THE INFLUENCE OF NATIONAL CULTURE DIMENSIONS ON AGILE PRACTICES: THE CASE OF SOUTH AFRICAN SOFTWARE DEVELOPMENT TEAMS

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ABSTRACT

Culture influences how agile frameworks are implemented, and agility is said to be suitable in contexts where flexibility and spontaneity are emphasized. While past studies have investigated the influence of national culture on Agile implementations and practices in Western and Eastern contexts, studies focusing on a South African software development context is limited. Furthermore, few studies have focused on the effect of cultural differences within software engineering in general. The purpose of this study is to describe how national culture influences Agile practices within the South African software development context. In particular, the Hofstede, GLOBE and Schwartz frameworks of national culture were considered. The study was interpretive and was executed using a qualitative, semi- structured interview research strategy directed at Agile practitioners in South African software development teams. The thematic analysis technique was used to analyze the data. Eleven propositions were formulated to highlight how national culture dimensions influence Agile practices. The findings reveal that various national culture dimensions influence the decision-making process, the degree of Sprint interruptions, participation in Agile ceremonies, adherence to policies and prescribed Agile practices, how teams reach agreement, approaches to process improvement and Sprint Planning. The dimensions also influence the extent to which team members are encouraged to have fun and their work-life balance, commitment to achieving Sprint Goals and the sustainable working pace, the Definition of "Done", blocker management, how commitments are made, team cohesion, preparation for and outcomes of Sprint Retrospective, as well as the degree to which the Scrum Master is task-focused or people-focused.

KEYWORDS

Agile Software Development, National Culture, Agile Practices, South Africa

1. INTRODUCTION

Agile frameworks are underpinned by values and principles which are described in the Agile Manifesto for successful software implementations (http://agilemanifesto.org/). The Agile values emphasize collaboration and interaction to mitigate issues which often hamper the success of software projects (Joseph et al., 2016). Since agility is like a mindset or culture, it is imperative to have an environment that characterizes and supports the Agile software development process (Sidky et al. 2007). This is particularly important given that culture plays a role in how Agile frameworks are utilized and implemented (Sutharshan, 2013). For instance, the Agile culture requires the active involvement of team members and is said to be suitable where there is a flat structure (low power distance). Moreover, flexibility and spontaneity are emphasized (Siakas & Siakas, 2007). Cultures from Anglo countries, where Agile methodologies originate from, and Nordic countries, are closest aligned to Agile values (Palokangas, 2013). Since Agile values are based on Western culture, there is a need to investigate their suitability for contexts that demonstrate different values (Zhao, 2015). This is supported by recent concerns from Agile practitioners regarding whether it was possible to implement Agile practices with all nationalities and cultures (Gregory et al., 2016).

Zhao (2015) studied the impact of culture, namely Chinese and Swedish, on the implementation of Scrum, a type of Agile methodology. Their findings concluded that national culture influences Scrum implementations, in terms of how Scrum roles, ceremonies, and artifacts are utilized. Zhao (2015) proposed conducting their study in a different country context to China (Eastern culture) and Sweden (Western culture) to further explore how aspects of national culture might impact Agile implementations. This study has been conducted in response to this recommendation. Indeed, South Africa offers an interesting context of study, due to its heterogeneous cultural grouping (Mnkandla, 2013). While studies have been conducted to investigate the influence of national culture on Agile implementations in Western and Eastern country contexts, there is no research that explores the influence of national culture and the implementation of Agile methodologies in the South African software development context. Furthermore, few studies have focused on the effect of cultural differences within software engineering in general (Darwish & Henryson, 2019).

According to Hofstede's culture classification, South Africa is identified as having high power distance, individualism, masculinity, and indulgence as well as low uncertainty avoidance and long-term orientation (Hofstede, 2013). For instance, South Africans enjoy clearly defined roles and therefore do not like to be called team members (Tanner & Noruwana, 2012). Moreover, South African culture is different to Western or Eastern culture in that it is less homogenous (Ward et al., 2015) and the introduction of different cultures in a team can be problematic for Agile implementations. Even though there is evidence in practice of Agile methods recently being incorporated in African countries, there is a lingering question about how its core values, with roots in western attitudes and behaviors, relates to non-western cultures (Jukich, 2018).

In response to the above-mentioned research problems, the purpose of this study is to describe how national culture dimensions influences Agile practices within the South African software development context. To provide a wholistic insight into the cultural dimensions, three national culture frameworks were considered namely Hofstede, GLOBE and Schwartz. This paper specifically reports on the findings related to the influence on Agile practices. The research question has been formulated as follows: How does national culture dimensions

influence Agile practices within the South African software development context? This study contributes to Agile software development literature through 11 propositions articulating the influence of Hofstede, GLOBE and Schwartz cultural dimensions on Agile practices in South African software development teams. The findings are also relevant to other non-South African teams that demonstrate similar cultural traits.

The paper is organized as follows. Following on from the introduction, a review of literature is presented in relation to the research problem regarding national culture suited for Agile software development. The conceptual framework employed for this study is then described, followed by an overview of the methodology employed for the study. The findings are then described and discussed considering the extent literature to articulate the research contributions. The paper is then concluded.

2. LITERATURE REVIEW

2.1 Defining Culture and National Culture

Culture is composed of traits and characters specific to a group of people which makes them unique from other societies (Aziza, 2001). These traits include language, dress code, music, work, arts, religion, dancing and more. It also entails social norms, taboos, and values (Idang, 2015). Since culture is a broad term, in this research we will narrow the concept of culture to values and practices that people acquire by living in different countries i.e., national culture (Hofstede et al., 2010).

There are several frameworks used for studying national culture. National cultures are a segment of the "mental software" we acquired during the first ten years of our lives and hold most of our basic values (Minkov & Hofstede, 2011, p. 14). This study focuses on the Hofstede, GLOBE and Schwartz national culture frameworks as data is available for South Africa pertaining to these frameworks. Moreover, other studies (e.g., Zhao (2015); Sutharshan (2013), Palokangas (2013)) have successfully employed these frameworks in the context of Agile software development. The frameworks are discussed in the Theoretical Framework section.

2.2 The South African Social Context

South Africa, which is also known as the "rainbow nation," has a culture that is one of the most multifaceted and diverse in the world (Tanner, 2009). It consists of 60.1 million people of which 30.8 million (51,1%) are female and 29.4 million (48,9%) are male (http://www.statssa.gov.za/, 2021). There are four distinct population groups namely, Black African, Colored, Indian/Asian, and White (South Africa. Statistics South Africa, 2016). In Southern Africa, among the traditional Nguni people which includes the Zulu, Xhosa, Ndebele, and Swazi people, there exists a common way of life known as 'Ubuntu' (Metz & Gaie, 2010). Ubuntu means humanity and the term can loosely be translated as "I am because we are" (West, 2014). The core values of Ubuntu are summarized as respect for the dignity of others, group solidarity, teamwork, service to others, and the spirit of harmony and interdependence (i.e., 'each one of us needs all of us') (Mbigi, 2007). The fifth dimension, the spirit of harmony and interdependence, was labelled as the spirit of Ubuntu. Wanasika et al. (2011) posit the philosophy of Ubuntu

encompasses human existence and social relations. Wanasika et al. (2011) then argues, that while there are views of collectivism being associated with current relationships, Ubuntu is grounded in history and includes the present and future obligations to individuals as well. Another example of the collectivism in Ubuntu is that there is no phrase or concept of "Agree to disagree," therefore a consensus must be reached on mutual understanding and agreement regarding a matter through socialization (Nussbaum, 2003). which is associated with modern society and the related practices embedded in education.

