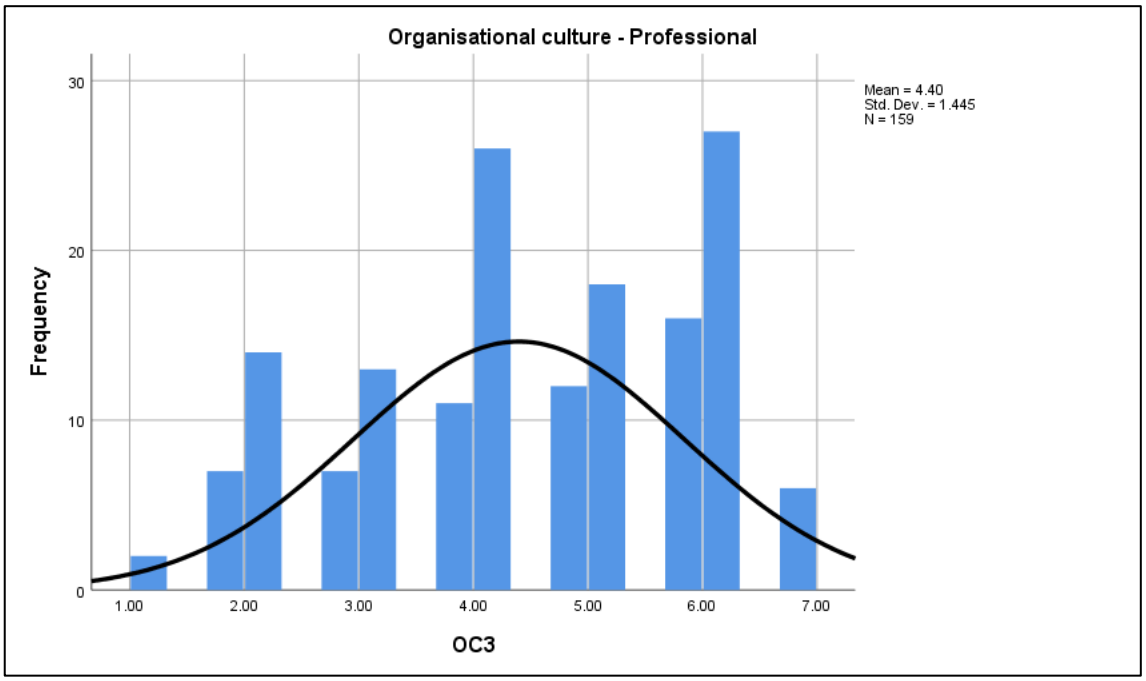

Figure 21.
Histogram of the professional dimension of organisational culture

5.3.2.4 Organisational culture – Construct 4

The fourth construct was an open versus closed system, with closed system representing a seven or “completely agree” and a one representing an open system or “completely disagree”.

Exploratory Factor analysis

The fourth construct was analysed similarly to the first three constructs. The KMO test was “Middling” with a result of 0.761 and the Bartlett’s test was significant. The Total Variance explained indicated that item OC4a to OC4e covered 49.93% of the variance. Item OC4e was loaded on a separate construct. OC4e also had very low inter-item correlations between the items.

Cronbach Alpha

The reliability test had a result of 0.671, thus the item-total statistics could be analysed and item OC4e indicated that the removal thereof, would result in a Cronbach of 0.789.

Therefore, the OC4 construct was estimated with items OC4a, OC4b, OC4c and OC4d. Figure 22 below shows the histogram of the combined variable.

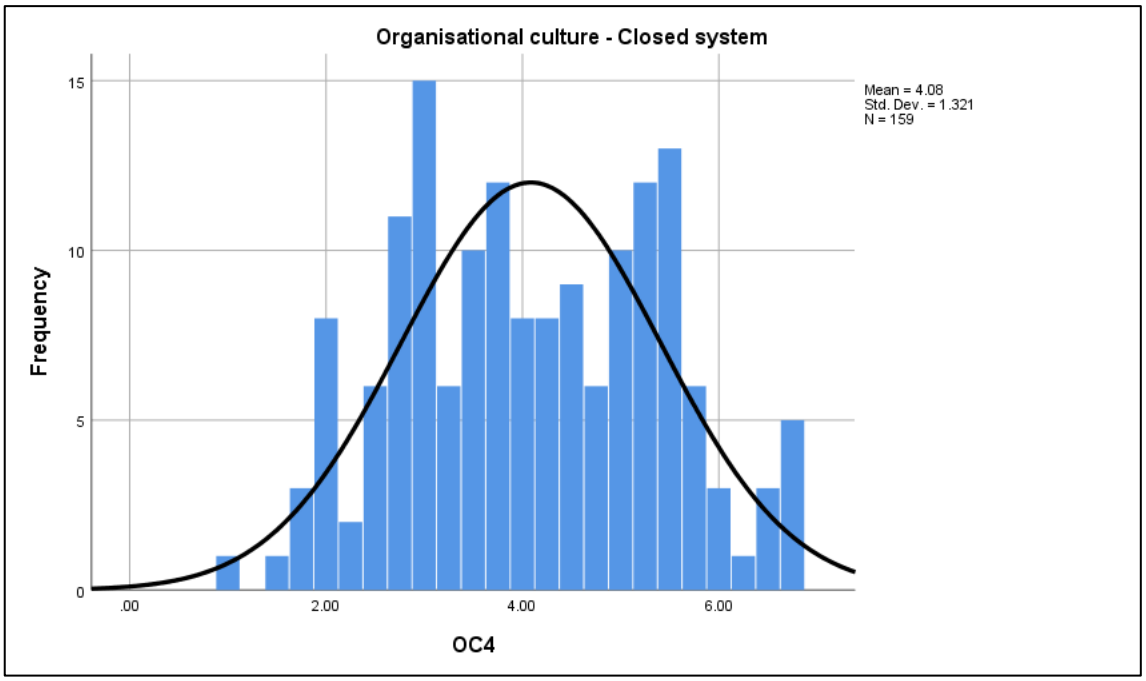

Figure 22.
Histogram of the closed system dimension of organisational culture

5.3.2.5 Organisational culture – Construct 5

Loose versus tight control was represented by construct 5, where only four questions formed part of this construct, but was represented similarly to the other constructs with seven representing tight control and one representing loose control.

Exploratory Factor analysis

The EFA analysis was initiated with the KMO and Bartlett's test. The results were a value of 0.724 for the KMO and a significant result for the Bartlett's test. Only one component was extracted, and the total variance was covered 56.09% by the items. The correlation matrix showed a value of 0.3 for at least every item in the matrix.

Cronbach Alpha

The reliability was again tested with the Cronbach alpha test and a result of 0.734 was attained. The removal of OC5a indicated an improvement to 0.748, which was not implemented as the value is already acceptable.

All variables for the fifth dimension was kept for estimation of the construct. Figure 23 shows the histogram of the combined variable.

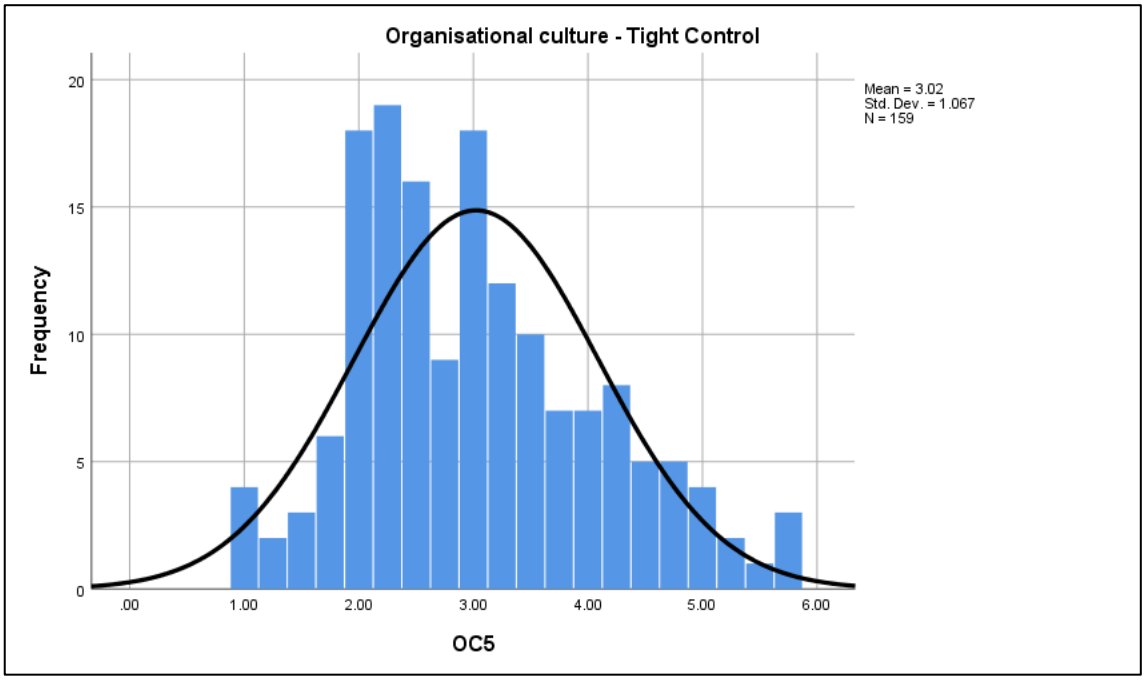

Figure 23.
Histogram of the tight control dimension of organisational culture

5.3.2.6 Organisational culture – Construct 6

The last dimension of organisational culture was normative versus pragmatic and one question was reversed and coded accordingly. Normative was represented with a one and pragmatic with a seven on the Likert scale.

Exploratory Factor analysis

The last construct of organisational culture was analysed similarly. The KMO test had a “Middling” result of 0.724 and the Bartlett’s test was significant with a value of 138.792. The variance was covered by 45.20% of the components. Only one component was extracted although the absolute loading of OC6a was lower than 0.3. Further reliability analysis was completed thereafter.

Cronbach Alpha

The reliability tests had a value of 0.648 for the Cronbach alpha and as this value is below the recommended 0.7, therefore the item-total statistics was analysed. OC6a was shown to have a negative influence on the reliability and by deleting it would ensure a value of 0.731. This was an acceptable value and the second item-total statistics showed that by deleting any other variable would have a detrimental effect.

The last construct was estimated with variables OC6b, OC6c, OC6d and OC6e. Figure 24 below shows the histogram of the combined variable.

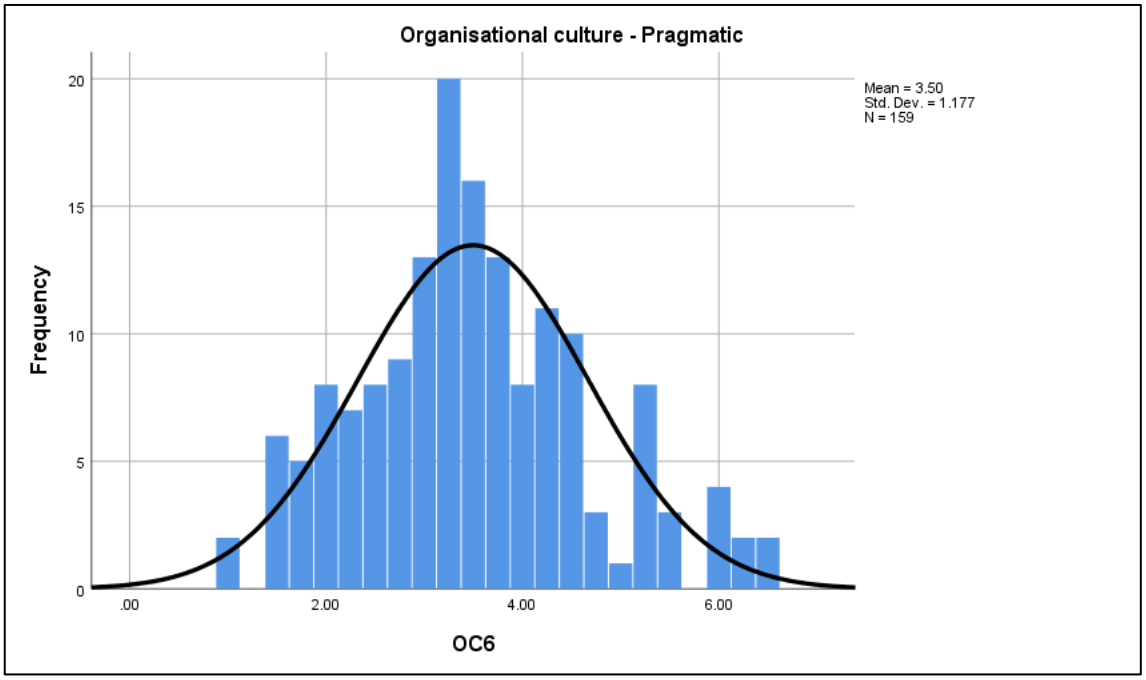

Figure 24.
Histogram of the pragmatic dimension of organisational culture

5.3.2.7 Knowledge transfer

The knowledge transfer construct was first analysed as a single construct to analyse the loadings of each variable.

Exploratory Factor analysis

To ensure if PCA can be completed, a KMO and Bartlett's test of sphericity was completed. The results indicated a "Middling" result of 0.7, while Bartlett's test was significant. Therefore, PCA could be completed. The component matrix indicated two components and the rotated components indicated that rotation converged in three iterations. The first component covered 43.95% of the variance and the second component covered 22.08%. Variables KT1a, KT1b, KT1c, KT2a and KT2b loaded on the first component and KT3a and KT3b loaded on the second component. Initially KT2a and KT2b were intended to be analysed with KT3a and KT3b as per Oliveira et al. (2015). Further reliability analysis was completed.

Cronbach Alpha

The Cronbach alpha for the total knowledge transfer construct was 0.629, which is below the recommended 0.7.

Further analysis of each loaded component had to be completed.

5.3.2.8 Knowledge transfer Component 1

The first component of knowledge transfer included the variables of frequency of knowledge transfer as well as the intention of sharing explicit knowledge. Although only one component was extracted it was analysed separately as two components. The following EFA and Cronbach Alpha headings discuss all measurements.

Exploratory Factor analysis

The EFA analysis of the variables showed a KMO of 0.757, which is in the "Middling" range. The Bartlett's test of sphericity was significant. The Total Variance was covered with 58.36% by the five variables and the correlation matrix showed at least a value of 0.3 for each variable. All items loaded on the same component.

The variables were also assessed separately as suggested by Oliveira et al.(2015). Therefore, the KMO of just KT1a, KT1b and KT1c was 0.674, which is in the "Mediocre" range. The Total Variance was covered by 69.16%. For KT2 (KT2a, KTb), the sharing of explicit knowledge, the EFA analysis showed a KMO of 0.5, but no further reduction was required. This is on the limit of a "Miserable" result. The one

component extracted covered 84.10% of the total variance. As there was no intention to eliminate any factors, all factors were left as is.

Cronbach Alpha

The Cronbach Alpha resulted in a value of 0.808 which is acceptable and the item-total statistics showed that by deleting any of the variables would have a detrimental effect on the total reliability. The reliability of KT1a, KT1b and KT1c were tested as 0.774 and KT2a and KT2b had a Cronbach Alpha value of 0.797, which is acceptable for both.

Therefore, all five variables were kept for the average of this component to be extracted. It was noted that the average of KT1a, KT1b and KT1c and KT2a and KT2b could also be analysed separately for further insight. Figure 25 shows the histogram of the combined variables for KT1a, KT1b and KT1c, and Figure 26 for KT2a and KT2b.

