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THE STUDY OF EMPLOYEE PERFORMANCE WHEN IMPLEMENTING AGILE PRACTICES IN A SOUTH AFRICAN IT WORKFORCE

by

Muhammad Hamid Raza Mookadam
10499068

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Mr, R Hanslo

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LIST OF ABBREVIATIONS

IT	Information technology
SA	South Africa
SDLC	Software development lifecycle
CHAOS	Comprehensive Human Appraisal for Originating Software
TDD	Test-Driven Development
FDD	Feature-Drive Development
XP	Extreme Programming
DSDM	Dynamic Systems Development Method
ASD	Adaptive Software Development
TA	Thematic Analysis
SAFe	Scaled Agile Framework
MVP	Minimum Viable Product
PI	Program Increment

THE STUDY OF EMPLOYEE PERFORMANCE WHEN IMPLEMENTING AGILE PRACTICES IN A SOUTH AFRICAN IT WORKFORCE

ABSTRACT

Agile practices were introduced as a result of an increase in software development projects failing. Adoption of agile practices have increased in South African IT workforces. Agile practices have transformed software development processes significantly. A value of agile practices is placing high focus on the human element of agile that brings about the importance of employee performance. There have been no comprehensive studies in a South African context on employee performance when implementing agile practices. This study addresses the gap to explore employee performance in agile practices within South African IT workforces.

The study aimed to explore employee performance in agile environments for IT workforces in South Africa. The objective of this study was to assess how agile practices influence employee performance. An interpretivist mono-method qualitative approach was used, with the use of interviews as a research strategy. Seventeen semi-structured interviews were conducted with agile practitioners from various roles, to understand their subjective realities on agile practices and their influence on employee performance from their perception. The Expectancy was used as a lens to guide this study. The Expectancy guided the interview questions that were categorised into various variables and assisted the researcher when analysing the data using thematic analysis. The benefits, challenges and additional support requirements of agile practices were investigated. Furthermore, aspects of agile practices that influence employee performance and guide successful projects were studied. Agile ceremonies and the value it provides were considered. Lastly, outcomes obtained when using agile practices were discussed.

Our results indicated that agile practices influence employee performance significantly with participants reporting on aspects which included planning, communication, employee development and well-being, collaboration, team culture and progress. Additionally, our results reported obstacles when using agile practices that included adoption, team

engagement, leadership and instilling an agile mindset. Additional support that was found from participants in using agile more effectively were training, adoption and acceptance and having an agile coach present.

Agile practices influence employee performance in South African IT workforces by fostering improved team dynamics, enhanced collaboration, improved efficiencies, risk management, planning, continuous improvement, learning, personal development and well-being. Conclusively, our findings suggested that if agile challenges are addressed and additional support is provided, employee performance can be improved extensively.

Keywords: Agile practices, Software development life cycle, Software solutions, Employee performance, IT workforce, Team dynamics, Agile implementation, Collaboration, Projects

1 INTRODUCTION

Agile practices consist of a specific outline of principles and values involved in the software development life cycle (SDLC), which enables software development teams to create value to the business by delivering working software in smaller pieces. The implementation of agile in the workplace, within the software development phase, creates an environment which encourages change and adaptation (Cooke, 2012). In recent times, the development of software solutions has become an essential component for organisations (Lerina, Carmine, & Maria, 2016). The use of software in organisations is referred to as the use of application software, computer programs and the various technologies that are coupled with these applications that allow organisations to fulfil their business processes (O'Brien & George, 2013). These processes are a set of tasks that are conducted to meet a business objective. The implementation of software solutions to complete these processes are intended to increase productivity, reduce costs, and ultimately make these tasks more efficient to an organisation (Mathias & Franz, 2019). The successful development of software works together with implementing a software development methodology that allows the team to accomplish their goals. There are multiple approaches that teams can implement in the SDLC. The SDLC is defined as a sequence of software development stages, that initiates from the idea, the implementation of the idea and the final solution that can be used by the end-user to perform tasks that meets the business need (Mohapatra, 2000). Some of the most common methodologies to have been used over the years that have been suited to different projects and teams are waterfall, lean, prototyping, Spiral, V-model and most recent being DevOps that adopted the agile principles to optimise the software development process and increase project success rate (Joakim, 2016). However, agile practice is the most followed methodology (Nageswara Rao, 2011). Agile practices include various practices and methods from the agile framework such as Scrum; Kanban; Extreme Programming (XP), Feature-Driven Development (FDD); Test-Driven Development (TDD); Adaptive Software Development (ASD); Crystal and Dynamic Systems Development Method (DSDM) (Chande & Flora, 2014).

Agile practices follow four core values: the value of "*Individuals and interactions over processes and tools"*; "*working software over comprehensive documentation"*; "*customer collaboration over contract negotiation"* and "*responding to change over following a plan"* (Beerbaum, 2021). Unlike other methodologies which focus on development practices and

tools used, agile prioritises its human resources and places more importance on individuals interacting and communicating to allow the team to provide new ideas and new thinking when developing the desired solution. This could essentially promote employee performance.

The below sections provided a comprehensive background on agile practices. Additionally, it explained agile practices' importance on employee performance. The problem statement is distinguished, which guides the significance of the study. The main research question and sub-questions are determined, together with its related research objectives. The limitations and assumptions, which this study entails, are also described within the chapter. Furthermore, the proposed contribution this study aimed to make, and the theoretical framework was defined.

1.1 BACKGROUND INFORMATION

The term agile is simply translated as 'to move quickly and easily' (Stevenson, 2010). From this we can derive that agile practices focus is on simple and smooth change during the SDLC. Agile practices are an approach which are designed to enhance the quality, relevance, add customer value and flexibility of software solutions (Cooke, 2012). With the fast paced market industries that the information technology(IT) workforce provides their services in (Ricky, Ritter, & Gemünden, 2004), it is imperative that the software development teams familiarise themselves with agile practices to provide value to customers by means of working software, without affecting the scope, quality or timeframe and keeping within the budget to ensure the attainment of a project. This provides business with an advantage when competing in their relative markets.

The information technology workforce refers to the business environment wherein IT professionals use their skills and capabilities to support an organisation's mission through the use of technology (Hawk, et al., 2006). If employees are satisfied, they become more productive and produce higher quality work, during a shorter period. This means that more tasks can be completed within a specific timeframe (Singh & Jain, 2013).

Due to the IT industry experiencing substantial project failures that were caused by inefficiencies in the SDLC, agile was founded in February 2001, by seventeen leading

developers that met to discuss if there were any commonality in methodologies they used amongst their practices. To sum up the meeting, there were points that stood out, a methodology is required to deal with change; four values of agile was agreed upon; the twelve agile principles were noted and finally the flexible processes to be used during the software development life cycle were determined (Koch, 2004). From the list of the twelve agile principles, the one that stood out that deals with the topic of employee performance is the ability to develop software around people that are motivated and providing them with an environment that supports their needs. This refers to the ability for organisations to provide a culture that empowers these individuals to express their abilities and skills and an environment that supports and trusts them through this process (Asproni, 2004). Another principle noted is the approach of face-to-face communication, with one of the agile values being reliant on collaboration, verbal communication amongst team members enhances problem solving ability and teamwork which leads to increased motivation within individuals (Cohn, 2004).

The well-being of employees is critical to any organisation. Previous research has suggested four factors which play a sizable role: human resource practices, support from team leaders, job design and performance monitoring (Frenkel, 1998). Other research noted that the transformation to agile in a company resulted in the change in employee behaviour (Sommer, 2019), which demonstrates that agile implementation does not only benefit the company but the employee as well. Agile practices focus on face-to-face conversations with team members which increases communication, interaction, collaboration and this promotes new ideas (Sharma , Sarkar , & Gupta , 2012). The end goal of a project can be met if members within the IT workforce are provided with an environment that promotes the right behaviour and compensates its employees for their hard work and effort (Bapna, Langer, Mehra, Gopal, & Gupta, 2013).

The objective of this research study was to explore the influence on employee performance when using agile which is essential in any IT workforce. Employee performance is a key driver to the success of an organisation (Hameed & Waheed, 2011). Employee performance refers to a measurement of how employees perform their required task and a measurement of their behaviour in an organisation with their fellow employees (McConnell, 2004). According to a study done by Hameed and Waheed (2011), there are five major practices

that affect employee performance: "*job autonomy"; "organizational support"; "training"; "distributive justice"* and *"procedural justice".* The importance of an organisation's ability to invest in its employees is one of the aspects raised that supports employees in their capacity to perform at an increased level. The term employee performance as it is mentioned, deals with all aspects that directly or indirectly affect the performance of an employee which includes but is not limited to the actual work, the working environment, the processes, management style and their remuneration (Elnaga & Imran, 2013).

1.2 PROBLEM STATEMENT

According to the Standish Group's 2020 CHAOS Report, approximately 66% of software development projects failed which are associated with the below reasons (Global, 2021):

- Expectations from business are unrealistic in terms of project costs and timelines and this is due to the lack of understanding of the software development landscape.
- Businesses are resistant to change in terms of processes and legacy systems. This proves to be a barrier to employees in cultivating the right culture that desires to enable employees to be high performing and deliver projects within the timeframe.
- Not having the end-user as the focal point which leads to the software system being delivered not meeting the customers' requirement. This leads to business dissatisfaction.
- Lack of system testing during the project due to time constraints and this leads to the software not working as anticipated.

Increased employee performance in a workforce is extremely important to the success of the organisation (Onyebuchi & Obibhunun, 2019), hence it is vital that the methodology implemented in the workforce creates an environment contributing to this. Therefore, the objective of this study was to ascertain the influence on employee performance when using the agile practices in an IT workforce.

Sanyal and Hisam (2018) noted that teamwork has a positive impact on employee performance, however, according to research done on how effective teamwork is using agile practices, there is no clarification on the effectiveness of teamwork using agile (Strode, Dingsøyr, & Lindsjorn, 2022). This brings about the requirement of further investigation to understand if teamwork in agile practices is one of the key factors that influences employee

performance. Diamantidis (2019) identied additional job-related factors that relate to employee performance which include working environment, communication amongst employees and the ability to provide employees the freedom to perform their tasks.

Current studies noted that the success of using agile practices as compared to the waterfall methodology produces a higher success rate on project success (Ben-Zahia, Aburas, & Ghuwar, 2022). The CHAOS 2020 Beyond infinity reported results which supports this with 42% of agile projects having been completed successfully compared to waterfall which has a 13% success rate within the project time frame, budget and meeting the end-users needs (Global, 2021). Requirements, delivery timelines and end user involvement were issues noted in the waterfall methodology and that with the implementation of agile practices, these issues were resolved (Ben-Zahia, Aburas, & Ghuwar, 2022). Limited if no research has been done in determining employee performance when agile is used and more specifically within a South African IT workforce. A major concern is that the implementation of agile could either motivate employees to work better or hinder their performance within the organisation. It is important that the influence on employee performance be determined when agile practices are implemented, in a South African IT workforce, so that organisations can decide if it will be beneficial to implement agile practices so that it benefits both, the software development process and employees, who are ultimately the key role players in developing software.

Additional factors that influence employee performance in an agile setting include team size, culture and organisational structure. Agile teams vary in sizes from small to large and consists of individuals with different skillsets. Smaller agile teams within organisations have a positive influence on the team's performance and satisfaction and this is managed closely through the use of daily-standups and sprint retrospectives (Przybilla, Wiesche, & Krcmar, 2018). Šmite, Moe and Gonzalez-Huerta (2021) identified twelve cultural barriers that affects the team's ability to perform their job functions adequately in agile practices that include but are not limited to leadership style, command and control mindset and taking responsibility of tasks.

It is fundamental to determine the effectiveness of agile practices in an IT workforce so that it can be determined if the implementation of the methodology would be an asset or liability to the workforce. If employee performance is not influenced positively, it brings about a

broader bearing on the workforce such as low productivity and morale (Yeti, 2020); decrease in customer satisfaction (Al Kurdi, Alshurideh, & Alnaser, 2020), a decrease in a organisations profit (Krekel, Ward, & de Neve, 2021) and the effectiveness of organisations (Krekel, Ward, & de Neve, 2021). This research study was posited to enhance workforce effectiveness within agile environments within South African IT workforces. The "*CHAOS Report 2015"* compiled by the Standish group which consists of projects success and failure rates using a sample of 10 000 software projects. The report was based on comparing the success rate of these projects using agile and waterfall and the project size and the findings on this report were that the use of agile in smaller projects brings about a low failure rate of 4% (Global, 2021). Therefore, to provide companies within the IT workforce with additional information of the effectiveness of implementing agile in terms of employee performance, this research is important.

If the conclusion of this research defines employee performance in an IT workforce that uses agile in a positive manner, it can be used as an instrument to illustrate to companies how the implementation of agile has a positive influence on not only the software development process but on employees as well.

1.3 RESEARCH AIM

The aim of this research is to investigate how the implementation of agile practices in South African IT workforces influence employee performance. Furthermore, this study aims to provide insight to organisations on how to enhance employee performance when implementing agile practices.

1.4 RESEARCH QUESTIONS

The purpose of this study was to determine how the implementation of agile practices in a South African IT workforce influences employee performance. The focal question to be asked was:

Main Research Question (MRQ):

How does the implementation of agile practices in a South African IT workforce contribute towards employee performance?

Sub-Research Questions (SRQ):

To ensure that this topic reaches an acceptable conclusion, the following set of questions must be answered:

SRQ1: Why is employee performance important in a workforce?

SRQ2: What are the benefits and challenges of agile practices to employees in a South African IT workforce?

SRQ3: How are agile practices implemented in the workforce using agile ceremonies?

SRQ4: How do agile practices affect employee performance in IT workforces, as measured by key metrics such as collaboration, communication, planning but not limited to these?

1.5 RESEARCH OBJECTIVES

The below research objectives which have been formulated are associated with the research questions. The objectives have been divided in numerous fragments that are addressed individually. This gives guidance on how the focal research question was achieved:

a. To examine the importance of employee performance in a workforce.
b. To identify and describe the benefits and challenges of agile practices that contribute towards employees in a South African IT workforce.
c. To explore and understand the specific ways in which agile practices are applied using agile ceremonies in a workplace.
d. To evaluate the impact of agile practices on employee performance by analyzing key metrics such as collaboration, communication, planning but not limited to these?

1.6 DELINEATIONS AND LIMITATIONS

This study focused on agile practitioners or employees that work within Information Technology (IT) workforces in South Africa. This study was limited to employees who have experience in the software development environment that applied agile practices. This study

included employees in the IT workforce but not limited to following job roles: business analysts, software developers, test analyst, system/business architects, systems analyst, development managers, scrum masters, project managers and production support analyst.

1.7 ASSUMPTIONS

The following assumptions were made during the process of my study in order to reach a conclusion:

- All employees working in an agile environment are high performing.
- The study will produce a positive outcome that employees in an IT workforce are highly performing.
- The samples of individuals involved in this study responded to questions accurately and honestly.

1.8 SIGNIFICANCE OF THE STUDY

1.8.1 Theoretical

The findings of this research proved to be valuable to any IT workforce that implements agile or that is considering implementing it. This study aimed to add to the body of knowledge of research of how implementing agile in a SA IT workforce affects employee performance. Having this information will enable organisations to better understand the advantages of implementing agile and why it will be beneficial to their organisation. It could prove to organisations that if agile practices are successfully implemented, the organisation benefits by having successful project deliveries and creating value to business. As mentioned above, the impact on employee performance has a direct effect on organisations (Hermina & Yosepha, 2019) and this has the potential to bring about increased productivity, driving innovation through its employees and increased financials for organisations.

1.8.2 Practical

This study aimed at providing a practical input using the Expectancy which will be discussed later in chapter 2. This study can be used as a guide to senior information technology role players in organisations to determine what the outcome on employee performance is, if implementing agile practices in a workforce. Furthermore, it can assist organisations that are using agile practices, what hinders employee performance and how they can change their agile implementation to get the best performance levels from its employees.

1.9 CONTRIBUTION

The contribution of this research proves to be valuable to any South African IT workforce that implements agile or that is considering implementing it. It provides insight into how implementing agile in a South African IT workforce influences employee performance. Having this information will enable companies to better understand the advantages of implementing agile and why it will be beneficial to their companies. This is an opportunity to contribute to the existing body of knowledge within the information systems field in relation to agile practices and its influence on employee performance.

If the conclusion of this study defines employee performance in a South African IT workforce that uses agile in a positive manner, it can be used as an instrument to illustrate to organizations how the implementation of the agile practices has a positive influence on employee performance, software development processes and organisations.

1.10 BRIEF CHAPTER OVERVIEW

Chapter 1: Introduction

This chapter introduces agile practices that covers one of the key values of agile: "*Individuals and interactions over processes and tools"* which relates to employees; a segment essential in bringing about the importance of employee performance. It also explains why employee performance is a study of concern and the importance of establishing the effectiveness of agile practices in a South African IT workforce. The main objective of the study is to explore the influence of agile practices on employee performance. The major limitation of this research is that it focuses on the implementation of agile practices exclusively in SA IT workforces and not any other industry. The assumption is that the study will prove that agile practices is beneficial and has a positive influence on employee performance.

Chapter 2: Literature review

This chapter defines the existing literature that exists by previous researchers on agile practices and employee performance and an in-depth evaluation. It provides and overview of agile practice and details the benefits and challenges. It further discusses the different frameworks of agile practices and provides a comparison with traditional methodologies. This chapter presents the importance and of employee performance and factors affecting it.

This chapter concludes by presenting the possible theoretical frameworks and present the Expectancy theory and the choose one.

Chapter 3: Research methodology

This chapter uses Saunders research onion as a guide to present the research methodology. The first section defines the philosophical paradigm, research approach, research strategy and the research method. It outlines the reasoning for the selection of them. The next section discusses the sampling method, sampling size, data collection method and data analysis method. Finally, it discusses the quality assessment to establish the trustworthiness of the data and the ethics to be considerations.

Chapter 4: Results and data analysis

This chapter outlines the results from the 17 interviews conducted. It provides a brief overview of each of the participants. Next, it presents the results of the interviews for each of the interview questions by codes. Finally, the emerging themes through the thematic analysis are presented.

Chapter 5: Discussion of findings

This chapter presents the findings of the results. The findings are discussed for each of the sub-research questions and relating the findings to existing literature. Then, the theoretical framework is presented using agile practices and employee performance.

Chapter 6: Conclusion

This chapter presents the conclusion to the study by reintroducing the research questions and objective. A summary of the findings is discussed. Thereafter, the research contributions, limitations and potential future research work are presented.

2 LITERATURE REVIEW

2.1 INTRODUCTION

This section identified and reported on the existing literature by authors on agile practices, its advantages and disadvantages and the agile process in the software development lifecycle. It further noted the aspects that influence employee performance and how agile is accepted and adapted.

The theoretical frameworks from Vroom's Expectancy were discussed. Existing literature from authors was used to understand the current body of knowledge in the field of agile practices and employee performance.

2.2 AGILE PRACTICES

According to Al-Saqqa, Sawalha & AdelNabi (2020) on a study on agile practices and trends, traditional software development methodologies follow a weighty process which include:

- Planning must be done in advance.
- Requirements and system design to be completed before system development can start.
- System development commences in line with the requirements.
- Fully testing the software to ensure that the requirements and system design have been met.

Table 2.1 presents a comparison of agile and traditional methods according to Matharu, Mishra, Singh and Upadhyay (2015):

Table 2.1: Traditional vs agile methodology

Parameter	Traditional Methods	Agile Methods
Management and leadership style	Authoritative and control	Democratic and teamwork
Development scale	Long-term	Short-term
Adaptability to change	Reluctant to change	Adaptable to change
Documentation	High intense	Low intense
Development Approach	Predictive	Adaptive

Learning style	Learning is not a priority over development	Learning constantly while building software
Development Orientation	Focus on process	Focus on people
Project size	Large	Small to medium
Team member roles (Nerur, Mahapatra, & Mangalarag, 2005)	Individual members skill specialisation	Self-organising teams where roles can be changed
Project development lifecycle (Nerur, Mahapatra, & Mangalarag, 2005)	Guided by functions and step by step	Guided by product features that are made in modularity
Budget (Ben-Zahia, Aburas, & Ghuwar, 2022)	Fixed	Variable
Requirements changing (Ben-Zahia, Aburas, & Ghuwar, 2022)	Low	High

The table below lists the different type of software development methodologies and an overview of each:

Table 2.2: Software development methodology description

Methodology	Description
Waterfall	The waterfall methodology is a straight-line software development approach which is implemented wherein the business requirements are identified at the start of a project, then the solution is designed and thereafter the requirements are developed (Fagarasan, Popa, & Cristea, 2021). Each phase must be completed, before the next phase commences during the software development process.
Lean	The core concept of lean is to maximise value and minimise waste by means creating efficiencies, analyse the process and remove any obstacles during the development to improve into the next iteration (Rodríguez, et al., 2020)

Prototyping	A prototype is built early on in the project, the prototype is continuously improved by being tested and revised. Prototyping is used to conceptualise the outcome without incurring high financial cost of the full product (Jones & Richey, 2000).
DevOps	DevOps is a software development approach which allows the system team to produce software applications at a high rate and in a short period. DevOps uses a mix of agile practices as well. DevOps supports automation of tasks and collaboration of teams (Rodríguez, et al., 2020).
Spiral	The spiral methodology is a combination of both agile and waterfall methodology. Spiral follows iterative development with controlled principles of waterfall using a linear approach (West, 2018).
V-model	The V-model is a customisation of the waterfall methodology whereby the development is not linear but, rather based on development and testing in parallel, however, each step in the process must be verified before continuation (Balaji & Murugaiyan , 2012).

In chapter 1, the agile values were distinguished, and these values serve as a guide to software development teams on their approach during the development of software during the SDLC. The table below provides a description of each of these values:

Table 2.3: Agile values description

Agile value	Description
"*Individuals and interactions over processes and tools*"	Agile focuses on the human element. This indicates that in agile, focus is placed more on the human resources that are involved in the SDLC over the process or tools. Since the team responds to the business needs and drives development, people are priority (Pinto & Serrador, 2015).
"*Working software over comprehensive documentation*"	During the software development lifecycle, focus should be on delivering working software to the end user, as opposed to interacting with the end users by means of heavy documentation as they could find it

	hard to understand compared to showing them a working software (Flewelling, 2018).
"*Customer collaboration over contract negotiation*"	This focuses on more direct communication with the business stakeholders and agile teams through iterations to prove that effective communication will be to key to ensuring that the outcome of the software system is a success (Mnkandla, 2008).
"*Responding to change over following a plan*"	This involves the agile team's ability to be flexible to adapt faster to any changes that might occur during the project by building an environment that is plan driven (Flewelling, 2018).

2.2.1 Key characteristics of agile

There are multiple characteristics of agile. The key agile characteristics defined by different authors are explained below:

- *Iterative* (Shankarmani, Pawar, Mantha, PhD., & Babu, PhD. , 2012):
  Agile focuses on increasing customer value. This fosters agile teams to focus on a portion as opposed to the entire project, in cycles which have a goal defined. The portion of the developed system can be analysed and improved which ensures the value to business meets the requirement.
- *People oriented* (Shankarmani, Pawar, Mantha, PhD., & Babu, PhD. , 2012):
  The agile value of people over processes is key to the individuals involved in system development processes. This prioritises people over tools which put the end-user as the focus and allows the team to evolve and increases employee performance and productivity.
- *Adaptive* (Shankarmani, Pawar, Mantha, PhD., & Babu, PhD. , 2012):
  Agile processes are built on an iterative method, many unknowns or risks may occur, and the agile approach prepares the team for these scenarios and how to react. This brings about the agile value of being flexible in adapting to any changes that occur.
- *Modularity* (Sharma , Sarkar , & Gupta , 2012):

The agile approach affords the team to split the complete system into smaller pieces which is referred to modularity. This is smaller manageable pieces for the team to develop at a time.

- *Time boxing* (Sharma , Sarkar , & Gupta , 2012):
  The approach to deliver smaller pieces of work in each iteration or cycle requires timelines to be provided. This allows for the project plan to be defined with what the goals are for each iteration and time constraints so that business can plan for when the full system will be implemented by.
- *Incremental* (Sharma , Sarkar , & Gupta , 2012):
  Each iteration having its defined goal. This leads to the software being built one module at a time and thus incrementing to have the full system developed at the end of the project.
- *Collaborative approach* (Sharma , Sarkar , & Gupta , 2012):
  With agile, the development approach based on different iteration and developing different modules that increment to the final software, this requires key collaboration and communication from the team to ensure that the progress moves flawlessly. Agile teams work closely with the customer as compared to traditional methodologies.

2.2.2 Overview of agile practices and methods

There have been various agile practices and methods that have been developed since the inception of agile, these practices have been noted in chapter 1. To provide some context on these practices, below are a list of the most common practices:

Scrum:

- Scrum highlights software development by means of collaboration, teams being flexible and follows an iterative approach. Scrum is used for big and complex projects and is based on continuous improvement after each iteration. This practice is facilitated by a scrum master (Faisal, Rehman, Arif, Wahab, & Abbas, 2019).
- The scrum team consists of the following roles (Zayat & Senvar, 2020):
  - Product owner
  - Scrum master
  - Scrum development team

Kanban:

- Kanban which is more of a visual representation of what tasks need to be done, what has been completed and what work is in progress. This makes it easier for the team to spot any bottlenecks during the flow of items. The flow of items in Kanban makes use of the 'pull system' where the development teams take on items once capacity becomes available. These items are represented by cards which details what tasks need to be done (Zayat & Senvar, 2020).

Extreme Programming (XP):

- Extreme Programming focuses on increased collaboration amongst the team, being flexible and adaptable to change. XP is commonly used in projects where requirements are not clear and with requirements that change often. The common feature is having the customer working closely with the team for increased communication and collaboration (Abdulrahman, 2015).

Feature-Driven Development (FDD):

- FDD is designed for large projects that are scalable. FDD follows an iterative approach which focuses on creating value to the end user sooner. As the name mentions, it breaks down items into features that can be easily implemented. It also aligns with agile practices that include collaboration, flexibility and bringing value to the end-user early on (Zayat & Senvar, 2020). Abrahamsson *et al.* (2017) defines the below processes for FDD:
    - Develop an overall model
    - Define a feature list
    - Plan according to features
    - Design by feature
    - Develop by feature

Adaptive Software Development (ASD):

- ASD provides a practice that provides the development team to be adaptive to change. This practice is suitable for projects where requirements are not clear and have the potential to evolve. ASD follows a three-phase approach (Zayat & Senvar, 2020):

- Speculation
- Collaboration
- Learning

Dynamic Systems Development Method (DSDM):

- DSDM is one of the earlier designed practices within agile. DSDM is used for different project sizes from small to large. It also includes that the customer works closely with the development team. DSDM works in an incremental method and includes the following steps (Zayat & Senvar, 2020):
  - Feasibility
  - Business study
  - Functional model iteration
  - Implementation

2.2.3 Employee roles and responsibilities in agile

The agile manifesto puts high emphasis on self-organising teams, which provides autonomy and trust within the team and that gives the team the ability to makes decisions and solve the unknowns and risks that occur (Beck, et al., 2001). Agile teams are often made up of the following roles that include product owners, scrum master and development team and are not limited to these roles (Flewelling, 2018).

Product owner:

- Setting the goal, objective and vision of the product or the software system and keeps this in mind throughout the stages of the software development lifecycle (Flewelling, 2018).
- Clarifies the needs of the end-user or customer to eradicate any misunderstanding by the development team (Matturo, Cordovés, & Solari, 2018).
- Plans and manages the product backlog that include identifying priorities of features for an iteration (Matturo, Cordovés, & Solari, 2018). A product backlog is a list of deliverables that include user stories or tasks which aids planning for each sprint for the development team to complete (Sedano, Ralph, & Péraire, 2019).