2.3 Agility and its Value System

Agile frameworks are based on values and principles defined in the Agile Manifesto. From a cultural point of view, Agile frameworks call for minimal hierarchy, and favor self-organization, equity, empowerment, commitment, responsibility, participation, learning and continuous improvement, consensus, respect, compromises, trust, honesty, openness, and communication (Iivari & Iivari, 2011).

According to the Manifesto, agility values individuals and interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a prescribed plan. The Agile Manifesto also formulates twelve principles that guide the nature of Agile frameworks (Misra et al., 2012).

2.4 Scrum and its Value System

Scrum is one of the frameworks that falls within the Agile umbrella. The Scrum framework provides the flexibility to control and manage requirements and the development process by allowing software to be developed in small chunks in multiple iterations (Hayat et al., 2019). The life cycle of the Scrum framework includes planning, staging, development, and release (Sutherland, 2005). The Scrum values relate to courage, focus, commitment, respect, and openness. These values encourage management and team members to take responsibility instead of blame shifting (Neelima, & Saile, 2013). Schwaber and Sutherland (2017) suggest that Scrum teams need to become proficient in living the Scrum values to successfully use Scrum. The framework consists of three aspects namely roles, processes, and artifacts (Cervone, 2011), and are briefly summarized in Table 1.

Table 1. Description of Scrum aspects

Scrum Aspects	Description
Artifacts – Product Backlog	The Product Backlog is a prioritized list of tasks that contains the product requirements (Girot, 2013). The purpose of the Product Backlog is to keep track of all work that must be done as well as bug fixes (Tanner, 2013).
Artifacts – Sprint Backlog	The Sprint Backlog contains a subset of requirements derived from the Product Backlog that can be completed during a Sprint (Girot, 2013).
Artifacts – Burndown Chart	The Burndown Chart shows a holistic view of how the project is progressing and allows for an assessment of the rate at which items are completed (Neelima, & Saile, 2013).

Artifacts – Task board	The task board is used to track the status of all tasks pertaining to user stories (Tanner, 2013; Cervone, 2011).
Roles – Product Owner	The Product Owner is responsible for providing requirements and maintaining the Product Backlog (Schwaber & Sutherland, 2017).
Roles – Scrum Master	The Scrum Master is responsible for enacting the Scrum values and practices, and to remove impediments (Cervone, 2011).
Roles – Scrum team members	Scrum team members are responsible for achieving the project goals. The characteristics of the Scrum team are: self-organizing; cross-functional; no titles for Developers; does not recognize sub-teams; and there may be individuals who have specialized skills, but the responsibility lies with the team (Schwaber & Sutherland, 2017).
Processes – Sprint	A Sprint that is an event time-boxed to a month or less, where a useable, and potentially a releasable product is created (Schwaber & Sutherland, 2017).
Processes – Sprint Planning	At the beginning of a Sprint, a Sprint Planning meeting is held where the Product Owner will communicate which components, or features identified in the Backlog, are to be prioritized into the next Sprint and which features can be developed in other Sprints (Neelima, & Saile, 2013).
Processes – Daily Scrum	The Daily Scrum is a fifteen-minute time-boxed event held every day between the Scrum Master and the team members (Schwaber & Sutherland, 2017).
Processes – Sprint Review	The Sprint Review is held at the end of Sprint to inspect the increment (i.e., demonstration to Product Owner) and to adjust the Product Backlog if necessary (Schwaber & Sutherland, 2017).
Processes – Sprint Retrospective	During the Sprint Retrospective, the team reviews its past processes and creates a plan to improve during the next Sprint (Schwaber & Sutherland, 2017).

2.5 Influence of National culture on Agile implementations

Past studies have found that national culture can impact Agile implementations. According to literature, Power distance influences Agile roles in relation to leadership qualities, responsibilities, and decision-making power (Zhao, 2015). For instance, Sutharshan and Maj (2011) found that in cultures with low power distance, employees are not afraid to challenge authority and leaders are not autocratic or paternalistic. Instead, a consultative style of decision-making and participative management style prevails. In individualist countries, team members emphasize the importance of personal responsibility pertaining to the quality of tasks completed (Zhao, 2015).

In relation to Scrum practices, teams with a higher uncertainty avoidance index demonstrate more rigorous planning practices, and use tried and tested tools instead of being open to risk-taking (Darwish & Henryson, 2019). Uncertainty avoidance plays a role in certain software practices, such as requirements being specified upfront, test-first programming, and making early design decisions (Darwish & Henryson, 2019). The use of Burndown Charts and limitations on Sprint interruptions are also more prevalent in cultures with a high degree of uncertainty avoidance (Zhao, 2015).

3. THEORETICAL FRAMEWORK

This study employed the Hofstede, GLOBE, and Schwartz project national culture dimensions to inform its theoretical framework. Hanges and Dickson (2004) compared the national culture dimensions of Hofstede to the GLOBE project national culture dimensions, as well as the GLOBE study national culture dimensions to the Schwartz national culture dimensions.

Their findings indicate similarities between Hofstede's and GLOBE's power distance dimension. Hofstede's and GLOBE's uncertainty avoidance dimension are also similar. Hofstede's and GLOBE's individualism and collectivism dimensions share similarities, but GLOBE further classifies collectivism as institutional collectivism and in-group collectivism. Lastly, Hofstede's masculinity dimension is like GLOBE's societal assertiveness' scale. Venaik, Zhu and Brewer (2013) mention that Hofstede long-term orientation dimension and GLOBE future orientation dimension capture various aspects of time orientation of societies. Hofstede's long-term orientation focuses on the past (tradition) versus future (thrift) aspect of societies, while GLOBE future orientation dimension captures the present versus future (planning) practices of societies. The GLOBE future orientation dimension also reflects societal aspirations and preferences for planning. Although criticisms regarding the inconsistency for Hofstede uncertainty avoidance and masculinity national culture dimensions exist (Minkov & Kaasa, 2021), the study provides findings for both extremes of these dimensions in the context of South African Agile software development teams.

Hanges and Dickson (2004) compared the GLOBE national culture dimensions to the Schwartz national culture dimensions. Their findings were that Schwartz's Hierarchy dimension positively correlated with the GLOBE power distance cultural values scale which means that these dimensions are the same. Secondly, the Schwartz's intellectual autonomy dimension was significantly negatively related to the GLOBE uncertainty avoidance cultural values scale which means that they can be considered as opposites of each other. Thirdly, the Schwartz's embeddedness dimension had a significantly positive correlation with the GLOBE uncertainty avoidance cultural values scale, meaning that that these dimensions are the same. Fourthly, the Schwartz's egalitarianism dimension had a significantly positive correlation with the GLOBE gender egalitarianism cultural values scale, meaning they are the same. Lastly Schwartz's egalitarian national culture dimension also had a significantly negative correlation with the GLOBE assertiveness cultural values scale, which translates to them being opposites of each other.

Based on the similarities identified by Hanges and Dickson (2004), Hofstede's and GLOBE's power distance, and Schwartz' hierarchy dimensions have been combined as *power distance*; Hofstede's individualism as well as the GLOBE's institutional collectivism and in-group collectivism dimensions have been combined as *individualism vs. collectivism*; Hofstede's and GLOBE's uncertainty avoidance as well as Schwartz' intellectual autonomy and embeddedness have grouped as *uncertainty avoidance*; Hofstede's masculinity, the GLOBE's assertiveness, and egalitarianism dimensions, as well as Schwartz' gender egalitarianism national culture dimension have been grouped together as *masculinity.*

Hofstede's long-term orientation, and indulgence national culture dimensions; the GLOBE's future orientation, performance orientation, and humane orientation national culture dimensions, as well as Schwartz' affective autonomy, and mastery versus harmony national culture dimensions had no proven similarity with other culture dimensions. Hence, they were discussed as separate national culture dimensions.