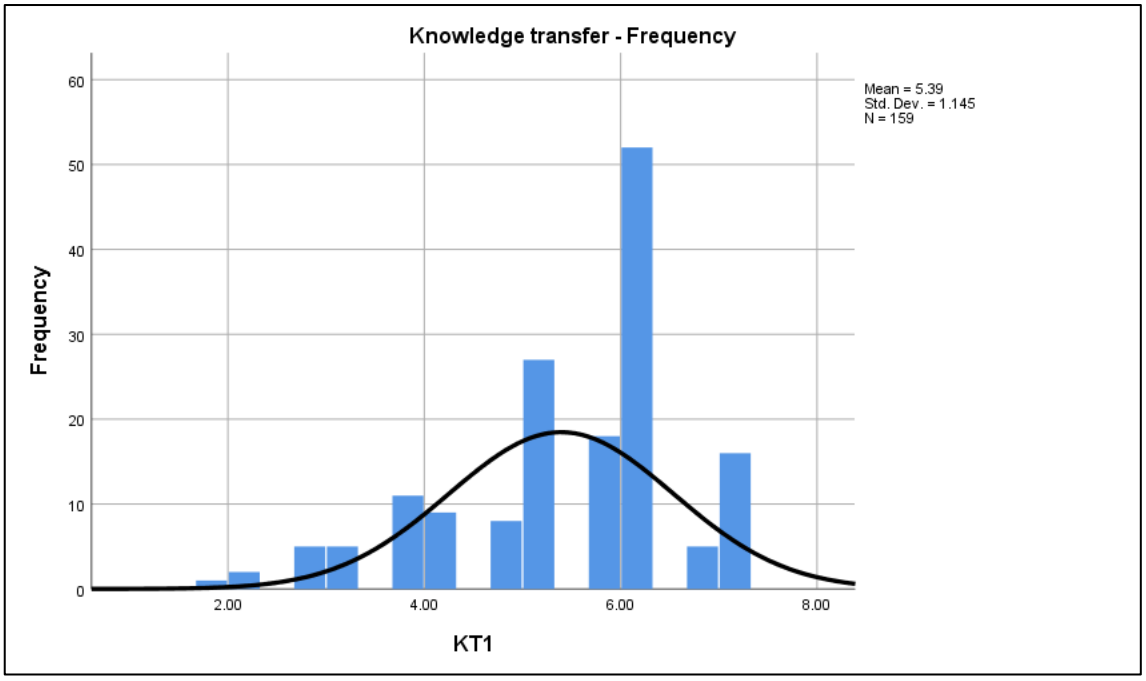

Figure 25.
Histogram of frequency and individual's involvement in knowledge sharing dimension

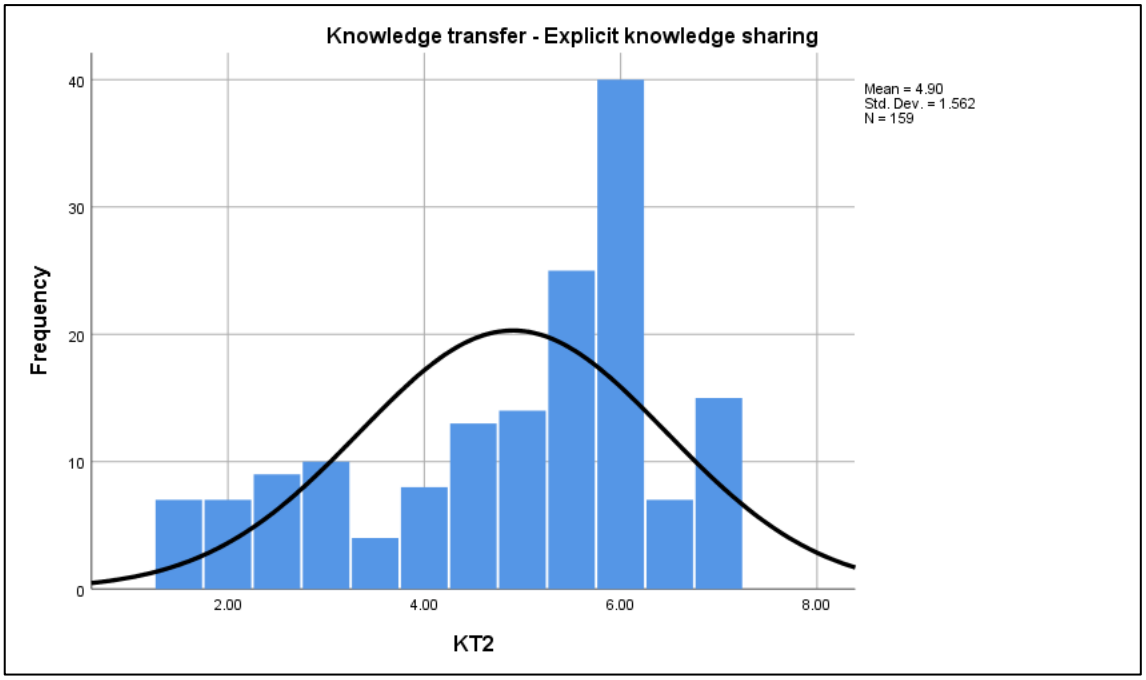

Figure 26.
Histogram of Explicit knowledge sharing dimension

5.3.2.9 Knowledge transfer Component 2

The knowledge transfer component 2 included two variable KT3a and KT3b, which is the intention to transfer intrinsic or tacit knowledge.

Exploratory Factor analysis

The EFA analysis showed a low KMO of 0.5, but still a significant Bartlett's test result. This is on the limit of a "Miserable" result. The one component extracted covered 81.02% of the total variance. As there was no intention to eliminate any factors, all factors were left as is.

Cronbach Alpha

The reliability of the two variables showed a Cronbach Alpha of 0.744, which is acceptable for the test. As there are only two variables, one could not be deleted to enhance the reliability.

Thus, an average of the two variables could be used for the construct. Figure 27 shows the histogram of the combined variables.

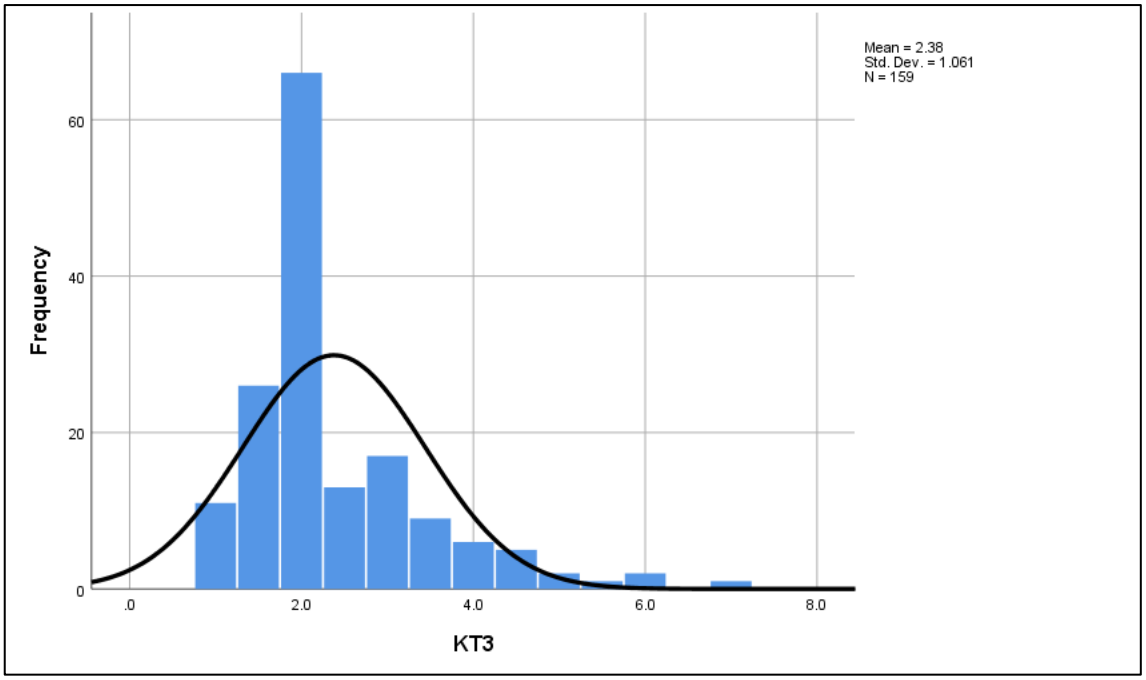

Figure 27.
Histogram of Implicit knowledge sharing dimension

5.3.3 Summary

After the reliability and validity tests were performed, the following components in Table 12 were extracted.

Table 12.
Extracted components

Question number	Variable name	Component 1	Component 2
8	OC1a	OC1	-
9	OC1b		-
10	OC1c		-
11	OC1d		-
12	OC1e		-
13	OC2a	OC2	-
14	OC2b	-	-
15	OC2c	OC2	-
16	OC2d		-
17	OC2e		-
18	OC3a	OC3	-
19	OC3b		-
20	OC3c	-	-
21	OC3d	-	-

Question number	Variable name	Component 1	Component 2
22	OC3e	OC3	-
23	OC4a	OC4	-
24	OC4b		-
25	OC4c		-
26	OC4d		-
27	OC4e	-	-
28	OC5a	OC5	-
29	OC5b		-
30	OC5c		-
31	OC5d		-
32	OC6a	-	-
33	OC6b	OC6	-
34	OC6c		-
35	OC6d		-
36	OC6e		-
37	KT1a	KT1	KT4
38	KT1b		
39	KT1c		
40	KT2a	KT2	
41	KT2b		
42	KT3a	KT3	-
43	KT3b		-

KT4 was not further analysed as KT1 and KT2 was analysed separately.

5.3.3.1 Test for Normality

All independent (organisational culture) and dependent (knowledge transfer) variables were tested for normality using the Shapiro Wilks test, with the results shown in Table 13.

Table 13.
Test for normality for all variables

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
OC1	0.110	159	0.000	0.958	159	0.000
OC2	0.064	159	.200*	0.983	159	0.049
OC3	0.119	159	0.000	0.952	159	0.000
OC4	0.090	159	0.003	0.977	159	0.009
OC5	0.116	159	0.000	0.965	159	0.000
OC6	0.090	159	0.003	0.979	159	0.015
KT1	0.168	159	0.000	0.923	159	0.000
KT2	0.196	159	0.000	0.900	159	0.000
KT3	0.287	159	0.000	0.831	159	0.000
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

The test showed that the significance level of all variables were below 0.05. Therefore, the null hypotheses of normality were rejected and concluded that the data is non normal. Correlation and regression tests were done on the data and appropriate non-parametric tests.

5.4 Analysing means between subgroups

The results of the Kruskal Wallis tests, summarised in Table 14, indicates that for all groups of age, years of service and organisation type, the distribution between the groups were the same. The significant value for all tests of these groups were larger than 0.05 and thus, the null hypotheses that the values are the same was not rejected, but accepted. For the job level and education, several of the tests rejected the null hypotheses.

Table 14.
Summary of Kruskal Wallis tests

	Age	**Job Level**	**Years of Service**	**Education**	**Organisation type**
OC1	Accept H_0	Accept H_0	Accept H_0	Accept H_0	Accept H_0
OC2	Accept H_0	Reject H_0	Accept H_0	Accept H_0	Accept H_0
OC3	Accept H_0	Accept H_0	Accept H_0	Reject H_0	Accept H_0
OC4	Accept H_0	Reject H_0	Accept H_0	Accept H_0	Accept H_0

	Age	Job Level	Years of Service	Education	Organisation type
OC5	Accept H_0	Accept H_0	Accept H_0	Accept H_0	Accept H_0
OC6	Accept H_0	Reject H_0	Accept H_0	Accept H_0	Accept H_0
KT1	Accept H_0	Reject H_0	Accept H_0	Reject H_0	Accept H_0
KT2	Accept H_0	Accept H_0	Accept H_0	Reject H_0	Accept H_0
KT3	Accept H_0	Accept H_0	Accept H_0	Accept H_0	Accept H_0

5.4.1 Differences in Knowledge transfer

Between the two dimensions of knowledge transfer, implicit knowledge transfer and explicit knowledge transfer, the means can be compared as can be seen in Table 15, where there was a difference of 2.53.

Table 15.
Implicit and explicit knowledge transfer

	KT2	KT3
Mean	4.9025	2.377
N	159	159
Std. Deviation	1.56249	1.0610

5.5 Hypotheses tests

To test the hypotheses mentioned in Chapter 3, Pearson correlation tests were run. The assumptions listed in section 4.8.5 were made to complete the tests.

5.5.1 Hypotheses 1: Process-oriented versus results-oriented

The first hypotheses tested for a relationship between a results-oriented culture and an individual's knowledge transfer. Results-oriented culture was measured with the variable OC1, while the frequency of knowledge transfer was measured by KT1. Explicit knowledge was measured by KT2 and implicit knowledge by KT3. The hypotheses are repeated below.

Hypothesis 1: There is a positive relationship between a results-oriented culture and the individual's knowledge transfer.

Table 16.
Hypothesis 1 sub-hypotheses

Number	Null Hypothesis (H_0)	Test
H1a	There is no statistically significant relationship between results-oriented culture and frequency and involvement of an individual participating in knowledge transfer.	Correlation between OC1 and KT1
H1b	There is no statistically significant relationship between results-oriented culture and explicit knowledge transfer.	Correlation between OC1 and KT2
H1c	There is no statistically significant relationship between results-oriented culture and implicit knowledge transfer.	Correlation between OC1 and KT3

Note: 95% significance level

Table 17 shows the results of the Pearson correlation test with the accompanying scatter plots of the significant relationships.

Table 17.
Pearson correlation for results-oriented organisational culture and knowledge transfer

Correlations					
		OC1	KT1	KT2	KT3
OC1	Pearson Correlation	1	.567**	.398**	-0.073
	Sig. (2-tailed)		0.000	0.000	0.358
	N	159	159	159	159
**. Correlation is significant at the 0.01 level (2-tailed).					

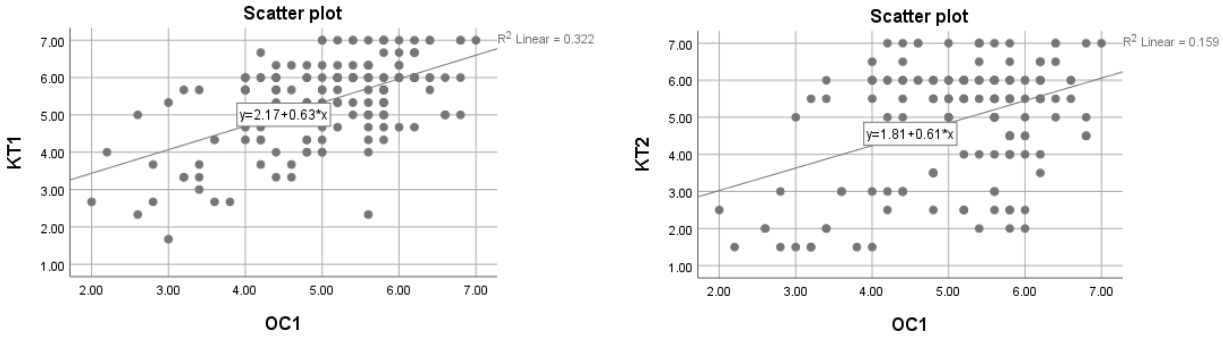

Figure 28.
Scatter plot of knowledge transfer and organisational culture construct one

The following conclusions can be drawn from Table 17 and Figure 28:

- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a moderate positive relationship between results-oriented culture (OC1) and frequency and intention of individuals (KT1) to share knowledge with a value of 0.567.
- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a weak positive relationship between results-oriented culture (OC1) and explicit knowledge sharing (KT2) with a value of 0.398.
- The significance of more than 0.05 indicates that there is no significance regarding the test and no qualification can be made regarding results-oriented culture (OC1) and KT3, implicit knowledge sharing.
- 32% of the variance in the dependent variable frequency and intention of individuals (KT1) can be accounted for by the results-based culture dimension.
- 16% of the variance in the dependent variable explicit knowledge transfer (KT2) can be accounted for by the results-based culture dimension.

5.5.2 Hypotheses 2: Employee-oriented versus job-oriented

The second hypotheses tested for a relationship between a job-oriented culture and individual's knowledge transfer. Job-oriented culture was measured with the variable OC2. Frequency of knowledge transfer was measured by KT1, explicit knowledge by KT2 and implicit knowledge with KT3. The hypotheses are repeated below.

Hypothesis 2: There is a negative relationship between a job-oriented culture and the individual's knowledge transfer.

Table 18.
Hypothesis 2 sub-hypotheses

Number	Null Hypothesis (H_0)	Test
H2a	There is no statistically significant relationship between job-oriented culture and frequency and involvement of an individual participating in knowledge transfer.	Correlation between OC2 and KT1
H2b	There is no statistically significant relationship between job-oriented culture and explicit knowledge transfer.	Correlation between OC2 and KT2
H2c	There is no statistically significant relationship between job-oriented culture and implicit knowledge transfer.	Correlation between OC2 and KT3

Note: 95% significance level

Table 19 shows the results of the Pearson correlation test with the accompanying scatter plots of the significant relationships.

Table 19.
Pearson correlation for Job-oriented organisational culture and knowledge transfer

Correlations					
		OC2	KT1	KT2	KT3
OC2	Pearson Correlation	1	-.271**	-.268**	-0.042
	Sig. (2-tailed)		0.001	0.001	0.602
	N	159	159	159	159
**. Correlation is significant at the 0.01 level (2-tailed).					

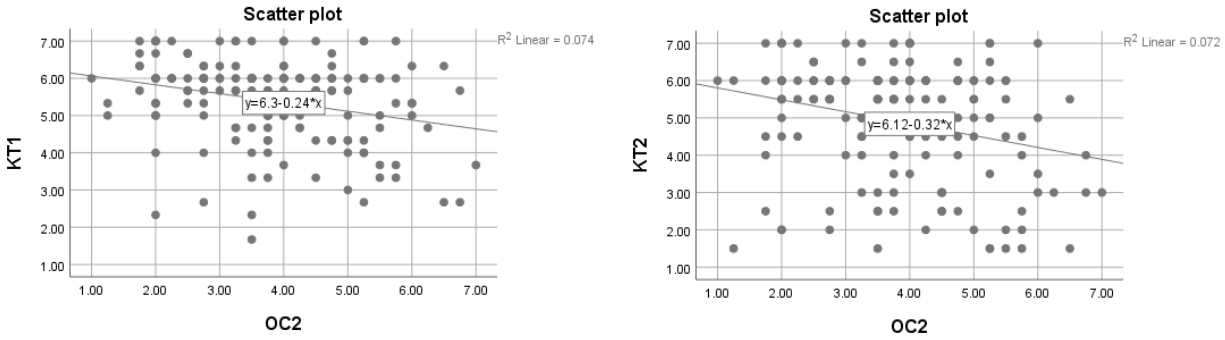

Figure 29.
Scatter plot of knowledge transfer and organisational culture construct two

The following conclusions can be drawn from Table 19 and Figure 29:

- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a weak negative relationship between job-oriented culture (OC2) and frequency and intention of individuals (KT1) to share knowledge with a value of - 0.271. This equates to a weak positive relationship to an employee-oriented culture.
- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a weak negative relationship between job-oriented culture (OC2) and explicit knowledge sharing (KT2) with a value of - 0.268. This equates to a weak positive relationship to an employee-oriented culture.
- The significance of more than 0.05 on the correlation between KT3 and OC2 indicates that there is no significance regarding the test and no qualification can be made regarding the relationship.