Development team:

- This includes a team member that are part of the development team include software developers, systems analyst, test analyst, UI/UX designers and architects (Dearden, Haider, & Subodh, 2010). The duty of these individuals is to collaborate during the development of the system to ensure each component developed meets the requirement (Flewelling, 2018).

Scrum Master:

- This role is specific to Scrum which is a practice of agile.
- Facilitates the agile ceremonies which include daily stand-up, sprint planning and retrospectives (Flewelling, 2018).
- These individuals are also there to mentor and guide the team along the agile approach (Yogeshwar, Rashina, & Amor, 2021).
- Assist the development team to remove any impediments realised that affects the teams progress (Yogeshwar, Rashina, & Amor, 2021).

2.3 AGILE PROCESS IN THE SOFTWARE DEVELOPMENT LIFECYCLE (SDLC)

The SDLC acronym often used is the stages within a software or systems development process. The SDLC is defined as a structured process followed by an organisation or a software project that consist of different phases depending on the research methodology used to develop a new software system or enhance a piece of an existing software system (Ruparelia, 2010).

Davies (Davies, 2019) identified six steps that are involved in the agile process:

- *Project planning* – This includes the project initiative and understanding the goal the projects intend to achieve. This is performed before the project commences. This involves conceptualising the end solution.
- *Product roadmap creation* – This step includes the identification of the different features of the full software system broken down. It includes an overview and vision of the project.
- *Release planning* – Planning the different iterations also known as sprints. This is important to guide the full software system to its fruition.

- *Sprint planning* – This is one of the four agile ceremonies that agile teams attend before the start of an iteration. The team plans the task from the backlog that will be completed during the iteration. The team assigns tasks that are manageable during the iteration.
- *Daily stand-ups* – The project teams meet daily to provide feedback to the team on their progress and if there are any impediment that the scrum master can assist with. This approach allows for increased collaboration between the team members.
- Sprint review– The development team displays the piece of development that was done during the iteration to the customer and provide feedback.
- *Sprint retrospective* – The agile team has an opportunity to reflect on how the iteration went and conduct a lessons-learned approach to improve the team performance in the next sprint.

Figure 2.1 by Davies (2019) shows how the approach that the agile team follow during the software development lifecycle.

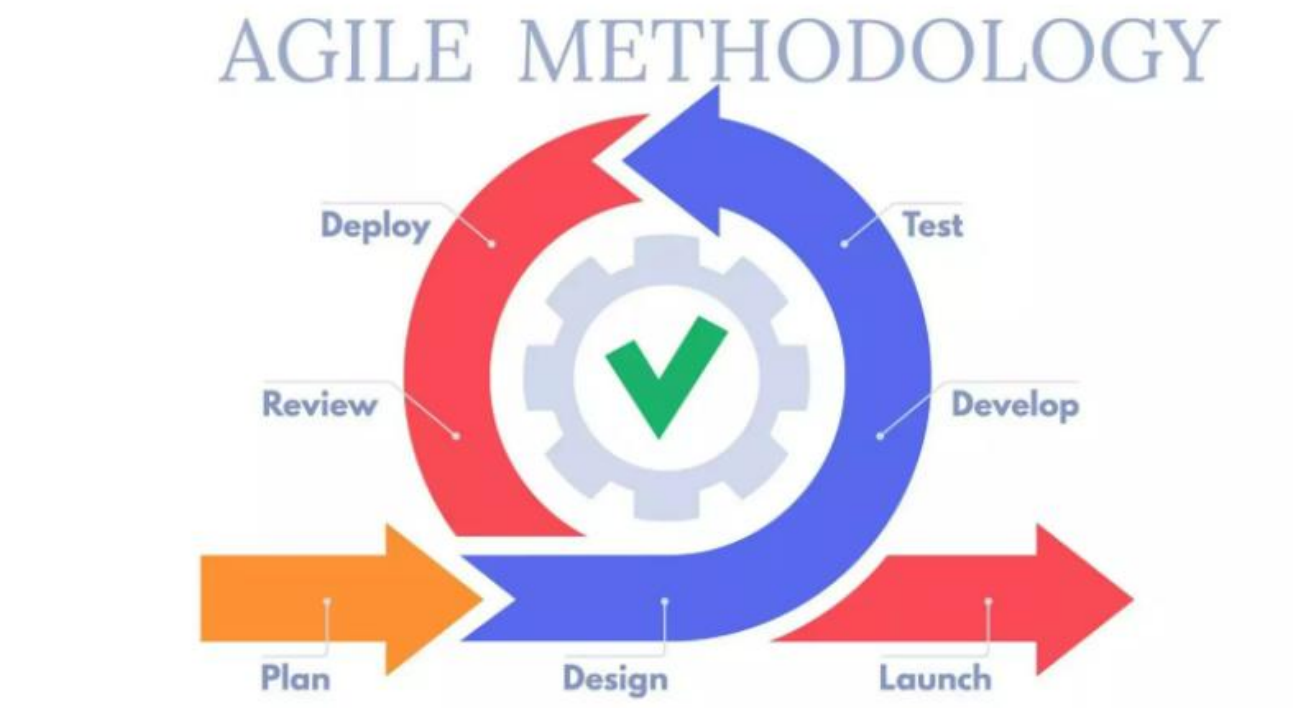


Figure 2.1: Agile practices software development process

Source: (Davies, 2019)

2.4 BENEFITS AND CHALLENGES OF AGILE PRACTICES

Agile practices were founded in 2001 and as the years went by, software development teams could understand the pros and cons that agile brings compared to the traditional methodologies. Dima and Maasen (2018) conducted a study where 19 professionals that worked in the software development field that were based at IT companies globally were interviewed. 53% of these respondents were employed at their companies between one and three years. The majority of these companies where these professionals were employed, had a company size of between 10000 - 17300 employees. The basis of the interview was on the software development methodology used at their companies and the trends regarding the methodology. 68% of these companies used agile practices. During the interview process when asked about the advantages and disadvantages that using agile brings to the software development team, 77% and 85% of the respondents mentioned frequent useful feedback and better adaptability to meeting requirements respectively, as advantages of agile. These professionals stated that due to the customer or end-users being closely involved, it allows for frequent feedback that allows the team to improve the software system each time in the software development process. 15% of respondents states that agile brings an increase in competition between employees - could this be one of the factors that influence employee performance in agile? With regards to the disadvantages being noted by the respondents, 76% mentioned that extra pressure on the team is created and that the outcomes differ in terms of what was planned and the actual outcome of project delivery times and product features. This can be attributed to how agile practices are implemented, in that it occurs frequently and improvements to system features takes place often. The increase pressure on employees affects their performance and can ultimately increase staff turnover. These were not noted as impediments since the agile approach requires increased software development pace.

Below are additional benefits and challenges that agile conveys to both the company and its employees.

2.4.1 Benefits

From a general observation, the following benefits of agile are identified:

Increased employee competition (Dima & Maasen, 2018):

- With agile being fast paced delivery, this creates an environment of competitiveness amongst team members with regards to completing high quality tasks on time.

Improved team cooperation (Dima & Maasen, 2018):

- The ability for employees to work within groups and with diverse teams who have the same goal in mind.

Ensure customer satisfaction (Sharma , Sarkar , & Gupta , 2012)**:**

- Agile requires close end-user and customer engagement and this allows the software system to be evaluated by them and provides feedback to the development team to improve the system after each iteration.

Adaptive to change (Sharma , Sarkar , & Gupta , 2012):

- After feedback from the customer, the development team is able to change and improve the system after each iteration and review from the customer.
- The agile approach allows for unknowns and risks to become apparent during a project. The teams are able to analyse and change direction when these risks are experienced with the autonomy the team has.

Quick releases (Al-Saqqa, Sawalha, & AbdelNabi, 2020)

- This allows the software development team to release working software earlier on in the process to provide value to business earlier on in the project

2.4.2 Challenges

Like all software development methodologies, agile also has its challenges that have been identified:

Extra pressure on employees (Dima & Maasen, 2018):

- With the high pace that agile brings to the team with the agile software development process, software release and improvements communicated by end-users, this constant cycle increases the pressure within the team.

Lack of documentation (Prause & Zoya, 2012)**:**

- With the Waterfall methodology that focuses on intense documentation that is distributed to the development team, agile is low on documentation and if the project tends to be complex, the lack of documentation can be a disadvantage as the customer can miss out key requirements.

Focus on discussion and feedback – time consuming (Sharma , Sarkar , & Gupta , 2012):

- One of the values of agile practices are "*customer collaboration over contract negotiation*" which puts emphasis on constant communication with the customer and the development team. This can be time consuming and take away time from the developers who need to focus on the actual system development.

Staff turnover rate due to high work pressure (Dima & Maasen, 2018)**:**

- The increased pressure that agile has on its employees, tends to be a factor in staff turnover rate.

2.5 FACTORS INFLUENCING EMPLOYEE PERFORMANCE

There have been many studies done on employee performance in organisations in multiple industries, however, there have been limited studies on employee performance in an agile environment, and the IT workforce in South Africa specifically. However, Bapna *et al.* (2013) looked at employee performance in the IT industry which focuses on human capital investment and whether employee training is effective in employee performance.

Diamantidis and Chatzoglou (2019) break down employee performance into three elements: firm/environment-related factors, job-related factors and employee-related factors. Each of these components touch the different fragments of an employee. These components are linked, and the output of these components determine employee performance.

The below factors that affect employee performance have been noted by different authors and grouped according to the three components mentioned by Diamantidis and Chatzoglou (2019):

Firm/environment-related factors:

Factors within this grouping are directly linked to an organisation and the way that it operates. These factors include an organisation's stance on employee training, leadership and management and the impact these have on employee performance. Hameed and Waheed (2011) note that procedural justice is key in that it is important that an organisation's processes are fair and transparent, and this can include processes of promotions.

- Management support (Diamantidis & Chatzoglou, 2019) (Astuty & Udin, 2020)
    - The extent to which leaders provide support to its employees on the performance of their task.
- Training culture (Diamantidis & Chatzoglou, 2019) (Atatsi, Stoffers, & Kil, 2019)
    - The level in which organisations value the ability to provide training to its employees to enhance their capabilities which can have an influence on their performance.
- Organisation climate (Diamantidis & Chatzoglou, 2019) (Sabuhari, Sudiro, Irawanto, & Rahayu, 2020)
    - An employee's perception of an organisation which includes the organisations culture, environment and the impact it has on society which affects their performance.
- Environmental dynamism (Diamantidis & Chatzoglou, 2019) (Badrianto & Ekhsan, 2020)
    - The industry that the organisation functions in and its stability with the external environment. In relation to an IT company, this refers to how companies respond to change with the different technologies that come about and incorporating these technologies has an impact on its employees' performance.
- Leadership (Bapna, Langer, Mehra, Gopal, & Gupta, 2013) (Suprayitno, 2024)
    - The leadership styles and behaviours that are not conducted in a positive manner will have a knock-on effect on its employees.
- Organisational trust (Verburg, et al., 2018) (Bapna, Langer, Mehra, Gopal, & Gupta, 2013)
    - The ability for employee to trust the organisation with the short-term and long-term objectives set out.
- Human capital investment (Rodrigues, Butler, & Guest, 2022) (Bapna, Langer, Mehra, Gopal, & Gupta, 2013)
    - An organisation's ability to invest in its employees across multiple aspects which include education, training and employee's health.
- Procedural justice (De Clercq, Ul Haq, & Azeem, 2021) (Hameed & Waheed, 2011)
    - Processes that an organisation follows that are ethical and fair when resolving disputes.

Job-related factors:

These factors relate to the job or task that an employee carries out. This includes the environment the employee works in, the communication between their colleagues and management and the control and autonomy that is given to an employee which shows the trust put into them in completing their tasks.

- Work environment (Badrianto & Ekhsan, 2020) (Diamantidis & Chatzoglou, 2019)
    - The environmental setting that an employee conducts their tasks in that is both physically and socially appealing and that influences their performance.
- Work communication (Titisari, Susanto, & Permatasari, 2021) (Diamantidis & Chatzoglou, 2019)
    - Communication amongst employees, including verbal and written, that is key which in increasing collaboration, productivity and performance.
- Work autonomy (Khoshnaw & Alavi, 2020) (Diamantidis & Chatzoglou, 2019)
    - Employees level of freedom to perform their tasks with some level of control which tends to increase employee performance.
- Organisational fairness (Kooij, et al., 2013)
    - An organisation's ability to be fair in all sets of components which includes promotions, rewards and remuneration.
- Work control (Badrianto & Ekhsan, 2020) (Kooij, et al., 2013)
    - The capability of an organisation in allowing employees to have control of their task, which ensures that management has confidence in them performing the task, and that has an impact on their performance levels.

Employee-related factors:

These are factors on the employees themselves that are instilled within them that has an impact on how they perform their duties, that ultimately has an impact on their performance. These factors include their skill level which provides them with the necessary expertise to complete their duties. The attitude which an employee has in their working environment such as being proactive and taking initiative, and whether they able to complete duties separate to their current roles.

- Proactivity (Parker, Wang, & Liao, 2019) (Diamantidis & Chatzoglou, 2019)

  - This factor is coupled with control, where employees understand the task and make changes early if required, rather than waiting for a situation to occur and making a change afterwards.
- Adaptability (Atatsi, Stoffers, & Kil, 2019) (Diamantidis & Chatzoglou, 2019)
  - Having the skill to adjust when different conditions occur and still perform their tasks at the highest quality.
- Intrinsic motivation (Atatsi, Stoffers, & Kil, 2019) (Diamantidis & Chatzoglou, 2019)
  - The capability of an employee to conduct their tasks, with the understanding that this task will bring a positive incentive to them.
- Skill flexibility (Rivaldo & Nabella, 2023) (Diamantidis & Chatzoglou, 2019)
  - An employee skills set being flexible, so if their skills are required in a different task, the employee can perform the task and maintain their performance levels.
- Commitment (Atatsi, Stoffers, & Kil, 2019) (Diamantidis & Chatzoglou, 2019) (Astuty & Udin, 2020)
  - The dedication that an employee has to their job which ensures that their work is of high priority, and which is key to their performance levels.
- Skill level (Diamantidis & Chatzoglou, 2019) (Rivaldo & Nabella, 2023)
  - Employee being equipped with the necessary skill level and knowledge to complete tasks with sufficiently high-quality level, which has an influence on their performance.
- Turnover (Atatsi, Stoffers, & Kil, 2019) (Hancock, Allen, Bosco, McDaniel, & Pierce, 2013)
  - The rate of employee turnover in an organisation, results in reduced resources and increase workload for employees. This affects employee morale and performance.
- Absenteeism (Aboagye, et al., 2019) (Hancock, Allen, Bosco, McDaniel, & Pierce, 2013)
  - An increase in an employee's absence at work results in lower productivity and reduced ability for organisations to retain these employees.

Hameed and Waheed (2011) did a study to explore employee development and how the performance of employees are impacted. Employee development consists of an

organisation's ability to provide training to its employees and coaching them to increase their skill level and expertise. The study noted that employees are assets to organisations and if employees are not provided with the necessary resources and tools to develop their skill levels, it impacts the performance of staff. Employee performance has an influence on the effectiveness of organisations (Hameed & Waheed, 2011). The objective of training is to increase the performance of an employee, and this provides the employees with the necessary skills to perform their tasks (Elnaga & Imran, 2013).

A finding that was indicated by Junker *et al.* (2021) at a specific organisation which was based in Germany that falls within the transportation and logistics industry where the aim of the study was to develop a multi-level model on agile for teams and individual work. Agile is not only used in software development organisation, but in other industries like marketing, manufacturing and human resources (Peter & Tavis, 2018). The researchers noted two additional factors that impact employee performance from other authors, *job crafting towards strengths* (Kooij, Woerkom, Wilkenloh, Dorenbosch, & Denissen, 2017) and *interests and employee intrapreneurship* (Gawke, Gorgievski, & Bakker, 2019). This study concluded that the agile approach at the organisation in Germany generates proactivity in teams that has an encouraging effect on team performance and that high performing teams have the potential to change employee performances for the better (Junker, Bakker, Gorgievski, & Derks, 2021).

2.6 AGILE PRACTICES CONTRIBUTION ON EMPLOYEES

The implementation of agile in any workforce contributes to both the organisation and employees. The SDLC within agile caters for an iterative approach, changes in requirements and providing value to the customer earlier on. The agile practice has an influence on what contribution it brings to its employees. Below is a list of contributions that agile brings to its employees from various studies.

2.6.1 Collaboration, communication and co-ordination

Also known as the Three 'C' of the agile practice (Sharp & Robinson, 2010). Agile promotes cross-functional teams and this has the ability to enhance employee collaboration amongst team members with different skillsets. It brings about closer communication with the team and increases co-ordination with the visibility of tasks that flow through the process. Not all

members possess all the knowledge, and it is vital that the team collaborate and communicate to solve issues (Sabanovic & Zegarra, 2022).

2.6.2 Adaptability and flexibility

Agile, unlike traditional methodologies where requirements are clearly stated beforehand, agile projects tend to have unclear and evolving requirements and embraces change, employees are required to be adaptable as requirements and priorities change during the project. This element in the workforce is key to keeping an organisation ahead of market changes and opportunities (Muduli, 2013).

2.6.3 Empowerment and autonomy

Agile principles promote self-organising teams which do not consist of rigid roles in some instances. Agile supports team trust, and this creates an environment for the team to make decisive decisions and solve complex tasks. Agile teams are empowered to plan their work which increases commitment to their tasks (Moe, Dahl, & Stray, 2019).

2.6.4 Continuous learning

In agile practices, feedback to employees is key and this embraces the opportunity for employees to continuously improve. In the scrum practice, the retrospective event occurs after each iteration to discuss what was the outcome of the iteration and what learning can be taken to improve on in the next iteration (Davies, 2019).

2.6.5 Focus on customer value

In any organisation, the ability to create value to its customers is vital to staying ahead in competitive markets. A principle of the agile manifesto is to provide satisfaction to customers with the delivery software (Beck, et al., 2001). Creating customer value can be described as the process of providing the customer with a product that improves an aspect of a process early on and with continuous delivery. By the customer providing continuous feedback, this allows the team to improve the product so that the customer ultimately receives the product with high quality (Sambinelli & Borges, 2022).

2.6.6 Work-Life balance

As mentioned above, Agile teams are responsible for their own planning and scheduling of tasks, this allows the team to plan tasks per iteration that are manageable and pull in tasks once capacity comes available. This setting causes the team to not have to work overtime but ensures a controllable amount of work can be achieved per iteration (Schroeder, Klarl, Mayer, & Kroiß, 2012).

2.6.7 Transparency and visibility

Agile provides a setting that is transparent and visible to the team. With the different ceremonies and continuous feedback that the team provides, this allows for all team members to understand the flow of work within the project. A study done by Laanti, Salo and Abrahamsson (2010) where a questionnaire was shared with over 1000 respondents, this research confirmed that transparency and visibility are one of the top 3 benefits in agile towards the team.

2.6.8 Celebrating success

Each iteration in agile has a goal in mind for the team to achieve. Achieving the goal affords the agile team an opportunity to celebrate what was achieved in terms of a successful delivery and provide value to business. This celebration motivates the team to continue delivering quality systems after each iteration (Moran, 2015).

2.7 ACCEPTANCE AND ADAPTATION OF AGILE PRACTICES BY EMPLOYEES

Systems development follows a software development methodology which helps guide the team and the project to implement a successful software system. It provides the team with a plan and structure and controls the development process. The implementation of a methodology comes with constraints in that there is resistance from the team and organisations to accepting and adopting a methodology (Wong, Lee, & Tshai, 2013). The section below will discuss the acceptance and adoption of agile by employee and organisations.

2.7.1 Acceptance of agile practices

A conceptual framework which represents the aspects that lead to the acceptance of agile by employees was created by Chan and Thong (2009). Chang and Thong focus on

knowledge management, which can be described as team members' ability to acquire knowledge about new technologies, have domain knowledge of the software system, understand the team member's abilities and collaborate and share knowledge. With agile being a collaborative approach, this affords the team the ability to gain the knowledge that allows for upskilling and enhances the team's ability to follow the agile practice. In order for knowledge to be created and transferred within the team, an organisation needs to provide its employees with the necessary training and support and instil an organisational culture that changes employee behaviour and allows for knowledge management to transpire. Agile characteristics accompany the approach to support teams in the process and are displayed in Figure 2.2 by Chan and Thong (2009). Below are the factors defined by Chan and Thong (2009).

Ability-related factors (Chan & Thong, 2009)*:*

- The factors in this category refer to the team members abilities itself and the support and coaching provided to them to use agile practices.

Motivation-related factors (Chan & Thong, 2009)*:*

- This relates to organisational culture and high management support in promoting the use of agile practices to its employees.

Opportunity-related factors (Chan & Thong, 2009):

- As mentioned above, this refers to the opportunity for employees to create and transfer knowledge. This determines the relationships between the team and the ability to share knowledge amongst one another regarding the system development and product knowledge.

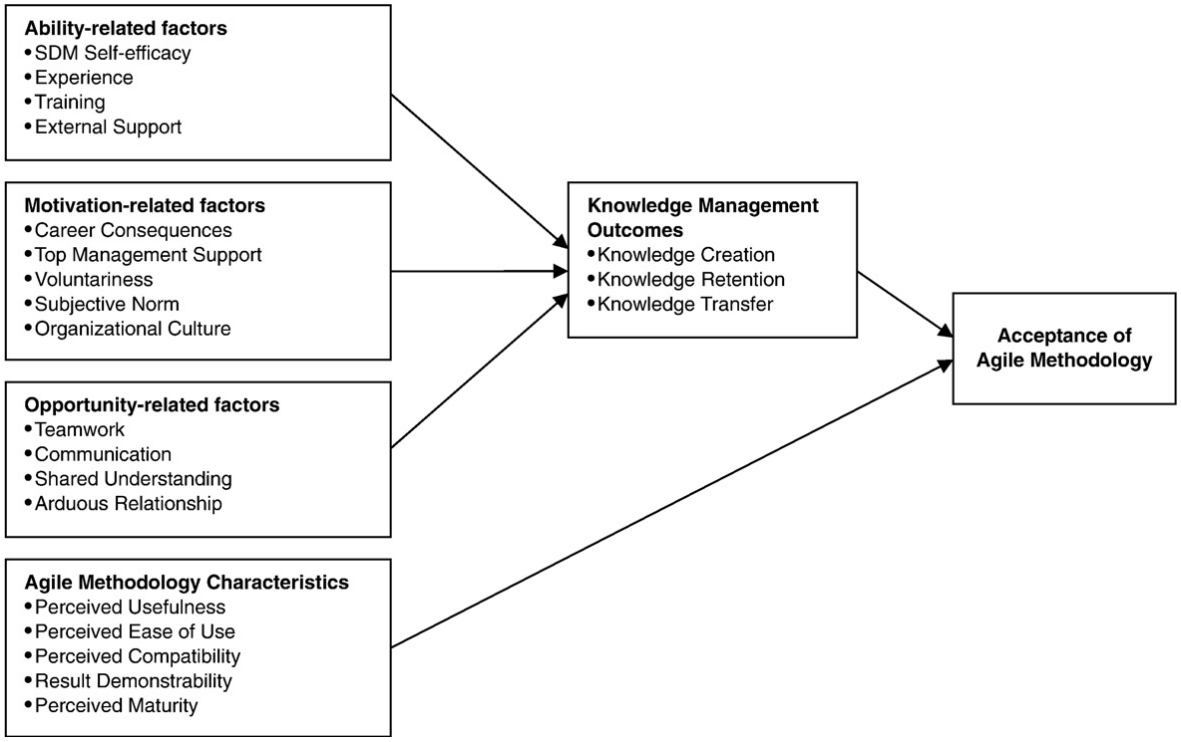


Figure 2.2: Conceptual framework for agile acceptance

Source: (Chan & Thong, 2009)

Past research demonstrates that when organisations change from traditional methodologies to agile, it has a huge impact on organisations and its employees. It does not just require changing existing tools and technologies; it impacts multiple components such as organisation structure, management behaviour, the team and organisational culture shift and having the buy-in from all stakeholders (Nerur, Mahapatra, & Mangalarag, 2005). As mentioned earlier, the agile approach comes with the dynamic that during the software development there are unknowns and risks that will be discovered and it is the acceptance of the organisation and team that this will be the case and that the agile approach will give the team the guidance to manage these occasions (Shankarmani, Pawar, & Mantha, 2012).

2.7.2 Adaptation of agile practices

It is often experienced that an implementation of any new piece of software, implementation of a new methodology or a change in team structure comes with its own adoption limitations. Shankarmani *et al.* (2012) identified agile adoption constraints that can potentially transpire in large organisations that consist of large teams and that the norm is on increased interaction between teams. The constraints that are realised come from both the

organisation and the team. Organisations prevent certain practices being followed by the team in the agile approach: the inability of organisation to change its culture, lack of support and guidance from high management and financial cost that the organisation cannot afford (Shankarmani, Pawar, & Mantha, 2012). From the perspective of an employee, the lack of agile skills within the team adds to the challenge to adopt to the agile approach; the team is reluctant to change and are stuck with the behaviour of traditional methodologies, and project complexity deems that both organisation and its employees adapt to agile (Shankarmani, Pawar, & Mantha, 2012).

The implementation of an agile approach impacts the organisation, its management, employees (team members) and the change in software in the development process. Nerur *et el.* (2005) defines the various issues related to each of the above components. Issues that organisations face with adapting to agile varies from organisational culture, high level management support and the knowledge of software development that the management team has. You can see from the factors of employee performance mentioned above, the adaption issues and employee performance factors are tightly linked and if organisations do not set a foundation that eases the adaption of agile, this has a ripple effect on the performance of its employees which results in the effectiveness of the organisation. With regards to individuals adapting to agile, with agile values placing high emphasis on the human element, this deals with the collaboration between team members and the effectiveness of working in teams. This tends to be an issue for employees to adapt to the agile methodology (Nerur, Mahapatra, & Mangalarag, 2005). The agile methodology compared to traditional methodologies shifts from processes to being people focused and this poses an issue to adapting (Cockburn & Highsmith, 2001). The indication that a change in organisation and individual behaviour is an aspect that can determine the successful implementation of agile, which will determine the software system delivery quality. Project size and scale is also a challenge that is experienced, and organisations must decide on the project sizes that can be delivered, taking into account the team size and skills level to deliver the software solution (Nerur, Mahapatra, & Mangalarag, 2005). The inability of management to assist the organisation and the team to transition from traditional methodologies to agile plays a vital role that would positively support and guide the team into this change. The lack of a structures approach makes the transition difficult and leads to failure (Noruwana & Tanner, 2012). Noruwana and Tanner describe that with the agile

approach (agile being teamwork and working within a team), team members prefer for their work to recognised on an individual level, rather than recognition as a team (2012).

2.8 THEORETICAL FRAMEWORK FOR EMPLOYEE PERFORMANCE

The most common and well-known theoretical frameworks that attempt to explain employee performance are the Equity Theory, Goal-setting Theory, Self-Determination Theory and the Expectancy.

The equity theory developed by John Stacy Adams (2019) advocates that the main components for individuals to be motivated and perform at an increased level are an individual's input and an organisation's outcome towards the individual for their input provided. Inputs refers to an individual's effort, skills, education and experience. Outcomes are remuneration, promotions and recognition. Individuals use their inputs and outcomes and compare them with other individuals, and this can affect their level of motivation and performance (Kollmann, Stöckmann, Kensbock, & Peschl, 2020).

Locke and Latham (1990) established the goal setting theory. This theory is based on an individual or team level. The goal setting theory consists of three steps which include setting clear and achievable objectives or goals with the manager that is specific and measurable; managers providing continuous feedback towards how individuals or teams are tracking towards their goals; and rewarding individuals or teams on their performance with their measurable goals. Rewards can include recognition, promotion and remuneration increases. The aim of this theory is to set measurable goals with rewards that will motivate employees to increase their performance and challenge their abilities (Miner, 2015).