Table 2. Description of Hofstede and GLOBE National Culture Dimensions

National Culture Dimensions	Description
Power distance - (Hofstede, GLOBE); Hierarchy - (Schwartz)	Power distance is the extent to which people with less power expect and accept that the decision-making power is distributed unequally (Hofstede, 2013; House et al., 1999). A hierarchical culture alludes to unequal power, roles, and resource distribution in the society, which can be seen in social constructs such as social power, authority, humility, and wealth (Schwartz, 1999).
Individualism & Collectivism – (Hofstede, GLOBE);	Individualism is the acceptance that people in a nation have learnt to act as individuals, whereas collectivism is where people act as a member of a group. The Individualism dimension of national culture is classified from collectivist to individualist (Hofstede, 2011).
Uncertainty avoidance - (Hofstede, GLOBE); Intellectual Autonomy & Conservatism (also called Embeddedness) - (Schwartz)	Uncertainty avoidance refers to whether people in a nation prefer structured over unstructured conditions which is classified from relatively flexible to extremely rigid (Hofstede, 2013). Intellectual autonomy is concerned with a society being inclined to favour individuals' independent choices, enabling them to follow their own ideas. This society also places emphasis on intellectual qualities such as curiosity, broadmindedness, and creativity (Sagiv & Schwartz, 2007). In a conservative society, emphasis is placed on maintenance of the status quo, appropriate behaviour, and members are inclined to be averse to actions that might change the solidary group or traditional orders such as social order, respect for tradition, and family security (Zhao, 2015). People are also viewed as entities who are embedded in the collective. The meaning of life is closely related to the social relationship through the identification of groups and participation in a shared way of life and their goals (Schwartz, 1999).
Masculinity / Assertiveness – (Hofstede, GLOBE); Egalitarianism – (Schwartz)	Masculinity is the degree to which masculine values prevail over feminine values. Masculine values include assertiveness performance, success, and competition, and is classified in a range from tender to tough. Feminine values include warm personal relationships, modesty, quality of life, service, and caring for the weak (Hofstede, 2013). Assertiveness refers to the extent to which individuals in organizations or societies are assertive, confrontational, and aggressive in social relationships (House et al., 1999). Egalitarianism is the opposite of hierarchy. Egalitarian societies expect people to sacrifice selfish interests to have voluntary commitment to promote the social welfare of all people in terms of quality, social justice, freedom, social responsibility, and honesty (Schwartz, 1999).

Long-term orientation (Hofstede)	Long-term orientation is "the fostering of virtues oriented toward future rewards, in particular, perseverance and thrift" (Hofstede as cited by Zhao, 2015, p. 17). This refers to a nation's time orientation and is characterized by "patience, perseverance, respects for older, tradition and ancestors, obedience sense and the duty towards the larger good" (Zhao, 2015, p. 18).
Future orientation - (GLOBE)	Future orientation refers to the extent to which individuals in organizations or societies engage in future-oriented activities such as planning, investing in the future, and delayed gratification (House et al., 1999).
Indulgence – (Hofstede)	In an indulgent culture it is deemed good to be free. Acting on impulses of what one wants to do is viewed as a good thing. In a restrained culture, the general sense is that life is hard, and that duty, not freedom, is the normal state of being (Hofstede, 2013).
Performance Orientation (GLOBE)	Performance orientation refers to the extent to which an organisation or society encourages and rewards group members for performance improvement and excellence (House et al., 1999).
Humane Orientation (GLOBE)	Humane orientation refers to the extent to which individuals in organisations or societies encourage and reward individuals for being fair, altruistic, friendly, generous, caring, and kind to others (House et al., 1999).
Mastery versus Harmony (Schwartz)	Mastery societies are focused on self-assertion in that ambition, success, courage, and competence are highly admired, and the belief that society needs to develop and grow (Schwartz, 1999). Harmony is the opposite of mastery. Harmony suggests that the culture desires to reach harmony in the environment which includes keeping unity with nature, protecting the environment, and improving the world (Schwartz, 1999).
Affective autonomy (Schwartz)	Affective autonomy is regarding a culture that encourages individuals to pursue experiences that have a positive effect, for example pleasure, a lifestyle of excitement, and a varied life (Sagiv & Schwartz, 2007).

The theoretical framework depicted in Figure 1 was formulated by the researcher based on the findings from Hanges and Dickson (2004). Hofstede, Schwartz, and the GLOBE national culture dimensions are listed in Figure 1, and the block to the right of the national culture dimensions is the Agile practices. The arrow suggests that the researcher anticipates national culture to have an influence on various Agile practices.
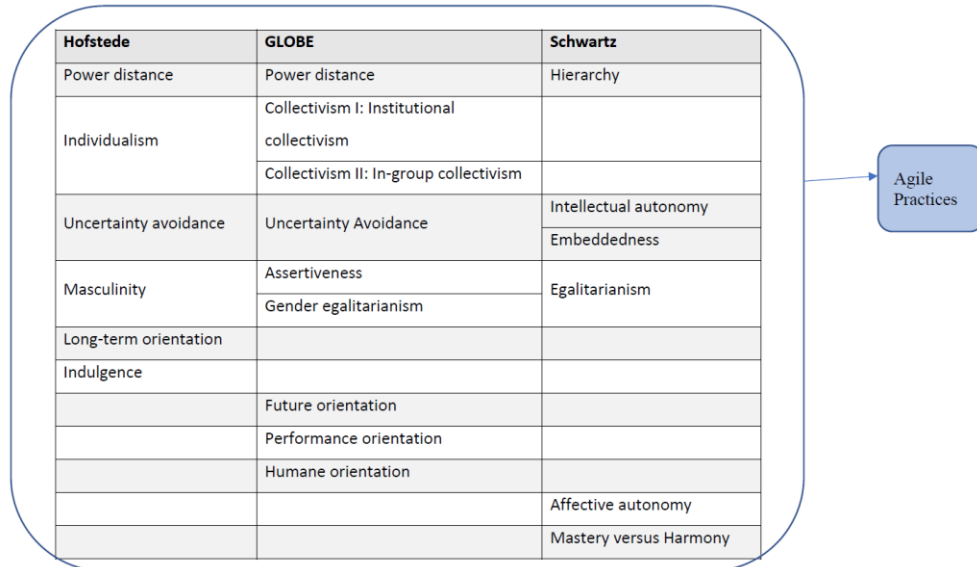
Hofstede	GLOBE	Schwartz
Power distance	Power distance	Hierarchy
Individualism	Collectivism I: Institutional collectivism	
	Collectivism II: In-group collectivism	
Uncertainty avoidance	Uncertainty Avoidance	Intellectual autonomy
		Embeddedness
Masculinity	Assertiveness	Egalitarianism
	Gender egalitarianism	
Long-term orientation		
Indulgence		
	Future orientation	
	Performance orientation	
	Humane orientation	
		Affective autonomy
		Mastery versus Harmony

Agile Practices

Figure 1. Cross Analysis of Scrum Practices and National Culture Dimension

4. METHODOLOGY

The section describes the research methodology followed for this study. The study employed a subjectivist and qualitative stance. The questions in the study were "how" questions in that the researcher wanted to describe how national culture dimensions impact on Agile practices in the South African context. The data that emerged was descriptive meaning that the data was reported in words instead of numbers (Creswell, 2003). This paper was written from an interpretivist paradigm perspective. The research question was answered using a deductive research approach, using a framework which informed the coding process (Braun & Clarke, 2006).