- 7% of the variance in the dependent variable frequency and intention of individuals (KT1) can be accounted for by the results-based culture dimension.
- 7% of the variance in the dependent variable explicit knowledge transfer (KT2) can be accounted for by the job-based culture dimension.

5.5.3 Hypotheses 3: Parochial versus professional

The third hypotheses tested for a relationship between a professional culture and individual's knowledge transfer. Professional culture was measured with the variable OC3, while frequency of knowledge transfer was measured by KT1, explicit knowledge by KT2 and implicit knowledge with KT3. The hypotheses are repeated below.

Hypothesis 3: There is a negative relationship between a professional-oriented and the individual's knowledge transfer.

Table 20.
Hypothesis 3 sub-hypotheses

Number	Null Hypothesis (H_0)	Test
H3a	There is no statistically significant relationship between professional culture and frequency and involvement of an individual participating in knowledge transfer.	Correlation between OC3 and KT1
H3b	There is no statistically significant relationship between professional culture explicit knowledge transfer.	Correlation between OC3 and KT2
H3c	There is no statistically significant relationship between professional culture and implicit knowledge transfer.	Correlation between OC3 and KT3

Note: 95% significance level

Table 21 shows the results of the Pearson correlation test with the accompanying scatter plots of the significant relationships.

Table 21.
Pearson correlation for Professional organisational culture and knowledge transfer

Correlations					
		OC3	KT1	KT2	KT3
OC3	Pearson Correlation	1	.336**	.328**	0.092
	Sig. (2-tailed)		0.000	0.000	0.248
	N	159	159	159	159
**. Correlation is significant at the 0.01 level (2-tailed).					

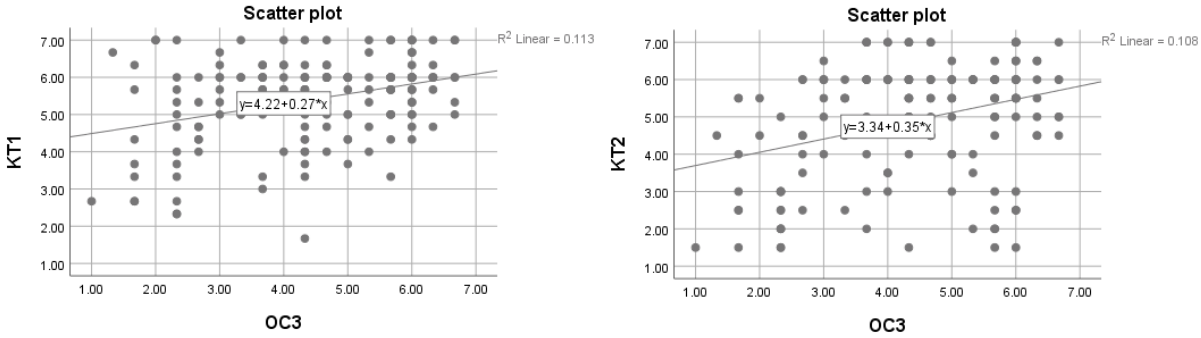

Figure 30.
Scatter plot of knowledge transfer and organisational culture construct three

The following conclusions can be drawn from Table 21 and Figure 30:

- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a weak positive relationship between professional culture (OC3) and frequency and intention of individuals (KT1) to share knowledge with a value of 0.336.
- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a weak positive relationship between professional culture (OC3) and explicit knowledge sharing (KT2) with a value of 0.328.
- The significance of more than 0.05 indicates that there is no significance regarding the test and no qualification can be made regarding job-oriented (OC3) and implicit knowledge sharing (KT3).
- 11% of the variance in the dependent variable frequency and intention of individuals (KT1) can be accounted for by the profession culture dimension.
- 11% of the variance in the dependent variable explicit knowledge transfer (KT2) can be accounted for by the professional culture dimension.

5.5.4 Hypotheses 4: Open versus Closed system

The fourth hypotheses tested for a relationship between close-system culture and individual's knowledge transfer. Close system culture was measured with the variable OC4, while frequency of knowledge transfer was measured by KT1, explicit knowledge by KT2 and implicit knowledge with KT3. The hypotheses are repeated below.

Hypothesis 4: There is a negative relationship between a closed-system culture and the individual's knowledge transfer.

Table 22.
Hypothesis 4 sub-hypotheses

Number	Null Hypothesis (H_0)	Test
H4a	There is no statistically significant relationship between closed system culture and frequency and involvement of an individual participating in knowledge transfer.	Correlation between OC4 and KT1
H4b	There is no statistically significant relationship between closed system culture and explicit knowledge transfer.	Correlation between OC4 and KT2
H4c	There is no statistically significant relationship between closed system culture and implicit knowledge transfer.	Correlation between OC4 and KT3

Note: 95% significance level

Table 23 shows the results of the Pearson correlation test with the accompanying scatter plots of the significant relationships.

Table 23.
Pearson correlation for Closed system organisational culture and knowledge transfer

Correlations					
		OC4	KT1	KT2	KT3
OC4	Pearson Correlation	1	-0.123474	-0.098663	-.392**
	Sig. (2-tailed)		0.121	0.216	0.000
	N	159	159	159	159
**. Correlation is significant at the 0.01 level (2-tailed).					

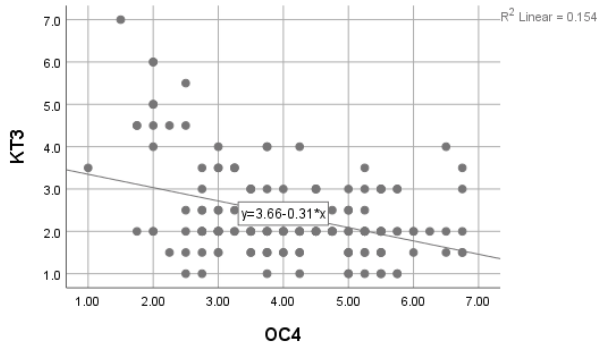

Figure 31.
Scatter plot of knowledge transfer and organisational culture construct four

The following conclusions can be drawn from Table 23 and Figure 31:

- The significance of more than 0.05 indicates that there is no significance regarding the test and no qualification can be made regarding closed system culture (OC4) and frequency and intention of individuals (KT1).
- The significance of more than 0.05 indicates that there is no significance regarding the test and no qualification can be made regarding c closed system culture (OC4) and frequency and explicit knowledge sharing (KT2).
- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a weak negative relationship between closed system (OC4) and implicit knowledge sharing with a value of -0.392. This equates to a weak positive relationship to open system culture.
- 15% of the variance in the dependent variable implicit knowledge transfer (KT2) can be accounted for by the closed system culture dimension.

5.5.5 Hypotheses 5: Loose versus tight control

The fifth hypotheses tested for a relationship between tight control culture and individual's knowledge transfer. Tight control culture was measured with the variable OC5, while frequency of knowledge transfer was measured by KT1, explicit knowledge by KT2 and implicit knowledge with KT3. The hypotheses are repeated below.

Hypothesis 5: There is a negative relationship between a tight-control culture and the individual's knowledge transfer.

Table 24.
Hypothesis 5 sub-hypotheses

Number	Null Hypothesis (H_0)	Test
H5a	There is no statistically significant relationship between tight control culture and frequency and involvement of an individual participating in knowledge transfer.	Correlation between OC5 and KT1
H5b	There is no statistically significant relationship between tight control culture and explicit knowledge transfer.	Correlation between OC5and KT2
H5c	There is no statistically significant relationship between tight control culture and implicit knowledge transfer.	Correlation between OC5 and KT3

Note: 95% significance level

Table 25 shows the results of the Pearson correlation test with the accompanying scatter plots of the significant relationships.

Table 25.
Pearson correlation for Tight control organisational culture and knowledge transfer

Correlations					
		OC5	KT1	KT2	KT3
OC5	Pearson Correlation	1	-.436**	-.280**	0.085
	Sig. (2-tailed)		0.000	0.000	0.286
	N	159	159	159	159
**. Correlation is significant at the 0.01 level (2-tailed).					

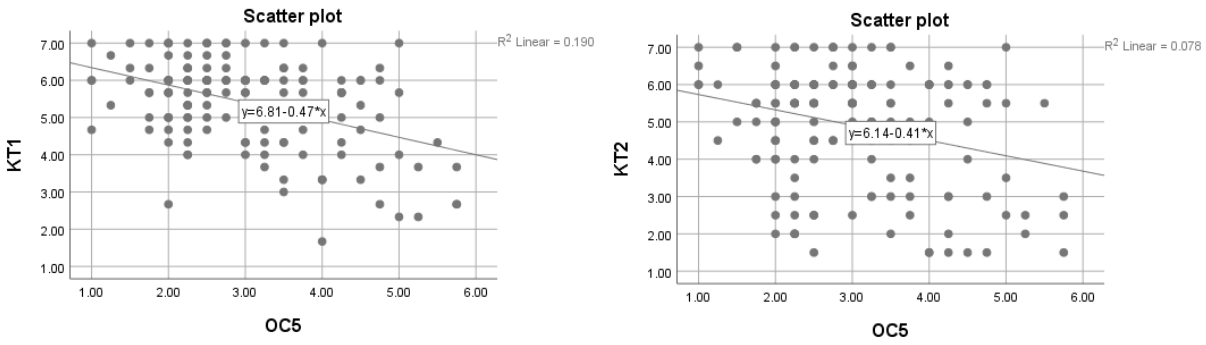

Figure 32.
Scatter plot of knowledge transfer and organisational culture construct five

The following conclusions can be drawn from Table 25 and Figure 32:

- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a moderate negative relationship between tight control culture (OC5) and frequency and intention of individuals (KT1) to

share knowledge with a value of -0.436. This equates to a moderate positive relationship to loose control culture.

- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a weak negative relationship between tight control culture (OC5) and explicit knowledge sharing (KT2) with a value of -0.280. This equates to a weak positive relationship to loose control culture.
- The significance of more than 0.05 indicates that there is no significance regarding the test and no qualification can be made regarding tight control (OC5) and implicit knowledge sharing (KT3).
- 19% of the variance in the dependent variable frequency and intention of individuals (KT1) can be accounted for by the profession culture dimension.
- 8% of the variance in the dependent variable explicit knowledge transfer (KT2) can be accounted for by the tight control culture dimension.

5.5.6 Hypotheses 6: Normative versus pragmatic

The last hypotheses tested for a relationship between a pragmatic culture and individual's knowledge transfer. Pragmatic culture was measured with the variable OC6, while frequency of knowledge transfer was measured by KT1, explicit knowledge by KT2 and implicit knowledge with KT3. The hypotheses are repeated below.

Hypothesis 6: There is a positive relationship between a pragmatic culture and the individual's knowledge transfer.

Table 26.
Hypothesis 6 sub-hypotheses

Number	Null Hypothesis (H_0)	Test
H6a	There is no statistically significant relationship between pragmatic culture and frequency and involvement of an individual participating in knowledge transfer.	Correlation between OC6 and KT1
H6b	There is no statistically significant relationship between pragmatic culture explicit knowledge transfer.	Correlation between OC6 and KT2
H6c	There is no statistically significant relationship between pragmatic culture and implicit knowledge transfer.	Correlation between OC6 and KT3

Note: 95% significance level

Table 27 shows the results of the Pearson correlation test with the accompanying scatter plots of the significant relationships.

Table 27.
Pearson correlation for Pragmatic organisational culture and knowledge transfer

Correlations					
		OC6	KT1	KT2	KT3
OC6	Pearson Correlation	1	.212**	.230**	0.136
	Sig. (2-tailed)		0.007	0.004	0.088
	N	159	159	159	159
**. Correlation is significant at the 0.01 level (2-tailed).					

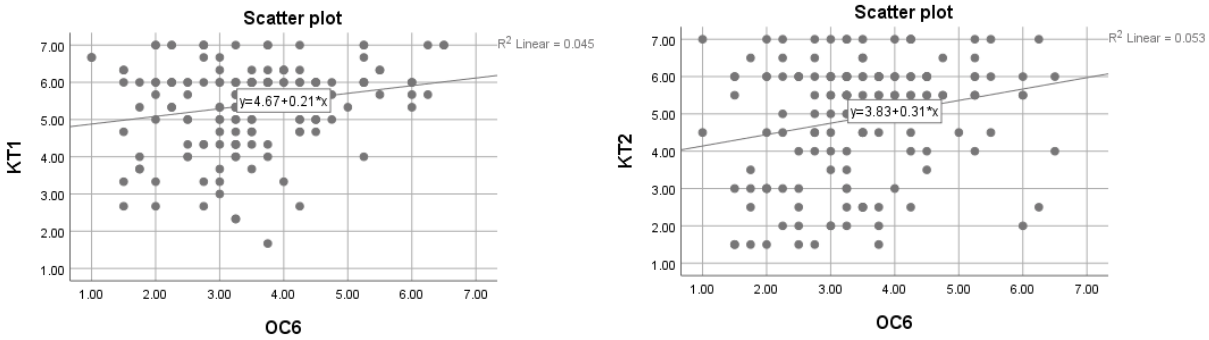

Figure 33.
Scatter plot of knowledge transfer and organisational culture construct six

The following conclusions can be drawn from Table 27Table 25 and Figure 33:

- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a moderate negative relationship between pragmatic culture (OC6) and frequency and intention of individuals (KT1) to share knowledge with a value of 0.212.
- The significant value of less than 0.05 indicates that the null hypothesis can be rejected and there exists a weak negative relationship between pragmatic culture (OC6) and explicit knowledge sharing (KT2) with a value of 0.213.
- The significance of more than 0.05 indicates that there is no significance regarding the test and no qualification can be made regarding pragmatic culture (OC6) and implicit knowledge sharing (KT3).
- 5% of the variance in the dependent variable frequency and intention of individuals (KT1) can be accounted for by the pragmatic culture dimension.
- 5% of the variance in the dependent variable explicit knowledge transfer (KT2) can be accounted for by the pragmatic culture dimension.

5.5.7 Research Question

The overarching research question of what the effect of organisational culture on knowledge transfer in professional service firms is, was analysed with a regression analysis, as summarised in Table 28.

Table 28.
Research Question sub-hypotheses

Number	Null Hypothesis (H_0)	Test
H1d	There is no statistically significant influence of results-oriented organisational culture on knowledge transfer.	Regression between OC1 and Knowledge transfer (KT1, KT2, KT3)
H2d	There is no statistically significant influence of job-oriented organisational culture on knowledge transfer.	Regression between OC2 and Knowledge transfer (KT1, KT2, KT3)
H3d	There is no statistically significant influence of professional organisational culture on knowledge transfer.	Regression between OC3 and Knowledge transfer (KT1, KT2, KT3)
H4d	There is no statistically significant influence of closed system organisational culture on knowledge transfer.	Regression between OC4 and Knowledge transfer (KT1, KT2, KT3)
H5d	There is no statistically significant influence of tight control organisational culture on knowledge transfer.	Regression between OC5 and Knowledge transfer (KT1, KT2, KT3)
H6d	There is no statistically significant influence of pragmatic organisational culture on knowledge transfer.	Regression between OC6 and Knowledge transfer (KT1, KT2, KT3)

Note: 95% significance level

5.5.7.1 Frequency and intention of knowledge transfer

The first dependent variable analysed was the frequency and intention of knowledge transfer and was analysed with a linear regression model. Table 29 to Table 31 indicates that the correlation between the variables was mediocre correlation strength with a value of 0.626. The R^2 value indicates the degree to which the total variation of frequency and intention of knowledge transfer can be ascribed to the independent variable, which is 39.2%.

The ANOVA results show that the model predicts the dependent variable, as the Sig. value is less than 0.05 and thus significant. The regression coefficients can be seen

in the Table 34. OC2, OC4, OC5 and OC6's Sig are not significant with a value larger than 0.05 and were therefore excluded from the model.

Table 29. Model summary of regression analysis with Frequency and intention as dependent variable

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.626[a]	0.392	0.368	0.91015
a. Predictors: (Constant), OC6, OC5, OC3, OC4, OC1, OC2				

Table 30. ANOVA analysis of regression analyses with Frequency and intention as dependent variable

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	81.168	6	13.528	16.331	.000[b]
	Residual	125.914	152	0.828		
	Total	207.082	158			
a. Dependent Variable: KT1						
b. Predictors: (Constant), OC6, OC5, OC3, OC4, OC1, OC2						

Table 31. Coefficients of regression analysis with Frequency and intention as dependent variable

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.232	0.902		2.474	0.014
	OC1	0.502	0.091	0.450	5.545	0.000
	OC2	-0.027	0.072	-0.031	-0.383	0.702
	OC3	0.181	0.055	0.229	3.300	0.001
	OC4	0.082	0.066	0.094	1.236	0.219
	OC5	-0.150	0.084	-0.140	-1.784	0.076
	OC6	0.009	0.075	0.010	0.124	0.901
a. Dependent Variable: KT1						

A model for the above coefficients can be seen in Equation 1.

$$\mathrm{KT1} = 2.232 + 0.502(\mathrm{OC1}) + 0.181(\mathrm{OC3}) \quad (1)$$

Therefore, the null hypotheses for OC2, OC4, OC5 and OC6 have been accepted and there is no statistical influence. The alternate hypotheses for OC1 and OC3 have been accepted.