Deci and Ryan developed the self-determination theory (2017). This theory focuses on three psychological needs, which are autonomy, competence and relatedness. An individual's choice of control over behaviours is referred to as the autonomy need. Competence is the feeling of an individual's ability for success in completing a task and this enhances performance and motivation. Relatedness is a sense of belonging and which individuals strive to gain. These needs work together to create an environment in increasing individuals' motivation in performing their tasks.

This paper discussed Vroom's Expectancy as a lens to determining employee performance when agile practices are implemented in a South Africa IT workforce.

2.8.1 Expectancy

While other theories of motivation and performance claim that an individual is motivated by factors that meet their needs, the Expectancy does not focus on the need of an individual, rather on their outcomes. Purvis, Zagenczyk and McCray (2015) states the effect of this results in the level of motivation, that leads to improved performance and that resulting in the outcome of performance.

Vroom's Expectancy is applied to employee motivation which indicates a correlation between behaviour and the expected outcome of that behaviour which individuals believe to have a positive outcome or reward (Lloyd & Mertens, 2018). Three characteristics in which individuals evaluate their behaviour: the desire of the outcomes of each of the behaviours(valence); what are the impacts of each of these behaviours(instrumentality) and the assumption that performing the behaviour will result in a successful outcome(expectancy) (Baumann & Bonner, 2017).

In order to apply the Expectancy to guide this research in determining employee performance when agile practices are implemented in a South African IT workforce, it is important to first state the outcomes and behavioural choices for which the three variables are being assessed. This will help determine the employee motivation level, since agile relies on teamwork (Matharu, Mishra, Singh, & Upadhyay, 2015) and Cohn (2004) states that teamwork has a positive influence on individuals motivation, this can be used to understand the influence on employee performance when using agile practices. The extent to which successful completion of a deliverable within the development of software context is, that it can be referred as a piece of code or working software that contributes to the overall project.

Expectancy means that an individual believes that the effort they lay in can affect the performance that they deliver. If an employee believes they put in the effort to understand and apply agile practices, this will lead towards increased levels in their performance as an example. This can be affected by organisational support in terms of employees not receiving

adequate training on agile practices and if agile practices are not implemented in the right way.

Instrumentality refers to the belief that an individual will be rewarded for their increased performance if they meet the expectation of a task. To improve employee performance in an organisation, managers should ensure that employee performance and rewards are clearly aligned. Baumann and Bonner (2017) mentions that management should create an environment whereby expectations are clear to employees and that if the expectations are met, rewards will be given, and this creates trust within the workforce. For example, this brings about the understanding of an employee that high performance will lead to rewards which could be both intrinsic or extrinsic rewards.

Valence is the value that an individual places on the outcome. This can include, if an employee places higher value in learning a new skill over receiving a bonus when completing a task, for an employee to be motivated by what they believe, the reward must be learning a new skill so that their increased effort will improve their performance. Within agile, employees can refer to the value that it brings to them which includes the ability for them to be flexible during iterative development when changes occur, and being innovative, or the decrease in stress and enhanced collaboration amongst team members. Rewards ultimately differ from person to person.

The strength of the Expectancy has been demonstrated by other studies to predict employee performance (Baumann & Bonner, 2017) (Purvis, Zagenczyk, & McCray, 2015). This theory allows for more chances for individuals to open-up on their experiences within agile practices, allowing individuals working within agile environments in a SA IT workforce to express their thoughts. Expectancy theory is helpful in explaining employee performance within an agile set.

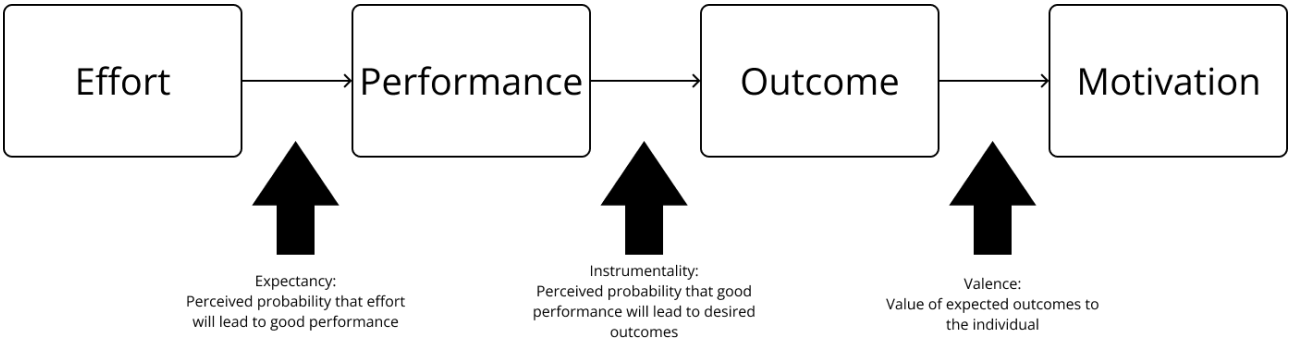


Figure 2.3: Expectancy Theory

Source: (Harris, Hanks, Lydia, Line, & Mcginley, 2014)

2.9 CONCLUSION

This chapter encompassed the existing narratives with the intention to gain an insight into agile practices and the influence on employee performance. The existing body of knowledge was evaluated to understand current researchers' stance on agile and employee performance. The characteristics and user roles in agile practices were defined to understand who the subjects are that employee performance impacts for this study. Furthermore, employee performance factors were outlined and the Expectancy theory (Purvis, Zagenczyk, & McCray, 2015) is the theoretical framework defined in this study that underpins employee performance.

3 RESEARCH METHODOLOGY

3.1 INTRODUCTION

In this chapter, using Saunders *et al.* (2014) research onion, the research philosophy, research approach, research choice as well as the research strategy for this study were discussed. Furthermore, this chapter included the data collection method, sampling approach, data analysis and ethical considerations. The purpose of this chapter was to define how the research would be conducted in order to explore the influence of employee performance when implementing agile practices in a South African IT workforce. This chapter described the framework followed for this study in collecting and analysing the data.

3.2 RESEARCH DESIGN

According to Akhtar (2016), research design encompasses the construction of a study that keeps together all the components in a thesis. Furthermore, he mentions that it is the plan with which a researcher goes about answering the research questions and objectives. Sahay (2016) defines that researchers should follow Saunders *et al.* (2014) research onion by peeling the onion from the outer layer to the inner layer. This study will use Saunders *et al.* (2014) research onion to provide an understanding of the methodology that will be used in this study. As Woody (2021) mentioned, “research is a systematic effort to gain knowledge” and this can be done through a scientific process.

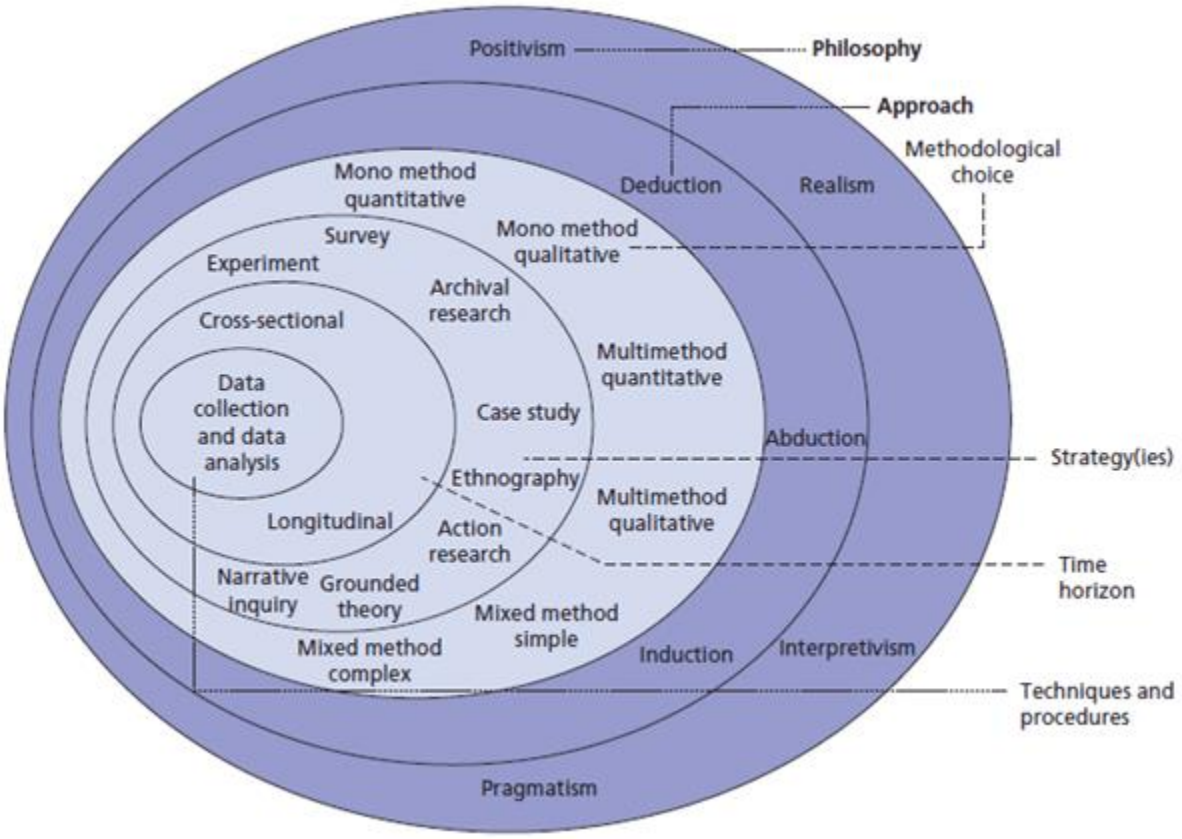


Figure 3.1: Research onion

Source: (Saunder, Lewin, & Thornhill, 2014)

3.2.1 Research Philosophy

The outer layer of the research onion is the research philosophy. Saunders *et al.* (2014) defines research philosophy as the establishment of knowledge and the process in which new information is established. An individual is ultimately doing research. Adding to the body of knowledge can be small, for example answering a specific problem in a field of research or it can be intense like creating a new theory. Furthermore, the research philosophy that is adopted by the researcher is influenced by practical considerations, and that knowledge that is considered acceptable and how the researcher embarks on this study is ultimately influenced by the researcher (Saunder, Lewin, & Thornhill, 2014). Žukauskas (2018) describes research philosophy as the development of research of knowledge, nature and assumptions and that all researchers have different assumptions about the truth of knowledge.

This study followed an interpretivist philosophy which is discussed in more detail in Section 3.2.3.

Ontology

Ontology implies to the nature of reality. It depicts what an individual considers a fact or reality based on their beliefs (Saunder, Lewin, & Thornhill, 2014). Saunders *et al.* (2014) defines two aspects of ontology that are likely to produce valid knowledge in the field of study:

- *Objectivism:* It is of the view that social entities exist freely of social actors in the real world.
- *Subjectivism:* Its philosophical point of view of which the actions and awareness of social actors is the outcome of social occurrences being created. It is critical to study the detail of a condition to comprehend the reality of the situation.

This study used a subjectivism because agile practices are implemented differently across agile teams in IT workforces. Employee performance is influenced by different aspects in different agile settings based on their perception. Qualitative methods allowed the researcher to gain in depth information in different agile settings and it complexities.

In interpretivism research, the view of the world can be depicted in multiple realities and not limited to a single view reality, and this is based on human subjective experience of the external world. This comes about as humans are diversified and hold different sets of views, knowledge and experiences (Gemma, 2018). As humans have their own subjective views, there is not a single truth of the phenomena. Interpretivists assumption is that knowledge can be gained by exploring human viewpoints and experiences (Creswell, 2016). The ability of exploration is appropriate in this study in understanding employee performance within an Agile setting in South African IT workforces and each individual has their own perception.

Epistemology

Žukauskas (2018) defines epistemology as how scholars of the study can establish information on the study of relevance and what defines knowledge as being acceptable in the field. Epistemology can also be described as clarifying the possibility of gaining knowledge, the origin and ways in which knowledge can be attained and deemed reliable

(Jurs & Wiersma, 2008). Reality of individuals is created based on their own subjective experiences and interpretations.

For this study, which used an interpretive approach, it is important to understand how agile is adopted and practiced in different South African IT organisations and how their experience influences employee performance. Understanding this context provides the ability to observe and interpret their realities. As mentioned above there are multiple realities (Gemma, 2018) that can be realised following interpretive research and for this study, employee experiences, attitudes and perceptions of agile practices can influence employee performance outcome. This study used a mono-method qualitative approach, with the selected research strategy as interviews that provided the ability to understand the subjective realities of employee and their experiences in agile that influences their perceptions on employee performance.

Axiology

Axiology refers to an assessment of the researcher's own value's during all phases of the research process. Axiology studies judgements of value (Hartman, 2011). Heron (1996) mentions that human actions are guided by their values. The researcher should be cognisant of their values and beliefs as this may have an influence on how data is interpreted. The researcher viewed the reality of employee performance in accordance with the interpretation of participants' view of reality.

3.2.2 Research Paradigms

Žukauskas (2018) defines research paradigms as a philosophical framework that a researcher bases their study on. It is also considered the standard to research that other researchers have used in the field. It is a way of inspecting social occurrences with the expectation to gain some understandings and explanations (Saunder, Lewin, & Thornhill, 2014).

Positivism

Positivism is a research philosophy that considers knowledge to be objective and set aside from the researcher's values and beliefs. The researcher and the topic of interest should be separated. Positivism is a positivist understanding of the world and science and scientific

research is understood as the approach to acquire the truth (Goduka, 2021). Positivist advises that you can only perceive behaviours and actions of people scientifically. The belief from positivist is that there is only one truth out there. Positivist researchers use a very structured research methodology to permit the replication of similar research later on (Bhattacherjee, 2012). Positivists look at the social and physical world as independent of humans which we do not have an influence on. Positivists believe that there is order in society with limited conflict (Bryant, 1985).

Interpretivism

The aim of interpretivism is to attempt to recognise all factors in a specific setting and investigate each one. They thereafter explain how they are all intertwined and reliant on each other, within the given setting. Interpretivism allows the phenomena to be understood in a unique way because it gathers information about the way specific groups value and add meaning to their worlds which can be compared to others (Oates, 2006). Interpretivism highlights the importance of understanding the phenomena within its specific cultural and social setting. The researcher forms part of the study, thus interpretivism yields results that are subjective (Myers, 2009). Interpretive research focuses on understanding individual behaviour and social phenomena and interpreting these realities (Creswell, 2016). Interpretive research often uses qualitative methods that allows the researcher to understand the phenomena and explore and derive valuable information of the social phenomena.

Critical research

Whilst critical researchers agree that reality within social settings are created by its people, they argue that it is also influenced by systems that have authority over how we experience things. The focus of critical research is to identify and thereafter challenge these authoritative conditions, the restrictions they impose and the unfairness they create and provide power to the people (Myers, 2009). The aim is for the researcher is to change the current situation and restrictive conditions (Orlikowski & Baroudi, 1991).

Pragmatism

Pragmatism considers that meaning and truth are influenced by practical consequences and/or real effects. The main idea is knowing that something is true because it works in

reality and that it has a use in new situations that arise. These are usually things that can be proven practically, through investigation or experiments. The research paradigm uses mixed methods, design-based research and action research. The research paradigm is in most instances defined by the research problem (Žukauskas, Vveinhardt , & Andriukaitienė, 2018)

3.2.3 Selection of research paradigm

The chosen paradigm for this study was interpretivism. Social science unlike other fields of studies requires a paradigm to guide the topic of interest and research strategy approach. The reason being that the study aimed to explore the influence employee performance has when the agile practices are implemented in South African IT workforces. In order to determine this, the study needed to use the interview research strategy so that knowledge can be gained from people in its real-world setting. This paradigm affords the opportunity to explore the social reality which is established on the understanding of individual behaviour in its real-world setting, in that employee performance in an agile environment. Since knowledge can be created by individual experience, this research could lean towards an inductive approach based on the data generation where the assumption is that all employees within a South African IT workforce are positively impacted or not. An objective view of the data and phenomenon was required to provide subjective recommendations and insights to IT organisations using agile practices. Interpretive research often used qualitative methods, and this study uses interviews as research strategy that affords the researcher the opportunity to obtain data from different individuals in different social phenomena.

The reality of the study can be applied to all IT workforces in South Africa and not limited to a particular group or organisation. In order for the study to be feasible, researcher bias and beliefs could not affect the study and needed to be subjective. Knowledge can be generated on the effectiveness agile practices has, not only on the project delivery and the organisation but its employees as well.

3.2.4 Research Approach

The research approach consists of the plan and procedure that the researcher uses during the research study. Saunders *et al.* (2014) defines the two research methods.

- **Inductive approach** – this approach refers to the researcher gathering data and using the data to develop a theory or develop new insights. It is a process of analysing data for which the outcome is to support the researcher in answering the research questions. The researcher uses interviews and questionnaires to develop a theory or contribute to the body of knowledge with new findings upon observing the data (Saunder, Lewin, & Thornhill, 2014).
- **Deductive approach** – this approach starts with a theory or problem, thereafter, developing a hypothesis. It then requires designing strategies to prove the hypothesis (Saunder, Lewin, & Thornhill, 2014).

3.2.5 Selection of research approach

This research study used the inductive research approach which is commonly used within qualitative methods. This assisted the researcher in gaining an interpretation of the perceptions of individuals working in an agile environment and their behaviour towards employee performance. The term 'theory' according to Nkomo *et al.* (2019) can be defined as the development of a new theory or the establishment of new insight of a particular interest or problem. This study projected new insights regarding employee performance in agile environments.

The inductive approach follows the following steps:

- Observation/data collection – collection of data using interview strategy. Participants include employees working in agile environments for organisations within South Africa (discussed in Section 3.4.1).
- Data analyses – analysing data using thematic analyses techniques. This process consists of identifying themes and patterns (discussed in Section 3.6).
- Pattern identification – identify similarities and differences within data (Pandey & Pandey, 2021). This was linked to the research questions to identify if any vital changes were required to the research questions or if any additional questions were to be added.
- Theory – the research questions were be mapped back to the theory and extract comparisons between the analysed data and the literature. This can result in new insight identified into the body of knowledge (Creswell, 2016).

The above steps are completed iteratively as new findings were discovered within the data.

3.2.6 Research Strategy

According to Wedawatta (2011), a research strategy sets the direction of a study. Research strategy is one of the components of research methodology. The research strategy guides the researcher in organising and performing the research systematically to produce quality results (Saunder, Lewin, & Thornhill, 2014). The different research strategies are detailed below.

Case study

A case study is a research methodology that entails a detailed process which involves the examination of an individual, group or department in its existing setting which the researcher wants to acquire knowledge and theories (Oates, 2006). The researcher can collect data on the study using qualitative methods which is suitable to interpretivist research. Case study relies on numerous sources of evidence to help guide the researcher in data collection and data analysis (Wedawatta, Ingirige , & Amaratunga , 2011). Case study helps the researcher gain comprehensive insight into the phenomena.

Common types of case studies: (Oates, 2006)

- *Exploratory study* - Is a practical observation of real-life occurrences to aid the researcher in understanding the problem and narrowing the focus of the ensuing research.
- *Descriptive study* - Is an analysis of a specific instance and the overall setting.
- *Explanatory study* - Is used to ascertain which factors had an effect on what was studied. It is also used to ascertain which theory in the literature is better in line with the case than the others.

Survey

A survey is an organized and systematic process for a researcher to gain data from a group or individuals. Individuals are tasked with reporting on their own behaviours and knowledge. Surveys can be conducted in numerous techniques that include in person, mail or over the internet (Wyatt & Eysenbach, 2002). Survey research methodology is often used with

exploratory and descriptive studies. Surveys include open-ended and closed-ended questions (Oates, 2006).

Experiment

Experiments is a research strategy that inspects the cause-and-effect relationship. Experiments is considered a part of the positivism research philosophy. The researcher would create a concept of their study that leads to a statement. This statement can then be tested using the experiment strategy (Oates, 2006). Experiments are meant to verify or refute a theory. The research can therefore prove their hypothesis in relation to the experiment carried out (Saunder, Lewin, & Thornhill, 2014).

Action research

Action research involves an arrangement of concepts and practice through modification of a situation within a suitable environment. It includes iterative progressions of changed approaches to get the most effective outcome (Avison, Lau, Myers, & Nielsen, 1999). The key steps of action research are preparation, action, observing and reflection (Mardani, 2009). This research strategy is a procedure of self-reflective analysis with the intention to improve the justification of the process carried out.

Design science research

Design science was developed during 1969 with the intention of identifying the differences between natural and design science. Its aim is to produce something that currently does not exist or adjust existing solutions to produce improved results (Teper, Aaltonen, & Gotcheva, 2021). The science is pertinent to multiple disciplines and includes information systems research (Venable, Pries-Heje, & Baskerville, 2016).

3.2.7 Selection of research strategy

The selected research strategy for this study was the survey. The survey strategy allowed the researcher to gain insights into participants who have experience and knowledge working in an agile environment in a South African IT workforce. This study required that data generation required empirical research to understand employee behaviours and values in agile practices. This ensured a more accurate sampling to gather data in order to reach a conclusion and determine the effectiveness on employee performance. In addition to this,

Uraon, Chauhan, Bharati and Sahu (2024) have recently used survey research strategy to explore the impact of agile taskwork and agile teamwork on team performance, with data collected through employees working at different IT organisations to provide insight on agile practices on team performance. Questionnaire data collection methods are most frequently used with survey research strategy; however Saunders, Lewis and Thornhill (2009) mentions that interviews (discussed in Section 3.5) where all participants are asked the same standard of question can also be used which is in the case of this study.

One of the research objectives of this study was to explore the influence of employee performance in an agile environment in a South African IT workforce. This can be valuable in providing organisations with insights on the data and assisting them with changing management style, organisation culture and providing their employees with an environment to increase their performance and ultimately impact the organisation positively.

3.3 TIME HORIZON

Time horizon is described as either cross-sectional or longitudinal. The selection of the time horizon is dependent on the research question. Cross sectional refers to a ‘snapshot’ of the phenomena whereas longitudinal refers to a ‘diary’ of the phenomena (Saunder, Lewin, & Thornhill, 2014). This study focuses on taking an interest of a phenomena at a particular time, thus cross sectional is used. Additionally, Hoda, Salleh and Grundy (2018) mention that agile is a continuously evolving practice from its inception in 2001 and this evolution causes the nature of the agile practice to continuously improve. It is appropriate for this study to use the cross-sectional time horizon for agile practices. This allowed the researcher the capacity to comprehend the current state of the influence of agile practices on employee performance.

3.4 SAMPLING

Saunders noted that you can collect data from all groups member and individuals, however there are restrictions that make this impossible such as time frame, funds and access (Saunder, Lewin, & Thornhill, 2014). The selection of individuals to be participants in a research study is important. Furthermore, Martínez-Mesa *et al.* (2016) described sampling as the phase where entities or sampling units are chosen from a sample frame where the

participants are used to address the research problem. This section described the target population, the sampling method and the sample size used for this study.

3.4.1 Target population

The target participants for this study used were agile practitioners who worked within IT workforces in South Africa and more specific the software development field. The targeted individuals had an adequate amount of knowledge and experience working in organisations that use agile practices during the development of software. These individuals possess the roles of product owners, developers, test analysts, business analysts, system analysts, scrum masters, business architects, system architects and project managers. These individuals work or have worked in an agile development environment.

Table 3.1: Target Population and inclusion criteria

Participant Targeted	Role Types	Methodology experience	Criteria
Employees working in IT software development field	• Product owners • Developer • Development Manager • QA Test analyst • QA Test Manager • Business analyst • System analyst • Scrum master • Business architect • System architect • Project manager	Agile	A minimum of at least two years of experience working in an agile software development environment

3.4.2 Sampling method

Saunders *et al.* (2014) stated that there are two types of sampling techniques: namely probability and non-probability sampling.

Probability Sampling

Probability sampling is a sampling technique that involves randomisation of a sample of a population and that everyone has an equal chance of being selected (Kumar, 2018). Types of probability sampling include stratified, cluster, simple random and systematic sampling (Oates, 2006).

- **Stratified sampling** – the population in two or more groups. The researcher selects the individuals from those groups based on specific attributes or characteristics (Sharma , Sarkar , & Gupta , 2012).
- **Cluster sampling** – the researcher performs a process of working with a subset within the population and can use simple random sampling to select these subsets or groups (Chih-Pei & Chang, 2017).
- **Simple random sampling** – is a type of probability sampling where the researcher randomly selects a subgroup of individuals from the population (Oates, 2006).
- **Systematic sampling** – the research builds a process to select individuals from the population and this could include selecting every 10th individual from the population for example (Saunder, Lewin, & Thornhill, 2014).

Non-probability sampling

This sampling technique is a deviation from probability sampling, wherein researchers select samples based on the researchers' individual judgement. The different types of non-probability sampling techniques defined by Oates (2006) are purposive, snowball, self-selection and convenience sampling.

- **Purposive sampling** – scholars use their own reasoning to choose participants from the population to achieve research objectives (Saunder, Lewin, & Thornhill, 2014).
- **Snowball sampling** – also referred to as chain-referral sampling where the samples have attributes that are not commonly found. It is used when there is difficulty in getting participants from the population (Saunder, Lewin, & Thornhill, 2014). The existing entities provide recommendations to recruit further samples to answer the research question. (Oates, 2006)
- **Self-selection sampling** – is used when the researcher prefers participants to volunteer as part of the research (Sharma G. , 2017).
- **Convenience sampling** – the researcher selects participants that are convenient to the research to choose from (Oates, 2006).

3.4.3 Selection of sampling technique

For the purpose of this study, a multi-sampling technique was used which included purposive and snowball sampling technique.

Non-probability sampling is mostly used in qualitative method studies. Oates (2006) describes this technique as the researcher selecting participants from the population by using their own judgement based on the purpose of the study. This allowed the researcher to select respondents with the right experience and knowledge within agile practices. This study is concerned with employee performance and its effect in agile environments in South African IT workforces. Purposive sampling technique allowed the researcher to target participants that have experience working in agile software development environments in South African IT workforces. This technique afforded the researcher the opportunity to select respondents that meet the criteria noted in Table 1.

Furthermore, the snowball sampling technique was also used to help identity additional participants that were identified through purposive sampling. These participants were asked after the interview if they could assist in providing additional participants who met the criteria and could provide insight into agile and employee performance.

3.4.4 Sample size

As Saunders *et al.* (2014) mentions, collecting data from the entire population is impractical and it is dependent on the budget and time to collect data, thus the means of selecting a sample size from the population that is manageable. Morse (2000) notes that when selecting a sample size, there are some factors that should be considered. These factors assist the researcher in selecting a sample size. The factors are the scope of the study, nature of the topic, quality of data, study design and the use of shadowed data. The scope of this study has been narrowed down focusing on employees in South African IT workforces using agile practices. It is critical that the topic is clear and precise for participants. The sample size should not be too small to affect data saturation, which is in line with qualitative studies, and not too large as this can be a challenge to mine and profile the data. Data saturation refers to when data collection is saturated, meaning that no new insights can be found from participants within interviews and if new data is collected, this will not change how the researcher understands the phenomena. (Malterud, Siersma, & Guassora, 2015) state that

qualitative studies and using the interview research strategy that the researcher should move away from the numerical size of the sample and focus on the new knowledge provided from a smaller sample during data analysis. Saturation in interviews generally occurs after the tenth interview, but it is imperative to do a few more interviews thereafter to verify saturation (Sarfo, Debrah, Gbordzoe, Afful, & Obeng, 2021). The initial estimate for this study was 15, however the researcher continued to 17 until no further data was discovered. Interviewing this number of participants covered a broad enough range from the population that considered job roles and experience levels.