Data was collected using qualitative semi-structured interviews. Initial interview questions aimed to set the context for the rest of the interview. The national culture dimension questions required the participant to expound on the responses given in relation to the culture dimension and the influence it exerted on the Agile practices. The researcher probed into unexplored themes that arose or asked the participant to clarify where the researcher felt more information could be retrieved regarding the context. A cross-sectional timeframe was chosen. No previous data was used, and no data was collected after write-up of analysis. The data was collected over about a six-month period from December 2020 to May 2021.

Purposive sampling was used in this study. Within purposive sampling, judgmental sampling was specifically used as the researcher targeted participants who could provide the relevant information to meet the objectives of the study (Etikan & Bala, 2017). The target population was Agile practitioners within the software development context. Interviews were held with participants from various roles within the Agile methodology as well as management to get a different perspective which was often a more holistic view than the responses from a team

member. Participants were asked about all the various practices and ceremonies within the Scrum framework. Furthermore, the researcher also targeted participants from a wide range of cultural groups in South Africa. Twenty-six semi-structured interviews were conducted with various project team members and stakeholders such as the Scrum team, Product Owner, Scrum Master, management, end-users, and customers across different teams and companies in South Africa. The interviews were held via digital video communication platforms such as Google Meet, Microsoft Teams, and Zoom.   All interviews were transcribed. The participants' demographics are shown in Table 3.

Table 3. Respondents' Demographics

Person	Role	Race	Years of experience in role	Team Size
P1	Scrum Master	Black	5 yrs.	16-25
P2	Agile Coach	White	8 yrs.	7
P3	Scrum Master	White	1 year	9-13
P4	Agile Coach	White	3 yrs.	12
P5	Product Owner	White	3 yrs.	4-7
P6	Technical Product Manager	White	5 yrs.	4-11
P7	Credit Analyst	Black	8 yrs.	12
P8	Agile Coach	Black	2 yrs.	13
P9	Scrum Master	White	2 yrs.	6
P10	Product Owner	Coloured	1 year	8
P11	Scrum Master	White	5 yrs.	8-9
P12	Agile Project Manager	Coloured	1 year	12
P13	Project Manager	Coloured	5 yrs.	6
P14	Application Support Specialist	Coloured	1 year	20
P15	Solutions Architect	White	8 yrs.	8-9
P16	Agile Coach	White	1 year	~14
P17	Scrum Master	White	6 yrs.	15
P18	Agile Coach	Indian	5 yrs.	7
P19	Agile Coach	White	1 year	7
P20	Head Of Application Development	White	4 yrs.	5-10
P21	Agile Coach	White	5 yrs.	~10
P22	Product Manager	White	1 year	6
P23	Scrum Master	Coloured	5 yrs.	6
P24	Centre of Excellence Manager	Indian	6 yrs.	6-9
P25	Business Analyst	Coloured	2 yrs.	6-7
P26	Agile Coach	White	1 year at organization 9 yrs. in role	3 teams of ~ 5 people

Each participant answered the questions in line with their Agile implementation context and the events experienced within the teams they were part of or managed. Participants were involved in projects in various phases of the software development life cycle. Some were part of mature Agile teams while other teams were involved in newly formed teams. Some participants changed companies and were too new to answer questions for the team they were in at that point in time and referred to the previous team or organization they were part of since

they had more experience to refer to for those teams. The researcher then focused on that selected team as the context for the interview. Most of the interview responses were based on the current context of the team within their team formation stage and software development life cycle. However, some respondents also provided data looking retrospectively and gave insight into how the team dynamics, processes, and artifacts changed over time. These responses were noted in the data analysis and the discussion sections.

The data was analyzed using thematic analysis. Analysis and data collection were conducted concurrently. In thematic analysis, responses are used to identify, analyze, and report patterns or themes within the data (Braun & Clarke, 2006). By way of example, the researcher coded the responses in a qualitative data analysis tool called NVivo. Themes were identified within the data for each question and reported on in the data analysis and discussion chapters. The collected data was organized and described in rich detail and various aspects of the research topic was interpreted. Thematic analysis entails the following phases: familiarizing yourself with your data, generating initial code, searching for themes, reviewing themes, defining, naming themes, and producing the report (Braun & Clarke, 2006).

This study made use of the following verification strategies: selecting the appropriate sample (Morse et al., 2002), comparing cases to seek out similarities and differences across companies to ensure different perspectives are represented, using 'rich' and 'thick' verbatim quotes from participants (Noble & Smith, 2015), consulting multiple data sources such as suggested links to concepts and other resources (Buchan et al., 2017), and reflexivity, where the researcher made notes of questions to change after each interview (Noble & Smith, 2015).

5. FINDINGS & DISCUSSION

This section is organized as follows. For each dimension, the empirical results are first presented including relevant quotes. Theoretical propositions are then formulated, and the findings are then compared to literature.

5.1 Power Distance and Agile Practices

In South African Agile teams, the decision-making process is influenced by the degree of power distance prevailing in the team. For instance, in smaller South African Agile teams with a flatter organizational structure, power distance is low and decision-making power is more equal among team members. Furthermore, these South African Agile teams implement various mechanisms (e.g., voting) to support a more democratic decision-making process to reach consensus: *"when it comes to making decisions, it would be a team discussion; we would explain why it is beneficial for the team, get their feedback; and then they would normally agree and be game to try it out"* (P23). In contrast, larger South African teams are more hierarchical, and the final decision is sometimes made by the Team Leader, or even management: *"The teams that I work with are still operating in an environment where senior management make decisions that often override the team regarding delivery timelines and attention to building in quality"* (P24).

In South Africa, power distance also influences the number of interruptions experienced by the Agile teams as well as the team's ability to decide on the scope of the Sprint. In instances where high power distance prevails, Agile teams face numerous interruptions by management to change the scope of the Sprint. In those instances, teams are less in control of the scope of

the Sprint: *"Interferences were mostly from operational managers."* (P6). During the Sprint Planning meetings, the scope is often decided by empowered individuals, with less input and consensus from the team. In contrast, in South African Agile teams with low power distance, the Sprint scope could only be changed by team, and they could agree on the Sprint scope through consensus. Furthermore, changes could be actioned by anyone, provided that the reason was valid. In line with the above findings, the following proposition is formulated: ***Proposition 1: In South African Agile teams, power distance influences the decision-making process and the degree of interruptions experienced by the teams during the Sprint.***

According to the findings, it can be posited that greater agility is achieved in South African teams with low power distance as this promotes self-organized teams. Indeed, Agile principle 11 states that self-organized teams achieve the best architectures, requirements and designs (https://agilemanifesto.org). The findings concur with literature whereby low power distance promotes shared understanding, discussion, and consensus (Zhao, 2015).

The principle of self-organized teams (Schwaber & Sutherland, 2017) is also supported when teams face minimal interruptions during the Sprint, and when they can agree on the Sprint scope democratically. Past studies have also found that in cultures with high power distance, interferences are often experienced and deemed acceptable (Zhao, 2015).