5.5.7.2 Explicit knowledge transfer

The second dependent variable analysed was the explicit knowledge transfer and was analysed with a linear regression model. Table 32 to Table 34 indicates that the correlation between the variables was mediocre correlation strength with a value of 0.489. The R^2 value indicates the degree to which the total variation of frequency and intention of knowledge transfer can be ascribed to the independent variable, which is 23.9%.

The ANOVA results show that the model predicts the dependent variable, as the Sig. value is less than 0.05 and thus significant. The regression coefficients can be seen in the Table 34. OC2, OC4, OC5 and OC6's Sig are not significant with a value larger than 0.05 and were therefore is excluded from the model.

Table 32. Model summary of regression analysis with explicit knowledge as dependent variable

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.489[a]	0.239	0.209	1.38971
a. Predictors: (Constant), OC6, OC5, OC3, OC4, OC1, OC2				

Table 33. ANOVA analysis of regression analyses with explicit knowledge transfer as dependent variable

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	92.182	6	15.364	7.955	.000[b]
	Residual	293.557	152	1.931		
	Total	385.739	158			
a. Dependent Variable: KT2						
b. Predictors: (Constant), OC6, OC5, OC3, OC4, OC1, OC2						

Table 34. Coefficients of regression analysis with explicit knowledge transfer as dependent variable

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.963	1.378		0.699	0.486
	OC1	0.473	0.138	0.311	3.422	0.001
	OC2	-0.104	0.109	-0.087	-0.949	0.344
	OC3	0.254	0.084	0.235	3.028	0.003
	OC4	0.152	0.101	0.128	1.501	0.135
	OC5	-0.053	0.129	-0.036	-0.412	0.681
	OC6	0.100	0.114	0.076	0.881	0.380
a. Dependent Variable: KT2						

A model for the above coefficients can be seen in Equation 2.

$$\mathrm{KT2} = 0.963 + 0.473(\mathrm{OC1}) + 0.254(\mathrm{OC3}) \quad (2)$$

Therefore, the null hypotheses for OC2, OC4, OC5 and OC6 have been accepted and there is no statistical influence. The alternate hypotheses for OC1 and OC3 have been accepted.

5.5.7.3 Implicit knowledge transfer

The last dependent variable analysed is the implicit knowledge transfer and was analysed with a linear regression model. Table 35 to

Table 37 indicates that the correlation between the variables was mediocre correlation strength with a value of 0.459. The R^2 value indicates the degree to which the total variation of frequency and intention of knowledge transfer can be ascribed to the independent variable, which is 21.1%.

The ANOVA results show that the model predicts the dependent variable, as the Sig. value is less than 0.05 and thus significant. The regression coefficients can be seen in the

Table 37. OC2, OC4, OC5 and OC6's Sig are not significant with a value larger than 0.05 and were therefore is excluded from the model.

Table 35. Model summary of regression analysis with implicit knowledge transfer as dependent variable

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.459[a]	0.211	0.179	0.96100
a. Predictors: (Constant), OC6, OC5, OC3, OC4, OC1, OC2				

Table 36. ANOVA analysis of regression analyses with implicit knowledge transfer as dependent variable

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	37.483	6	6.247	6.764	.000[b]
	Residual	140.376	152	0.924		
	Total	177.858	158			
a. Dependent Variable: KT3						
b. Predictors: (Constant), OC6, OC5, OC3, OC4, OC1, OC2						

Table 37. Coefficients of regression analysis with implicit knowledge transfer as dependent variable

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.817	0.953		4.006	0.000
	OC1	-0.153	0.096	-0.148	-1.601	0.111
	OC2	0.153	0.076	0.189	2.022	0.045
	OC3	0.037	0.058	0.051	0.642	0.522
	OC4	-0.399	0.070	-0.497	-5.704	0.000
	OC5	0.025	0.089	0.025	0.284	0.777
	OC6	0.041	0.079	0.046	0.525	0.601
a. Dependent Variable: KT3						

A model for the above coefficients can be seen in Equation 3.

$$\mathrm{KT3} = 3.817 + 0.153(\mathrm{OC2}) - 0.399(\mathrm{OC4}) \quad (3)$$

Therefore, the null hypotheses for OC1, OC3, OC5 and OC6 have been accepted and there is no statistical influence. The alternate hypotheses for OC2 and OC4 have been accepted.

5.6 Conclusion and Summary

5.6.1 Hypothesis 1: Process-oriented versus results-oriented

PCA analysis was completed on the variables of results-oriented culture (OC1) and the three variables of knowledge transfer. The tests concluded that results-oriented culture can be analysed with all variables and knowledge transfer had to be analysed by separate variables. Correlation and regression were used for relationship evaluation and this indicated a relationship between results-oriented culture and frequency of knowledge transfer, explicit knowledge transfer, but not implicit knowledge transfer.

5.6.2 Hypothesis 2: Employee-oriented versus job-oriented

The second hypothesis followed the same steps of hypothesis one, where PCA showed that one variable of job-oriented culture should not be used for estimation and knowledge transfer had to be analysed by separate variables. There after the variables were used for relationship estimation, where only weak relationships were identified between frequency of knowledge transfer and explicit knowledge transfer and job-oriented organisational culture. The regression analysis showed no significant relationship except to implicit knowledge sharing.

5.6.3 Hypothesis 3: Parochial versus professional

The third hypothesis involved the PCA of professional organisational culture, which eliminated two variables. Knowledge transfer had to be analysed by separate variables. The relationship tests of correlation and regression showed again a relationship between frequency of knowledge transfer and explicit knowledge transfer and professional organisational culture. The regression analysis had similar results to the correlation tests.

5.6.4 Hypothesis 4: Open versus Closed system

The fourth hypothesis concerned closed-system organisational culture and with PCA, one component was removed. Knowledge transfer had to be analysed by separate variables. The correlation tests indicated a relationship only to implicit knowledge transfer and no significant relationship to frequency and explicit knowledge transfer. The regression analysis showed a significant influence on implicit knowledge sharing.

5.6.5 Hypothesis 5: Loose versus tight control

The fifth hypothesis, regarding tight organisational control was described with all components, and thus no components were removed. Knowledge transfer had to be analysed by separate variables. Similar to results-oriented, job-oriented and professional culture, a relationship was found between tight-control and frequency and explicit knowledge sharing. Tight control did not show any significant relationship in the regression analysis.

5.6.6 Hypothesis 6: Normative versus pragmatic

The last hypothesis referred to pragmatic organisational culture, where the PCA removed one component. Knowledge transfer had to be analysed by separate variables. The correlation tests again showed weak relationships between the frequency and explicit knowledge sharing activities, and no relationship to implicit knowledge sharing. The regression analysis did not identify any relationship to the knowledge sharing variables.

5.6.7 Research Question

The overarching research question as mentioned in Section 3.2, was to determine which organisational culture dimension had an effect on the knowledge transfer activities in a firm. The regression analysis for the three knowledge transfer variables showed that OC1 (Results-oriented) and OC3 (Professional culture) had an influence on the frequency of knowledge transfer as well as explicit knowledge transfer. Alternatively, OC2 (Job-oriented) and OC4 (Closed system) had an influence on implicit knowledge transfer.

CHAPTER 6: DISCUSSION OF RESULTS

6.1 Introduction

From the research methodology that was executed, the results described in Chapter 5 were attained. These results were tested for validity and reliability, where after statistical tests were executed for each hypothesis, as stated in chapter 3. In this chapter the results from Chapter 5 will be interpreted and explained in the context of the study.

The first section of the chapter explains the demographic of the sample. This assists in the understanding of the profile of the candidates in the sample, where after inferences are drawn from these results. The following sections interprets the findings from each hypothesis and the overarching research question.

6.2 Demographics

The sample of participants for this study consisted of 159 individuals, employed in Professional Services Firms within South Africa. Given the target response rate detailed in Chapter 5, this was a sufficient sample size for the research.

Although the age of the respondents stretched over different age groups, there was no significant differences in means and therefore, not taken into account for the rest of the analysis. The same outcome was observed with regards to the years of service in the company of each participant. However, individuals with less than one year's experience were regarded as not fully exposed and influenced by the firm's culture and was therefore excluded from the study.

A very large portion of the respondents were employed in the engineering field. This was because the researcher is also working in the engineering field and had numerous personal and social contact, who could more easily be reached out to, to participate in the research study, than in other professional services fields. However, the type of firm where the participants were employed also showed no significant differences in means and therefore, didn't have an effect on the research outcomes.

The job level of the respondents had no significant difference in the means for constructs OC1, OC3, OC5, KT2 and KT3 and therefore, had no influence on the outcome of the study. For constructs OC2 (employee-oriented versus job-oriented), OC4 (open system versus closed system) and KT1 (frequency and intention of knowledge transfer) however, there were significant differences in means.

When comparing the means of the subgroups per job level for construct OC2, it is evident that the Entry, Mid-management and Senior-management levels showed similar means to each other and lower means than the Professional level. This may be because more attention is given to entry level employees to promote their well-being and training in the firm. Furthermore, the role of management will include more tasks to ensure the happiness of the people working for them, where professionals are more likely to focus on executing the work. This is supported by Malhotra et al. (2016), which explained that the management of a firm needs to divide their time between mentoring and supervising entry level employees and conducting business. Professionals' knowledge, on the other hand, is leveraged to enhance innovation capacity.

The same argument might be valid when comparing the means of the subgroups per job level for construct OC4. Entry level employees may experience the firm as more open, due to management, as part of their job, investing more time in making them feel part of the firm. Professionals might get absorbed in their own personal work and have limited open interactions with colleagues.

No justification in literature could be found for why there was a difference in means for the subgroups per job level compared to construct KT1 and further research is necessary.

The education of the respondents had no significant difference in the means for constructs OC1, OC2, OC4, OC5, OC6 and KT3 and therefore, had no influence on the outcome of the study. For constructs OC3 (parochial versus professional), KT1 (frequency and involvement of knowledge transfer) and KT2 (explicit knowledge transfer) however, there were significant differences in means.

The difference in means for parochial versus professional organisational culture grouped by education, showed that the higher the level of education of an employee, the more they tend to lean towards a professional culture. This is in line with the

study by Hofstede et al. (2010), who found that the scores in this dimension correlated with the employees level of education and that employees with less formal education were found in parochial organisations.

When comparing the means for the subgroups per education level for the frequency and involvement in knowledge transfer activities, the results showed that the higher the level of education of an employee, the more the employee seemed to be involved in knowledge sharing. This is supported by Oliveira et al. (2015), who found that employees with a higher level of education could identify, apply and share new knowledge.

Finally, when comparing the means for the subgroups per education level for the explicit knowledge transfer, the results indicated that employees with a higher education level tend to be more involved in sharing explicit knowledge in a professional firm. Although no justification could be found in literature supporting this trend specifically for explicit knowledge, one can argue that the same argument holds true than for KT1.

6.3 Hypotheses discussion

6.3.1 Hypothesis 1: Process-oriented versus results-oriented

The objective of hypothesis 1 was to determine the relationship between results-oriented organisational culture and knowledge transfer, where knowledge transfer was separated in involvement and frequency of knowledge sharing (H1a), sharing of external knowledge (H1b), as well as intrinsic knowledge (H1c).

The conclusion was that the null hypothesis can be rejected for H1a and H1b and the alternate hypothesis can be accepted. The Pearson correlation test showed a r value of 0.567 (moderate) between results-oriented and the frequency and inclination of a person to partake in knowledge transfer. Additionally, the r value for the relationship between results-oriented and explicit knowledge transfer was 0.398 (weak).

The first dimension of culture, process-oriented versus results-oriented, measured if the culture can be characterised by routines and procedures that must be followed (process-oriented) or if the culture is concerned with the goals to be achieved (Hofstede et al., 1990). The results indicated that a results-oriented culture has a

relationship to the frequency and inclination of candidates taking part in knowledge transfer activities. This is in line with Chang & Lin (2015), but is in contrast with Suppiah & Sandhu (2011) and Lee et al. (2016).

Knowledge is the product of professional services firms and thus, the sharing thereof can enhance the competitive advantage of professional services firms (Fu, 2015). Additionally, Wang et al. (2014) proposed that knowledge sharing is required to assist other employees to accomplish goals. The results-oriented culture in the context of a professional services firms, is to apply the correct knowledge for every client's unique situation to achieve the correct outcomes. This is supported by Fu et al. (2015) in the professional services context, where High Performing Work Systems (HPWS), which relates to results-oriented culture, supported knowledge sharing.

The expectation from the research is that all dimensions of knowledge sharing would be correlated to this culture dimension, but as can be seen in Chapter 5, the tacit knowledge relationship was not significant. The relationship to tacit knowledge within the context of professional services firms is complicated, where the competitiveness of an individual is characterised by his or her own knowledge (Chang & Lin, 2015). Therefore, their own self-interest may prevent them from sharing this knowledge, even if the organisational culture is results-oriented. This however, does not indicate that they do not apply the intrinsic knowledge that they have.

6.3.2 Hypothesis 2: Employee-oriented versus job-oriented

The second hypothesis tested the relationship between job-oriented organisational culture and knowledge transfer. The results in Chapter 5 indicate that the null hypothesis of the sub-hypothesis for frequency (H2a) and explicit knowledge transfer (H2b) was rejected and the alternate hypothesis was accepted with the r-values of 0.271 and -0.268. The third sub-hypothesis, H2c, testing the relationship between job-oriented organisational culture and implicit knowledge transfer was accepted, as the significance was above 0.05. The negative values of the correlation were towards job-oriented culture and as the opposite of job-oriented is employee-oriented, there exists a positive relationship to employee-oriented organisational culture.

Employee versus job-oriented culture assess the priorities of the organisation, where if it is employee-oriented, it tends to think of the well-being of the employees and not just the organisation. Lee et al. (2016) found that there was a positive relationship

between employee-oriented organisational culture and knowledge transfer, which is re-affirmed here, although Chang & Lin (2015) found the adverse to this.

Argote & Fahrenkopf (2016, p. 152) noted the different influences on knowledge transfer and found that “commitment-based human resource practices” had a positive influence on knowledge transfer. In their study it was also seen that the psychological safety of a group in the organisation was conducive to knowledge sharing. Employee oriented culture will exhibit the same characteristics as was seen by Argote & Fahrenkopf (2016), which explains the relationship seen in this study. In the professional services context, the human resources have been seen to impact knowledge sharing (Fu et al., 2015).

Again, the fact that there is no significant relationship to tacit knowledge may be subject to self-interest (Chang & Lin, 2015). Malhotra et al (2016) described the uniqueness of tacit knowledge in the professional services firms, noting that tacit knowledge is difficult to transfer and may be attributed to the billable-hours concept of professional services firms, although no significant relationship could be commented on.

6.3.3 Hypothesis 3: Parochial versus professional

The third hypothesis, which tested the relationship between a professional organisational culture and knowledge transfer, found relationships for frequency and explicit knowledge transfer. The correlation values for these two relationships were 0.336 for frequency and intention for knowledge transfer (H3a) and 0.328 for explicit knowledge transfer (H3b). Again, no significant relationship was found with implicit knowledge transfer (H3c).

This dimension of organisational culture, professional versus parochial organisational culture tests where the loyalty of the employee lies (Hofstede et al., 1990). Wang & Hou (2015) found a positive effect of professional organisational culture towards knowledge sharing. In this study, two of the dimensions were found to have a positive relationship.

In the study from Wang & Hou (2015), the concept of altruism for the benefit of the organisation was explored, where the employees had a selfless motivation to encourage knowledge sharing. It is proposed that even though the employee doesn’t

enjoy the behaviour, but because the benefits for the organisation is understood, the employee will continue with the actions. In this study, frequency and explicit knowledge sharing were found to have a negative relationship to parochial culture, alternatively put, a positive relationship to professional culture. This is in contrast with the study from Wang & Hou (2015), which may be because one of the characteristics in the professional services context is that employees are required to join professional associations, where knowledge is shared (von Nordenflycht, 2010).

6.3.4 Hypothesis 4: Open versus Closed system

The fourth hypothesis tested the relationship between closed system organisational culture and knowledge transfer. The results in Chapter 5 indicate that the null hypothesis of the sub-hypothesis for frequency (H4a) and explicit knowledge transfer (H4b) was accepted, as the significance was above 0.05. The third sub-hypothesis, H4c, testing the relationship between closed organisational culture and implicit knowledge transfer, was rejected and the alternate was accepted with an r-value of -0.392.

This dimension of organisational culture concerns an open versus a closed system. An open system denotes a culture where communication is open and new employees are welcomed (Hofstede et al., 2010). The results obtained in this study is in line with the study by Chang & Lin (2015) for tacit knowledge transfer.

Szulanski et al. (2016) noted the difficulty of tacit knowledge transfer, as the knowledge is not embedded in documents or manuals. However, explicit knowledge can be self-learned if it is first codified and then studied. As mentioned in Chapter 2, knowledge can be embedded in members, tasks and tools and networks are used to transfer or share this knowledge (Argote & Fahrenkopf, 2016). The networks between members with the knowledge are used to transfer the knowledge. The relationships and social identity of groups in the organisation have been shown to facilitate knowledge transfer (Argote & Fahrenkopf, 2016), therefore an open-system culture will enhance the transfer of knowledge. In addition, Connely et al. (2019) noted that in environments with high mistrust, knowledge hiding is higher, which is in line with a closed system.