3.5 DATA COLLECTION

In order for this study to achieve the objectives, the data collection process took place which included collecting information relating to the study. There are two ways in which data can be collected that include primary data collection and secondary data collection (Oates, 2006). Data that is received directly from respondents is referred to as primary data. The methods include interviews, observations and focus groups which often are used for qualitative studies. Secondary data is information from sources such as journals, articles, textbooks or videos (Saunder, Lewin, & Thornhill, 2014). Data collection allowed the researcher to gather knowledge and insights into the research problem. This study focused on the collection of primary data only using semi structured interviews.

Interviews

A research interview is a meaningful conversation between the researcher and individuals or a group where the researcher has an objective in mind when asking concise questions. The interview nature should be in line with the research questions and objectives. Below is the list of types of interviews (Saunder, Lewin, & Thornhill, 2014).

- **Structured interviews** – this is a list of predetermined questions that follows a standard and the interviewer has control over the interview.
- **Semi-structured interviews** – this is a mix of both structured and unstructured interview where there is no formal process and the interviewer will ask a few key questions, ask questions in different order and leave out a few questions.
- **Unstructured interviews** – this is an informal interview where the researcher does not have outlined predetermined questions but rather uses this interview type to explore a specific area.

3.5.1 Selection of data collection method

Interviews:

The primary data collection method for this study was semi-structured interviews or also referred to as qualitative research interviews. This allowed the researcher to understand what was happening in a specific reality to seek new knowledge. Interviews are often used in qualitative studies and are well adapted for interpretive studies (Saunder, Lewin, & Thornhill, 2014).

Although semi-structured interviews involved the researcher having pre-defined open-ended questions, this also provided the researcher with the freedom to probe participants into exploring topics that emerge during the interview. This afforded the researcher the opportunity to collect data that was rich and in-depth from participants experience and perceptions on agile and its effect on employee performance. Interviews do provide consistency with regards to the topics covered in an interview with all participants but also offered the flexibility in understanding different experiences. Data triangulation was used by gathering data from respondents who work at various IT organisations and who have different roles. The interviewer was prepared before an interview as a lack preparedness could lead to low-quality of data being extracted from participants. Interviews were conducted through MS Teams, Zoom, Google Meets and face-to-face. These were based on participants preferences and logistical constraints.

Documents and Secondary Data:

There is various existing literature published from scholars in relation to the discipline of agile practices and employee performance. The existing literature was useful to support the primary data collected. The secondary data included journal articles and books from previous authors. This data assisted the researcher in compiling his findings chapter.

Interview guidelines

This study followed an interview guideline which supported the researcher to structure the questions in line with an aim that is grouped into various elements. This process assisted in forming interview questions that were not repetitive and ambiguous and also followed a flow of priority from gathering participants background, thereafter, understanding what benefits and challenges they have experienced with agile. The researcher then went deeper into

understanding the agile practices and processes being followed and gathered an understanding of the value and outcomes participants acquire from using agile practices. Once the interviews were structured, these were then sent to academics and peers in the IT workforce environment to review and be used as the pre-testing process and to gather their feedback.

Interview guide process:

This section details the process that the researcher took when structuring the interviews. Interview questions constructed were categorised into different sections that provided the researcher with a purpose to extract from each section. The sections were guided by the Expectancy theory that was used as a lens for this study. The categories included background, expectancy, instrumentality and valence. Furthermore, this also guided the researcher when determining the results of the data and aided the data findings process. The table below presents the set of interview questions in sequential order and its respective category and the purpose of the questions that were asked to the participants.

Table 3.2: Interview guideline

Interview category	Interview question	Purpose
Background	Have you ever worked in a company or team that implements agile practices during software development in a South African IT workforce?	To determine the background and experience of the agile practitioners.
	How many years of experience do you have working in agile practices?	
	What was the most common used agile methodology in those years?	
	While working in your most recent company or agile	

	team where agile practices were used, what was your role?	
Expectancy	From your experience, what are some specific benefits that employees in the South African IT workforce derive from adopting agile methodologies?	To understand what benefits agile practitioners derive from using agile practices and does this aid in employee performance.
	From your perspective, what are some common challenges that employees in the South African IT workforce encounter when adopting agile methodologies?	To understand what challenges agile practitioners derive from using agile practices and does this affect employee performance.
	What additional support or resources would help you feel more confident in using agile practices?	To determine what support would assist agile practitioners in using agile practices, and if provided can it improve employee performance.
	Can you describe a time when your efforts in agile practices led to a successful project outcome?	To understand what forms of agile practices led agile practitioners to successful projects.
	Can you identify key aspects of agile practices that directly influence and contribute to employee performance?	To determine what forms of agile practices have an influence on employee performance.

	What agile ceremonies do you have within your organisation?	To determine what ceremonies agile practitioners follow within their teams and organisation.
	What value do each of these ceremonies bring to you?	To understand the value these ceremonies provide them agile practitioners with.
Instrumentality	Can you provide examples of outcomes you take out from working in successful agile project performance?	To understand what agile practitioners take away from working in successful agile projects.
	What types of outcomes would motivate you to perform better in agile projects?	To determine what type of outcomes would motivate agile practitioners to increase performance in agile projects.
Valence	What types of outcomes do you value the most for your performance in agile projects?	To understand what type of outcomes agile practitioners value in agile projects.
	Are there any outcomes that you feel are undervalued in the current system?	To understand what outcomes agile practitioners feel are undervalued.

3.6 DATA ANALYSIS

Data received from respondents from interviews are considered raw data. Before this data can be processed and analysed, it proves to have little meaning to the researcher in terms of answering the research objectives and questions. Data received from primary and secondary data collection methods need to be analysed by the researcher. The data needs to be analysed and interpreted to be useful. Qualitative data analyses focus on deriving

meaning from data through words which in this study is using interview transcripts (Saunder, Lewin, & Thornhill, 2014). The various types of qualitative data analysis methods include thematic data analysis, content analysis, discourse analysis and narrative analysis (Jaspal, 2020).

Thematic analysis

Thematic analysis also known as coding is mostly used in instances where the researcher needs to analyse data from texts which can include interview transcripts for primary data and journal articles for secondary data (Jaspal, 2020). The aim of thematic analysis is to identify themes(codes) as the method states, as well as patterns to derive meaning from raw data. These themes and patterns identified will further be analysed in line with the research aims and objectives to ensure alignment of the study. These themes can be updated as the researcher analyses the data to align with the phenomena.

Content analysis

Content analysis is similar to thematic analysis which involve coding, however, the focus is based on quantifying data presented. Data presented is often depicted in a numerical manner which is derived from the themes found. The researcher can then use this data to analyse the data statistically. These codes can be identified by humans or by use of computer-generated algorithms (Brough, 2019).

3.6.1 Selection of data analysis method

The data analysis method selected for this study was thematic analysis which is often used in qualitative methods. The selected research approach in this study was inductive which allowed themes to be derived from the interview transcribed data collected. With inductive research, themes are not derived beforehand, rather themes are defined from the researcher as the data analysis process progresses. It allowed the researcher to investigate the softer side which included exploring and describing the data by identifying, analysing and reporting on patterns and themes from the interview data. A theme can be described as an important aspect derived from the data and has some level of meaning in relation to the entire data set. Thematic data analysis is performed on the primary data collected from interviews. The researcher can categorise the data collected from interviews into numerous

themes or codes that relate to agile and employee performance. Data analysis can be seen as the final product from the researcher's data analysis process.

Themes are derived from patterns originating from interviews from all participants and has a subjective meaning (Vaismoradi & Snelgrove, 2019), data collected can be grouped together to allow the researcher to interpret the data. This study was guided by phases that is outlined by Braun and Clarke (2006) in six phases. The term phases refer to the ability of the researcher to follow these processes iteratively:

Table 3.3: Thematic analysis steps

Thematic analysis steps	Description
1. Familiarising yourself with the data	This phase involved the researcher going through the data and starting to engage in a manner that allows the researcher to gain insight into the data. This involved reading through the transcribed data multiple times and making notes. The interview audio data was transcribed using Microsoft Teams and Otter.ai for virtual and in person interviews respectively.
2. Generating initial codes	This step included the process of coding whereby important and interesting text in the data are reduced into smaller pieces that provide meaning and are relevant to the research questions. Using NVivo, this involved reading through the data and creating new codes and modifying existing codes for significant statements and phrases from participants responses. The Expectancy identified for this research guided the researcher in generating the initial codes. The researcher identified initial codes relating to expectancy, instrumentality and valence. The codes

	generated from the transcripts aligned with the research questions and objectives.
3. Searching for themes	A theme can be defined as pattern that describes interesting and important aspect of the data which relates to the research questions (Maguire & Delahunt, 2017). The codes are than organised into themes that have been derived. The codes identified were then grouped into broader themes based on its similarity and idea. The themes searched were aligned with the Expectancy theory as a lens for the study which included the expectancy, instrumentality and valence variable.
4. Reviewing themes	The researcher than revised the themes created in step 3 and this included adding new themes and editing existing ones. The themes derived should be different from one another, or else the themes can be combined if they have similarities. Secondary themes can also be created to further distinguish different characteristics of the primary theme. To ensure credibility of these themes, the researcher ensure this theory aligned with previous literature that studies employee performance in different settings. The list of themes identified were reviewed thoroughly and further grouped into primary and secondary themes and aligned with the research questions.
5. Defining and naming themes	This is the final iteration of the theme construction. The researcher names the themes guided by the Expectancy and understands how the secondary themes relate to the primary theme. It is also vital to understand that the

	themes do correlate with the research questions and objectives, and this enhances the findings and conclusion chapter. Each of the primary and secondary themes identified were named to provide a clearer understanding of each theme and its relation to each research question to guide the discussion and conclusion chapter.
6. Producing the report	Once the researcher feels comfortable with the transcribed data, the coding has been completed and themes have been identified. To present this data to be more meaningful, the researcher extracted the crucial parts of the data to create a narrative to give details on the data. This involved providing an understanding of each theme and how it answers each research questions and quoting responses from participants.

3.7 QUALITY ASSESSMENT

Nowell et al. (2017) mentions that it is important to establish trustworthiness in qualitative research to ensure that information added to the body of knowledge is understood and is valid. To ensure trustworthiness, Licon and Guba (1985) defined the criteria of credibility, transferability, dependability, and confirmability which compares to quantitative method that uses validity and reliability. The following criteria was adhered to enhance trustworthiness of this study.

Creditability:

Credibility can be defined as the participants ability to determine if the results are believable from the participants view and the representation of the data (Nowell, Norris, White, & Moules, 2017). Another technique to ensure credibility was using data triangulation and this was done by means of collecting data from participants working at different IT organisations

and different job roles to ensure to ensure the data represents participants from diverse perspectives noted in Table 4.

Dependability:

Dependability refers to the ability to document the phases of data analysis comprehensively so that it can be replicated by an external researcher to compare the findings and determine the consistency (Nowell, Norris, White, & Moules, 2017). The researcher ensured that all data collected is securely stored for use later by other researchers. This was done by providing a detailed criteria on the selection of participants in Table 1 and the thematic data analysis steps followed (see section 3.6.1) and data was securely stored in the University of Pretoria research data repository.

Transferability:

Transferability allows this research to be applied to different settings or contexts. This was done by providing detailed descriptions of the participants, data analysis phases and contexts which are South African IT workforces.

Confirmability:

Nowell et al. (2017) stated that confirmability can only be achieved once the credibility, dependability and transferability criteria are met. Confirmability is associated with the researcher's ability to determine how the interpretation and findings from the data was achieved. This was done by ensuring data triangulation using participants with diverse perspectives in terms of IT organisations and ensuring the researcher based findings and made decisions that were not biased.

3.8 ETHICAL CONSIDERATIONS

Oates (2006) mentions that it is the duty of a researcher to be an ethical researcher, and all participants involved should be treated fairly and with honesty. There are ethical standards and behaviours that a researcher must always adhere to (Saunder, Lewin, & Thornhill, 2014).

- **Integrity and objectivity of the researcher** – the researcher must act with integrity and honesty and be open and truthful and support accuracy of data (Saunder, Lewin,

& Thornhill, 2014). In this study, the researcher ensured that all findings were reported honestly and not misrepresented.

- **Participants right not to participate or withdraw** – participants must be given the right to not participate and the option to withdraw from the research study (Oates, 2006). The voluntary participation and the participants ability to withdraw during the interview were clearly stated to the participants before the interview.
- **Informed consent** – participants should provide informed consent before being involved in the research. The informed consent must detail the objective of the research, who the researcher is, what is required for the participant to take part and how will this data be used (Pope, et al., 2003). A consent form was provided to the potential participant beforehand and clearly indicated the purpose and description of the study, how will the data be used, any risks and benefits to the participant, confidentiality of the participant and the data collected storage process. Additionally, the ethics approval was provided by the University of Pretoria before the data collection process could commence.
- **Avoidance of harm** – any risk of harm occurring to participants must be avoided. Harm refers to emotional, physical or mental well-being of participants (Saunder, Lewin, & Thornhill, 2014). The researcher ensured that no harm was done to participants and allowed participants to select an environment that is suitable to them for the interview to be conducted i.e. interview in person or virtually.
- **Confidentiality of data maintaining anonymity of participants** – questions pertaining to the study must keep participant's anonymity and the data from the study should only be used for purposes of the study (Saunder, Lewin, & Thornhill, 2014). For this study, no personal information of participants was requested.

3.9 CONCLUSION

This chapter presented the research design elements. It identified the research philosophy, approach, strategy, data collection and data analysis techniques that this study will use. Furthermore, the sampling approach was described as well as the ethical standards and behaviours to be followed.

A summary of the research designs choices according to Saunders et al. (2014) research onion is mentioned below:

Table 3.4: Research design choices

Research design	Selection of choices
Research Paradigm	Interpretivism
Research Approach	Inductive
Research Strategy	Survey
Research method	Mono method qualitative
Sampling technique	Non-probability purposive Non-probability snowball
Sample size	17 interviews
Data collection method	Semi structured interviews
Data analysis method	Thematic analysis

4 RESULTS AND DATA ANALYSIS

4.1 INTRODUCTION

This chapter firstly introduces the participants. Thereafter, using the interview guide process defined in Section 3.5.1, the results and analysis were outlined from the 17 participants. The interview responses were grouped into the different interview categories which were background, expectancy, instrumentality and valence were presented. The last section provides the emerging themes which consists of the primary themes, secondary themes and key aspects defined during the thematic analysis. The themes are further described in Chapter 5.

4.2 DESCRIPTION OF PARTICIPANTS

The interviews conducted included participants who were all employed at various South African IT organisations. These participants worked in software development environments where agile practices were used.

4.2.1 Participants

Initially 19 participants were interviewed, however two participants did not meet the criteria of at least two years of experience working in an agile software development environment. The remainder of the participants met the criteria. These participants were employed at various organisations and held various positions in their organisations that were aligned with the agile roles discussed in section 2.2.3. As per the consent agreement with participants, their personal details will be withheld on the premise of anonymity. Table 8 below presents the demographics of each participant which include their role type, agile practice used and their years of experience using agile practices. To ensure data triangulation, participants with different role types with different seniority levels that were based at various organisations were used. The demographics noted provides the relevance of these participants for the data collected from them that aligns with the research objectives.

Table 4.1: Demographics of participants

Research participant: Agile practitioners	Role type	Years of experience within agile
P1	Business analyst	8
P2	Test analyst	6
P3	Software developer	3
P4	Software developer	6
P5	Business architect	7
P6	Software development manager	12
P7	Scrum master	8
P8	Business analyst	3
P9	Business architect	8
P10	Software development manager	10
P11	Software developer	9
P12	Systems architect	6
P13	Business architect	5
P14	Business analyst	3
P15	Product owner	10
P16	Project manager	5
P17	Chief information officer	11

P1:

Participant 1 is a business analyst. Having worked in multiple organisations and teams using agile practices, she built her career over the years and now is a senior business analyst. Her role includes working closely with business stakeholders to gather requirements and communicate these requirements to the agile delivery team. She has eight years of experience working in agile practices using scrum and test-driven development (TDD) methods.

P2:

Participant 2 currently is a senior test analyst. He has six years of experience working in agile practices using scum and kanban. Currently works in agile team that supports mobile application testing.

P3:

Participant 3 is a software developer and worked at only one organisation, however he works for a consulting organisation and had the opportunity to continuously be placed in different agile teams from project to project. He is a visual person and feels agile practices allows him to see plans being executed. Started off his career in finance, but his passion for technology made him switch career paths. He has three years of experience working with multiple agile teams using scrum.

P4:

Participant 4 is a software developer. Currently has six years of experience working in agile practices using scrum. Additionally, also plays the role of a technical team lead to guide and mentor junior software developers. He feels that completing technical analysis before starting a task provides a great foundation to deliver quality code.

P5:

Participant 4 is the head of the business architect and business analyst team in his organisation. Has experience working in a startup product that used agile practices. Currently has twelve years of agile practices experience using scrum.

P6:

Participant 6 is a senior software development manager that worked on various agile projects that were amongst the innovator awards within his organisation. Over his twelve years of agile experience, used the scrum, Disciplined agile delivery (DAD) and SAFe.

P7:

Participant 7 is a scrum master working across various cross functional teams. Currently has eight years of experience in agile practices using scrum. He believes understanding agile practices is key before teams can implement the practice.

P8:

Participant 8 is a technical business analyst leading the digital team in his organisation and works on various projects concurrently, using scrum. Working in a digital team, always feels that end users feedback is powerful. He has three years of experience using agile practices.

P9:

Participant 9 is a business architect with eight years of experience using scrum agile practices. Believes that making a difference to society and having a positive impact on clients are important.

P10:

Participant 10 is a senior software development manager with ten years of experience using scrum and kanban agile practices. Feels that over these ten year using agile practices and understanding the benefits, he will never go back to using the waterfall methodology.

P11:

Participant 11 is a senior software developer. He currently has nine years of experience using scrum agile practices. Feels its beneficial to break down tasks for not only development but should also be applied when fixing complex system defects.

P12:

Participant 12 is a systems architect and has worked in different agile teams. Lead multiple successful projects and believes that agile is not an out of the box methodology, it should be assessed to align with the team and organisation. Currently has six years of agile experience using kanban.

P13:

Participant 13 is a lead business architect and has five years of agile practice experience using SAFe. Has experience working in various organisations and teams in the financial industry.

P14:

Participant 14 is a senior business analyst with three years of experience. Started off as an intern and grew himself to a senior business analyst in a short period of time. Has experience working in teams using the scrum agile practices.

P15:

Participant 15 is a product owner with ten years of experience using agile practices particularly SAFe and scrum. Recently attended an agile refresher course.

P16:

Participant 15 is the head of a project management office that looks after the project manager and scrum agile user roles in her organisation. Has experience working in an organisation that is currently going through changes in implementing agile practices.

P17:

Participant 15 is chief information officer whose role consists of overseeing an IT area responsible for technology delivery within the organisation using agile practices. His main purpose is to understand the environment the teams are working in and guiding the team in its agile journey maturity. He has eleven years of experience in agile teams spanning over multiple organisations.

4.3 INTERVIEW GUIDE PROCESS RESPONSES

This section includes the responses of participants using the interview guide process mention in Section 3.5.1. Responses are guided by each unique category that derives a purpose. This allowed the researcher to gather responses from participants from their background in agile, understanding their experiences using agile practices and defining what participants obtain when using agile practices.

4.3.1 Background interview guide category

The first category comprises of introducing the participants and their respective roles and experiences using agile practices. This provides a greater understanding of these participants and their credibility for the objective of the study relating to agile. These questions were in line with the criteria in Section 3.4.1.

4.3.1.1. Question 1.1. Agile experience

The first question was asked to establish the background of participants and if they have experience in using agile practices in an organisation within the South African IT workforce:

Have you ever worked in an organisation or team that implements agile practices during software development in a South African IT workforce?

From the total of 19 participants, 2 had less than 2 years working in agile practices and had to be excluded as they did not meet the minimum of 2 years of agile practice experience in accordance with the criteria. The other 17 participants all had experience in working in agile practices in South African IT organisations or teams.

Table 4.2: Descriptive statistics of agile experience

Measure	Frequency	%
Less than 2 years agile experience	*2 (excluded from study)	11.50
More than 2 years agile experience	17	89.00
Total	**19**	**100**

4.3.1.2. Question 1.2. Years of agile practice experience

The next question was to understand the number of years participants had in working in agile teams:

How many years of experience do you have working in agile practices?

All 17 participants had more than 2 years of experience working in agile teams. The minimum number of years of experience was 3 years and the maximum was 12 years. Across all participants, the average years of experience was 7 years. The number of years of experience allowed the researcher to probe participants further to gather feedback from their experiences that cover various projects and teams.

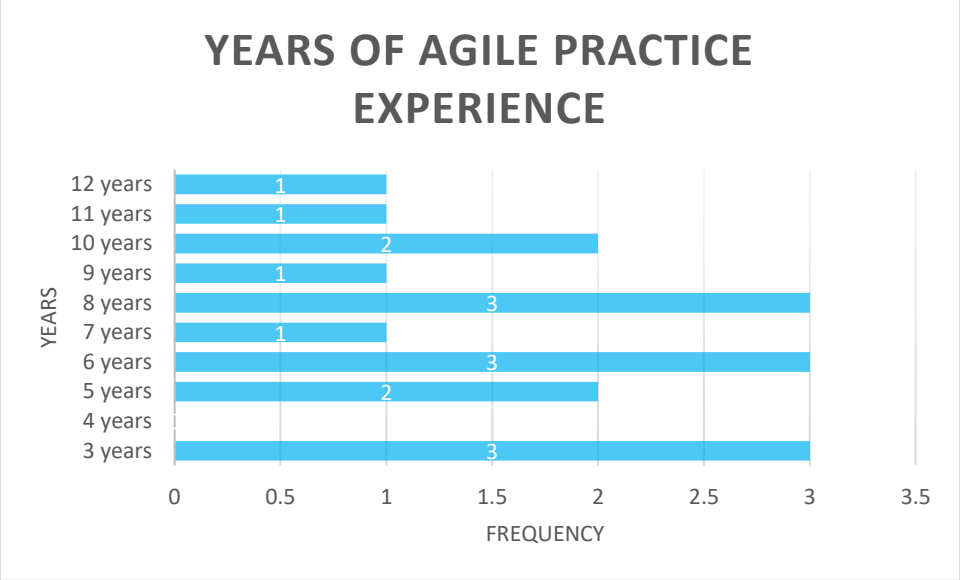


Figure 4.1: Descriptive statistics of years of agile practice experience

4.3.1.3. Question 2.1. Agile methodologies used

The next question was to understand what the most common form of agile practices participants used in their years of agile experience:

What were the most common used agile methodologies in those years?

2 participants initially had experience using the waterfall methodology during the early years of their career, however have not gone back to using waterfall. From the 17 participants, 14 of them used scrum, 4 of them used SAFe (Scaled agile framework), 3 of them used Kanban, 2 of them used DAD (Disciplined agile delivery) and 1 used TDD (Test driven development).

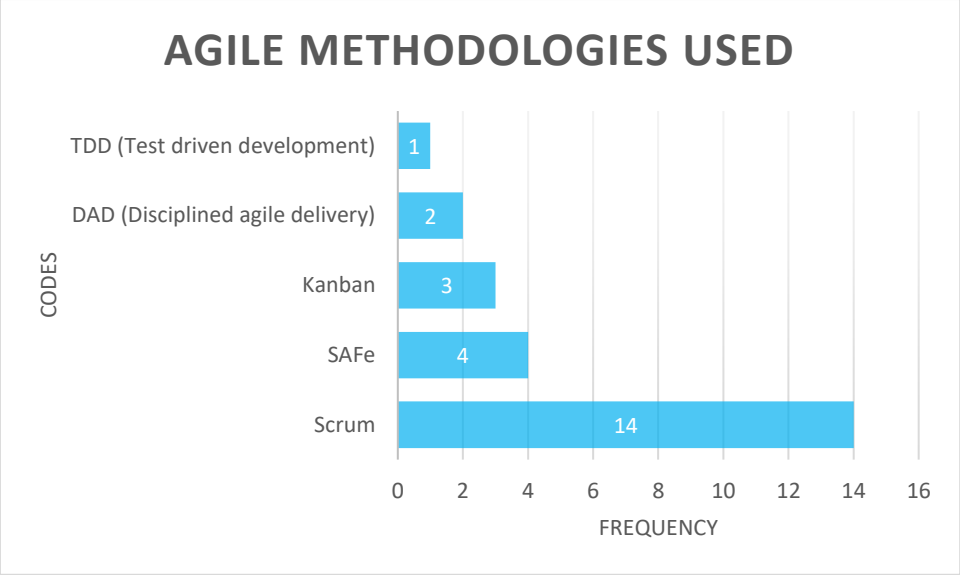


Figure 4.2: Descriptive statistics of agile methodologies used

4.3.1.4. Question 2.1. Agile roles

The next question was to understand what participants roles were when working in agile teams:

While working in your most recent company or agile team where agile practices was used, what was your role?

The responses from participants varied from different role types within agile practices and different seniority levels. From these participants, 3 are business analysts, 3 are software developers, 1 is a test analyst, 1 is a scrum master, 1 is a product owner, 1 is a systems architect, 1 is a chief information officer, 1 is the head of project management office, 2 are development managers on a senior level and 3 are business architects of which the one is the head of the business architect team and 1 is a lead business architect. This provided credibility to the responses which are based on different roles within agile practices and various seniority levels amongst participants. This allowed the researcher to understand the responses of these participants from multiple disciplines with having different experiences and skillsets. Additionally, senior role players not working close to project delivery based their responses from a team perspective, whereas junior or middle level individuals being part of the delivery team provided responses from an individual perspective.

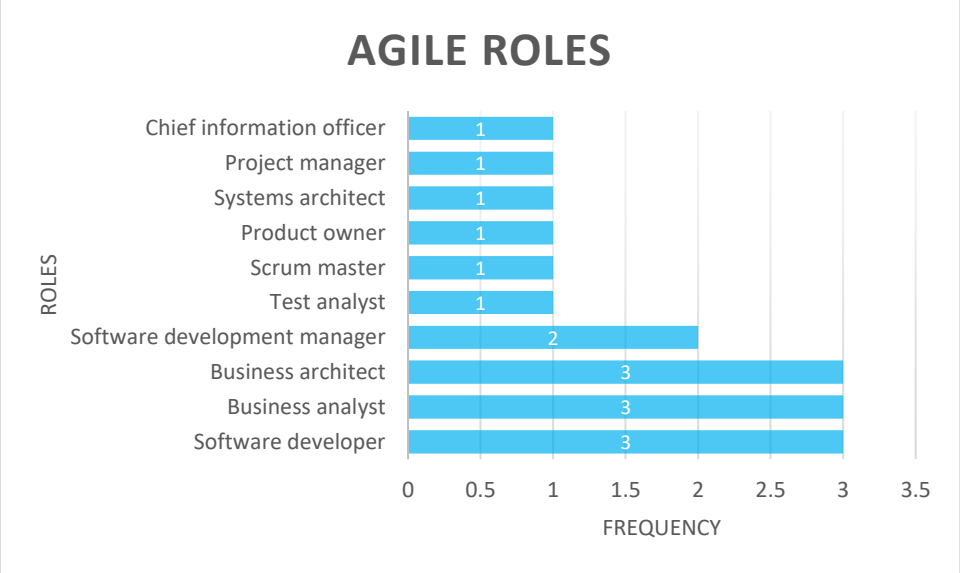


Figure 4.3: Descriptive statistics of agile roles

4.3.2 Expectancy interview guide category

The secondary category encompassed the understanding of participants experiences using agile practices that seeks to gather in-depth knowledge of agile benefits, challenges, agile practices influence of employee performance, additional support participants require using agile practices and understanding what aspects of agile practices have led to successful projects from their experiences. This category expresses the expectancy variable of the Expectancy theory where it is believed that increased efforts will lead to better performance.