5.2 Individualism / Collectivism and Agile Practices

In South African Agile teams, the degree of individualism / collectivism influences the members' degree of participation in Agile ceremonies. In individualist teams, members do not actively participate in ceremonies. For instance, these members are only expected to provide feedback on their specific work items during daily stand-ups: *"With artifacts, there is an expectation to be involved overall for the team. Generally, there is a bit of a barrier to that and separation; for example, you would do what is in your lane instead of everyone working together on something. They were looking at who was accountable for something"* (P4). In contrast, in South African Agile teams with collectivist traits, members prepare for and participate in all meetings, whilst collectively providing input on all items on the agenda: *"We do a Sprint Review which forms part of our planning. In terms of artifacts, reviews, and planning there is a collective responsibility. There is never an instance where one person runs the Sprint Planning. As we unpack stories, developers give their input. The expectation is that everyone in the team has to contribute to the Sprint Reviews, planning and artifacts"* (P23). However, in both individualist and collectivist teams, the degree of participation is mitigated by the team members' role. For instance, during Sprint Planning meeting 2, Business Analysts and Quality Assurance Testers might not have much to contribute as the meeting focuses on technical design tasks.

The influence institutional collectivism has on Agile artifacts is that management make commitments on behalf of the team to deliver Increments by a specific deadline.: *"I would say there is more leaning towards the group commitment which is often to someone else's deadline where sacrifices are made."* (P21). In most small Agile teams, although they are collectivistic, individual goals rarely suffer, and it is taken seriously by management in that leave is never cancelled, work is scheduled around their availability, and commitments are not made by the Product Owner on behalf of the team until the individual team members' availability is discussed: *"We never cancelled leave and took individual goals exceptionally seriously. When people didn't have individual goals, they filled in the blanks and they knew that at some point*

they would ask people for that time. The bi-product of that is that they supported one another really well." (P20).

The findings reveal that in-group collectivism influences team cohesion. In-group collectivistic teams formed sub-teams whereby teams are split according to domain, job function, platform, or technical architecture. According to the findings, in large-scale Agile teams, where a high degree of individualism is demonstrated, in-groups are prevalent: *"An example would be where twenty people of different races would come into a room and would most likely relate to or first interact with people of the same race"* (P16). Sub-teams also exist where multiple vendors or disciplines from various domain teams are involved. For example, the vendor that performs the quality testing has a separate team; the Business Analysts are internal to the organization and forms the Business Analyst team; the Lead Business Analyst plays the role of the Product Owner; the Developers formed another team as well. Sub-teams are used as a knowledge sharing mechanism: *"There are sub-teams and leads because mentorship is important in the office."* (P13). In contrast, Agile/Scrum teams of eight members or less, sub-teams were not mentioned, but the team operated together (P23). In line with the above findings, the following proposition is formulated: ***Proposition 2: In South African Agile teams, the participation of team members in Agile ceremonies, commitments made, and team cohesion is influenced by the degree of individualism / collectivism manifested in the team.***

Based on the findings, it can be inferred that South African teams with collectivist traits are better able to adhere to the Agile value pertaining to collaboration. None of the past literature that was reviewed provided insights into the influence of individualism and collectivism on participation in Agile ceremonies. Past studies only mentioned that individualist teams require workshops and group social events to increase group cohesiveness (Brockmann & Thaumüller, 2009). Furthermore, the Scrum Guide prescribes that the team should be collectively accountable and responsible. However, the findings revealed that individualistic teams are not collectively responsible and accountable for the product; the Scrum Master is responsible for the delivery of the team and the Product Owner is accountable for the product. The study therefore provides new insights into the role of individualism / collectivism in a team's ability to achieve agility. Collectivistic teams align to Agile principle 4 that states that business people and developers must work together daily throughout the project.

According to literature, institutional collectivist societies prioritize institutional goals over individual goals (House et al., 1999). In this study, although small teams are mostly collectivistic, they have a low degree on institutional collectivistic traits, and although large companies mostly had individualistic traits, institutional collectivistic traits manifested. Therefore, since South African teams that display a low degree of institutional collectivism, are consulted, and have work commitments scheduled around their availability, they align with Agile principle 8 that states that Agile processes promote sustainable development; the sponsors, developers, and users should be able to maintain a constant pace indefinitely.

Lastly, literature mentions that, although westernised South Africa may be individualistic, it desires a greater integration into smaller groups and families (Booysen & Van Wyk, 2007). The findings are contrary to literature, as South African Agile software development, individualistic teams formed sub-teams, while collectivist teams are found to be more inclined to practice pair-programming than individualist teams (Darwish & Henryson, 2019). The practice of pair-programming aligns to the Agile principles 4 and 6 that concerns of face-to-face conversation, and of working together daily throughout the project (Beck et al., 2001).

5.3 Uncertainty Avoidance and Agile Practices

The study found that uncertainty avoidance influences the extent to which teams are comfortable with uncertainty and ambiguity during the Sprints. South African Agile teams from larger companies typically demonstrate high uncertainty avoidance. Hence, they tend to strictly follow due procedures: *"They have become less tolerant of unorthodox methods and instead trying to become more team-orientated"* (P4). Smaller Agile teams, where low uncertainty avoidance is demonstrated, are flexible and less strict on adherence to policies. There might also be no documented policy and instead a standard way of working is commonly accepted in the team: *"We aren't strict with regards to policies, procedures and Scrum processes, because I think you can lose agility as this is all about change and adapting"* (P23).

The findings revealed that South African Agile teams with low uncertainty avoidance are also flexible and experiment with the Sprint duration to suit their business practices. Intellectual autonomy prevails and team members are also encouraged to pursue their own ideas. Curiosity and creativity are valued, and the team is supported to experiment with Agile frameworks. The Scrum teams are reminded by the Scrum Master of the values and principles of Agile when new ideas are presented to remain agile (P12). Furthermore, time is set aside in the Sprint for the team to research any ideas to present back to the team: *"Well, the process is theirs. Scrum is just the beginning. I value curiosity and creativity so I would give you the framework and I expect you to explore it, pull it apart, put it back together, find a way that works for you, and if you make a mistake, I will be there to support you."* (P20). In contrast, in large corporate companies, intellectual autonomy is encouraged in theory but not much is put in practice, as explained by P8. This was due to project time pressure as well as red-tape and bureaucracy that halted the progress of the team regarding their own ideas. Therefore, due to the environment not being provided for teams in large corporates to pursue their own ideas, we can derive that the context is that of low intellectual autonomy, or high embeddedness into the processes and procedures of the organization. In line with the above findings, the following proposition is formulated: ***Proposition 3: In South African Agile teams, the degree of uncertainty avoidance influences the extent to which teams adhere to policies and prescribed Agile practices, and the extent to which intellectual autonomy is encouraged and practiced.***

South African teams with low uncertainty avoidance are more inclined to adapt their business processes and are therefore better adhering to the Scrum principle of empiricism of which transparency, inspection and adaptation are pillars (Schwaber & Sutherland, 2017). The findings concur with literature whereby teams with a higher uncertainty avoidance index use tried and tested tools instead of being open to risk-taking (Darwish & Henryson, 2019). Moreover, while past studies indicate that such teams tend to minimize risks (Darwish & Henryson, 2019), the findings from this study further reveal that this is achieved through strict adherence to policies and procedures. Since, teams that displayed a low degree of uncertainty avoidance, did not have strict policies and procedures in place and used tools that were commonly accepted, they align with Agile principle 10 which states that simplicity is essential.

There is no comparative literature for the influence of intellectual autonomy on software development teams. However, South African software development teams that displayed intellectual autonomy, had the environment and motivation to be creative, and embraced the value of curiosity. Therefore, teams with a high degree of intellectual autonomy align with Agile principle 5 that states, *"Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done*." (Beck et al., 2001).