The explicit knowledge and frequency knowledge sharing dimensions did not show a significant relationship. Therefore, no comment can be made on the positive or

negative relationship, although it should be noted that implicit knowledge is an antecedent to explicit knowledge, and organisational structures are required for explicit knowledge to be shared (Oliveira et al., 2015).

6.3.5 Hypothesis 5: Loose versus tight control

The fifth hypothesis of the study was related to the loose versus tight control organisational culture and knowledge transfer. The results from the correlation tests showed a significant and moderate relationship to the intention and frequency of knowledge transfer (H5a) with a value of -0.436. The second dimension of knowledge transfer, explicit knowledge transfer (H5b), showed a relationship of -0.280 (weak) to this organisational culture dimension. There was no significant relationship found between implicit knowledge transfer (H5c) and loose versus tight control.

This dimension of organisational culture referred to loose and tight control. Tight control happens in an organisation where formality, rules and codes of conduct are strictly utilised (Chang & Lin, 2015). The results found in this study are partially similar to Wang & Hou (2015) and Chang & Lin (2015), although these studies did not asses knowledge transfer as two separate constructs.

The results showing the relationship between tight control and frequency and explicit knowledge transfer, may be explained by the study of Foss, Husted & Michailova (2010) who noted that, as soon as guidelines are felt to be controlling, even if they are incentivised, they have a negative effect on knowledge sharing. The implicit knowledge sharing dimension had no significant relationship, but had a value close to zero. This may be related to the fact that tacit knowledge transfer isn't dependent on rules, although no comment can be made as the values are not significant.

6.3.6 Hypothesis 6: Normative versus pragmatic

The last hypothesis to assess the relationships between the constructs, was normative versus pragmatic culture and knowledge transfer. The results in Chapter 5 show that there were significant, positive and weak relationships with intention and frequency of knowledge transfer (H6a), as well as explicit knowledge transfer (H6b), with the two values being 0.212 and 0.230. The implicit knowledge transfer (H6c) relationship showed a value of 0.139, which was not significant.

Normative and pragmatic organisational culture indicate how customer focused the firm is and how the client's needs are taken into account (Hofstede et al., 1990). The results found in this study is in line with Strese et al. (2016), but contradicts Lee et al. (2016). No statistical results were found for intrinsic knowledge sharing, although it was not tested separately as a dimension in these studies.

The results from the study is in line with Strese et al. (2016) who noted that looking at the client for the correct solution and having an external focus, will drive knowledge transfer. This is because, in the context of professional services firms, knowledge is the product, therefore to stay competitive, knowledge has to be shared.

As the relationship to tacit knowledge sharing was not significant, it can't be reasoned if there is a positive or negative relationship. However, the self-interest of professionals has to be taken into account, as they are busy looking at the external environment and the relationship may not be the same as explicit and frequency of knowledge sharing.

6.3.7 Hypotheses summary

Using the results from the correlation tests, Figure 34 shows the model of all significant relationships between organisational culture and knowledge sharing.

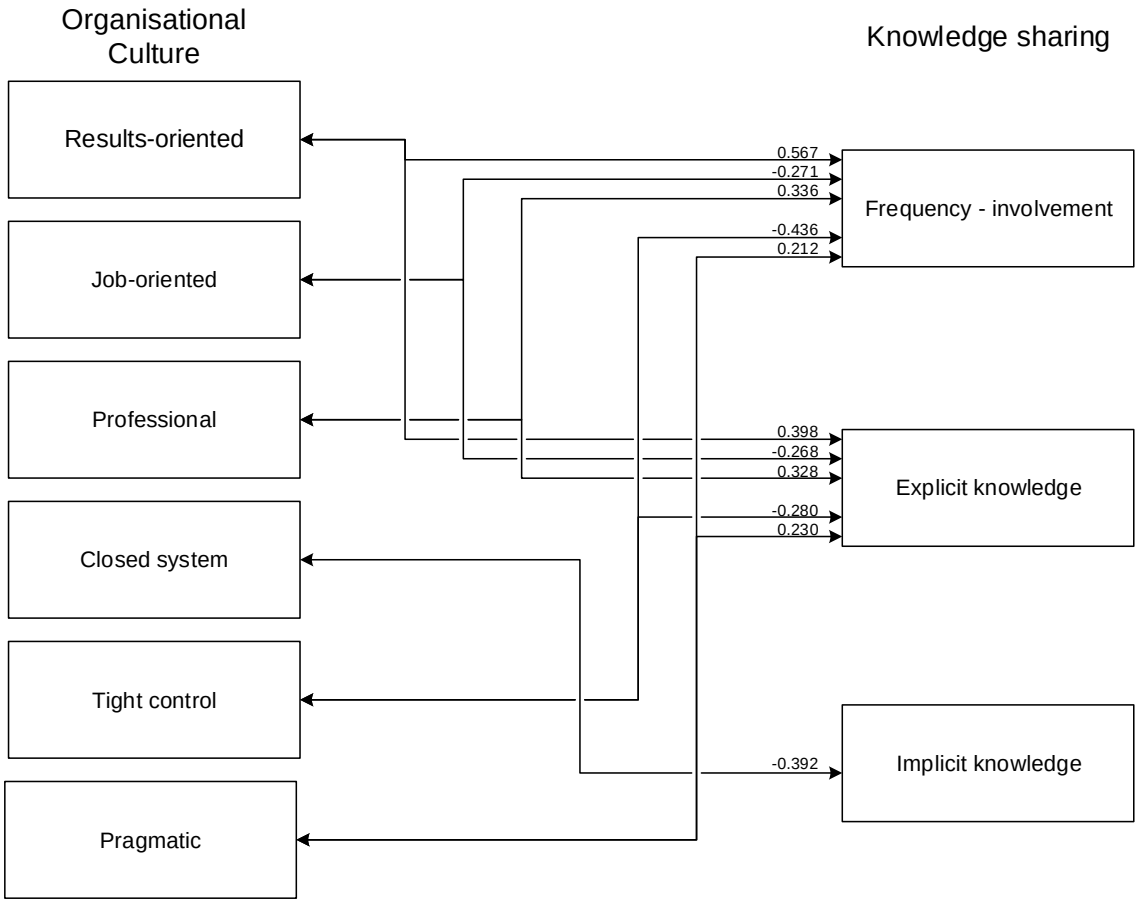

Figure 34.
Results of correlation analysis on knowledge transfer constructs.

6.4 Research Question

The research question was tested with the linear regression method, as described in Chapter 5. The three constructs of knowledge transfer are described below.

6.4.1 Frequency and involvement of knowledge transfer (KT1)

The frequency and involvement of the knowledge transfer regression analysis showed significant relationships with results-oriented culture and professional organisational culture. The influence of results-oriented culture on knowledge transfer was seen by Chang & Lin (2015), although not by Suppiah & Sandhu (2011) and Lee et al. (2016). This can be explained by Wang et al. (2014), who proposed that knowledge sharing is required to assist other employees to accomplish their goals. In addition to this, it was argued that frequent interactions and explicit knowledge sharing are encouraged by a common goal. In the professional services context, it was noted by Fu et al. (2015), that high performing work systems (HPWS), which relates to results-oriented culture, supported knowledge sharing. The

frequency and involvement of an individual have been used extensively to predict knowledge sharing (Oliveira et al., 2015), as used by Fu et al. (2015), which explains the value in the regression analysis for results-oriented culture.

The second construct to have an influence on frequency and involvement of an individual participating in knowledge transfer is the dimension of a professional culture. The relationship of professional culture with knowledge transfer was described to be negative in literature by Wang & Hou (2015). In turn, the loyalty culture referred to by Wang & Hou (2015), referred to the loyalty and self-less work for the specific organisation, which had a positive influence on knowledge transfer.

In this study however, it was found that a professional culture had a positive influence on knowledge transfer. In the professional services context, a common requirement for professionals is to be involved in professional associations, where the professionals share knowledge (von Nordenflycht, 2010). It can be argued that the professionals who have an organisational culture aligned to the industry, may associate more with knowledge transfer activities.

6.4.2 Explicit knowledge transfer

The explicit knowledge sharing construct showed similar organisational culture dimensions influencing organisational culture, being results-oriented and professional organisational culture. Explicit knowledge sharing is the sharing of codified or documented knowledge. The influences on explicit knowledge is similar to the variables influencing frequency or involvement of an individual in knowledge transfer.

In the study by Z. Wang et al. (2014) it was suggested to use procedures and formal language to enhance explicit knowledge sharing, as all the knowledge should be codified already. These actions are associated with professional organisational culture, explaining why this organisational culture influences explicit knowledge sharing.

6.4.3 Implicit knowledge transfer

Implicit knowledge transfer showed an influence on two organisational culture variables, being employee-oriented and open system organisational culture. The transfer of implicit knowledge has been noted as being very difficult (Szulanski et al.,

2016), which can be seen in the lower mean value of tacit knowledge transfer versus explicit knowledge transfer and was supported by Z. Wang et al. (2014).

The work by Argote & Fahrenkopf (2016) can be used to explain the influence of open system dimension on knowledge transfer. They explained that knowledge can be embedded in members, tasks and tools and networks are used to transfer or share this knowledge. The relationships and social identity of groups in the organisation have been shown to facilitate knowledge transfer (Argote & Fahrenkopf, 2016). In their study it was also seen that the psychological safety of a group in the organisation was conducive to knowledge sharing. One can thus reason that a culture that assists with building the networks between employees will assist the implicit knowledge transfer, which is an open system organisational culture. This is confirmed in this study, where open system culture had a positive influence on tacit knowledge transfer. Tacit knowledge therefore has to be shared using the connections between individuals and groups (Z. Wang et al., 2014).

The correlation analysis found a positive relationship with employee-oriented organisational culture, as proved in previous studies (Lee et al., 2016). In the regression analysis, the opposite was found, as was also found in other studies (Chang & Lin, 2015). Chang & Lin (2015) described a job-oriented culture to promote knowledge sharing as the attitude of the employees to get the job done. This culture will force the team to share all the knowledge, even the tacit or experience-based knowledge.

6.4.4 Research Question summary

The above regression analysis results can be seen in the model in Figure 35.

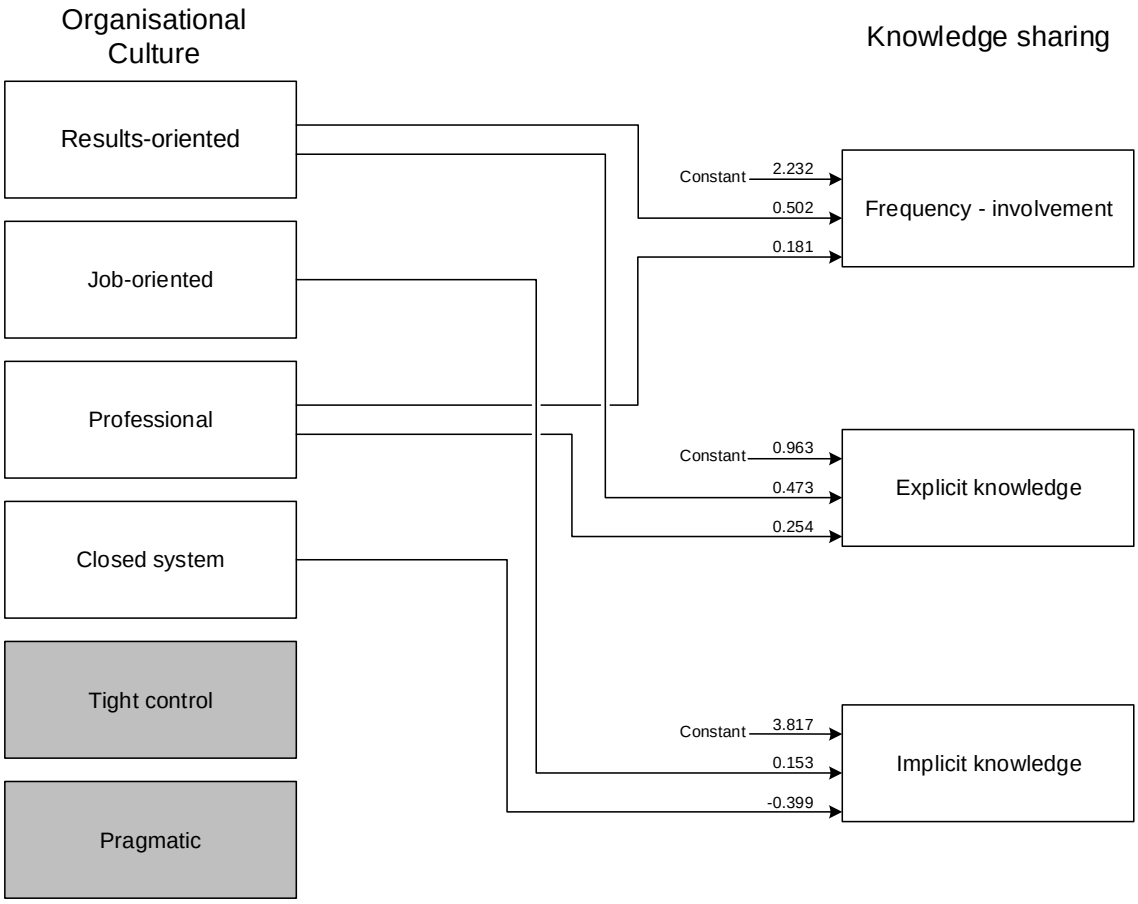

Figure 35.
Results of regression analysis on knowledge transfer constructs.

6.5 Conclusion

Several authors (Chang & Lin, 2015; Lee et al., 2016; Suppiah & Sandhu, 2011) have argued that organisational culture influences knowledge transfer. Furthermore, in the context of professional service firms, the impact of knowledge is extensive (Fu, 2015), which led to the aim of this study to investigate the relationships between organisational culture and knowledge transfer.

From the correlation and regression analysis a few dimensions were identified that must be focused on to ensure knowledge transfer. Results-oriented, employee-oriented, professional, open system, loose control and pragmatic cultures had positive relationships with knowledge transfer, although most of the relationships were weak. The moderate relationships were results-oriented and loose control to frequency and explicit knowledge, as well as an open system to implicit knowledge sharing. The regression analysis provided more clarity as the influences of the dimensions could be analysed, where results oriented and professional culture

influenced frequency and involvement and explicit knowledge transfer. Job-oriented and open system cultures had an influence on implicit knowledge transfer.

The employee-oriented versus job-oriented organisational culture had inverse results in assessing the relationship versus the influence. The results showed employee oriented as having a positive relationship with frequency and involvement and explicit knowledge transfer, whereas the regression analysis showed that job-oriented organisational culture had a positive influence on implicit knowledge transfer and no significant influence on the first two dimensions. This may present a problem for the managers in the firm and will be detailed further in Chapter 7.

With the execution as described in Chapter 5, the dimensions of organisational culture which had an effect on knowledge transfer, could be identified. This has been achieved, as can be seen in the results above. Depending on the requirement from the organisation, whether general, explicit or tacit knowledge is required to be transferred, different cultural dimensions may be exploited.

CHAPTER 7: CONCLUSION

7.1 Introduction

The aim of the research was to investigate the effect of organisational culture on knowledge transfer in professional services firms. In addition to the main purpose of the study, the aim was also to add to the existing body of knowledge on organisational culture and knowledge transfer in professional services firms. To accomplish this, surveys were sent out to professional services firms in South Africa, assessing the organisational culture dimensions and the dimensions of knowledge transfer. Thereafter, statistical tests were completed to assess the relationships between the dimensions.

This research is of particular importance to managers in professional services firms, as the knowledge aspect is the differentiator in these type of firms (Fu, 2015). Previous research has highlighted the different dimensions of organisational culture found to have an influence on knowledge transfer, although no research that was conducted in the professional services context was found.

This chapter presents the results of the study and details the implications to managers and academics in the field of knowledge transfer.

7.2 Principle findings

A professional services firm presents a unique predicament, where the product is knowledge embedded in people. The success of these firms is dependent on the competence of their staff, which is a source of competitive advantage (von Nordenflycht, 2010). Knowledge transfer can enhance this competitive advantage (Fu, 2015). Organisational culture, on the other hand, has been proven to have an influence on knowledge transfer (Chang & Lin, 2015; Wei & Miraglia, 2017). Therefore, to be able to enhance knowledge transfer in professional services firms, the research was aimed at determining which dimension of organisational culture can be used to drive knowledge transfer within these firms. This was executed through survey questions that tested the following constructs:

- Process-oriented versus results-oriented
- Employee-oriented versus job-oriented

- Parochial versus professional
- Open versus closed system
- Loose versus tight control
- Normative versus pragmatic
- Involvement and frequency of knowledge transfer
- Explicit knowledge transfer
- Implicit knowledge transfer

The organisational culture dimensions, which had an influence on the frequency and the involvement of individuals and explicit knowledge transfer, were results-oriented and professional culture. For implicit knowledge transfer, job-oriented and open system organisational cultures were found to influence the dimension. Relationships were found between several organisational culture dimensions and knowledge transfer, although this does not indicate an effect or influence. No statistical significant influence was found between tight control and pragmatic organisational culture and any of the knowledge transfer constructs.