4.3.2.1. Question 3.1. Agile practice benefits

The next question was to gain an understanding of what are the benefits that participants gather from using agile practices:

From your experience, what are some specific benefits that employees in the South African IT workforce derive from adopting agile methodologies?

The question addressed was to obtain insight of agile benefits from agile practitioners using agile practices during software development that can aid employee performance. The responses from participants of different roles received, was to gain a diverse perspective from the various disciplines.

There were multiple codes derived from participants relating to agile benefits. These codes were categorized into the following groups: team dynamics and collaboration; communication; efficiency and productivity; quality and delivery; risk management and problem solving; planning and adaptability; continuous improvement and learning; project management and personal development and well-being and the results were noted below for each group.

a. Team dynamics and collaboration

From participants responses, 7 codes were identified. The codes within this group referred to participants responses relating to increased collaboration amongst the team and interactions and relationships between team members. The code with the highest mention was *team collaboration* (15). Additionally, the rest of the codes were distributed as follows: *team members carry individuals along the agile journey* (1), *features driven by the team* (2), *working towards a common goal* (6), *everybody is accountable* (1), *product owner mentality within teams* (1) and *ability to make mistakes and learn from them* (1).

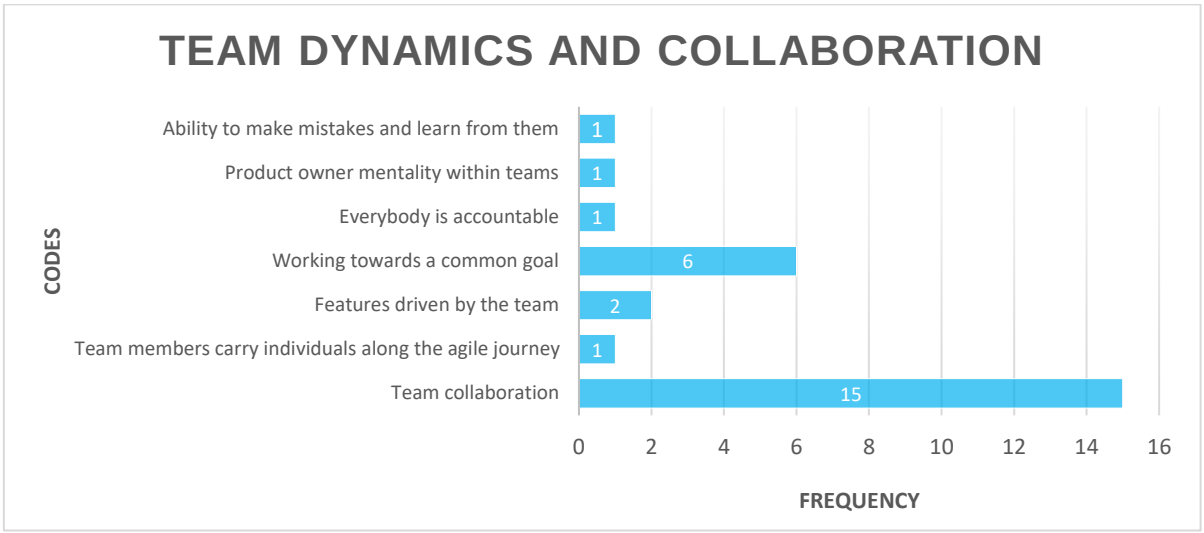


Figure 4.4: Frequency of codes in the team dynamics and collaboration code group

b. Communication

From participants responses, 3 codes were identified. The codes within this group referred to participants responses relating to improved communication within the team and the customer. This includes providing a level of transparency and visibility that leads to trust and enhances collaboration which is mentioned in the previous group. The code with the highest

mention was *enhanced communication* (8). Additionally, the rest of the codes were distributed as follows: *transparency* (4) and *constant feedback* (3).

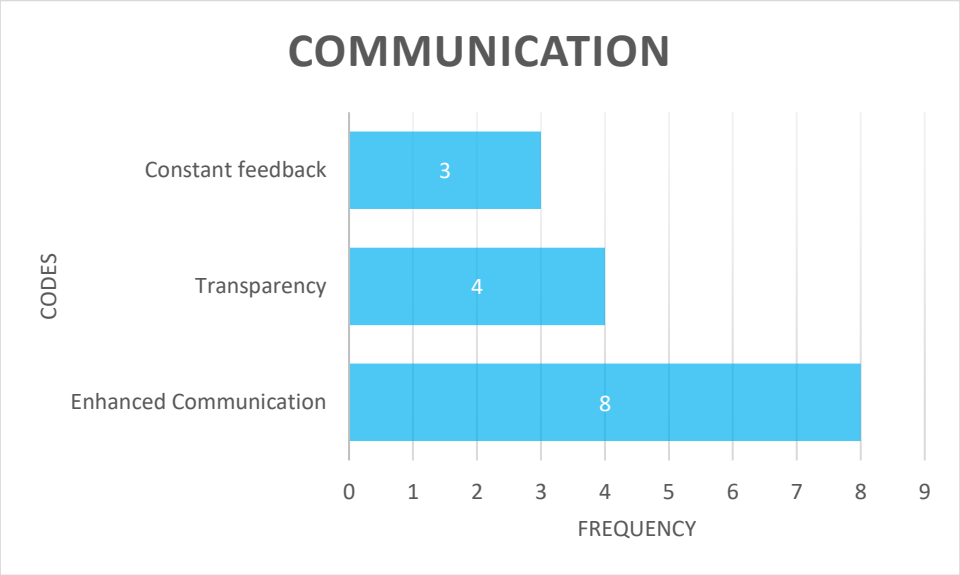


Figure 4.5: Frequency of codes in the communication code group

c. Efficiency and productivity

From participants responses, 3 codes were identified. The codes within this group referred to participants responses relating to increased productivity levels and agile practices providing a platform for teams to work more efficiently and leading towards one of the principles of agile in providing working software earlier on to the customer. The code mentioned the most was *increased productivity* (12). Additionally, the rest of the codes were distributed as follows: *efficiency* (3) and *quicker turn-around times* (2).

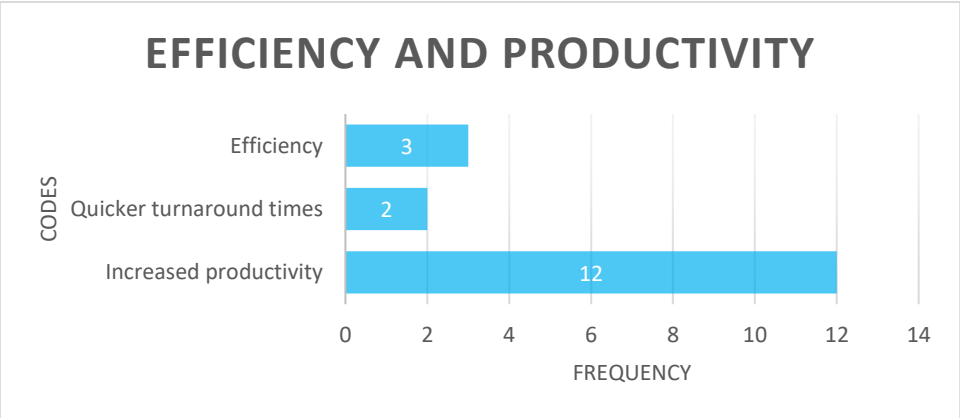


Figure 4.6: Frequency of codes in the efficiency and productivity code group

d. Quality and delivery

From participants responses, 2 codes were identified. The codes within this group referred to participants responses relating to increased quality in the software delivered with decreased system defects. The codes were distributed as follows: *quality delivery* (2) and *decreased defects* (1).

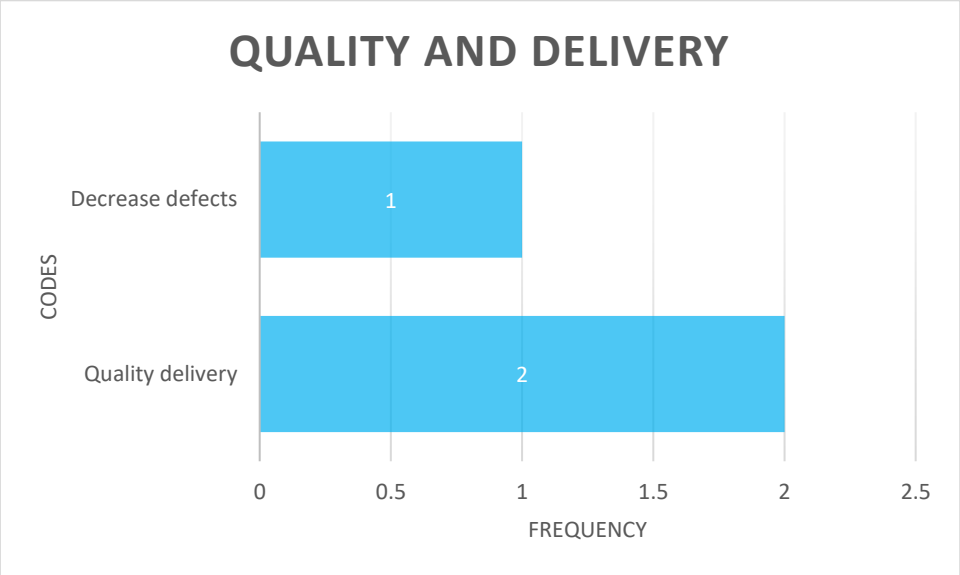


Figure 4.7: Frequency of codes in the quality and delivery code group

e. Risk management and problem solving

From participants responses, 2 codes were identified. The codes within this group referred to participants responses identifying risks or impediments and resolving them earlier and this enhances the team's problem-solving capabilities. The codes were distributed as follows: *manage risks* (4) and *solve problems* (3).

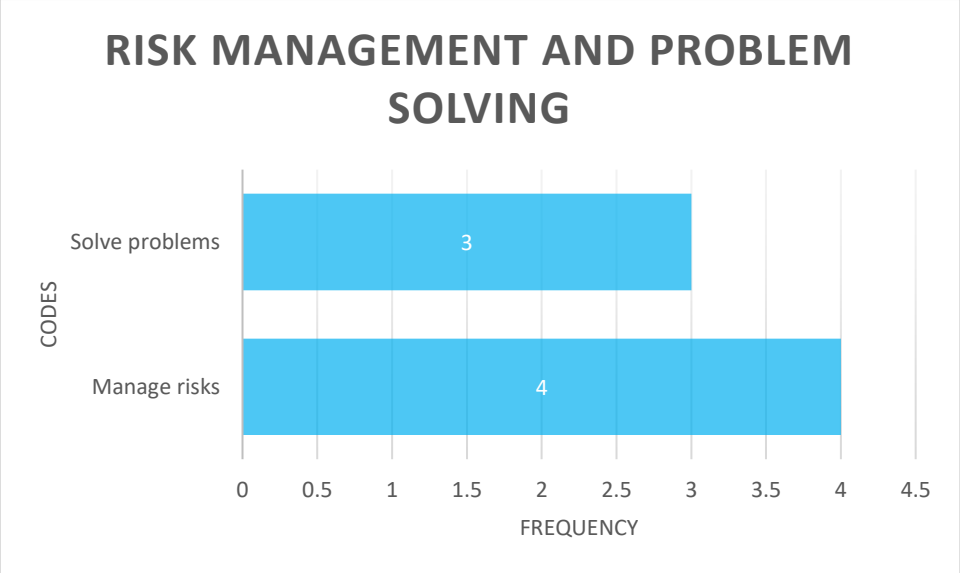


Figure 4.8: Frequency of codes in the risk management and problem-solving code group

f. Planning and adaptability

From participants responses, 2 codes were identified. The codes within this group referred to participants responses with the team's ability to adapt to change much quicker and also provides a setting that improves planning with the various agile ceremonies. The code with the highest mention was *adapt to change* (8). The second code was *improved planning* (4).

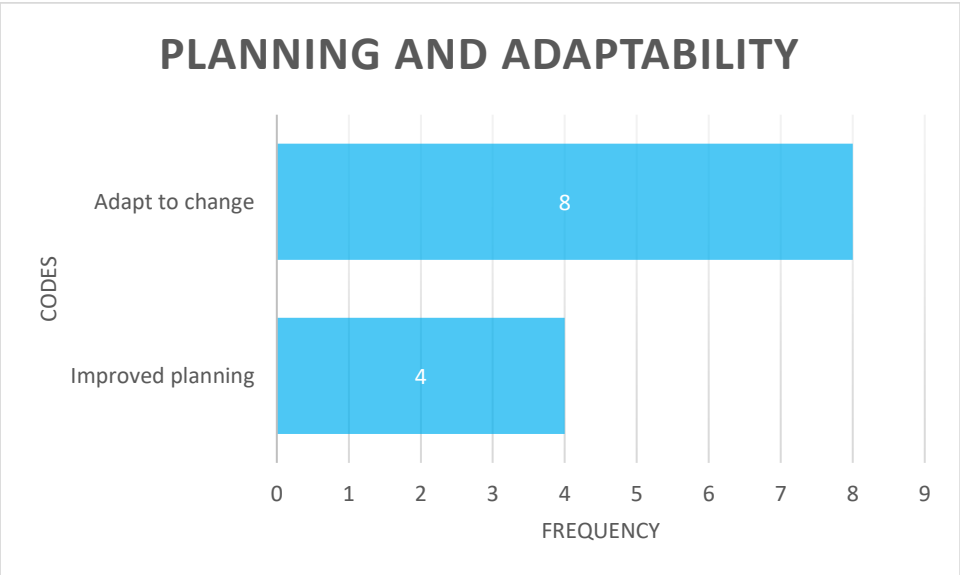


Figure 4.9: Frequency of codes in the planning and adaptability code group

g. Continuous improvement and learning

From participants responses, 2 codes were identified. The codes within this group referred to participants responses with the team's ability to continuously improve from iteration to iteration and growing by learning from each other. Agile practices have a platform where individuals can use the sprint retrospective ceremony to reflect on their efforts within the sprint and what can they do better in the next sprint to improve. Solving problems as a team and working with individuals from different disciplines provides the team with the opportunity to learn from each other. The code with the highest mention was *learning and upskilling* (5). The second code was *continuous improvement* (4).

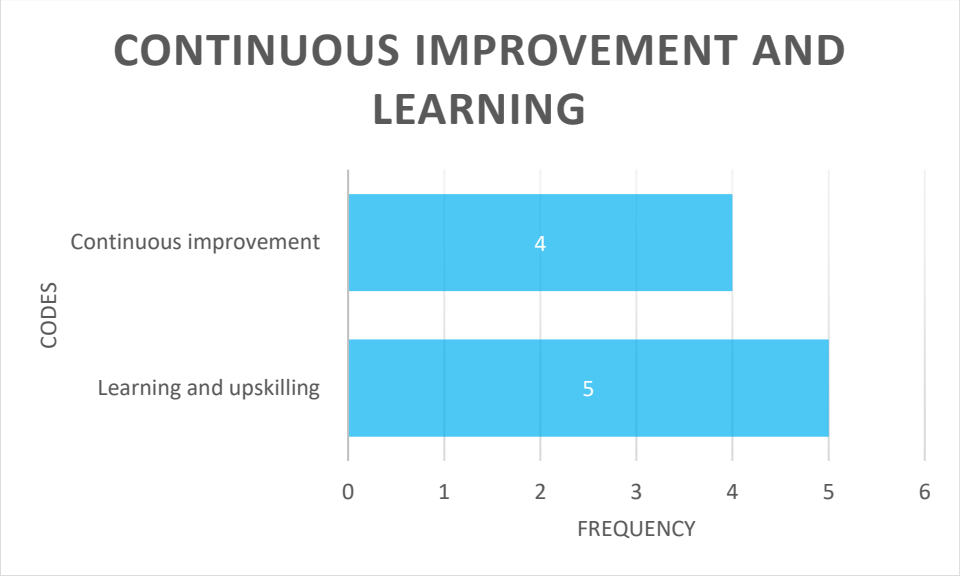


Figure 4.10: Frequency of codes in the continuous improvement and learning code group

h. Project management

From participants responses, 2 codes were identified. The codes within this group referred to participants responses with the team's ability to effectively manage tasks and projects more effectively by breaking them down into more manageable pieces. Project scope is managed more efficiently with transparent communication with the customer and prioritising requirements. Although agile does cater for changes, these changes are managed from a team capacity and the value it brings. The code with the highest mention was *break down project and tasks* (3). The second code was *manage scope* (1).

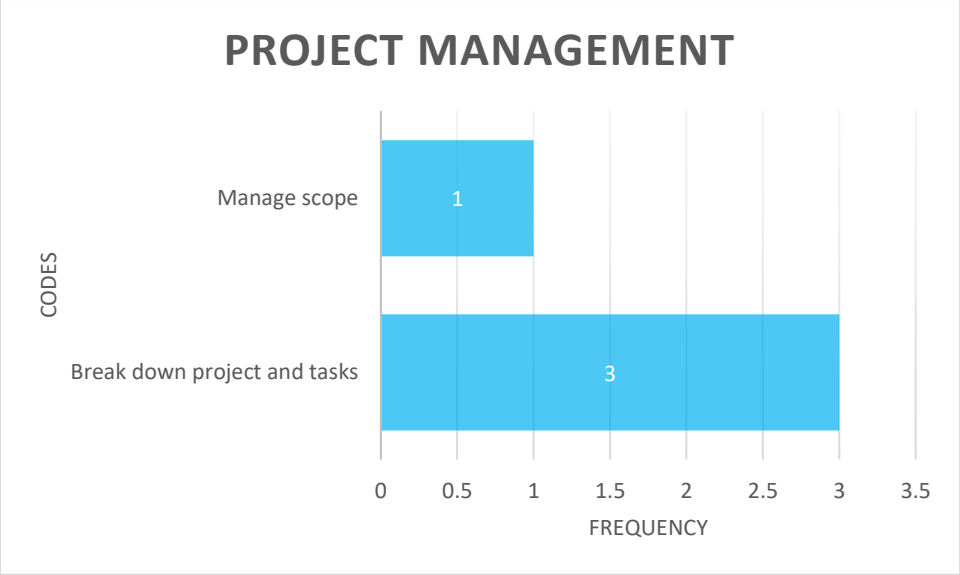


Figure 4.11: Frequency of codes in the project management code group

i. Personal development and well-being

From participants responses, 2 codes were identified. The codes within this group referred to participants responses with their well-being which gives them comfort in having a healthy work life balance and having that agile mindset to continuously improve. The codes were distributed as follows: *work-life balance* (2) and *good mental shift* (2).

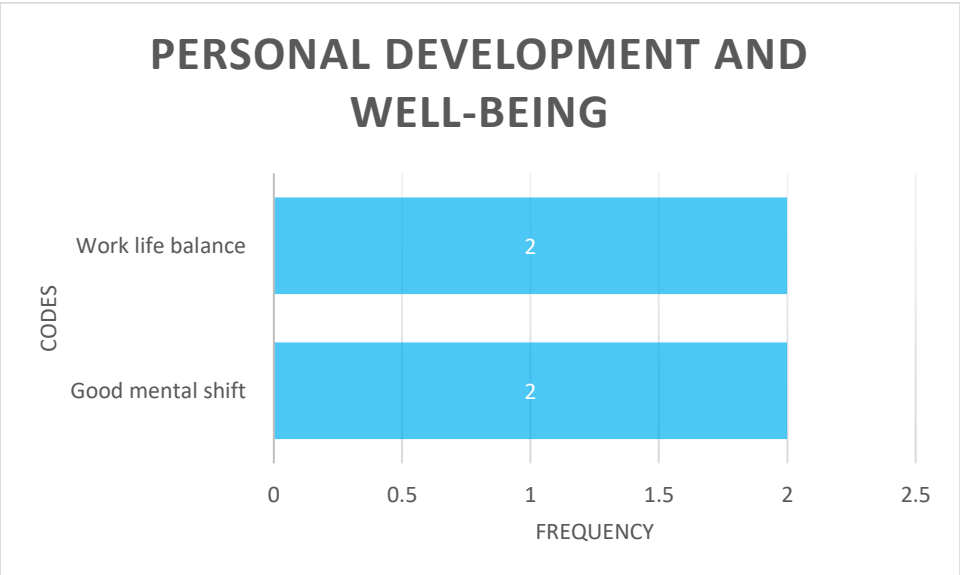


Figure 4.12: Frequency of codes in the personal development and well-being code group

The emerging themes and key aspects of agile practice benefits within the expectancy category from participants responses are summarised below:

Table 4.3: Emerging themes: Agile practice benefits in the expectancy category

Emerging themes	Key aspects
Team dynamics and collaboration	Team collaboration
	Team members carry individuals along the agile journey
	Features driven by the team
	Working towards a common goal
	Everybody is accountable
	Product owner mentality within teams
	Ability to make mistakes and learn from them
Communication	Enhanced communication
	Transparency
	Constant feedback
Efficiency and productivity	Efficiency
	Quicker turnaround times
	Increased productivity
Quality and delivery	Quality delivery
	Decrease defects
Risk management and problem solving	Manage risks
	Solve problems
Planning and adaptability	Improved planning
	Adapt to change
Continuous improvement and learning	Learning and upskilling
	Continuous improvement
Project management	Break down project and tasks
	Manage scope
Personal development and well-being	Good mental shift
	Work life balance

4.3.2.2. Question 3.2. Agile practice challenges

The next question was to gain an understanding of what the challenges are that participants face from using agile practices:

From your perspective, what are some common challenges that employees in the South African IT workforce encounter when adopting agile methodologies?

The question directed was to acquire insight of agile challenges that agile practitioners experience with agile practices during software development that can affect employee performance. The responses from participants of different roles received, was to gain a diverse perspective from the various disciplines.

There were several codes derived from participants describing their agile challenges experienced. These codes were categorized into the following groups: adopting agile practices; leadership and decision making, team engagement; customer involvement and planning and predictability and the outcomes are mentioned below for each group.

a. Adopting agile practices

From participants responses, 3 codes were identified. The codes within this group referred to participants responses relating to adapting to agile practices and having that agile mindset instilled in their ways of following agile practices. The code with the highest mention was *adopting agile practices* (9). Additional mentions were *agile mindset* (7) and *resistance to change* (2).

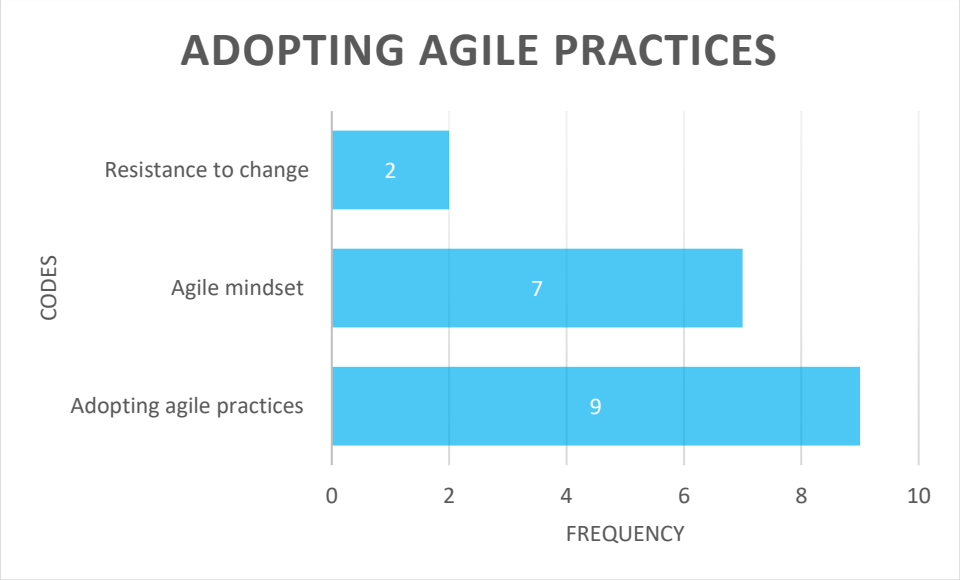


Figure 4.13: Frequency of codes in the adopting agile practices code group

b. Leadership and decision making

From participants responses, 2 codes relating to leadership and decision making were identified. The codes within this group referred to participants responses relating to being micro-managed and dictatorship from customers to the team. The code with the highest mention was *dictatorship* (4). Additional code identified was *micro-management* (2).

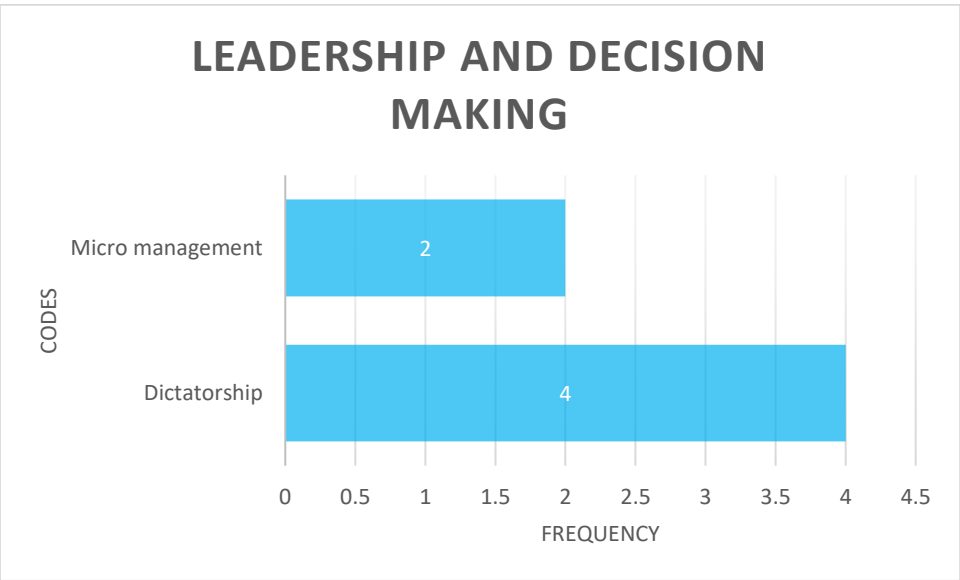


Figure 4.14: Frequency of codes in the leadership and decision-making code group

c. Team engagement

From participants responses, 2 codes relating to team dynamics and engagement were identified. The codes within this group referred to getting team members engaged and enthusiastic about agile practices. Moreover, making team members feel safe within the team setting and this can be seen during sprint retrospective where individuals are reluctant to speak up about what went wrong and how they can improve. The code with the highest mention was *getting team members engaged* (2). The additional code was *making team members feel safe* (1).

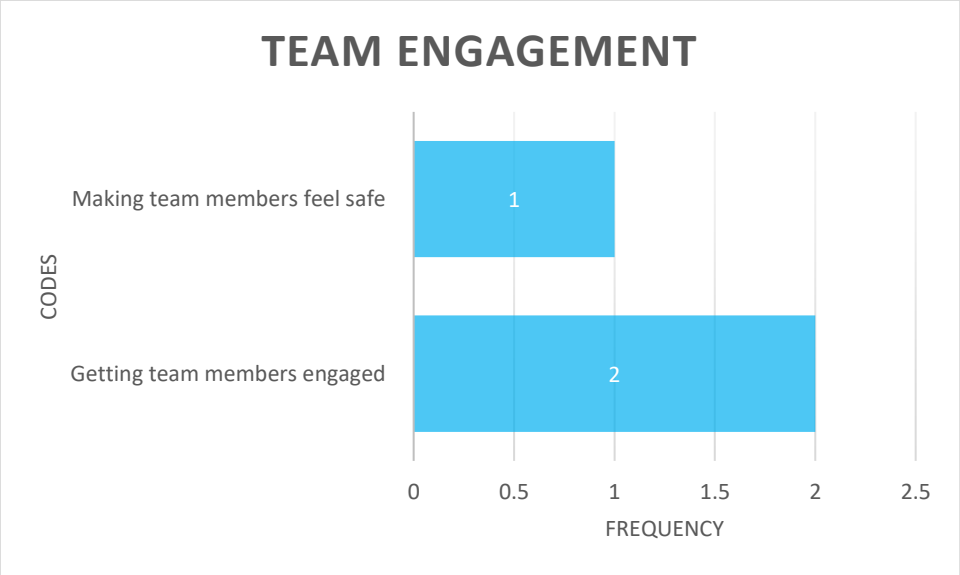


Figure 4.15: Frequency of codes in the team engagement code group

d. Customer involvement

From participants responses, 2 codes relating to customer involvement were identified. The codes within this group referred to getting the customer to understand agile practices so that there can be alignment between business and IT strategy. The code with the highest mention was *business stakeholders not versed on agile* (3) and *no alignment from business and IT on agile practices* (1).