5.4 Masculinity / Assertiveness and Agile Practices

According to the findings, masculinity / assertiveness influences Agile practices relative to how teams reach agreement, resolve conflict and the degree to which team members speak up during meetings. For instance, in South African Agile teams demonstrating low levels of masculinity, a democratic process is used to reach consensus. During this democratic process, each team member can provide input: *"To ensure consensus I use planning poker in order to get different perspectives of the complexity, uncertainty, risk and effort associated with the work to be committed to in the Sprint. It also provides us with the final velocity score so that the team can agree on the commitment for the Sprint"* (P26). In teams with a high degree of masculinity, team members with the most knowledge on a topic typically makes the decision: *"At the moment it doesn't feel like willing consent from all team members, more a kind of 'I don't want to argue about it, so I'll just go with it'"* (P4). Masculinity is mostly prevalent in newly formed Agile teams but as the team matures, it often demonstrates less masculinity and instead use the method of willing consent. Masculinity also influences how conflict is resolved in South African Agile teams. Agile teams with a high degree of masculinity resolve conflicts through direct confrontation or in the presence of management: *"A conflict resolution that we had was with the Scrum Master where we suggested that we have a conversation with the each one's manager to try and resolve the conflict"* (P4). In teams where a low degree of masculinity is manifested, conflict (especially personal conflict) is avoided or resolved through conversation that the Scrum Master facilitate (P17).

The findings also reveal that different team members can demonstrate different degrees of assertiveness. In South African Agile teams, when some members are more assertive, others in the team tend to not speak up to give their opinion or ideas (P6). However, this can be circumvented if the Scrum Master ensures that all voices are equally heard.

In teams with a high degree of egalitarianism, team members are committed to assist each other as a matter of choice. In low egalitarian teams, members are expected to be told what to do (P16) and people must request assistance where needed (P4). Smaller teams have high egalitarianism and make the team aware when they need assistance or when they can offer help: *"The team just steps in and assists wherever they can. In scrum, we are motivated to work together as a team."* (P12).

According to the findings, in teams with high masculinity / low gender egalitarianism, Scrum Masters write down blockers in meetings while presenting (as teams were remote at the time). Therefore, it can be deduced that Scrum Masters play a secretarial role in teams with low gender egalitarianism: *"The Scrum Master plays a bit of a secretarial role by making notes and make it transparent in the scrum of scrums."* (P4). In contrast, in teams with high gender egalitarianism, the Scrum Master did not necessarily do admin work. The team write down their own blockers on the Sprint Backlog and presented it to the team. P15 said that the Scrum team handled impediments whereby the subject matter expert sought to resolve the blocker. Furthermore, impediments were noted down in the ticket logging system (Jira) by the person who raised it. There was no instance where solely a woman had to write on the board: *"In the workspace, everyone brings their upbringing and experiences into the space. In my role, I avoid being the 'Scrummy mummy'. For example, I am not an admin fairy, I don't organize people's birthdays, or touch the board, or check anyone's artifacts, nor organize the team- builds. I think that is something that I love about this role because I can challenge those traditional views."* (P19). In line with the above findings, the following proposition is formulated: ***Proposition 4:***

In South African Agile teams, masculinity / assertiveness influence how members reach agreement, resolve conflict, expectations in being told to assist or whether they assist as a matter of their own choice, and blocker management.

The Scrum value of commitment proposes that team members come to an agreement on the commitments they make as a team and as individuals (Schwaber & Sutherland, 2017). The findings reveal that the national culture of masculinity (Hofstede, 2013) and assertiveness (House et al., 1999) influence the extent to which this Scrum value is adhered to. Masculinity influences the conflict resolution mechanisms in South African Agile teams. Past studies have mostly related the issue of conflict resolution to the power distance cultural dimension (Sutharshan & Maj, 2011). This study reveals that masculinity also influences how conflict is resolved, in line with Hofstede (2013) who states that masculine cultures resolve conflict by fighting. Since teams with low masculinity reach agreement by consensus, resolve conflict by facilitated conversations, assist each other as a matter of choice, and anyone can log and resolve blockers, they therefore align with Agile principle 4 that states that business people and developers must work together daily throughout the project.

5.5 Long-Term (Short-Term) Orientation and Agile Practices

In South African Agile teams, the long-term (short-term) orientation national culture dimension influences how members approach the Retrospective Meetings to improve on their work practices. In particular, the findings reveal that short-term orientated teams mostly reflect on the past Sprint i.e., "what went well" and "what did not go well" during Retrospective Meetings. They do not necessarily focus on long-term results, future actions, or how the team can improve: *"In Retrospective Meetings, there is an aspect of focusing on continuous improvement but there is a larger aspect of focusing on the past. The conversations about the future become a frustration for the team because they feel that it won't change anything"* (P4). Teams with long-term orientation instead have in-depth discussions around improvements for future: *"It was very much backward-looking at first. Once we started putting measures in place, things started to change so that we focus on how we can get better going forward"* (P20). In line with the above findings, the following proposition is formulated: ***Proposition 5: In South African Agile teams, long-term (short-term) orientation influence teams' approaches to process improvement.***

The findings are in line with literature relative to long-term orientation, whereby the team members display habits that show consideration for future events by preparing for them in the present (Darwish & Henryson, 2019). Furthermore, in long-term orientated teams, members actively engage in tasks that lead to continuous improvement and are willing to brainstorm how to do things better. This is in line with literature that states that long-term orientation cultures emphasize schooling (learning) and have conversations about the effectiveness of Agile methods to deliver working software (Brockmann & Thaumüller, 2009). It can therefore be posited that long-term orientated teams are better able to adhere to Agile principle 12 stating that "at regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly" (Beck et al., 2001).

5.6 Future Orientation and Agile Practices

Future orientation influences Agile practices in relation to how Product Backlog refinement sessions are conducted. In South African Agile teams that are future oriented, members are more forward-looking during Product Backlog refinement sessions. These Agile teams not only plan for the next Sprint but sometimes plan for future Sprints as well: *"We plan for every Sprint. In some cases, we plan two Sprints ahead. This depends on the PO and business because they buy into the product, so we wait for them to give us the requirements"* (P1). Future orientation traits are prevalent in mature Agile compared to novice teams, and this translates in their level of planning of the Sprints. In line with the above findings, the following proposition is formulated: ***Proposition 6: In South African Agile teams, future orientation influence teams' approaches to Sprint Planning.***

Literature states that limiting planning to only a Sprint prevents developers from thinking ahead, while planning for two or more Sprints helps the developers focus on the Product Vision and to maintain the bigger picture (Cockton, Lárusdóttir, Gregory & Cajander, 2016). Therefore, while Scrum proposes only planning for the next Sprint ahead due to the future being uncertain beyond two weeks, there is value in helping teams see the bigger picture.