The implications of these influences of organisational culture on knowledge transfer in professional services firms means that certain organisational culture dimensions can be encouraged, which in turn can enhance knowledge transfer. In the professional services context, where knowledge is vital, the strategy of the firm should be aligned to the sharing of certain knowledge, be it tacit or explicit knowledge. Therefore, by aligning the organisational culture to the strategy of the firm, this can be achieved.

7.3 Recommendations

7.3.1 Implications for management

The literature on knowledge transfer had shown that it is vital for the success of a professional services firm. Additionally, the knowledge and the sharing thereof internally within a firm can lead to a competitive advantage (Fu, 2015). Furthermore, organisational culture had been described to have an influence on knowledge transfer (Szulanski et al., 2016). Therefore, if management can exploit this relationship of organisational culture and knowledge transfer, the sharing of experience and information can be enhanced.

The findings from the research show that, depending on what type of knowledge transfer is required, some organisational culture dimension can assist in promoting it. A results-oriented culture can be fostered by ensuring that the success of employees is celebrated. Management can also encourage employees to take risks to get the job done. A professional culture is aligned with employees having loyalty to the profession, which can be achieved by making it compulsory to join voluntary organisations. For enhancing tacit knowledge sharing, a job-oriented culture can be enhanced by ensuring that there is emphasis on optimisation and efficiency in the organisation. Lastly, if an open system culture is emphasised, communication will be promoted and an inclusive culture will be fostered.

Therefore, if a company can foster the correct organisational culture, knowledge transfer can be enhanced (Suppiah & Sandhu, 2011) and, in the professional services sector, competitiveness as well (Fu, 2015). It is suggested for management to first assess what organisational culture is currently established in the company, where after the correct culture can be worked towards. As suggested by Hofstede et al. (2010), culture can be changed to fit the organisational strategies or can be used to support strategies. An example of how the change in culture can be established is through Kotter's (2012, p. 23) eight step process, which starts with establishing the necessity and urgency and ends with "anchoring the new approaches" in the organisational culture. This can be further related to Schein's (2010) organisational culture model, where the change in culture starts on the outside as artefacts and creations forced by management, where after it can be changed to the values and beliefs of the organisation. Hogan & Coote (2014, p. 1619) supported this by stating that "Artefacts can be a powerful mechanism for communicating and endorsing values".

7.3.2 Implications for academics

There are a few inferences from the study, which can assist academics in future studies. There exist several methods for the analysis of organisational culture, but no study was found that reviewed and critiqued these different methods. Therefore, because multiple studies were found, each using a different method, there might be inconsistencies, as each cultural dimension is different.

A second finding was the contradictory results of the dimension of employee versus job-oriented culture. Chang & Lin (2015, p. 448) described in their study how several

studies received inconsistent results on this dimension and stated that they found a “significant positive” relationship between job-oriented culture and knowledge transfer. In this study it was found however, that job-oriented culture had no significant relationship to tacit knowledge transfer, but a negative relationship to frequency and involvement and explicit knowledge transfer. Alternatively, the regression analysis provided no significant influence on frequency and involvement and explicit knowledge transfer, but a positive influence on tacit knowledge transfer. These are clearly opposing views and the contradictions found by Chang & Lin (2015) were also found in this study. This can lead to confusion and inconsistencies if the dimension is not defined correctly or the results are not consistent.

7.4 Contribution of the study

The study not only contributed to the body of knowledge regarding organisational culture and knowledge transfer, but also highlighted the different dimensions required in professional services firms that promotes knowledge transfer.

7.5 Future research

From this study, other possible future research opportunities have been identified. These future studies are related to organisational culture, knowledge transfer and professional services firms.

There is a protentional gap of using a mediator variable during the study, such as absorptive capacity as a construct, where absorptive capacity is the ability to retain and apply the correct knowledge (Oliveira et al., 2015). The dependent variable of knowledge transfer in professional services firms can also be expanded to knowledge management to understand not only how knowledge is shared, but also generated, stored and applied.

A possible future research project is to use a different method for assessing organisational culture and evaluate the results against the results achieved with this study.

7.6 Limitations of the research

7.6.1 Research methodology

Although the large majority of responses received from the engineering field might be considered as a limitation, it was proved not to be the case when looking at the outcome of the difference in means of the different constructs. However, if more attention was given to the disciplines with low responses, the total overall sample group would have been higher and might have led to a positive PCA analysis. It can also be argued that snowball sampling, as discussed under research methodology in section 4.9, were partly responsible for the majority of responses from the engineering field.

In addition to the methodology limitations discussed in section 4.9, the completion of the questionnaire and responses were a voluntary exercise, with no pressure from management or incentives offered. This might have led to self-selection bias, where only employees who had an interest in the research topic, made an effort to complete the questionnaire. To expand on this research, a study may be done where senior managers of different professional services firms are contacted before the questionnaires are sent to the employees of the firms, in an effort to make the questionnaires mandatory, which may eliminate self-selection bias.

7.6.2 Scope

As mentioned in section 1.5, the scope of this study was limited to professional services firms in South Africa. National cultures have been shown to influence organisational culture (Schneider et al., 2013) therefore, if similar studies are performed in different countries, especially countries with very different national cultures, the outcomes will most likely differ.

7.7 Conclusion

As professional services firms have knowledge embedded in people as their product and are challenged to have a sustainable competitive advantage, these firms are required to ensure that knowledge is shared throughout the organisation. This study showed that organisational culture has an effect on the knowledge sharing

capabilities of an organisation. The implementation of the research can be achieved practically, by driving the correct organisational culture throughout the firm.

8 REFERENCE LIST

Andres, L. (2012). Survey Formats. In *Designing & Doing Survey Research* (pp. 45–60). 55 City Road: SAGE Publications, Ltd. https://doi.org/10.4135/9781526402202

Ang, Z., & Massingham, P. (2007). National culture and the standardization versus adaptation of knowledge management. *Journal of Knowledge Management*, *11*(2), 5–21. https://doi.org/10.1108/13673270710738889

Argote, L., & Fahrenkopf, E. (2016). Knowledge transfer in organizations: The roles of members , tasks , tools , and networks. *Organizational Behavior and Human Decision Processes*, *136*, 146–159. https://doi.org/10.1016/j.obhdp.2016.08.003 (4)

Argote, L., & Guo, J. M. (2016). Routines and transactive memory systems: Creating, coordinating, retaining, and transferring knowledge in organizations. *Research in Organizational Behavior*, *36*, 65–84. https://doi.org/10.1016/j.riob.2016.10.002

Austin, L., & Jin, Y. (2017). *Social media and crisis communication*. *Social Media and Crisis Communication*. New York: Routledge. https://doi.org/10.4324/9781315749068

Bansal, P., Smith, W., & Vaara, E. (2018). New ways of seeing through qualitative research. *Academy of Management Journal*, *61*(4), 1189–1195. https://doi.org/10.5465/amj.2018.4004 (4*)

Beavers, A. S., Lounsbury, J. W., Richards, J. K., Huck, S. W., Skolits, G. J., & Esquivel, S. L. (2013). Practical Considerations for Using Exploratory Factor Analysis in Educational Research. *Practical Assessment, Research & Evaluation*, *18*(6), 1–13.

Belhekar, V. M. (2016). *Statistics for Psychology Using R* (First). Thousand Oaks: SAGE.

Beltagui, A., Sigurdsson, K., Candi, M., & Riedel, J. C. K. H. (2017). Articulating

the service concept in professional service firms. *Journal of Service Management*, *28*(3), 593–616. https://doi.org/10.1108/JOSM-10-2015-0299

Bonett, D. G., & Wright, T. A. (2015). Cronbach's alpha reliability: Interval estimation, hypothesis testing, and sample size planning. *Journal of Organizational Behavior*, *36*(1), 3–15. https://doi.org/10.1002/job

Bortolotti, T., Boscari, S., & Danese, P. (2015). Successful lean implementation: Organizational culture and soft lean practices. *International Journal of Production Economics*, *160*, 182–201. https://doi.org/10.1016/j.ijpe.2014.10.013

Caimo, A. (2015). Knowledge Sharing in Organizations : A Bayesian Analysis of the Role of Reciprocity and Formal Structure. *Journal of Management*, *41*(2), 665–691. https://doi.org/10.1177/0149206314552192 (4*)

Chang, C. L., & Lin, T. C. (2015). The role of organizational culture in the knowledge management process. *Journal of Knowledge Management*, *19*(3), 433–455. https://doi.org/10.1108/JKM-08-2014-0353

Chatman, J. A., Caldwell, D. F., O'Relly, C. A., & Doerr, B. (2014). Parsing organizational culture: How the norm for adaptability influences the relationship between culture consensus and financial performance in high-technology firm. *Journal of Organizational Behavior*, *35*, 785–808. https://doi.org/10.1002/job

Chatman, J. A., & O'Reilly, C. A. (2016). Paradigm lost: Reinvigorating the study of organizational culture. *Research in Organizational Behavior*, *36*, 199–224. https://doi.org/10.1016/j.riob.2016.11.004

Collins, C. J., & Smith, K. G. (2012). Knowledge Exchange and Combination : The Role of Human Resource Practices in the Performance of High-Technology Firms. *Academy of Management Journal*, *49*(3), 544–560.

Connelly, C. E., Černe, M., Dysvik, A., & Škerlavaj, M. (2019). Understanding knowledge hiding in organizations. *Journal of Organizational Behavior*, (May), job.2407. https://doi.org/10.1002/job.2407

Courtney, M. G. R. (2018). Pearson Correlation Coefficient. In *The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation* (pp. 1229–1233). Thousand Oaks: SAGE Publications, Inc. https://doi.org/10.4135/9781506326139

Dawson, J. (2017). *Analysing Quantitative Survey Data for Business and Management Students*. 55 City Road: SAGE Publications Ltd. https://doi.org/10.4135/9781473983311

Denison, D., Nieminen, L., & Kotrba, L. (2014). Diagnosing organizational cultures: A conceptual and empirical review of culture effectiveness surveys. *European Journal of Work and Organizational Psychology*, *23*(1), 145–161. https://doi.org/10.1080/1359432X.2012.713173

Denison, D. R. (1984). Bringing corporate culture to the bottom line. *Organizational Dynamics*, *13*(2), 5–22. https://doi.org/10.1016/0090-2616(84)90015-9

Denison, D. R., & Mishra, A. K. (1995). Toward a Theory of Organizational Culture and Effectiveness. *Organization Science*, *6*(2), 204–223. https://doi.org/10.1287/orsc.6.2.204

Eckardt, R., Skaggs, B. C., & Lepak, D. P. (2018). An examination of the firm-level performance impact of cluster hiring in knowledge-intensive firms. *Academy of Management Journal*, *61*(3), 919–944. https://doi.org/10.5465/amj.2016.0601

Eisend, M., Evanschitzky, H., & Gilliland, D. I. (2016). The influence of organizational and national culture on new product performance. *Journal of Product Innovation Management*, *33*(3), 260–276. https://doi.org/10.1111/jpim.12268

Elias, L. (2015). Intelligent questionnaire design for effective participant evaluations. *Training & Development*, *42*(1), 8–11.

Evans, J. M., Hendron, M., & Oldroyd, J. B. (2015). Withholding the Ace : The Individual- and Unit-Level Performance Effects of Self-Reported and

Perceived Knowledge Hoarding. *Organization Science*, *26*(2), 1–17. https://doi.org/10.1287/orsc.2014.0945

Fischer, T., Dietz, J., & Antonakis, J. (2017). Leadership Process Models: A Review and Synthesis. *Journal of Management*, *43*(6), 1726–1753. https://doi.org/10.1177/0149206316682830

Foss, N. J., Husted, K., & Michailova, S. (2010). Governing knowledge sharing in organizations: Levels of analysis, governance mechanisms, and research directions. *Journal of Management Studies*, *47*(3), 455–482. https://doi.org/10.1111/j.1467-6486.2009.00870.x

Fu, N. (2015). The role of relational resources in the knowledge management capability and innovation of professional service firms1. *Human Relations*, *68*(5), 731–764. https://doi.org/10.1177/0018726714543479

Fu, N., Flood, P. C., Bosak, J., Morris, T., & O'Regan, P. (2015). How do high performance work systems influence organizational innovation in professional service firms? *Employee Relations*, *37*(2), 209–231. https://doi.org/10.1108/ER-10-2013-0155

Fu, N., Flood, P. C., Bosak, J., Rousseau, D. M., Morris, T., & O'Regan, P. (2017). High-performance work system in professional service firms: Examining the Practices-Resources-Uses-Perfrmance Linkage. *Human Resource Management*, *56*(2), 329–352. https://doi.org/10.1002/hrm

Giorgi, S., Lockwood, C., & Glynn, M. A. (2015). The Many Faces of Culture: Making Sense of 30 Years of Research on Culture in Organization Studies. *Academy of Management Annals*, *9*(1), 1–54. https://doi.org/10.1080/19416520.2015.1007645

Goldberg, A., Srivastava, S. B., Manian, V. G., Monroe, W., & Potts, C. (2016). Fitting In or Standing Out? The Tradeoffs of Structural and Cultural Embeddedness. *American Sociological Review*, *81*(6), 1190–1222. https://doi.org/10.1177/0003122416671873

Grant, R. M. (1996). Toward a knowledge-based view (KBV) theory. *Strategic*

Management Journal, *17*(Winter), 109–122. https://doi.org/10.1002/smj.4250171110

Greenwood, R., Li, S. X., Prakash, R., & Deephouse, D. L. (2005). Reputation, Diversification, and Organizational Explanations of Performance in Professional Service Firms. *Organization Science*, *16*(6), 661–673. https://doi.org/10.1287/orsc.1050.0159

Hofstede, G. (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture*, *2*(1), 310–319. https://doi.org/10.9707/2307-0919.1014

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and Organizations Software Of The Mind*. *Cultures and Organizations* (3rd ed.). New York: McGrawHill. https://doi.org/10.1007/s11569-007-0005-8

Hofstede, G., Neuijen, B., Ohayv, D. D., & Sanders, G. (1990). Measuring Organizational Cultures : A Qualitative and Quantitative Study Across Twenty Cases. *Administrative Science Quarterly*, *35*(2), 286–316.

Hogan, S. J., & Coote, L. V. (2014). Organizational culture, innovation, and performance: A test of Schein's model. *Journal of Business Research*, *67*(8), 1609–1621. https://doi.org/10.1016/j.jbusres.2013.09.007

Kotter, J. P. (2012). *Leading Change*. Boston, Massachusetts: Harvard Business Review Press.

Laforet, S. (2016). Effects of organisational culture on organisational innovation performance in family firms. *Journal of Small Business and Enterprise Development*, *23*(2), 379–407. https://doi.org/10.1108/JSBED-02-2015-0020

Lee, J. C., Shiue, Y. C., & Chen, C. Y. (2016). Examining the impacts of organizational culture and top management support of knowledge sharing on the success of software process improvement. *Computers in Human Behavior*, *54*, 462–474. https://doi.org/10.1016/j.chb.2015.08.030

Malhotra, N., Smets, M., & Morris, T. (2016). Career Pathing and Innovation in Professional. *Academy of Management Perspectives*, *30*(4), 369–383. https://doi.org/10.5465/amp.2012.0108

McKight, P. E., & Najab, J. (2010). Kruskal Wallis test results. *Corsini Encyclopedia of Psychology*, 832–834.

Mehrizi, M. H. R., & Bontis, N. (2009). A cluster analysis of the KM field. *Management Decision*, *47*(5), 792–805. https://doi.org/10.1108/00251740910960123

Nonaka, I., Toyama, R., & Konno, N. (2000). SECI, Ba and Leadership: A Unified Model of Dynamic Knowledge Creation. *Long Range Planning*, *33*(1), 5–34. https://doi.org/10.1016/S0024-6301(99)00115-6

Oliveira, M., Curado, C. M. M., Maçada, A. C. G., & Nodari, F. (2015). Using alternative scales to measure knowledge sharing behavior: Are there any differences? *Computers in Human Behavior*, *44*, 132–140. https://doi.org/10.1016/j.chb.2014.11.042

Patel, T. (2015). Crossing disciplinary, epistemological and conceptual boundaries in search of better cultural sense-making tools: A review of principal cultural approaches from business and anthropology literatures. *Journal of Organizational Change Management*, *28*(5), 728–748. https://doi.org/10.1108/JOCM-03-2015-0049

Pett, M. A., Lackey, N. R., & Sullivan, J. J. (2003). *Making Sense of Factor Analysis*. Thousand Oaks: SAGE.

Pettigrew, A. M. (1979). On Studying Organizational Cultures. *Administrative Science Quarterly*, *24*(4), 570–581.

Pinnington, A. H., & Sandberg, J. (2014). Competence Regimes in Professional Service Firm Internationalization and Professional Careers. *Group and Organization Management*, *39*(5), 561–591. https://doi.org/10.1177/1059601114548273

Razmerita, L., Kirchner, K., & Nielsen, P. (2016). What factors influence knowledge sharing in organizations? A social dilemma perspective of social media communication. *Journal of Knowledge Management*, *20*(6), 1225–1246. https://doi.org/10.1108/JKM-03-2016-0112

Saunders, M., & Lewis, P. (2018). *Doing research in business and management* (2nd ed.). Harlow: Pearson.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students* (5th ed.). Harlow: Pearson Education Limited.

Schein, E. H. (1984). Coming to a New Awareness of Organizational Culture. *MIT Sloan Management Review*, (Winter), 1–14.