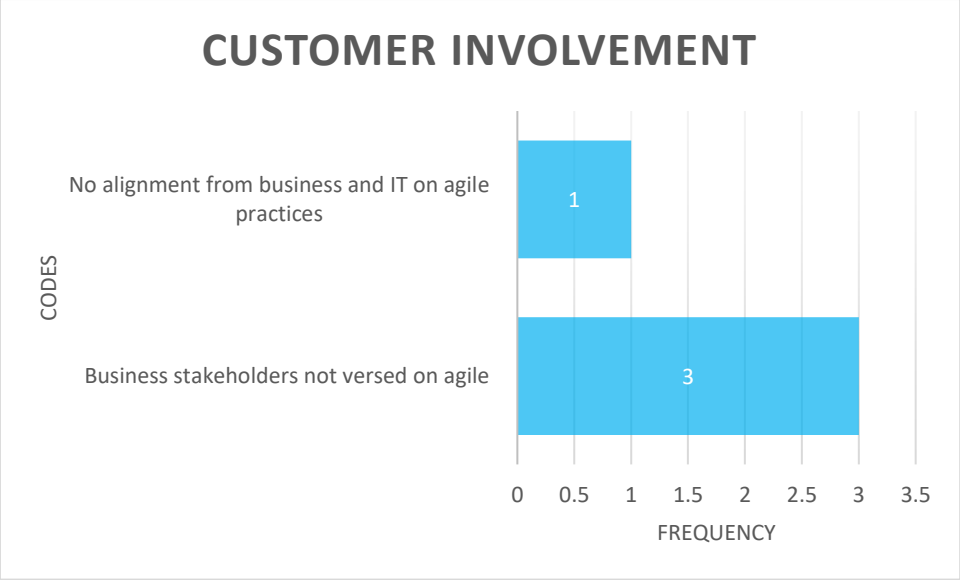


Figure 4.16: Frequency of codes in the team customer involvement code group

e. Planning and predictability

From participants responses, 2 codes relating to planning and predictability were identified. The codes within this group referred to providing customers with a definite date for the full solution and difficulties in predicting time and resources in each iteration. The codes were *provide customer with a definite deadline* (2) and *predict time and resources* (2).

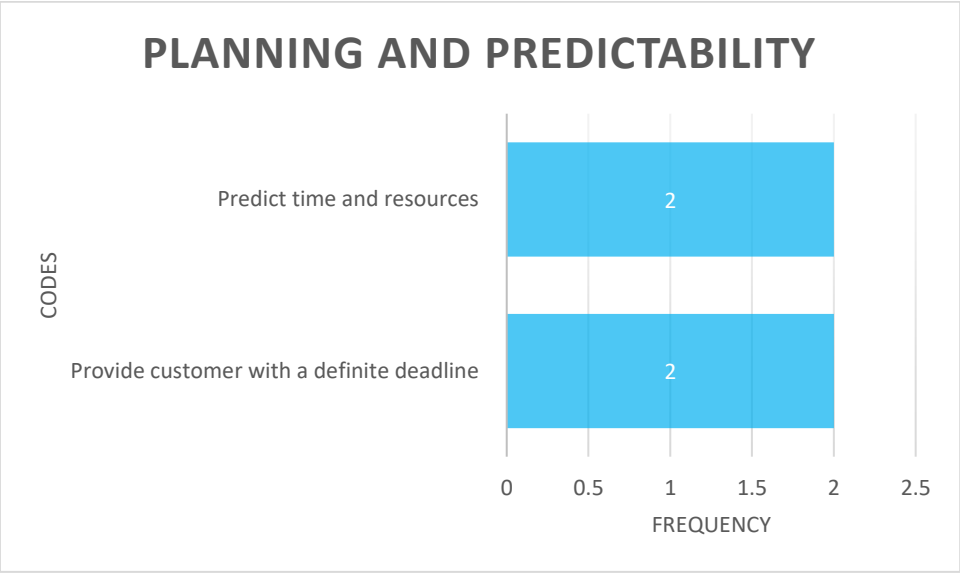


Figure 4.17: Frequency of codes in the planning and predictability code group

The emerging themes and key aspects of agile practice challenges within the expectancy category from participants responses are summarised below:

Table 4.4: Emerging themes: Agile practice challenges in the expectancy category

Emerging themes	Key aspects
Adopting agile practices	Adopting agile practices
	Agile mindset
	Resistance to change
Leadership and decision making	Dictatorship
	Micro-management
Team engagement	Getting team members engaged
	Making team members feel safe
Customer involvement	Business stakeholders not versed on agile
	No alignment from business and IT on agile practices
Planning and predictability	Provide customer with a definite deadline
	Predict time and resources

4.3.2.3. Question 3.3. Additional support

The next question was to gain an understanding of what additional support or resources will assist participants in using agile practices in a more effective manner:

What additional support or resources would help you feel more confident in using agile practices?

The question directed was to gain insight of what additional support or resources that are lacking that will help agile practitioners use agile practices more effectively during software development. Additionally, if the identified support is provided, can it improve employee performance.

There were several codes derived from participants describing additional support required. These codes were categorized into the following groups: training and education, additional

role support, acceptance and understanding, and implementation and practices and the responses are mentioned below for each group.

a. Training and education

From participants responses, 2 codes relating to training and education were identified. The codes within this group referred to having agile training and also the initiative from team members and leaders within the team to self-study and keeping up with the latest agile trends. The codes are *agile training* (5) and *self-study* (2).

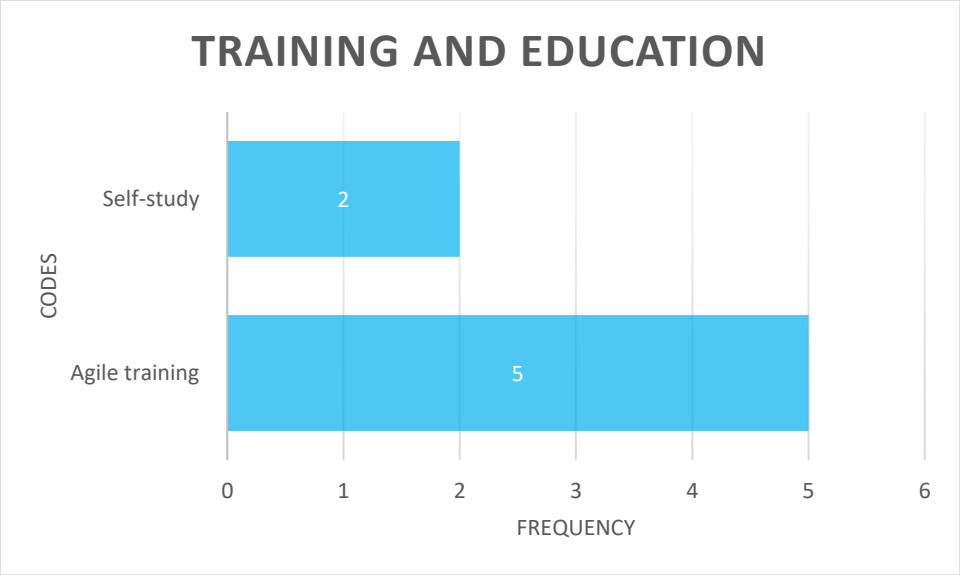


Figure 4.18: Frequency of codes in the training and education code group

b. Additional role support

From participants responses, 1 code relating to additional role was identified. The code within this group referred to having an agile coach present to mentor and guide teams on the agile transformation journey. The code is *agile coach* (7).

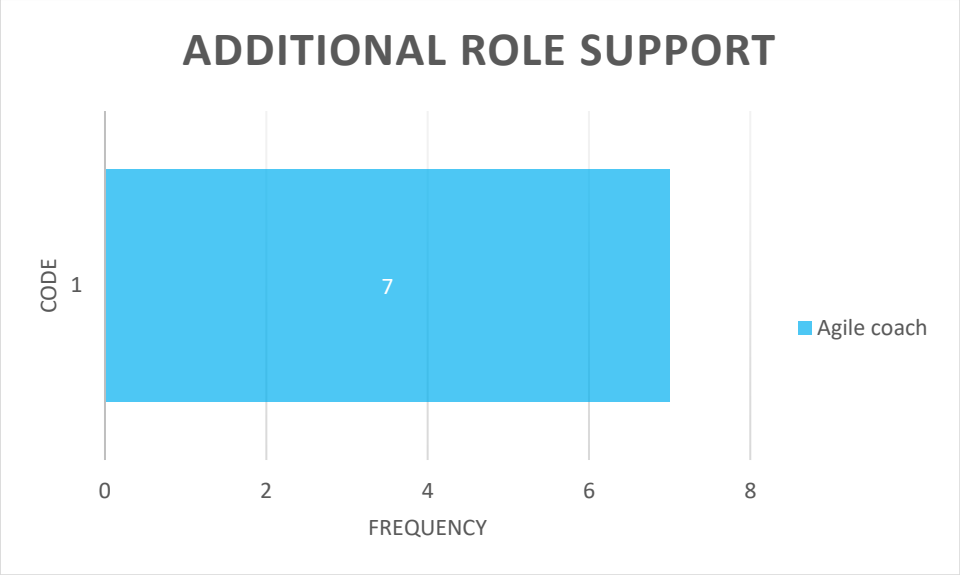


Figure 4.19: Frequency of codes in the additional role support code group

c. Acceptance and understanding

From participants responses, 2 codes relating to acceptance and understanding of agile practices were identified. The codes within this group referred to the team accepting using agile practices and what value it brings to their processes of software development. The other responses within this group were having a clear understanding of agile practices from the team and customer. The codes are *understanding of agile practices* (5) and *acceptance of using agile practices* (2).

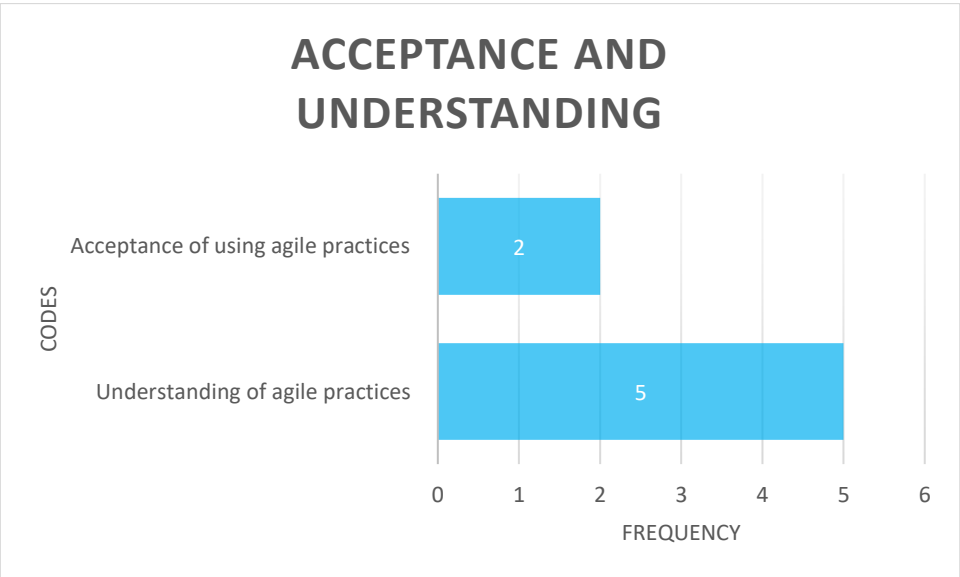


Figure 4.20: Frequency of codes in the acceptance and understanding code group

d. Implementation and practices

From participants responses, 2 codes relating to implementation and practices were identified. The codes within this group referred to the team having the ability to apply agile practices effectively without time constraints and learning from previous sprints or projects must be shared so that it can be used to improve the team. The codes are *apply agile practices without time constraints* (3) and *share input from learnings* (2).

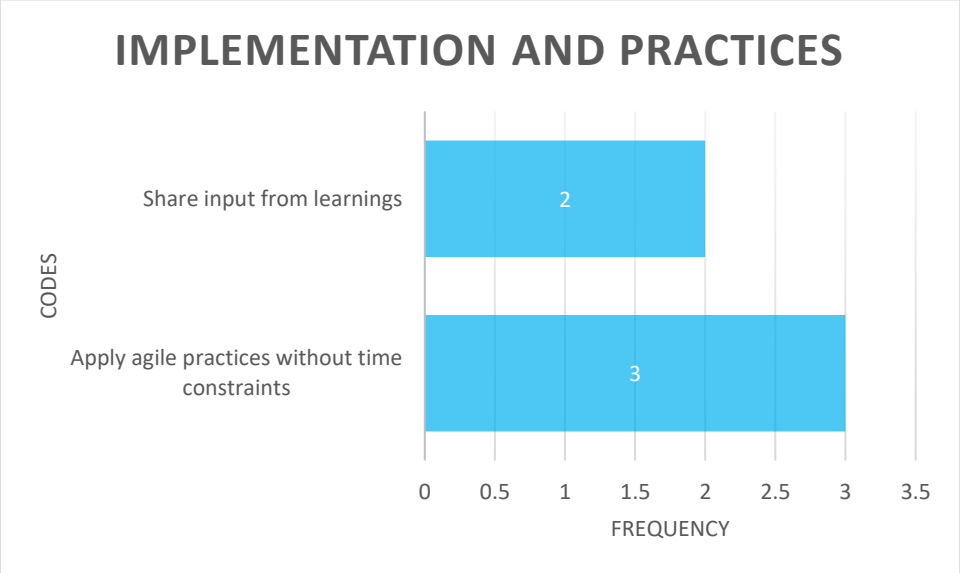


Figure 4.21: Frequency of codes in the implementation and practices code group

The emerging themes and key aspects of additional support within the expectancy category from participants responses are summarised below:

Table 4.5: Emerging themes: Additional support in the expectancy category

Emerging themes	Key aspects
Training and education	Agile training
	Self-study
Additional role support	Agile coach
Acceptance and understanding	Understanding of agile practices
	Acceptance of using agile practices
Implementation and practices	Apply agile practices without time constraints
	Share input from learnings

4.3.2.4. Question 3.4. Agile practices that lead to successful projects

The next question was to gain an understanding of what efforts of agile practices participants used that led to project being successful:

Can you describe a time when your efforts in agile practices led to a successful project outcome?

The question directed was to gain insight of what components of agile practices participants used and whether these practices had a positive outcome compared to previous projects during software development.

There were several codes derived from participants describing agile practices that led to successful projects. These codes were categorized into the following groups: team dynamics and collaboration, communication, agile practices and processes, planning and management and problem-solving, and the responses are mentioned below for each group.

a. Team dynamics and collaboration

From participants responses, 2 codes relating to team dynamics and collaboration were identified. The codes within this group indicated the team working together with a common goal in mind and increased collaboration that assisted the team in successful project delivery. The codes are *increased collaboration* (3) and *team goal aligned* (2).

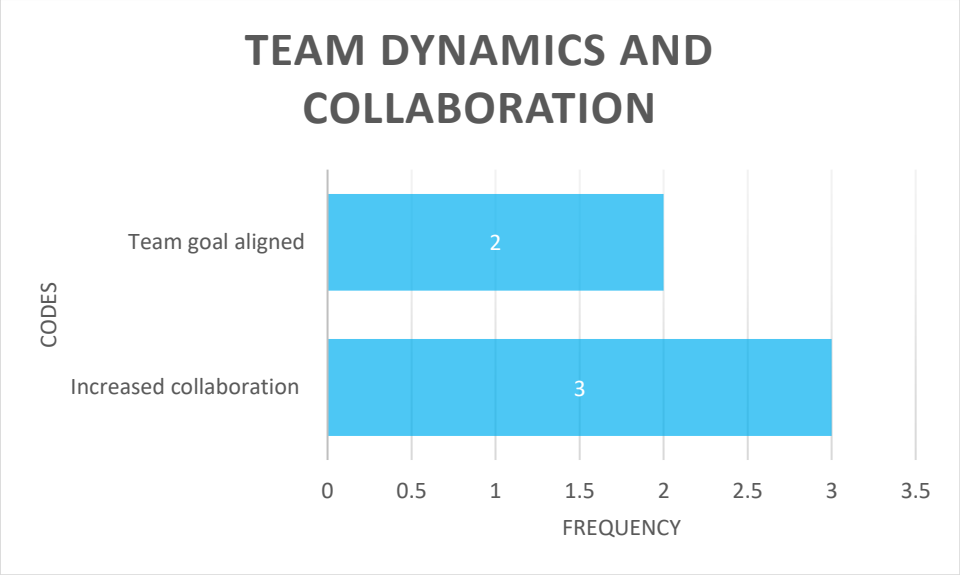


Figure 4.22: Frequency of codes in the team dynamics and collaboration code group

b. Communication

From participants responses, 1 code relating to communication was identified. The code within this group referred to enhanced communication with the team and customer the contributed to solving problems and delivering a product that meets the customer's needs. The code is *continuous communication* (5).

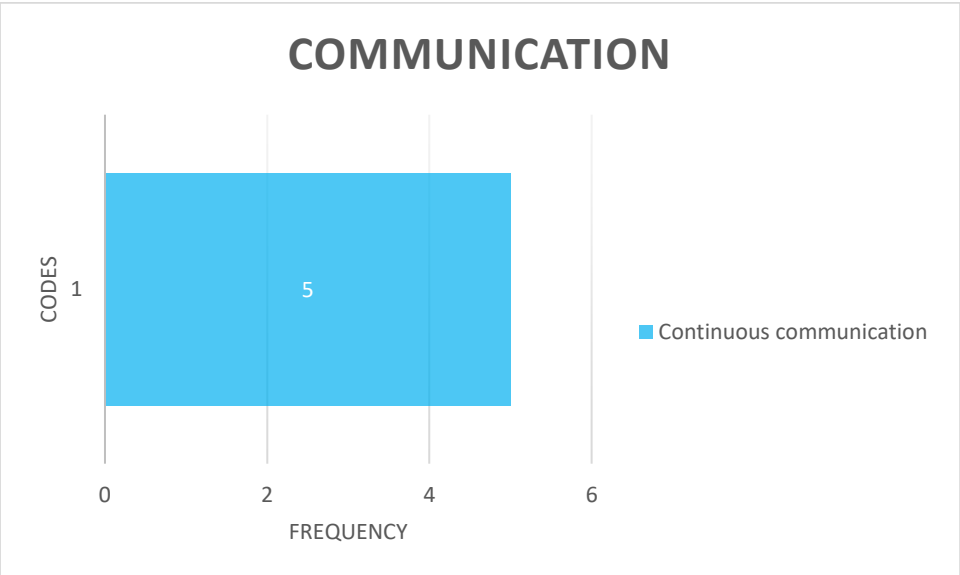


Figure 4.23: Frequency of codes in the communication code group

c. Agile practices and processes

From participants responses, 3 codes relating to agile practices and processes were identified. The codes within this group described the capability to define an MVP (minimum viable product) from project initiation and this provided a foundation for the team to focus and understand the value of the product. These practices used, allowed the team to deliver workable software to the market earlier on in time. The code with the highest mention was define the *minimum viable product (MVP)* (5). The additional codes were *understanding of project objectives and value* (3) and *deliver earlier to market* (2).

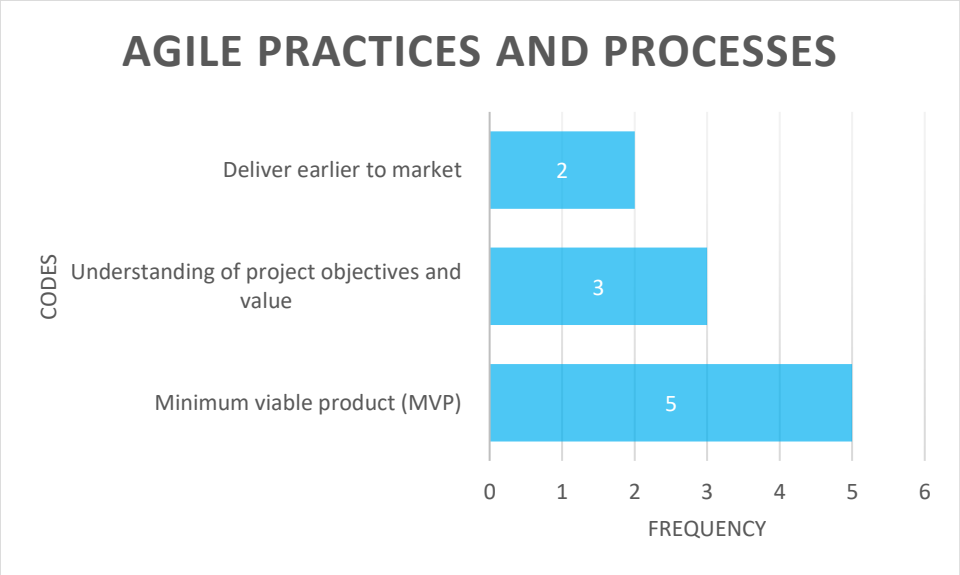


Figure 4.24: Frequency of codes in the agile practices and processes code group

d. Planning and management

From participants responses, 2 codes relating to planning and management were identified. The codes within this group described the capability from the team to break down tasks in smaller pieces and deliver those smaller increments on work. Moreover, this group of codes also includes emphasizing on risks earlier on and planning of projects to be delivered. The code with the highest mention was *planning and preparation* (6). The additional code was *task management and execution* (5).

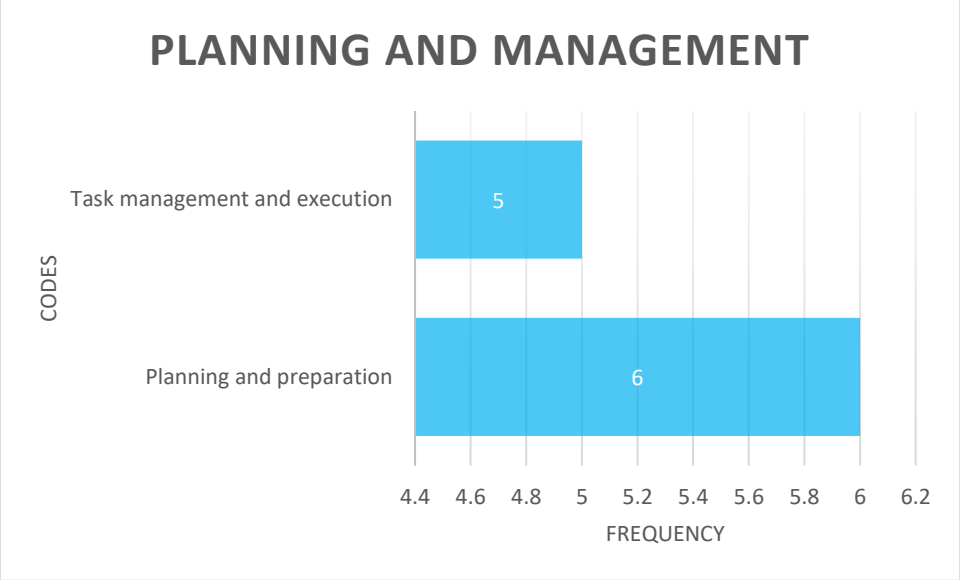


Figure 4.25: Frequency of codes in the planning and management code group

e. Problem solving

From participants responses, 1 code relating to problem solving was identified. The code within this group referred to having context of the issue and solving them together as a team. The code is *coming up with solutions* (2).

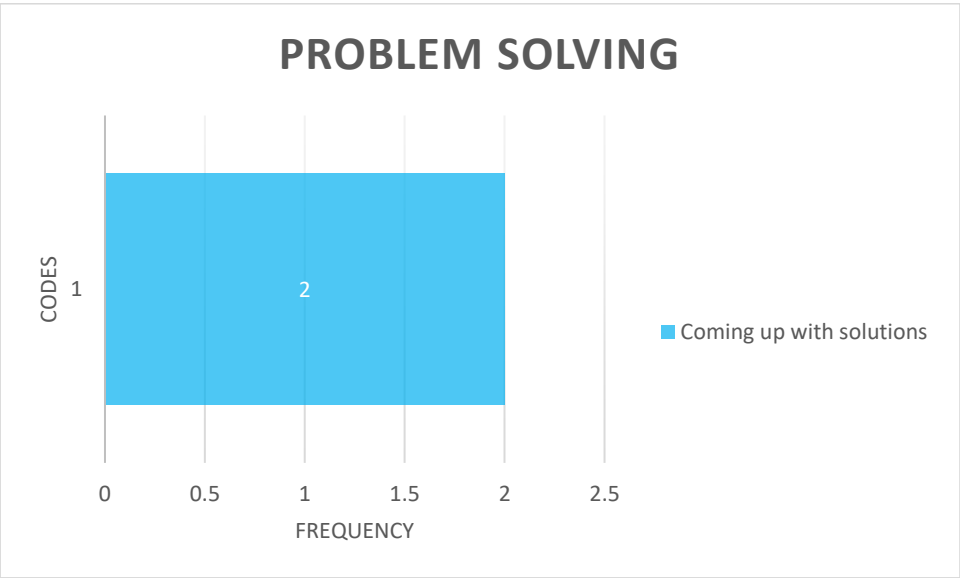


Figure 4.26: Frequency of codes in the problem-solving code group

The emerging themes and key aspects of agile practices that result in successful projects within the expectancy category from participants responses are summarised below:

Table 4.6: Emerging themes: Agile practices that lead to successful projects in the expectancy category

Emerging themes	Key aspects
Team dynamics and collaboration	Increased collaboration
	Team goal aligned
Communication	Continuous communication
Agile practices and processes	Minimum viable product (MVP)
	Understanding of project objectives and value
	Deliver earlier to market
Planning and management	Planning and preparation
	Task management and execution
Problem solving	Coming up with solutions

4.3.2.5. Question 3.5. Agile practices that influence employee performance

The next question was to gain insight of what aspects of agile practices influence and contribute to employee performance:

Can you identify key aspects of agile practices that directly influence and contribute to employee performance?

The question directed was to understand what parts of agile practices has a positive influence on employee performance during software development.

There were several codes derived from participants describing agile practices that led to successful projects. These codes were categorized into the following groups: task management and planning, transparency and communication, employee development and well-being, team collaboration and culture and progress and outcomes and the responses are mentioned below for each group.

a. Task management and planning

From participants responses, 6 codes relating to task management and planning were identified. The codes within this group described the capability of the team to break down tasks, manage tasks and time more efficiently that is encompassed in the planning process. Responses from participants with efficient planning has a positive contribution to the outcome where products are delivered on time or earlier and this allows the team to take on more work. The code with the highest mention was *planning* (8). The additional codes were *handling delays* (2), *performance and delivery* (3), *risk management and analysis* (4), *involvement* (1) and *agile practices* (2).