5.7 Indulgence and Agile Practices

In South African Agile teams, indulgence influences Agile practices relative to whether enjoyment during Agile ceremonies is encouraged. According to the findings, teams with high degrees of indulgence are encouraged to have fun by celebrating together, playing snooker, having remote games as a team, use humor or banter during ceremonies. Humor or banter is used to ease tension and teams allocate time for fun activities during ceremonies like the Retrospective Meeting. This further improves team cohesion. In contrast, in teams with a low degree of indulgence, the ceremonies are formal, and members do not speak about their personal lives during meetings: *"It is always encouraged in the processes. We always start with a bit of banter. With a retro we would have some fun in the first thirty minutes and have lunch together offsite. When we were in office, we would get lunch every day and people might breakaway to do a puzzle or something like that"* (P3). In line with the above findings, the following proposition is formulated: ***Proposition 7: In South African Agile teams, the degree of indulgence influences the extent to which members are encouraged to have fun during ceremonies.***

Findings indicate that teams that emphasize indulgence, have better team cohesiveness. This agrees with literature which states that in societies with a high degree of indulgence, individuals tend to show positive attitude which helps to maintain team motivation (Ayed et al., 2017). Literature also states that teams with a low degree of indulgence display fatigue (Ayed et al., 2017). The findings reveal a similar trend where low indulgence teams do not have fun activities due to being busy with projects and not having time to build team morale. Team morale increases commitment to the Scrum team goals and the Sprint Goals. Therefore, teams that manifest a high degree of indulgence, are closely aligned to the Scrum value of commitment and Agile principle 5 that concerns building projects around motivated individuals (Beck et al., 2001).

5.8 Performance Orientation and Agile Practices

Findings reveal that in South African Agile teams where a high degree of performance orientation is manifested, the artifacts are influenced whereby the team strives to complete all items in the Sprint and are highly committed to achieving the Sprint Goals: *"Once the team has their goals, they are committed to achieving them and working together to do so"* (P3). In Agile teams with a lower degree of performance orientation, due to the teams valuing relationships over results, the team is lenient and has a lower sense of urgency since all items in the Sprint are not delivered. According to the findings, in South African Agile software development teams in general, success is measured mostly by whether the features and stories in the Sprint are delivered. In teams with a high degree of performance orientation, the stories and features are on average 80% completed in each sprint. Teams with a high degree of performance orientation generally thrived to complete all the items promised. In contrast, in teams with a seemingly low degree of performance orientation, items on the Sprint Backlog items are on average 60%-70% complete at the end of each sprint. This is due to these teams being mostly focused on production support issues rather than the Sprint Goals: *"I would average it at 70% because much more emphasis is put on production than on Sprint."* (P8). While focus of these teams are split between new project Sprint work and production support, performance levels are not compromised. In fact, they are also performance orientated since are flexible, and robust to handle change in the environment such as urgent production errors. Some teams with a high degree of performance orientation focus more on completing the Sprint Goal than completing the task items on Sprint Backlog since they feel that it is a more accurate representation of performance: *"We define success by us achieving our goal. Items are completed up to 60% but we always achieve the goal. I think what's more accurate is how many things we get done."* (P17). Therefore, percentage of Sprint tasks complete, is not a good measure for performance orientation in the South African software development context.

In addition, where a high degree of performance orientation is manifested, the Definition of "Done" is defined up front and work done is signed off after the stakeholders complete their user acceptance testing (UAT): *"The Definition of "Done" was actually signed-off on UAT and then pushed into production that afternoon."* (P2). In teams with a seemingly low manifestation of performance orientation, a fixed and documented Definition of "Done" does not exist. In these cases, performance is determined by the customer's approval of work delivered. Further investigation is required into the role the Definition of "Done" plays in performance and why this phenomenon occurred.

Lastly, teams with a high degree of performance orientation, the Sprint Retrospective meetings were viewed as the most important meeting, whereas in teams with a low degree of performance orientation, Sprint Retrospective meetings did not always happen: *"I think it has taken a bit of a step back because there are no longer official Retrospective meetings. I always felt that the retros helped the team to focus on excellence. At this point, it is still stable, and the teams are small and still new, but I think that it will start slipping if the proper Retros are not put into place."* (P15). In line with the above findings, the following proposition is formulated: ***Proposition 8: In South Africa, Agile teams with a high degree of performance orientation thrive to complete all items in the Sprint, are committed to achieving Sprint Goals, have a fixed Definition of "Done", and have regular official retrospectives.***

There is no literature for how the performance orientation national culture dimension influences Agile practices. However, the outcome of our findings for the performance orientation dimension was as expected whereby high performance orientated teams are highly committed to achieving the Sprint Goals, thrive to complete all tasks allocated to the Sprint, and have a fixed Definition of "Done and have the Increment released into production once the Definition of "Done" is met. Although prior research states that having a Definition of "Done" improves performance by reducing the number of defects and technical debt resulting from deferred defects (Davis, 2013), past studies do not mention that the Definition of "Done" contributes or is prevalent in teams where the percentage of work done in a Sprint. In cases where teams focus on both production issues as well although all new feature work is not completed in the Sprint, a contribution to Increment is still made by ensuring the existing software works. Therefore, they were not any less performance orientated than teams that only focused on new feature work and completed all items in the Sprint. Teams with high performance orientation that strived to complete all tasks in the Sprint aligns to Agile principle 3 that is concerned with delivering working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale. Since teams with a high degree of performance that focuses on production support items as well, ensures the continuity of the existing system, they align with Agile principle 7 that states that working software is the primary measure of progress. The performance orientated teams that focus on the Sprint Goal only, aligns with Agile principle 10 that states that simplicity--the art of maximizing the amount of work not done--is essential. Since performance orientated teams have regular official retrospectives, they align to Agile principle 12: "At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly" (Beck et al., 2001).

5.9 Mastery vs. Harmony and Agile Practices

The findings indicate that in teams with high degrees of mastery, all members actively prepare for Retrospective meetings. In addition, the findings such teams have measures put in place to track improvements: *"We try to have a smart goal and we make improvements visible on the board to remind people. It depends on what the action is and we do try to come back and evaluate it at some point."* (P17). Conversely, in teams that display traits from the harmony dimension only the Scrum Master prepares for Retrospective meetings. Moreover, teams with high degree of harmony do not necessarily note ideas for improvement.

The findings also reveal that teams that lean toward the mastery national culture dimension often include innovative features or improvement items as part of the Sprint Backlog based on the feedback in the Retrospective meetings: *"The team is major focused on [innovation]. The problem is sometimes to dial them back because they are always coming up with new ideas. But we are still delivering to clients, so we need to focus on improving the delivery of the product."* (P20). In line with the above findings, the following proposition is formulated: ***Proposition 9: In South Africa, Agile teams with a high degree of mastery actively prepare for the Sprint Retrospective meetings, have improvement measures in place, and have many innovative features or improvement items as part of the Sprint Backlog based on the feedback in the Retrospective meetings.***

Team members in mastery teams actively preparing for Retrospective meetings aligns with the Scrum Guide's recommendation to address improvements from Sprint Retrospective meetings as soon as possible or even to add to suggested improvements to the Sprint Backlog for the next Sprint (Schwaber & Sutherland, 2020).

The finding of mastery teams including innovative features or improvement items in their Sprint Backlog based on feedback from Retrospective meetings was expected based on the mastery trait of the belief that society needs to go through development (Schwartz, 1999). In terms of the theme related to improvement measures, mastery teams are closely aligned with Agile principle 12 which states: *"At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly"* (Beck et al., 2001).

Our finding which suggests that teams with harmony traits accept the Agile artifacts such as the Product Backlog and the various templates as is without the need to change these artifacts. This finding was expected based on the harmony trait of being at harmony with the environment without wanting to change, direct or exploit (Schwartz, 1999). The implication for Agility concerning the harmony national culture dimension is that Agile artifacts are used as prescribed.