Schein, E. H. (2010). *Organizational culture and leadership* (Fourth). San Francisco: Jossey-Bass.

Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational Climate and Culture Factors. *Annual Review of Psychology*, *64*, 361–388. https://doi.org/10.1146/annurev-psych-113011-143809

Seiders, K., Flynn, A. G., Berry, L. L., & Haws, K. L. (2015). Motivating Customers to Adhere to Expert Advice in Professional Services: A Medical Service Context. *Journal of Service Research*, *18*(1), 39–58. https://doi.org/10.1177/1094670514539567

Sekaran, U., & Bougie, R. (2016). *Research Methods For Business: A Skill Building Approach* (7th ed.). Chichester: John Wiley & Sons.

Shaikh, S. J. (2017). Linear regression. In M. Allen (Ed.), *The SAGE Encyclopedia of Communication Research Methods* (pp. 1–494). Thousand Oaks: SAGE Publications, Inc. https://doi.org/10.1007/978-3-319-55252-1

Spender, J. C., & Grant, R. M. (1996). Knowledge and the firm: overview. *Strategic Management Journal*, *17*(Winter Special Issue), 5–9.

Strese, S., Adams, D. R., Flatten, T. C., & Brettel, M. (2016). Corporate culture and absorptive capacity: The moderating role of national culture dimensions

on innovation management. *International Business Review*, *25*(5), 1149–1168. https://doi.org/10.1016/j.ibusrev.2016.02.002

Suppiah, V., & Sandhu, M. S. (2011). Organisational culture's influence on tacit knowledge-sharing behaviour. *Journal of Knowledge Management*, *15*(3), 462–477. https://doi.org/10.1108/13673271111137439

Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal*, *17*(S2), 27–43. https://doi.org/10.1002/smj.4250171105

Szulanski, G., Ringov, D., Llull, U. R., & Jensen, R. J. (2016). Overcoming Stickiness : How the Timing of Knowledge Transfer Methods Affects Transfer Difficulty. *Organization Science*, *27*(2), 1–19. https://doi.org/10.1287/orsc.2016.1049

Toepoel, V., Das, M., & van Soest, A. (2012). Design of Web Questionnaires : The Effects of the Number of Items per Screen. *SAGE Internet Research Methods*. https://doi.org/10.4135/9781446268513

Trompenaars, F. (1993). *Riding the waves of culture: understanding cultural diversity in businesses* (3rd ed.). London: The Economist Books.

Tung, R. L., & Verbeke, A. (2010). Beyond hofstede and GLOBE: Improving the quality of cross-cultural research. *Journal of International Business Studies*, *41*(8), 1259–1274. https://doi.org/10.1057/jibs.2010.41

van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist for testing measurement invariance. *European Journal of Developmental Psychology*, *9*(4), 486–492. https://doi.org/10.1080/17405629.2012.686740

Verbeke, W., Volgering, M., & Hessels, M. (1998). Exploring the conceptual expansion within the field of organizational behavior: Organizational climate and organizational culture. Willem Verbeke, Marco Volgering, and Marco Hessels. *Journal of Management Studies*, *35*(3), 1–57. https://doi.org/10.1111/1467-6486.00095

von Nordenflycht, A. (2010). What Is a Professional Service Firm? toward a Theory and Taxonomy of Knowledge- Intensive Firms. *The Academy of Management Review*, *35*(1), 155–174. https://doi.org/(4*)

Wang, S., Noe, R. A., & Wang, Z. M. (2014). Motivating Knowledge Sharing in Knowledge Management Systems: A Quasi-Field Experiment. *Journal of Management*, *40*(4), 978–1009. https://doi.org/10.1177/0149206311412192

Wang, W. T., & Hou, Y. P. (2015). Motivations of employees' knowledge sharing behaviors: A self-determination perspective. *Information and Organization*, *25*(1), 1–26. https://doi.org/10.1016/j.infoandorg.2014.11.001

Wang, Z., Wang, N., & Liang, H. (2014). Knowledge sharing, intellectual capital and firm performance. *Management Decision*, *52*(2), 230–258. https://doi.org/10.1108/MD-02-2013-0064

Wei, Y., & Miraglia, S. (2017). Organizational culture and knowledge transfer in project-based organizations: Theoretical insights from a Chinese construction firm. *International Journal of Project Management*, *35*(4), 571–585. https://doi.org/10.1016/j.ijproman.2017.02.010

Wernerfelt. (1984). A Resource-based view of the firm: tem years after. *Strategic Management Joumal*, *5*(2), 171–180.

Witherspoon, C. L., Bergner, J., Cockrell, C., & Stone, D. N. (2013). Antecedents of organizational knowledge sharing : a meta-analysis and critique. *Journal of Knowledge Management*, *17*(2). https://doi.org/10.1108/13673271311315204

Zhao, H., Liu, W., Li, J., & Yu, X. (2019). Leader–member exchange, organizational identification, and knowledge hiding: The moderating role of relative leader–member exchange. *Journal of Organizational Behavior*, (January), 834–848. https://doi.org/10.1002/job.2359

Zikmund, W. (2009). *Applied Research Textbook* (8th ed.). Mason: Cengage Learning.

9 APPENDIXES

9.1 Appendix A: Questionnaire

Organisational culture and knowledge sharing Questionnaire

Preamble

Dear Respondent

I am conducting a research to understand the effect of organisational culture on knowledge transfer in professional services firms. This study can help academia as well as industry to understand and exploit this relationship. The study will seek to recommend to organisations which culture dimensions can influence knowledge transfer behaviour. You are therefore asked to complete a survey on a set number of questions. The questionnaire should take no longer than 10 minutes of your time to complete. Your participation is voluntary and you can withdraw at any time without penalty. All the information collected is anonymous and the responses provided cannot be used to identify any participant. Data collected will be kept confidential. By completing the questionnaire, you indicate that you voluntarily participate in this research. Should you have any concerns, please contact myself or my supervisor.

Our details are as follows:

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Section A: Demographic questions

1. Do you work for a Professional services firm:

☐ Yes
☐ No

2. Organisation type:

☐ Engineering
☐ Accounting
☐ IT advisory
☐ Architecture
☐ Other, Please specify:

_____

3. Age:

☐ 21-29
☐ 30-39
☐ 40-49
☐ 50

4. Years of service in organisation:

☐ Less than 1 year
☐ 1 to 5 years
☐ 5 to 10 years
☐ More than 10 years

5. Job level:

☐ Entry
☐ Professional
☐ Mid Management
☐ Senior Management

6. Highest level of education:

☐ Senior Certificate
☐ Diploma
☐ Degree
☐ Post graduate
☐ Other

7. Company name

_____

Section B: Organisational culture assessment (Adapted from (Hofstede, Neuijen, Ohayv, & Sanders (1990)*)*

This section refers to the culture of the firm you are working for. Indicate by selecting the appropriate checkbox according to the scale below:

1	Completely disagree
2	Disagree
3	Slightly disagree
4	Neither agree or disagree
5	Slightly agree
6	Agree
7	Completely agree

8. Employees are comfortable in taking risks.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

9. Each day at work brings new challenges

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

10. People put in maximum effort to achieve results.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

11. Employees receive positive feedback when a job is well done.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

12. A typical employee executes tasks as fast as possible.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

13. The firm is only interested in the work people do.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

14. Decisions are made in a group and not by top management.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

15. There is little concern for the personal problems of employees.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

16. New employees are left to find their own way

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

17. No special ties with local community.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

18. Private lives are considered employees own business.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

19. Job competence is the only criteria considered during hiring processes

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

20. The planning for work is done three years ahead or more.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

21. Employees are aware of competitors of the firm.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

22. There is cooperation and trust between departments.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

23. Only a few special people fit in the organisation.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

24. Organisation and people are closed and secretive.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

25. New employees need more than a year to feel at home.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

26. Management is unnecessarily cost-conscious on small things

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

27. Attention is given to physical work environment.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

28. Meeting times are kept punctually.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

29. Everybody is cost-conscious.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

30. Employees always speak seriously of organisation and job.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

31. A typical employee is well-groomed.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

32. Major emphasis is placed on meeting customer needs.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

33. Results are more important than procedures.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

34. Ethical decisions are governed by rules.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

35. Organisation contributes little to society.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

36. Employees talk about history and traditional way of doing things in organisation.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

Section C: Knowledge transfer questions (Adapted from (Oliveira, Curado, Maçada, & Nodari (2015)*)*

37. I often participate in knowledge sharing activities in my team.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

38. I usually spend a lot of time conducting knowledge sharing activities in my team.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

39. I usually share my knowledge with the other members of my team.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

40. I often share the reports and official documents from my work with the members of my team.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

41. I always share my manuals, methodologies and models with the members of my team.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

42. I often share my experience or know-how with the members of my team

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

43. . I always share my know-where and know-whom when prompted by the members of my team.

☐ 1 ☐ 2 ☐ 3 ☐4 ☐ 5 ☐ 6 ☐ 7

9.2 Appendix B: EFA and Cronbach Alpha results

9.2.1 Organisational Culture – Construct 1

Appendix Table 1
KMO and Bartlett's Test for organisational culture construct 1

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.772
Bartlett's Test of Sphericity	Approx. Chi-Square	220.798
	df	10
	Sig.	0.000

Appendix Table 2
Total Variance Explained for organisational culture construct 1

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.679	53.588	53.588	2.679	53.588	53.588
2	0.874	17.489	71.077			
3	0.615	12.303	83.380			
4	0.486	9.714	93.094			
5	0.345	6.906	100.000			
Extraction Method: Principal Component Analysis.						

Appendix Table 3
Total Correlation Matrix for organisational culture construct 1

Correlation Matrix						
		OC1a	OC1b	OC1c	OC1d	OC1e
Correlation	OC1a	1.000	0.229	0.214	0.300	0.215
	OC1b	0.229	1.000	0.586	0.538	0.391
	OC1c	0.214	0.586	1.000	0.500	0.530
	OC1d	0.300	0.538	0.500	1.000	0.535
	OC1e	0.215	0.391	0.530	0.535	1.000

Appendix Table 4
Reliability Statistics for organisational culture construct 1

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.771	0.772	5

Appendix Table 5
Item Total Statistics for organisational culture construct 1

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC1a	20.90	20.357	0.301	0.100	0.808
OC1b	19.87	18.027	0.597	0.426	0.713
OC1c	20.22	16.553	0.626	0.459	0.698
OC1d	20.43	16.576	0.647	0.440	0.691
OC1e	20.49	17.555	0.569	0.380	0.720

9.2.2 Organisational culture – Construct 2

Appendix Table 6
KMO and Bartlett's Test for organisational culture construct 2

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.714
Bartlett's Test of Sphericity	Approx. Chi-Square	147.600
	df	10
	Sig.	0.000

Appendix Table 7
Total Variance Explained for organisational culture construct 2

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.277	45.549	45.549	2.277	45.549	45.549
2	0.991	19.819	65.368			
3	0.782	15.648	81.015			
4	0.552	11.048	92.064			
5	0.397	7.936	100.000			
Extraction Method: Principal Component Analysis.						

Appendix Table 8
Total Correlation Matrix for organisational culture construct 2

Correlation Matrix						
		OC2a	OC2b	OC2c	OC2d	OC2e
Correlation	OC2a	1.000	0.089	0.433	0.413	0.225
	OC2b	0.089	1.000	0.207	0.052	0.047
	OC2c	0.433	0.207	1.000	0.544	0.482
	OC2d	0.413	0.052	0.544	1.000	0.360

Correlation Matrix						
		OC2a	OC2b	OC2c	OC2d	OC2e
	OC2e	0.225	0.047	0.482	0.360	1.000

Appendix Table 9
Reliability Statistics for organisational culture construct 2 – First round

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.670	0.666	5

Appendix Table 10
Item Total Statistics for organisational culture construct 2– First round

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC2a	14.69	22.976	0.430	0.232	0.616
OC2b	15.30	27.516	0.132	0.051	0.736
OC2c	15.43	19.373	0.663	0.455	0.501
OC2d	15.45	20.768	0.521	0.349	0.571
OC2e	15.43	22.703	0.411	0.248	0.624

Appendix Table 11
Reliability Statistics for organisational culture construct 2 – Second round

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.736	0.735	4

Appendix Table 12
Item Total Statistics for organisational culture construct 2– Second round

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC2a	10.91	18.283	0.446	0.232	0.720
OC2c	11.65	15.405	0.654	0.430	0.600
OC2d	11.68	15.890	0.573	0.346	0.649
OC2e	11.66	17.783	0.446	0.246	0.722

9.2.3 Organisational culture – Construct 3

Appendix Table 13
KMO and Bartlett's Test for organisational culture construct 3

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.671
Bartlett's Test of Sphericity	Approx. Chi-Square	175.054
	df	10
	Sig.	0.000

Appendix Table 14
Total Variance Explained for organisational culture construct 3

Total Variance Explained									
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.210	44.209	44.209	2.210	44.209	44.209	2.200	43.994	43.994
2	1.198	23.964	68.172	1.198	23.964	68.172	1.209	24.178	68.172
3	0.810	16.195	84.367						
4	0.429	8.584	92.951						
5	0.352	7.049	100.000						
Extraction Method: Principal Component Analysis.									

Appendix Table 15
Total Correlation Matrix for organisational culture construct 3

Correlation Matrix						
		OC3a	OC3b	OC3c	OC3d	OC3e
Correlation	OC3a	1.000	0.625	0.533	-0.041	0.078
	OC3b	0.625	1.000	0.588	-0.070	0.057
	OC3c	0.533	0.588	1.000	-0.035	0.267
	OC3d	-0.041	-0.070	-0.035	1.000	0.186
	OC3e	0.078	0.057	0.267	0.186	1.000

Appendix Table 16
Rotated Component Matrix for organisational culture construct 3

Rotated Component Matrix[a]		
	Component	
	1	2
OC3a	0.839	-0.031

OC3b	0.867	-0.069
OC3c	0.829	0.177
OC3d	-0.139	0.757
OC3e	0.192	0.774
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Appendix Table 17
Reliability Statistics for organisational culture construct 3 – First Round

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.628	0.583	5

Appendix Table 18
Item Total Statistics for organisational culture construct 3 – First round

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC3a	14.44	14.438	0.538	0.432	0.484
OC3b	14.05	14.048	0.544	0.488	0.478
OC3c	13.45	14.135	0.618	0.442	0.441
OC3d	16.31	23.204	0.007	0.044	0.699
OC3e	15.25	19.341	0.196	0.122	0.661

Appendix Table 19
Reliability Statistics for organisational culture construct 3 – Second round

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.699	0.690	4

Appendix Table 20
Item Total Statistics for organisational culture construct 3– Second round

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC3a	12.38	13.148	0.576	0.432	0.573
OC3b	11.99	12.645	0.594	0.487	0.559
OC3c	11.39	12.872	0.657	0.440	0.522
OC3e	13.19	18.787	0.154	0.087	0.807

Appendix Table 21
Reliability Statistics for organisational culture construct 3 – Third round

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.807	0.807	3

Appendix Table 22
Item Total Statistics for organisational culture construct 3– Third round

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC3a	9.25	9.139	0.651	0.432	0.739
OC3b	8.86	8.538	0.693	0.481	0.695
OC3c	8.26	9.791	0.622	0.391	0.769

9.2.4 Organisational culture – Construct 4

Appendix Table 23
KMO and Bartlett's Test for organisational culture construct 4

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.761
Bartlett's Test of Sphericity	Approx. Chi-Square	205.208
	df	10
	Sig.	0.000

Appendix Table 24
Total Variance Explained for organisational culture construct 4

Total Variance Explained									
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.498	49.959	49.959	2.498	49.959	49.959	2.496	49.930	49.930
2	1.007	20.138	70.097	1.007	20.138	70.097	1.008	20.167	70.097
3	0.714	14.283	84.380						
4	0.451	9.030	93.410						
5	0.330	6.590	100.000						
Extraction Method: Principal Component Analysis.									

Appendix Table 25
Total Correlation Matrix for organisational culture construct 4

Correlation Matrix						
		OC4a	OC4b	OC4c	OC4d	OC4e
Correlation	OC4a	1.000	0.635	0.539	0.316	-0.029
	OC4b	0.635	1.000	0.623	0.439	0.013
	OC4c	0.539	0.623	1.000	0.398	-0.031
	OC4d	0.316	0.439	0.398	1.000	-0.062
	OC4e	-0.029	0.013	-0.031	-0.062	1.000

Appendix Table 26
Rotated Components for organisational culture construct 4

Rotated Component Matrix[a]		
	Component	
	1	2
OC4a	0.803	0.019
OC4b	0.873	0.061
OC4c	0.823	-0.005
OC4d	0.641	-0.142
OC4e	-0.021	0.992
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Appendix Table 27
Reliability Statistics for organisational culture construct 4 – First round

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.671	0.665	5

Appendix Table 28
Item Total Statistics for organisational culture construct 4 – First round

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC4a	17.12	18.916	0.563	0.437	0.556
OC4b	17.38	17.945	0.689	0.543	0.498
OC4c	17.34	18.188	0.598	0.440	0.536
OC4d	16.93	19.761	0.403	0.221	0.633
OC4e	16.34	27.935	-0.037	0.009	0.789

Appendix Table 29
Reliability Statistics for organisational culture construct 4 – Second round

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.789	0.795	4

Appendix Table 30
Item Total Statistics for organisational culture construct 4– Second round

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC4a	12.18	17.036	0.604	0.437	0.733
OC4b	12.44	16.273	0.719	0.541	0.678
OC4c	12.40	16.293	0.644	0.439	0.713
OC4d	11.99	17.677	0.448	0.218	0.816

9.2.5 Organisational culture – Construct 5

Appendix Table 31
KMO and Bartlett's Test for organisational culture construct 5

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.722
Bartlett's Test of Sphericity	Approx. Chi-Square	141.226
	df	6
	Sig.	0.000

Appendix Table 32
Total Variance Explained for organisational culture construct 5

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.244	56.095	56.095	2.244	56.095	56.095
2	0.782	19.541	75.636			
3	0.571	14.285	89.921			
4	0.403	10.079	100.000			
Extraction Method: Principal Component Analysis.						