Figure 4.27: Frequency of codes in the task management and planning code group

b. Transparency and communication

From participants responses, 3 codes relating to transparency and communication were identified. The codes within this group described constant communication within the team and customers and having transparency across the team. Moreover, the feedback loop relating to response of the product being released in terms of metrics to showcase to the team the value the product has provided, or if the software solution required enhancements based of measurable feedback from the customer. The code with the highest mention was *communication* (5). The additional codes were *regular feedback loop* (4) and *transparency across the team* (2).

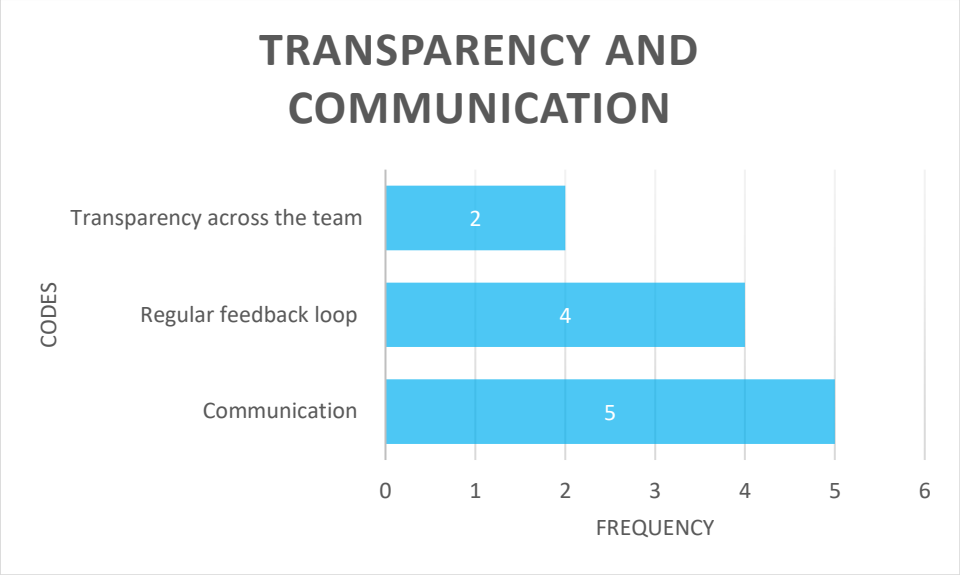


Figure 4.28: Frequency of codes in the transparency and communication code group

c. Employee development and well-being

From participants responses, 4 codes relating to employee development and well-being were identified. The codes within this group referred to individuals being empowered by increased autonomy, decision making and enhancing critical thinking. Additionally, individuals can grow by learning and maturing in their roles. Also, by being able to plan, this frees up individuals' time and can be used for self-learning. The code with the highest mention was *autonomy and independence* (4). The additional codes were *personal growth and development* (3), *efficiency and productivity* (1) and *employee well-being* (1).

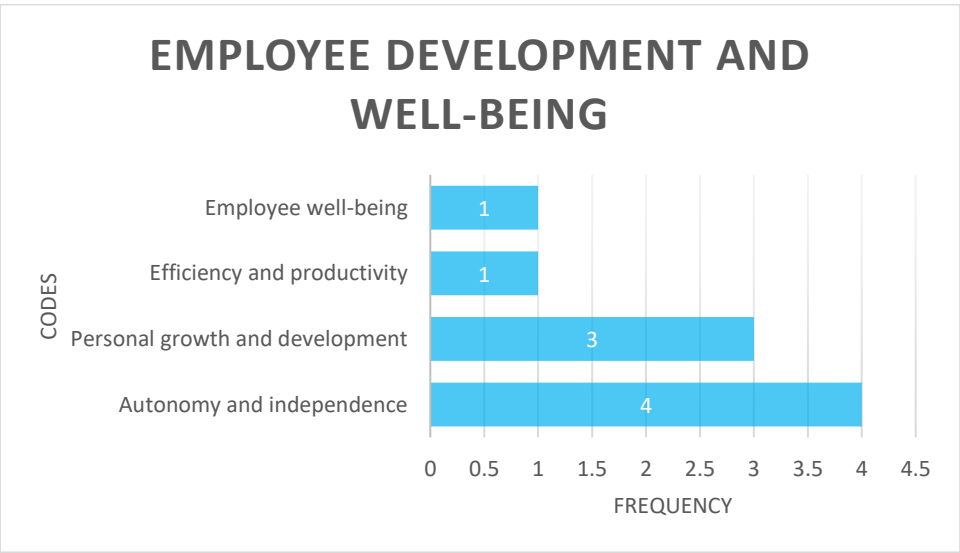


Figure 4.29: Frequency of codes in the employee development and well-being code group

d. Team collaboration and culture

From participants responses, 3 codes relating to team collaboration and culture were identified. The codes within this group referred to increased collaboration within the team. Additionally, team culture is also included in this group where individuals feel part of a team, and this provides the basis to fail as a team and learn from the mistakes which allows the team to continuously improve. One of the benefits noted for agile practices were working towards the same goals, this alignment provides focus for the team to work as a unit. The code with the highest mention was *team dynamics and culture* (5). The additional codes were *performance and accountability* (2) and *continuous improvement and alignment* (3).

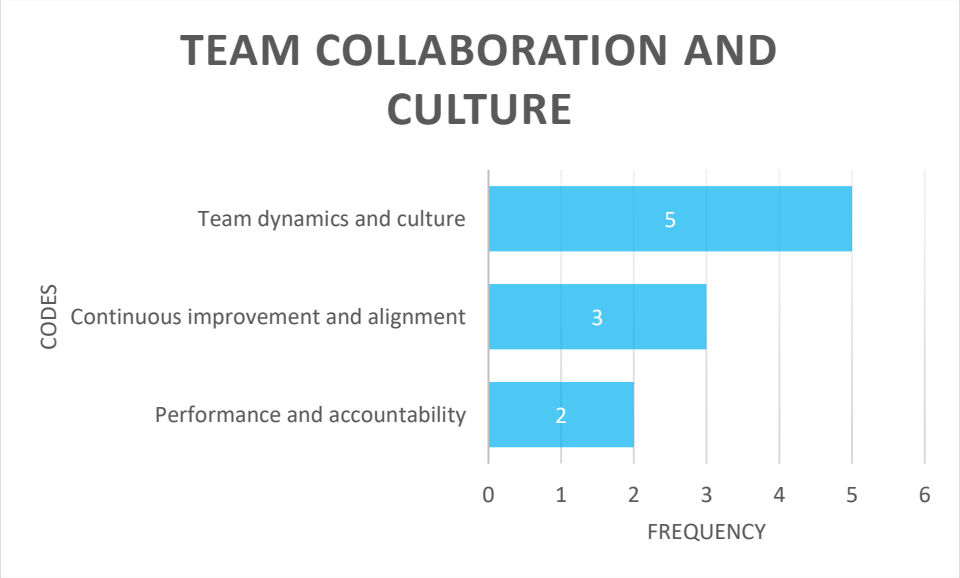


Figure 4.30: Frequency of codes in the team collaboration and culture code group

e. Progress and outcomes

From participants responses, 2 codes relating to progress and outcomes were identified. The codes within this group described the team ability to see progress and the rewards immediately and each piece of work provides value. Additionally, the team seeing their work being deployed into the live environments and also the team using the products provides a sense of accomplishment. The code with the highest mention was *immediate feedback and rewards* (5). The additional code was *clear outcomes and value* (3).

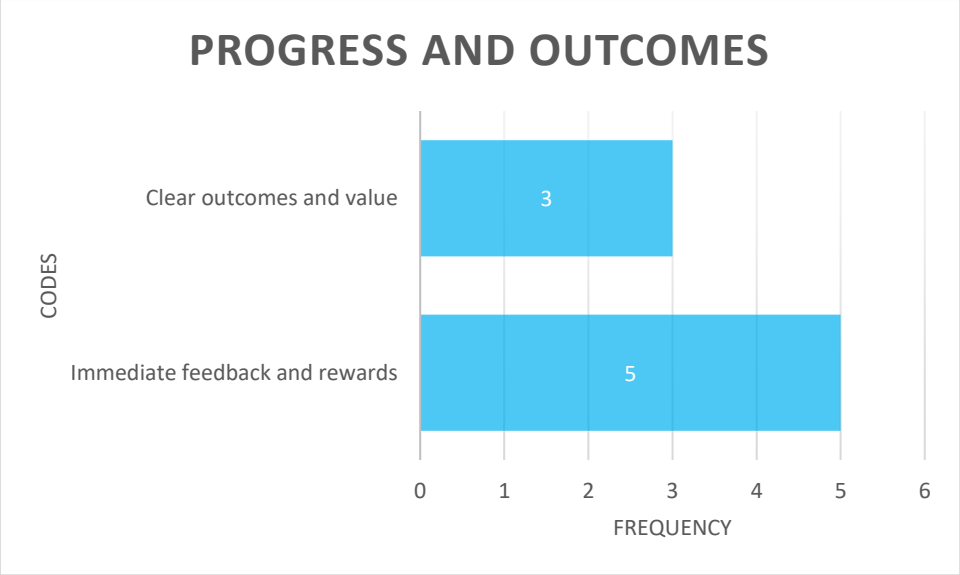


Figure 4.31: Frequency of codes in the progress and outcomes code group

The emerging themes and key aspects of agile practices that influence employee performance within the expectancy category from participants responses are summarised below:

Table 4.7: Emerging themes: Agile practices that influence employee performance in the expectancy category

Emerging themes	Key aspects
Task management and planning	Handling delays
	Performance and delivery
	Planning
	Risk management and analysis
	Involvement
	Agile practices
Transparency and communication	Communication
	Regular feedback loop
	Transparency across the team
Employee development and well-being	Autonomy and independence
	Personal growth and development
	Efficiency and productivity

	Employee well-being
Team collaboration and culture	Performance and accountability
	Continuous improvement and alignment
	Team dynamics and culture
Progress and outcomes	Immediate feedback and rewards
	Clear outcomes and value

4.3.2.6. Question 3.6. Agile ceremonies

The next question was to gain insight into what agile ceremonies participants have within their teams while using agile practices:

What agile ceremonies do you have within your organisation?

The question posed was to understand what agile ceremonies participants have when using agile practices during software development projects.

There were several codes derived from participants describing the different agile ceremonies they use within their teams. These codes were categorized into the following groups: daily stand-ups, sprint planning, backlog/sprint grooming, sprint review, sprint retrospective, knowledge and sharing and PI planning. The responses are stated below for each group.

a. Agile ceremonies

From participants responses, 7 codes relating to agile ceremonies were identified. The codes within this group described the different agile ceremonies participants use within their teams. The codes with the highest mention were *daily stand-up* (17) and *sprint planning* (17). The additional codes were *sprint retrospective* (16), *backlog/sprint grooming* (9), *sprint review* (5), *knowledge and sharing* (2) and *PI planning* (2).

All participants use the basic ceremonies of daily stand-up and sprint planning. A vast majority use sprint retrospective. A lower number of participants use sprint reviews where

the work completed in the sprint is demonstrated to the customer. 2 participants had formal knowledge and sharing sessions within their teams.

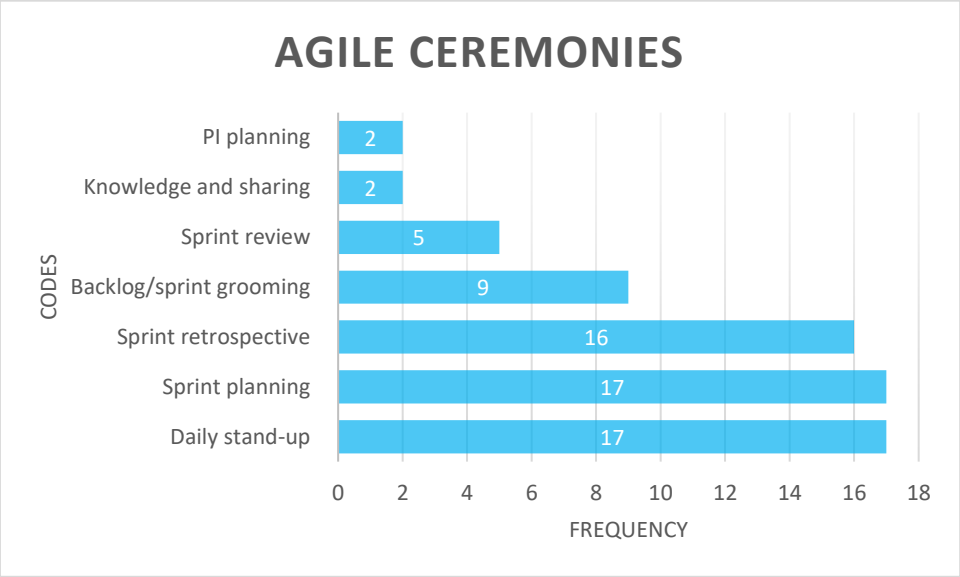


Figure 4.32: Frequency of codes in the agile ceremonies code group

The emerging themes and key aspects of agile ceremonies that participants use within the expectancy category from participants responses are summarised below:

Table 4.8: Emerging themes: Agile ceremonies used in the expectancy category

Emerging themes	Key aspects
Agile ceremonies	Daily stand-up
	Sprint planning
	Sprint retrospective
	Backlog/sprint grooming
	Sprint review
	Knowledge and sharing
	PI planning

4.3.2.7. Question 3.7. Value of agile ceremonies

The next question was to gain insight into what value do participants obtain from each of the agile ceremonies when using agile practices:

What value do each of these ceremonies bring to you?

The question asked was to understand the value participants obtain from each of the agile ceremonies when using agile practices during software development.

There were several codes derived from participants describing the value experienced for each agile ceremony during agile projects. These codes were categorized per agile ceremony into following groups daily stand-ups value, sprint planning value, backlog/sprint grooming value, sprint review value, sprint retrospective value, knowledge and sharing value and PI planning value. The responses are stated below for each group.

a. Daily stand-up value

Tracking and progress

From participants responses, 3 codes relating to tracking and progress as values gained during daily stand-ups were identified. The codes within this group described the team ability to see progress of tasks for the sprint, measure progress and understand if the sprint goal will be met. The code with the highest mention was *track team members work* (4). The additional codes were *measure progress* (1) and *determine if sprint goal will be met* (3).

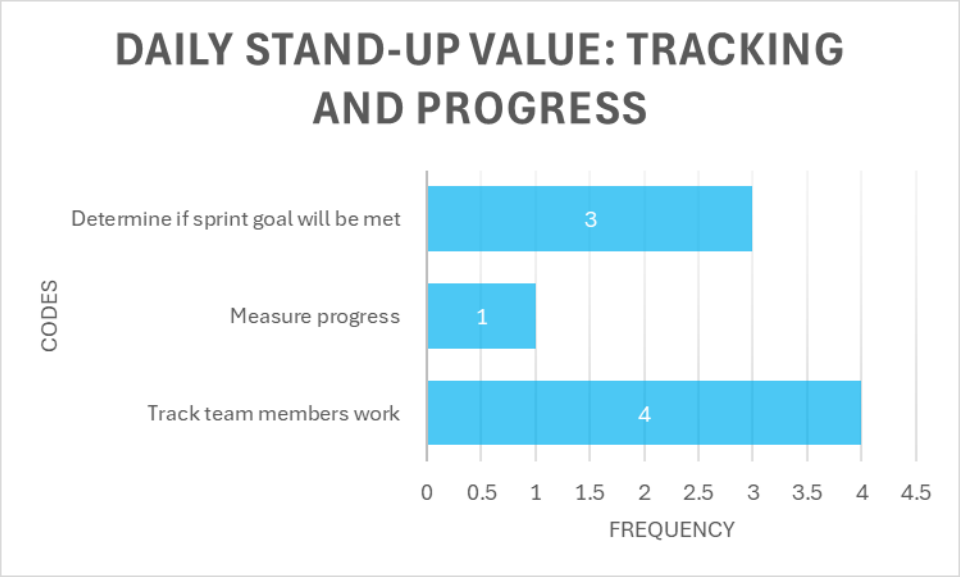


Figure 4.33: Frequency of codes in the daily stand-up value: tracking and progress code group

Identifying and resolving issues

From participants responses, 3 codes relating to identifying and resolving issues as values gained during daily stand-ups were identified. The codes within this group described being able to determine any risks and find solutions to resolve them. The code with the highest mention was *find solutions to blockers/risks* (6). The additional codes were *manage challenges* (1) and *determine blockers/risks* (3).

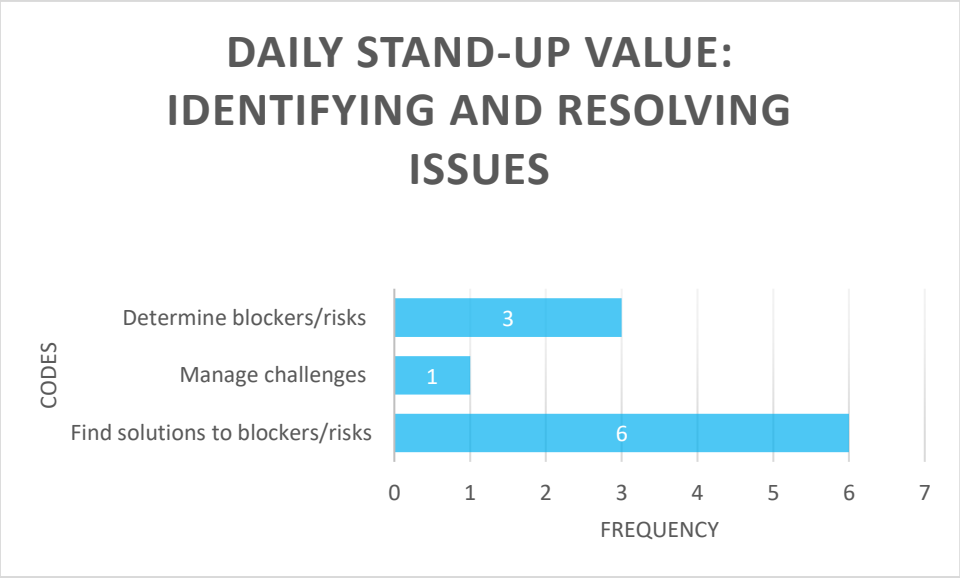


Figure 4.34: Frequency of codes in the daily stand-up value: identifying and resolving issues code group

Communication and collaboration

From participants responses, 2 codes relating to communication and collaboration as values gained during daily stand-ups were identified. The codes within this group described the team's ability to communicate and collaborate as value during daily stand-ups. The code with the highest mention was *communication* (4). The additional code was *collaboration* (2).

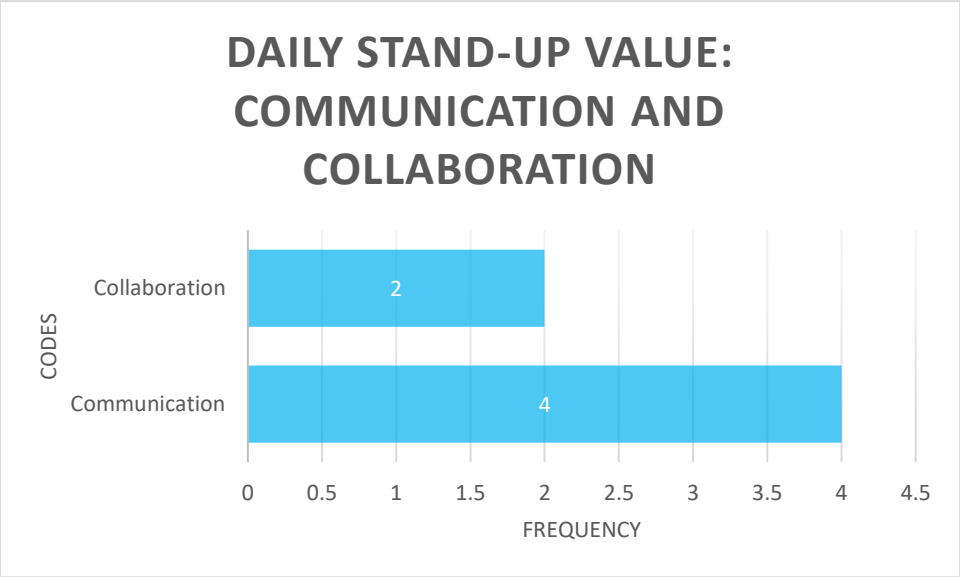


Figure 4.35: Frequency of codes in the daily stand-up value: communication and collaboration code group

Understanding and supporting team members

From participants responses, 3 codes relating to understanding and team member support as values gained during daily stand-ups were identified. The codes within this group described the team gaining understanding of team members work, having focus and ability to bring in additional items to work on. The code with the highest mention was *understand team members work* (6). The additional codes were *continuous focus* (1) and *pull new items* (1).

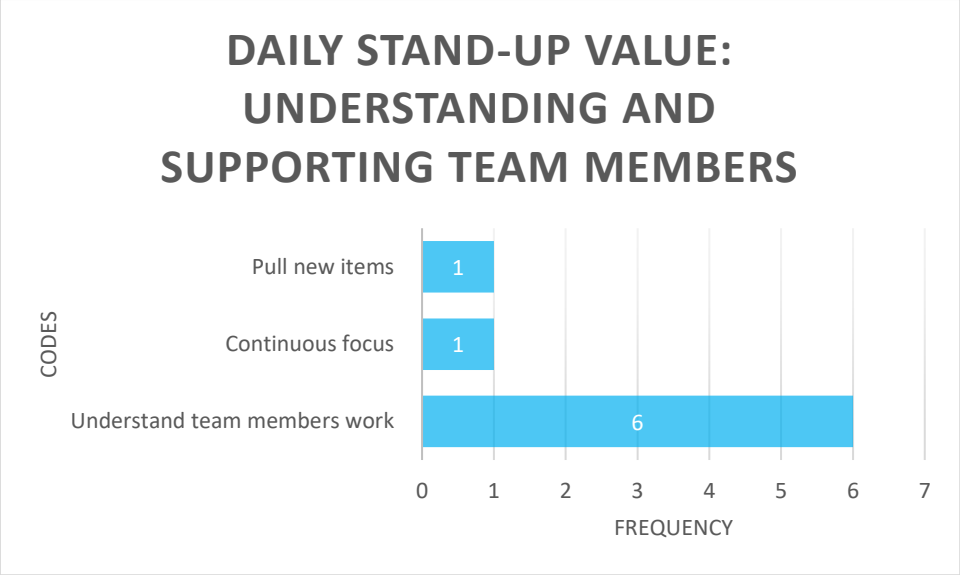


Figure 4.36: Frequency of codes in the daily stand-up value: understanding and supporting team members code group

b. Sprint planning value

Planning and estimation

From participants responses, 3 codes relating to planning and estimation as values gained during sprint planning were identified. The codes within this group described the team being able to plan and estimate the work in accordance with the team's capacity. The codes with the highest mention were *determine team capacity* (3) and *allow teams to plan* (3). The additional code was *estimate work* (2).

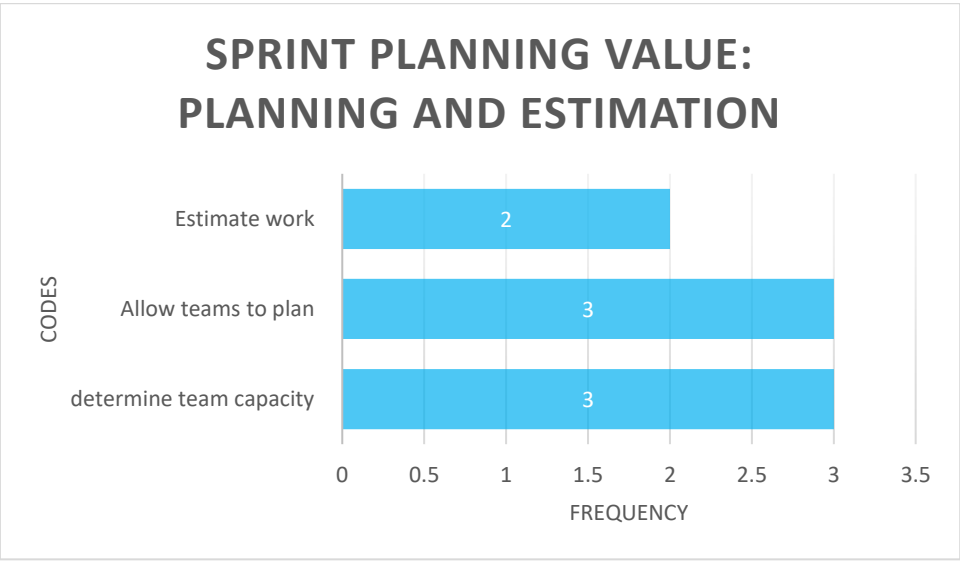


Figure 4.37: Frequency of codes in the sprint planning value: planning and estimation code group

Understanding and refining work

From participants responses, 4 codes relating to understanding and refining work as values gained during sprint planning were identified. The codes within this group described the team gathering an understanding of the work, breaking the work down into manageable pieces and use what you have learned from previous sprints to refine work. The code with the highest mention was *understand what needs to be delivered* (3). The additional codes were *breaking down features* (2), *identify dependencies* (1) and *use learnings from previous sprints* (1).

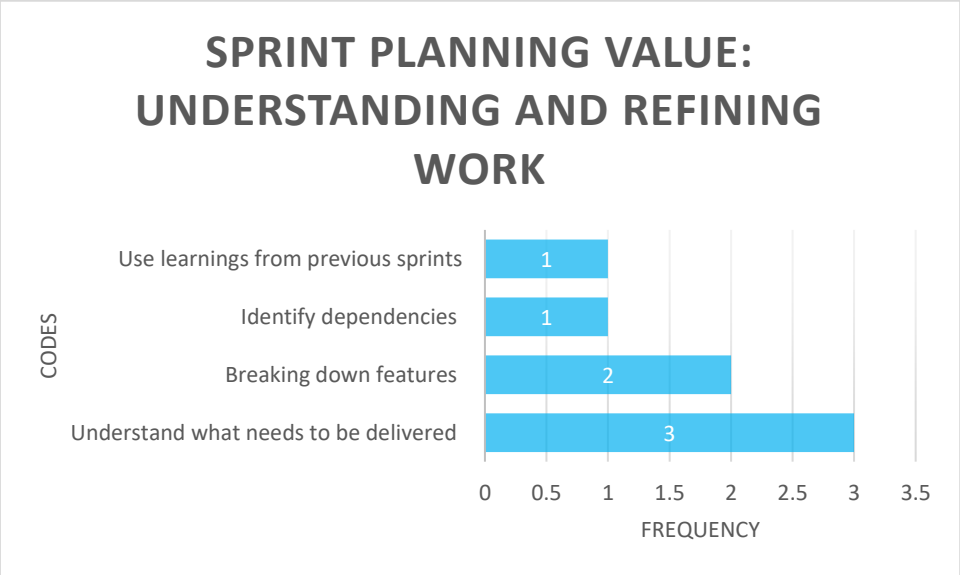


Figure 4.38: Frequency of codes in the sprint planning value: understanding and refining work code group

Goal setting and commitment

From participants responses, 2 codes relating to goal setting and commitment as values gained during sprint planning were identified. The codes within this group described the team setting a sprint goal and committing to the work for the sprint. The codes with the highest mention were *determine sprint goals* (2) and *committing to work* (2).