5.10 Humane Orientation and Agile Practices

The findings indicate that teams that manifest low humane orientation are not tolerant of mistakes. In low humane orientated teams, a blame culture prevails. Furthermore, in teams with low humane orientation, mistakes are seen as failure instead of as a learning opportunity: *"It is better than it was, but we are still at that point where mistakes are seen as failure instead of a learning curve."* (P21). In addition, the Scrum Master in low humane teams is more task-focused (administrative) than people-focused. For example, the Scrum Master in low humane teams do not focus very much on soft skills due to the Scrum Master primarily fulfilling the Project Manager role, which is an expert role (P4) and not a people-focused role: *''When a Project Manager or leader is placed into the role of Scrum Master, and although they have the technical skill set, they are not able to relate to their soft side which enables them to be sensitive to cultural differences, or conflict in the team; it is important to fulfil the role of Scrum Master with the skill sets (i.e. being sensitive to the human aspect) that is necessary, instead of being task-driven. It is about the people and their well-being and empowerment. This should be the key to success."* (P16). In contrast, in teams with a high humane orientation, the Scrum Master acts as the coach to help the team perform better and this even involves coaching based on technical skills.

Humane orientation influences Agile processes whereby humane orientated teams have ceremonies to get to know one another, and team members have an equal opportunity to speak in the ceremonies: *"As an organization, we are very much about the collective and bringing your whole self to the workplace. This team is still relatively new with only our second Sprint in. So, we still obviously forming all of those relationships. We've actually dedicated a whole Sprint just to get to know each other, doing team-building exercises which were a bit challenging to do virtually"* (P22). In contrast, teams with a low degree of humane orientation do not make mention of team building activities due to high project pressure and stakeholder demands. In line with the above findings, the following proposition is formulated: ***Proposition 10: In South Africa, in Agile teams with a low degree of humane orientation, a low tolerance of mistakes and a blame culture is prevalent, mistakes are seen as failure instead of a learning curve, and the Scrum Master is task-focused instead of people-focused, whereas In South***

*Africa, Agile teams with a high degree of humane orientation have activities to build
relationships and have equal voice in meetings.*

No prior research investigated the influence of humane orientation on Agile practices.
Therefore, no comparison can be drawn with literature. However, based on the findings, it can
be deduced that a high degree of humane orientation is suited to Agile principles since the Scrum
Master role in humane orientated teams played a supportive role as prescribed by the Scrum
Guide (Schwaber & Sutherland, 2020). The Scrum Master coaching the team shows that the
working relationships in the team are being valued and interactions are taking place. Therefore,
high humane teams better align with Agile principle 5 concerning building teams around
motivated individuals and providing the environment and support they require (Beck et al.,
2001).

5.11 Affective Autonomy and Agile Practices

According to the findings, high affective autonomy influenced the Agile processes in the team
having a good work-life balance. In teams with a high degree of affective autonomy, team
members can leave work early to do fun activities or their hobbies such as cycling: *"They are
very accommodating in the sense of having positive life experiences and varied life, especially
with the impact of COVID."* (P14). In teams with a low degree of affective autonomy, there was
no mention of work-life balance or flexible work practices (i.e., standard working hours applied)
and teams have a schedule for when members would be on standby over weekends.

Findings reveal that teams with high affective autonomy work at a sustainable pace during
the Sprint: *"Absolutely. We went at a sustainable pace and gave them the skills and mastery as
well as autonomy to help them get the job done."* (P2). This means that only enough items are
included in the Sprint Backlog that can be comfortably done in the Sprint. In teams with a low
degree of affective autonomy, such as in support teams where members are often on standby,
overtime work is a reality. In line with the above findings, the following proposition is
formulated: ***Proposition 11: In South Africa, Agile teams with a high degree of affective
autonomy have a good work-life balance and work at a sustainable pace during the Sprint.***

Literature states that members can effect changes in their workplace learning environment
which result in improvement in team members' concentration, focus, motivation, and
engagement (James, 2011). High affective autonomy teams have more agility in terms of their
schedules and fit the Agile principle of promoting sustainable development by working at a
constant pace indefinitely (Beck et al., 2001).

Teams with a high degree of affective autonomy working at a sustainable pace translates to
the Agile principle: "Agile processes promote sustainable development. The sponsors,
developers, and users should be able to maintain a constant pace indefinitely" (Beck et al.,
2001).

6. CONCLUSION

Culture can be an impediment to Agile practices in that cultural issues can cause a lack of trust,
challenges collaboration and diminishes collective ownership and team success. There exist
many empirical studies that have investigated the relationship between organizational culture
and the deployment of Agile. However, few studies have focused on the influence of national

culture dimensions Agile practices, especially in the South African context. This thesis provides a useful contribution to research and practice as it provides insights into the role of a consolidated set of cultural dimensions on Agile practices. The findings are compared based on their implications for agility.

Eleven propositions have been formulated to highlight how Hofstede (2013), GLOBE (House et al., 1999) and Schwartz (2007) national culture dimensions influence Agile practices. The findings reveal that various national culture dimensions influence the decision-making process, the degree of Sprint interruptions, participation in Agile ceremonies, adherence to policies and prescribed Agile practices, how teams reach agreement, approaches to process improvement and Sprint Planning, the extent to which team members are encouraged to have fun, commitment to achieving Sprint Goals, whether a fixed Definition of "Done" exists, blocker management, how commitments are made, team cohesion, preparation for Sprint Retrospective Meetings and improvement measures, the degree of innovative features or improvement items as part of the Sprint Backlog, how mistakes are viewed, the degree to which the Scrum Master is task-focused or people-focused, the degree to which team members have a work-life balance, and whether teams work at a sustainable pace during the Sprints.

Although in South African culture hierarchical order is accepted to a greater extent (Hofstede, 2013), the hierarchical dynamic assisted the Scrum Master to manage novice team, give direction, and coach the team to get them back on track. In addition, the collectivist cultural trait in South Africa was found to more suitable to Agile practices than the South African individualistic cultural trait. In collectivist South African software development teams, democratic decisions (consensus) are mostly used but over time as teams trust one another they use the method of willing consent. Therefore, the Ubuntu collectivist culture is leaner over time as collectivist teams experiment with other Agile methodologies to optimize for continuous flow, and community-orientation. Lastly, teams with low masculinity are better suited to Agile practices in terms of the team's interactions and the team's focus on the work in the Sprint and the goals of the team.

The findings not only contribute to theories around the impact of culture in Agile teams, but also provide key insights to practitioners on what cultural manifestations might be at play in their project teams. It is important to understand the cultural driving forces at play behind the challenges that they might be experiencing. The findings can help inform Agile implementations in practice, and therefore help managers and teams curate Agile teams for appropriate environments.

Most of the respondents provided input in relation to the Scrum framework. Future studies could focus on a wider sample of respondents with experience in a broader range of Agile frameworks. Future studies could also focus on the influence of national culture dimensions on Agile practices in teams other than those in software development. A longitudinal study could be conducted to obtain deeper insights into the cultural manifestations over a longer period. This might provide more insights into how teams cultural traits changes over time as the teams mature. The researcher feels that if Developers were interviewed there would have been more in-depth responses in terms of the dynamics of the team since Developers have meetings among themselves and will be able to give feedback into those sessions. More female participants in roles other than Scrum Masters and Product Owners can be interviewed. More female team members should be included in future studies for more representative responses as this may impact the dynamics of the team. Lastly, in addition to the suggestions based on limitations, recent themes from the study that arose are themes such as the Agile mind-set, the importance of character of the team members, empowerment of the team to be self-organized and

self-managed, motivation and passion for Agile, output versus outcome-based performance measurement and reward, and can be explored as well. Further opportunities to explain the findings with other theoretical frameworks such as Complex Adaptive Theory (CAS) can be exploited.

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