Appendix Table 33
Total Correlation Matrix for organisational culture construct 5

Correlation Matrix					
		OC5a	OC5b	OC5c	OC5d
Correlation	OC5a	1.000	0.392	0.298	0.271
	OC5b	0.392	1.000	0.564	0.413
	OC5c	0.298	0.564	1.000	0.514
	OC5d	0.271	0.413	0.514	1.000

Appendix Table 34
Reliability Statistics for organisational culture construct 5

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.734	0.734	4

Appendix Table 35
Item Total Statistics for organisational culture construct 5

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC5a	9.20	12.225	0.393	0.170	0.748
OC5b	8.89	10.501	0.603	0.385	0.628
OC5c	8.85	10.458	0.606	0.415	0.627
OC5d	9.34	11.390	0.511	0.293	0.683

9.2.6 Organisational culture – Construct 6

Appendix Table 36
KMO and Bartlett's Test for organisational culture construct 6

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.724
Bartlett's Test of Sphericity	Approx. Chi-Square	138.792
	df	10
	Sig.	0.000

Appendix Table 37
Total Variance Explained for organisational culture construct 6

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.260	45.197	45.197	2.260	45.197	45.197
2	0.973	19.455	64.652			
3	0.746	14.916	79.568			
4	0.616	12.321	91.889			
5	0.406	8.111	100.000			
Extraction Method: Principal Component Analysis.						

Appendix Table 38
Total Correlation Matrix for organisational culture construct 6

Correlation Matrix						
		OC6a	OC6b	OC6c	OC6d	OC6e
Correlation	OC6a	1.000	-0.115	-0.083	-0.094	-0.103
	OC6b	-0.115	1.000	0.522	0.338	0.379
	OC6c	-0.083	0.522	1.000	0.528	0.384
	OC6d	-0.094	0.338	0.528	1.000	0.282
	OC6e	-0.103	0.379	0.384	0.282	1.000

Appendix Table 39
Reliability Statistics for organisational culture construct 6 – First round

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.648	0.561	5

Appendix Table 40
Item Total Statistics for organisational culture construct 6 – First round

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC6a	13.99	22.164	-0.133	0.020	0.731
OC6b	12.07	12.976	0.514	0.316	0.534
OC6c	12.65	12.622	0.631	0.431	0.471
OC6d	11.39	13.834	0.469	0.291	0.560
OC6e	12.32	14.207	0.419	0.200	0.587

Appendix Table 41
Reliability Statistics for organisational culture construct 6 – Second round

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.731	0.732	4

Appendix Table 42
Item Total Statistics for organisational culture construct 6– Second round

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC6b	10.45	13.110	0.533	0.313	0.663
OC6c	11.03	12.841	0.641	0.431	0.601
OC6d	9.77	14.024	0.483	0.290	0.691
OC6e	10.70	14.374	0.436	0.197	0.719

9.2.7 Knowledge transfer

Appendix Table 43
KMO and Bartlett's Test for knowledge transfer

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.699
Bartlett's Test of Sphericity	Approx. Chi-Square	417.713
	df	21
	Sig.	0.000

Appendix Table 44
Total Variance Explained for knowledge transfer

Total Variance Explained									
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.076	43.947	43.947	3.076	43.947	43.947	2.868	40.969	40.969
2	1.546	22.081	66.028	1.546	22.081	66.028	1.754	25.059	66.028
3	0.896	12.799	78.827						
4	0.555	7.932	86.759						
5	0.345	4.935	91.694						
6	0.336	4.805	96.499						
7	0.245	3.501	100.000						
Extraction Method: Principal Component Analysis.									

Appendix Table 45
Total Correlation Matrix for knowledge transfer

Correlation Matrix								
		KT1a	KT1b	KT1c	KT2a	KT2b	KT3a	KT3b
Correlation	KT1a	1.000	0.643	0.507	0.493	0.341	-0.068	-0.021
	KT1b	0.643	1.000	0.456	0.402	0.274	-0.155	-0.123
	KT1c	0.507	0.456	1.000	0.554	0.421	-0.145	-0.188
	KT2a	0.493	0.402	0.554	1.000	0.682	-0.153	-0.084
	KT2b	0.341	0.274	0.421	0.682	1.000	-0.385	-0.199
	KT3a	-0.068	-0.155	-0.145	-0.153	-0.385	1.000	0.620
	KT3b	-0.021	-0.123	-0.188	-0.084	-0.199	0.620	1.000

Appendix Table 46
Rotated Components for knowledge transfer

Rotated Component Matrix[a]		
	Component	
	1	2
KT1a	0.820	0.090
KT1b	0.739	-0.027
KT1c	0.761	-0.132
KT2a	0.808	-0.129
KT2b	0.637	-0.400
KT3a	-0.106	0.893
KT3b	-0.030	0.868
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Appendix Table 47
Reliability Statistics for Knowledge transfer

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.631	0.613	7

Appendix Table 48
Item Total Statistics for knowledge transfer

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
KT1a	25.23	21.711	0.619	0.507	0.505
KT1b	25.72	22.166	0.472	0.450	0.549
KT1c	25.09	23.478	0.545	0.417	0.539
KT2a	25.35	20.278	0.661	0.593	0.479
KT2b	26.33	21.262	0.368	0.551	0.592
KT3a	27.97	31.866	-0.151	0.475	0.726
KT3b	28.76	30.626	-0.020	0.409	0.674

9.2.8 Knowledge transfer – Component 1

Appendix Table 49
KMO and Bartlett's Test for knowledge transfer Component 1

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.757
Bartlett's Test of Sphericity	Approx. Chi-Square	305.275
	df	10
	Sig.	0.000

Appendix Table 50
Total Variance Explained for knowledge transfer Component 1

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.918	58.364	58.364	2.918	58.364	58.364
2	0.929	18.579	76.943			
3	0.515	10.296	87.239			
4	0.353	7.064	94.302			
5	0.285	5.698	100.000			
Extraction Method: Principal Component Analysis.						

Appendix Table 51
Total Correlation Matrix for knowledge transfer Component 1

Correlation Matrix						
		KT1a	KT1b	KT1c	KT2a	KT2b
Correlation	KT1a	1.000	0.643	0.507	0.493	0.341
	KT1b	0.643	1.000	0.456	0.402	0.274
	KT1c	0.507	0.456	1.000	0.554	0.421
	KT2a	0.493	0.402	0.554	1.000	0.682
	KT2b	0.341	0.274	0.421	0.682	1.000

Appendix Table 52
Reliability Statistics for knowledge transfer Component 1

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.808	0.820	5

Appendix Table 53
Item Total Statistics for knowledge transfer Component 1

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
KT1a	20.48	22.783	0.628	0.498	0.763
KT1b	20.96	22.518	0.538	0.438	0.788
KT1c	20.34	23.922	0.619	0.399	0.770
KT2a	20.59	20.788	0.717	0.581	0.733
KT2b	21.58	19.891	0.542	0.468	0.801

9.2.9 Knowledge transfer – Component 1 (KT1a, KT1b, KT1c)

Appendix Table 54
KMO and Bartlett's Test for knowledge transfer Component 1 (KT1a, KT1b, KT1c)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.674
Bartlett's Test of Sphericity	Approx. Chi-Square	135.938
	df	3
	Sig.	0.000

Appendix Table 55
Total Variance Explained for knowledge transfer Component 1 (KT1a, KT1b, KT1c)

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.075	69.165	69.165	2.075	69.165	69.165
2	0.573	19.086	88.251			
3	0.352	11.749	100.000			
Extraction Method: Principal Component Analysis.						

Appendix Table 56
Total Correlation Matrix for knowledge transfer Component 1 (KT1a, KT1b, KT1c)

Correlation Matrix				
		KT1a	KT1b	KT1c
Correlation	KT1a	1.000	0.643	0.507
	KT1b	0.643	1.000	0.456
	KT1c	0.507	0.456	1.000

Appendix Table 57
Reliability Statistics for knowledge transfer Component 1 (KT1a, KT1b, KT1c)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.774	0.776	3

Appendix Table 58
Item Total Statistics for knowledge transfer Component 1 (KT1a, KT1b, KT1c)

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
KT1a	10.67	5.576	0.681	0.471	0.615
KT1b	11.16	5.007	0.639	0.436	0.670
KT1c	10.53	6.921	0.529	0.286	0.779

9.2.10 Knowledge transfer – Component 1 (KT2a, KT2b)

Appendix Table 59
KMO and Bartlett's Test for knowledge transfer Component 1 (KT2a, KT2b)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.500
Bartlett's Test of Sphericity	Approx. Chi-Square	97.946
	df	1
	Sig.	0.000

Appendix Table 60
Total Variance Explained for knowledge transfer Component 1 (KT2a, KT2b)

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.682	84.103	84.103	1.682	84.103	84.103
2	0.318	15.897	100.000			
Extraction Method: Principal Component Analysis.						

Appendix Table 61
Total Correlation Matrix for knowledge transfer Component 1 (KT2a, KT2b)

Correlation Matrix			
		KT2a	KT2b
Correlation	KT2a	1.000	0.682
	KT2b	0.682	1.000

Appendix Table 62
Reliability Statistics for knowledge transfer Component 1 (KT2a, KT2b)

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.797	0.811	2

Appendix Table 63
Item Total Statistics for knowledge transfer Component 1 (KT2a, KT2b)

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
KT2a	4.41	3.648	0.682	0.465	
KT2b	5.40	2.228	0.682	0.465	

9.2.11 Knowledge transfer – Component 2

Appendix Table 64
KMO and Bartlett's Test for knowledge transfer Component 2

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.500
Bartlett's Test of Sphericity	Approx. Chi-Square	76.053
	df	1
	Sig.	0.000

Appendix Table 65
Total Variance Explained for knowledge transfer Component 2

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.620	81.020	81.020	1.620	81.020	81.020
2	0.380	18.980	100.000			
Extraction Method: Principal Component Analysis.						

Appendix Table 66
Total Correlation Matrix for knowledge transfer Component 2

Correlation Matrix			
		KT3a	KT3b
Correlation	KT3a	1.000	0.620
	KT3b	0.620	1.000

Appendix Table 67
Reliability Statistics for knowledge transfer Component 2

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.744	0.766	2

Appendix Table 68
Item Total Statistics for knowledge transfer Component 2

Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
KT3a	1.98	0.993	0.620	0.385	
KT3b	2.77	1.834	0.620	0.385	

9.3 Appendix C: Difference between means

9.3.1 Age

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of OC1 is the same across categories of AG.	Independent-Samples Kruskal-Wallis Test	.748	Retain the null hypothesis.
2	The distribution of OC2 is the same across categories of AG.	Independent-Samples Kruskal-Wallis Test	.949	Retain the null hypothesis.
3	The distribution of OC3 is the same across categories of AG.	Independent-Samples Kruskal-Wallis Test	.688	Retain the null hypothesis.
4	The distribution of OC4 is the same across categories of AG.	Independent-Samples Kruskal-Wallis Test	.613	Retain the null hypothesis.
5	The distribution of OC5 is the same across categories of AG.	Independent-Samples Kruskal-Wallis Test	.863	Retain the null hypothesis.
6	The distribution of OC6 is the same across categories of AG.	Independent-Samples Kruskal-Wallis Test	.750	Retain the null hypothesis.
7	The distribution of KT1 is the same across categories of AG.	Independent-Samples Kruskal-Wallis Test	.940	Retain the null hypothesis.
8	The distribution of KT2 is the same across categories of AG.	Independent-Samples Kruskal-Wallis Test	.871	Retain the null hypothesis.
9	The distribution of KT3 is the same across categories of AG.	Independent-Samples Kruskal-Wallis Test	.200	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 36.
Kruskal Wallis test for age.

9.3.2 Job level

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of OC1 is the same across categories of JL.	Independent-Samples Kruskal-Wallis Test	.099	Retain the null hypothesis.
2	The distribution of OC2 is the same across categories of JL.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
3	The distribution of OC3 is the same across categories of JL.	Independent-Samples Kruskal-Wallis Test	.199	Retain the null hypothesis.
4	The distribution of OC4 is the same across categories of JL.	Independent-Samples Kruskal-Wallis Test	.029	Reject the null hypothesis.
5	The distribution of OC5 is the same across categories of JL.	Independent-Samples Kruskal-Wallis Test	.090	Retain the null hypothesis.
6	The distribution of OC6 is the same across categories of JL.	Independent-Samples Kruskal-Wallis Test	.014	Reject the null hypothesis.
7	The distribution of KT1 is the same across categories of JL.	Independent-Samples Kruskal-Wallis Test	.008	Reject the null hypothesis.
8	The distribution of KT2 is the same across categories of JL.	Independent-Samples Kruskal-Wallis Test	.575	Retain the null hypothesis.
9	The distribution of KT3 is the same across categories of JL.	Independent-Samples Kruskal-Wallis Test	.476	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 37.
Kruskal Wallis test for job level.

9.3.3 Years of service

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of OC1 is the same across categories of YS.	Independent-Samples Kruskal-Wallis Test	.540	Retain the null hypothesis.
2	The distribution of OC2 is the same across categories of YS.	Independent-Samples Kruskal-Wallis Test	.444	Retain the null hypothesis.
3	The distribution of OC3 is the same across categories of YS.	Independent-Samples Kruskal-Wallis Test	.405	Retain the null hypothesis.
4	The distribution of OC4 is the same across categories of YS.	Independent-Samples Kruskal-Wallis Test	.162	Retain the null hypothesis.
5	The distribution of OC5 is the same across categories of YS.	Independent-Samples Kruskal-Wallis Test	.863	Retain the null hypothesis.
6	The distribution of OC6 is the same across categories of YS.	Independent-Samples Kruskal-Wallis Test	.651	Retain the null hypothesis.
7	The distribution of KT1 is the same across categories of YS.	Independent-Samples Kruskal-Wallis Test	.481	Retain the null hypothesis.
8	The distribution of KT2 is the same across categories of YS.	Independent-Samples Kruskal-Wallis Test	.287	Retain the null hypothesis.
9	The distribution of KT3 is the same across categories of YS.	Independent-Samples Kruskal-Wallis Test	.389	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 38.
Kruskal Wallis test for years of service.

9.3.4 Education

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of OC1 is the same across categories of EL.	Independent-Samples Kruskal-Wallis Test	.458	Retain the null hypothesis.
2	The distribution of OC2 is the same across categories of EL.	Independent-Samples Kruskal-Wallis Test	.534	Retain the null hypothesis.
3	The distribution of OC3 is the same across categories of EL.	Independent-Samples Kruskal-Wallis Test	.009	Reject the null hypothesis.
4	The distribution of OC4 is the same across categories of EL.	Independent-Samples Kruskal-Wallis Test	.638	Retain the null hypothesis.
5	The distribution of OC5 is the same across categories of EL.	Independent-Samples Kruskal-Wallis Test	.474	Retain the null hypothesis.
6	The distribution of OC6 is the same across categories of EL.	Independent-Samples Kruskal-Wallis Test	.600	Retain the null hypothesis.
7	The distribution of KT1 is the same across categories of EL.	Independent-Samples Kruskal-Wallis Test	.004	Reject the null hypothesis.
8	The distribution of KT2 is the same across categories of EL.	Independent-Samples Kruskal-Wallis Test	.012	Reject the null hypothesis.
9	The distribution of KT3 is the same across categories of EL.	Independent-Samples Kruskal-Wallis Test	.920	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 39.
Kruskal Wallis test for educational level.

9.3.5 Organisation type

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of OC1 is the same across categories of OT.	Independent-Samples Kruskal-Wallis Test	.419	Retain the null hypothesis.
2	The distribution of OC2 is the same across categories of OT.	Independent-Samples Kruskal-Wallis Test	.744	Retain the null hypothesis.
3	The distribution of OC3 is the same across categories of OT.	Independent-Samples Kruskal-Wallis Test	.141	Retain the null hypothesis.
4	The distribution of OC4 is the same across categories of OT.	Independent-Samples Kruskal-Wallis Test	.449	Retain the null hypothesis.
5	The distribution of OC5 is the same across categories of OT.	Independent-Samples Kruskal-Wallis Test	.235	Retain the null hypothesis.
6	The distribution of OC6 is the same across categories of OT.	Independent-Samples Kruskal-Wallis Test	.459	Retain the null hypothesis.
7	The distribution of KT1 is the same across categories of OT.	Independent-Samples Kruskal-Wallis Test	.746	Retain the null hypothesis.
8	The distribution of KT2 is the same across categories of OT.	Independent-Samples Kruskal-Wallis Test	.214	Retain the null hypothesis.
9	The distribution of KT3 is the same across categories of OT.	Independent-Samples Kruskal-Wallis Test	.838	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Figure 40.
Kruskal Wallis test for organisation type.