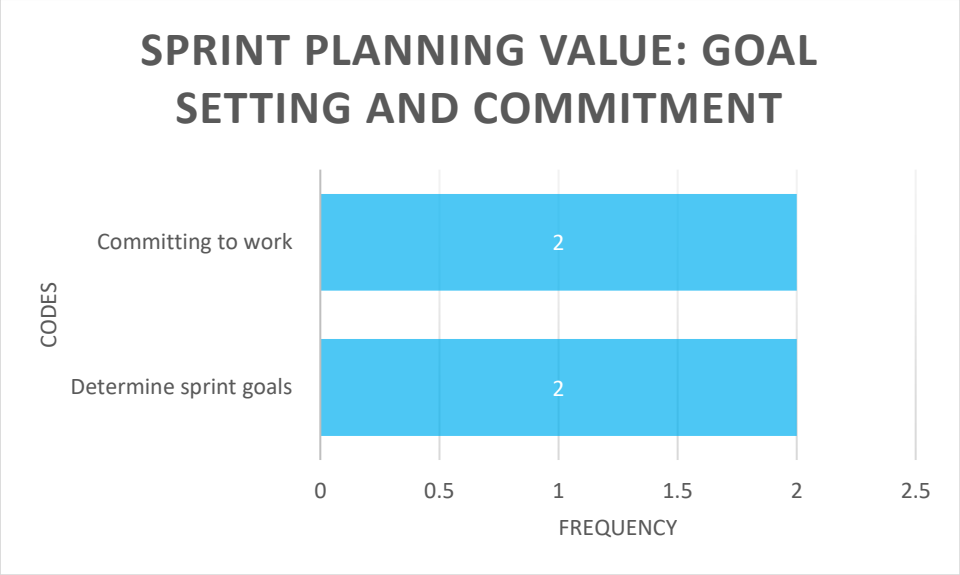


Figure 4.39: Frequency of codes in the sprint planning value: goal setting and commitment code group

Team dynamics and engagement

From participants responses, 2 codes relating to team dynamics and engagement as values gained during sprint planning were identified. The codes within this group referred to the team feeling engaged during sprint planning and building team spirit and trust amongst each other. The codes were *build team spirit and trust* (1) and *feel engaged* (1).

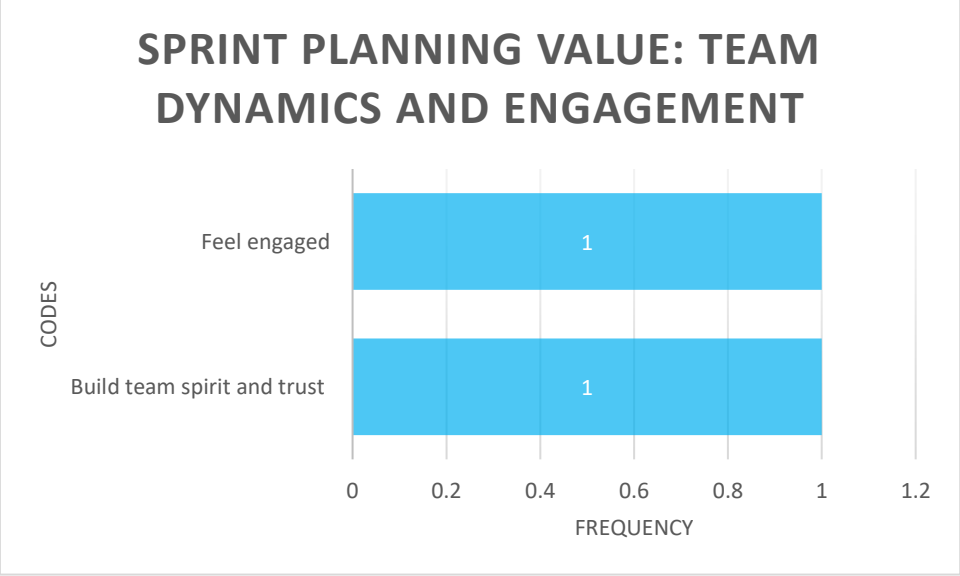


Figure 4.40: Frequency of codes in the sprint planning value: team dynamics and engagement code group

Visibility and predictability

From participants responses, 2 codes relating to visibility and predictability as values gained during sprint planning were identified. The codes within this group referred to the team having a view of what work is upcoming and predict what work can be delivered. The codes were *view of what is upcoming* (1) and *accurately predict when work can be delivered* (1).

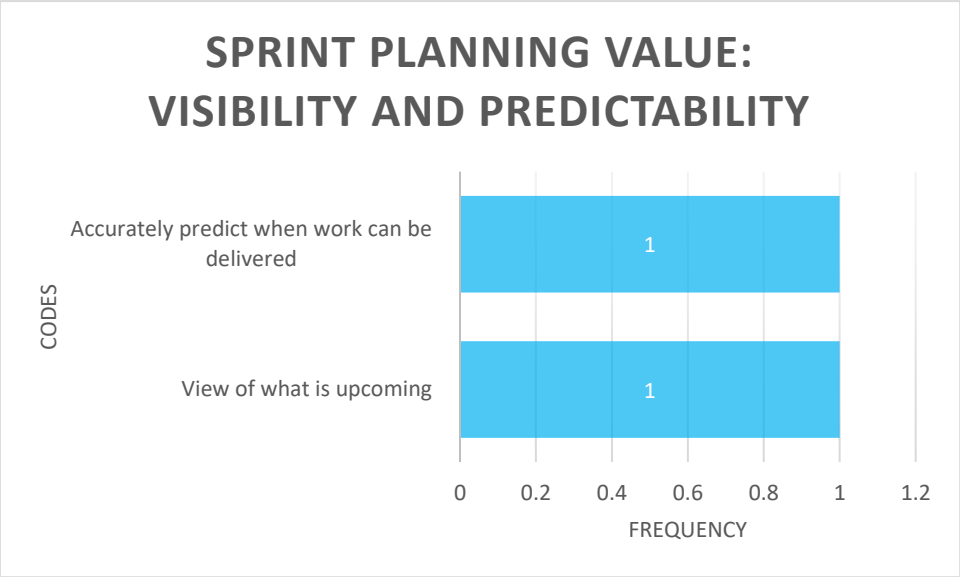


Figure 4.41: Frequency of codes in the sprint planning value: visibility and predictability code group

c. Backlog/sprint grooming value

Understanding and refining work

From participants responses, 3 codes relating to understanding and refining work as values gained during backlog/sprint grooming were identified. The codes within this group referred to the team further refining work for upcoming sprints, getting feedback on any business requirements and defining any misalignments of work. The code with the highest mentions was *unpack the detail further* (2). The additional codes were *define any misalignments for upcoming work* (1) and *get feedback from team on requirements to further refine them* (1).

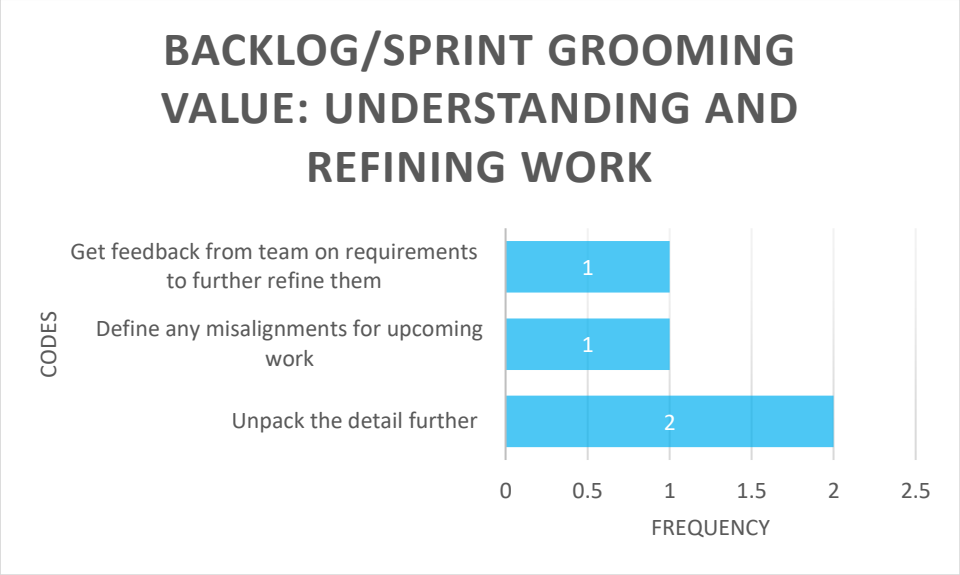


Figure 4.42: Frequency of codes in the backlog/sprint grooming value: understanding and refining work code group

Team awareness and visibility

From participants responses, 2 codes relating to team awareness and adaptability as values gained during backlog/sprint grooming were identified. The codes within this group referred to being able to understand how far the team is with the current sprint and have a view of upcoming work. The code with the highest mentions was *team understands what work is coming up* (2). The additional code was *determine how far the team is* (1).

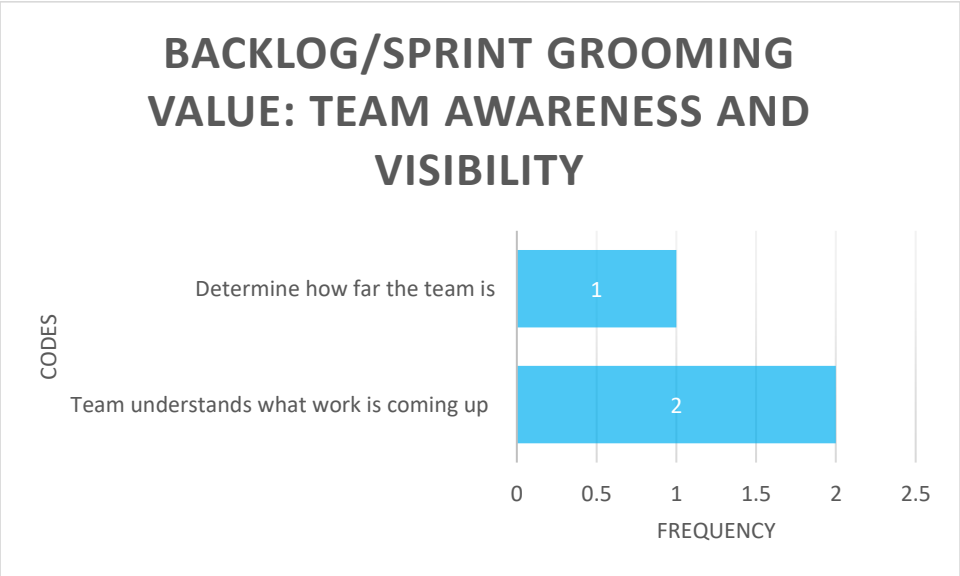


Figure 4.43: Frequency of codes in the backlog/sprint grooming value: team awareness and visibility code group

Continuous improvement and engagement

From participants responses, 3 codes relating to continuous improvement and engagement as values gained during backlog/sprint grooming were identified. The codes within this group referred to continuously improving, having open conversations with the customer and the customer feeling engaged. The codes were *continuous improvement* (1), *open conversations with the customer* (1) and *customer feels engaged* (1).

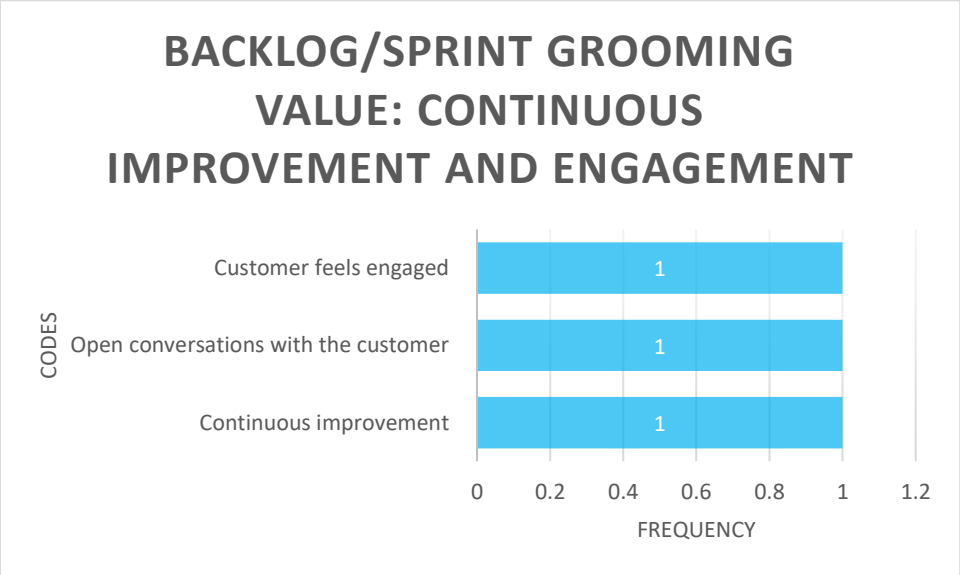


Figure 4.44: Frequency of codes in the backlog/sprint grooming value: continuous improvement and engagement code group

d. Sprint review value

Demonstration and recognition

From participants responses, 3 codes relating to demonstration and recognition as values gained during sprint review were identified. The codes within this group referred to the team having an opportunity to showcase the work completed during the sprint and sets as a platform to shine. Additionally, this uplifts the team to have a view of the work achieved during the sprint. The code with the highest mentions was *teams' ability to shine for work done* (2). The additional codes were *uplifts the team to see what work was delivered* (1) and *improve presentation skills* (1).

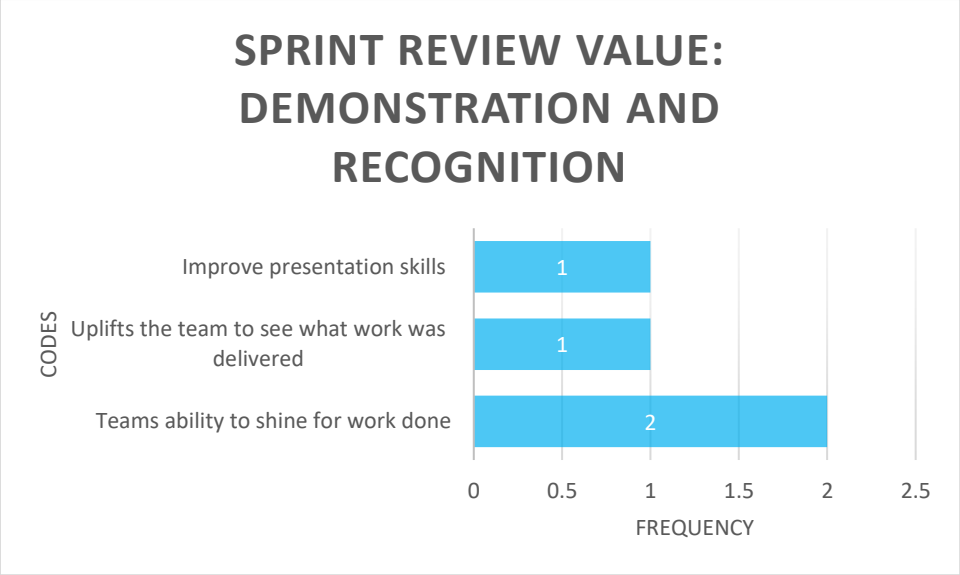


Figure 4.45: Frequency of codes in the sprint review value: demonstration and recognition code group

Evaluation and reflection

From participants responses, 1 code relating to evaluation and reflection as values gained during sprint review were identified. The code within this group referred to the team determining what the team planned for a sprint and evaluate if the sprint goal was achieved. The code was *determine what was planned and if it was achieved* (1).

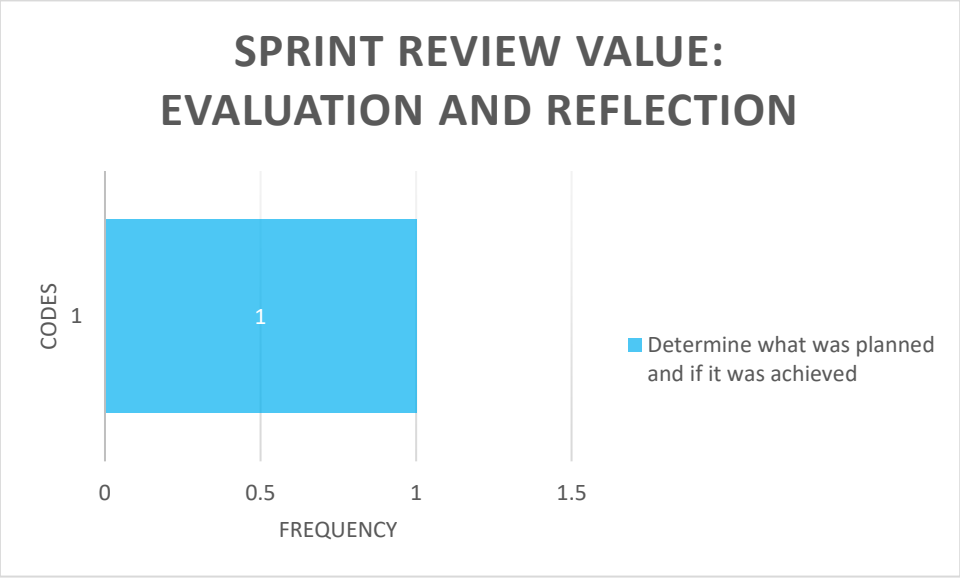


Figure 4.46: Frequency of codes in the sprint review value: evaluation and reflection code group

e. Sprint retrospective value

Reflection

From participants responses, 1 code relating to reflection as values gained during sprint retrospective was identified. The code within this group referred to the team reflecting on the previous sprint from an individual and team perspective as a starting point to continuous improvement. The code was *reflect on previous sprint* (4).

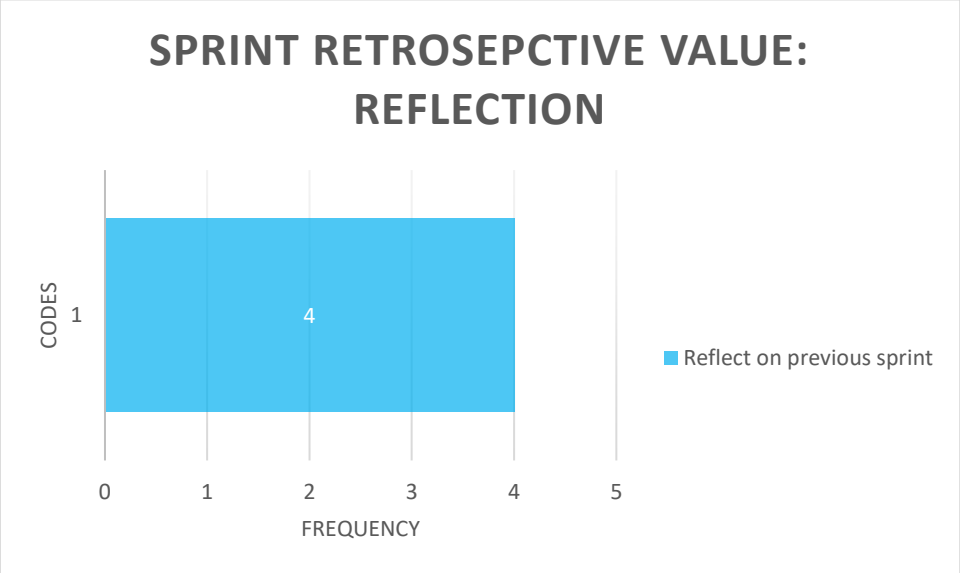


Figure 4.47: Frequency of codes in the sprint retrospective value: reflection code group

Continuous improvement

From participants responses, 2 codes relating to continuous improvement as values gained during sprint retrospective were identified. The codes within this group referred to the team determining improvements to work more efficiently and define points of growth. The code with the highest mentions was *continuous improvement* (9). The additional code was *realise growth points* (2).

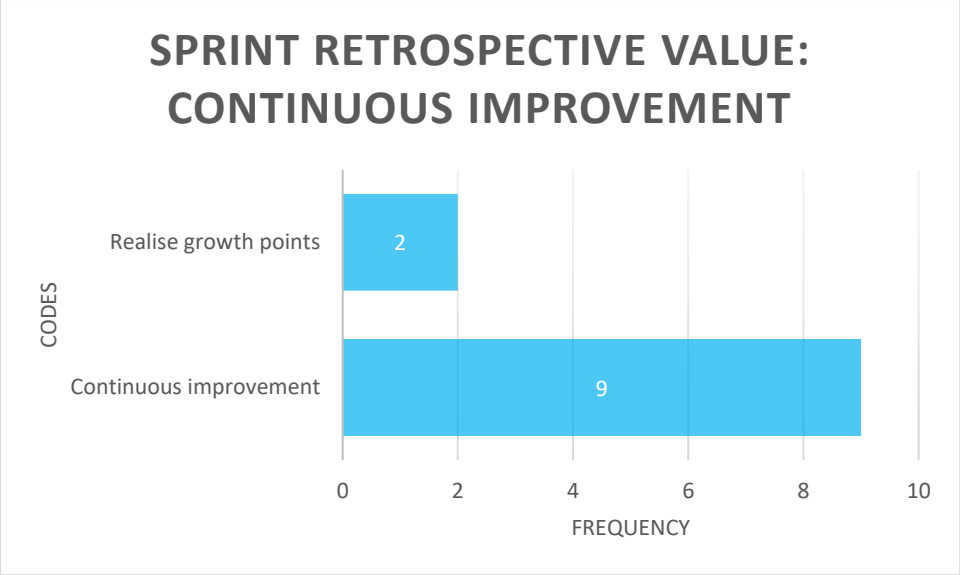


Figure 4.48: Frequency of codes in the sprint retrospective value: continuous improvement code group

Team trust and accountability

From participants responses, 2 codes relating to team trust and accountability as values gained during sprint retrospective were identified. The codes within this group referred to being honest with each other that builds trust and holds each other accountable. The code with the highest mentions was *team members hold each other accountable* (2). The additional code was *build team trust* (1).

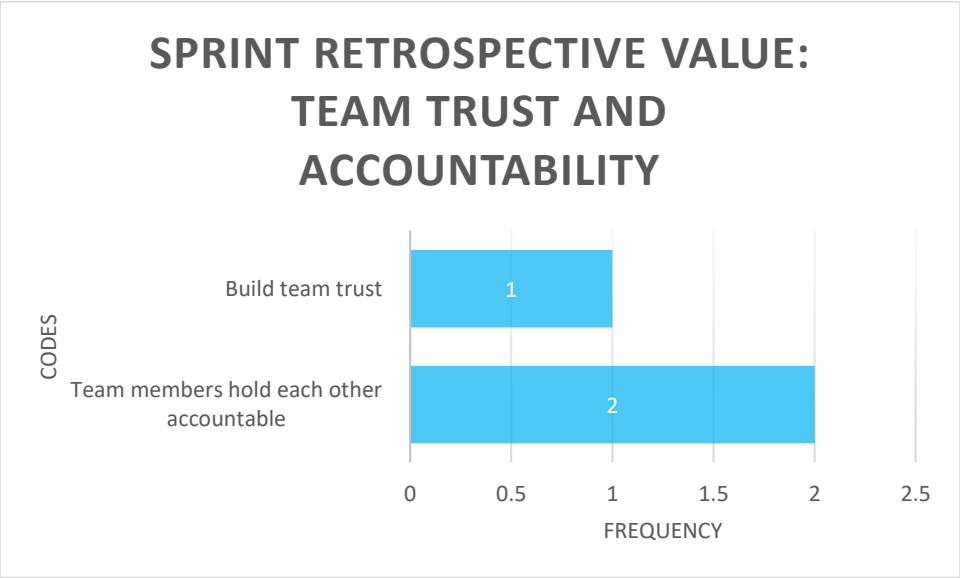


Figure 4.49: Frequency of codes in the sprint retrospective value: team trust and accountability code group

Acknowledgement and learning

From participants responses, 3 codes relating to acknowledgement and learning as values gained during sprint retrospective were identified. The codes within this group referred to acknowledging failures and success and understand what learnings from the sprint can be taken to the next sprint. The codes with the highest mentions were *determine failures in the sprint* (2) and *acknowledgement of work* (2). The additional code was *understanding learnings from sprint* (1).

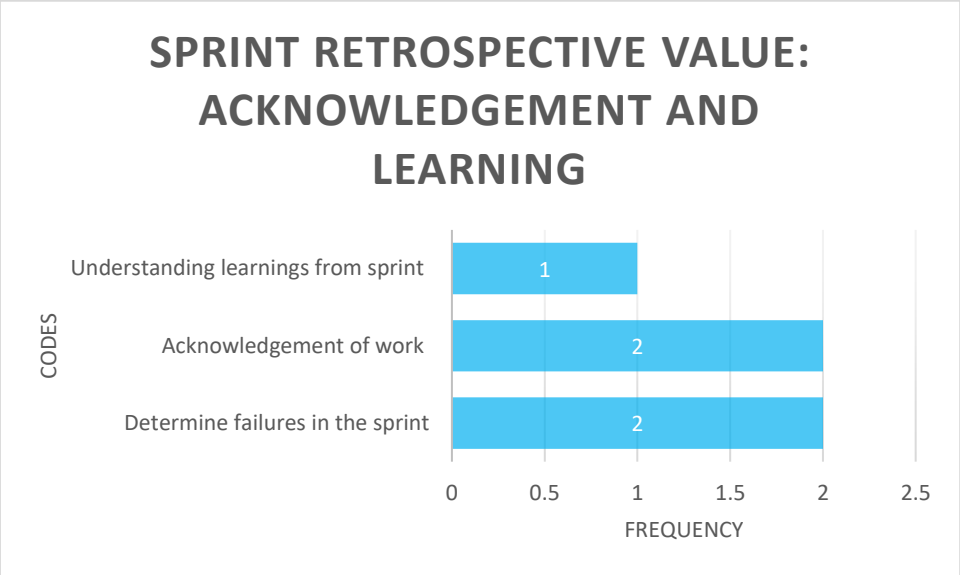


Figure 4.50: Frequency of codes in the sprint retrospective value: acknowledgement and learning code group

f. Knowledge and sharing value

Learning and sharing

From participants responses, 2 codes relating to learning and sharing as values gained during knowledge and sharing were identified. The codes within this group referred to the team being able to learn new things from each other and share knowledge. The codes were *learn new things from different team members* (1) and *share knowledge with the team* (1).

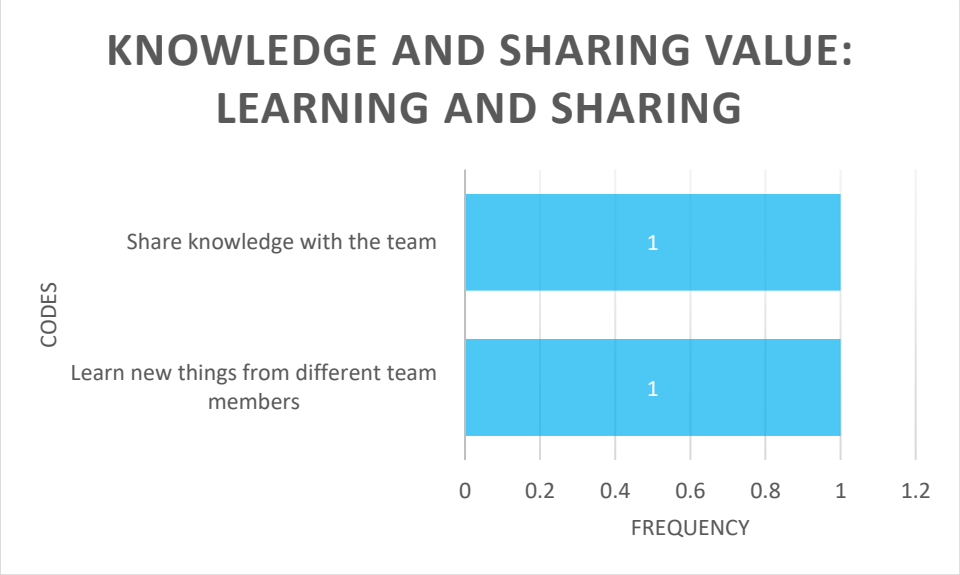


Figure 4.51: Frequency of codes in the knowledge and sharing value: learning and sharing code group

g. PI planning value

Scope management

From participants responses, 1 code relating to scope management as values gained during PI planning was identified. The code within this group referred to the team going through the features of the project and being able understand the priority of work requested by the customer. The code was *understand priority of features to be delivered* (1).

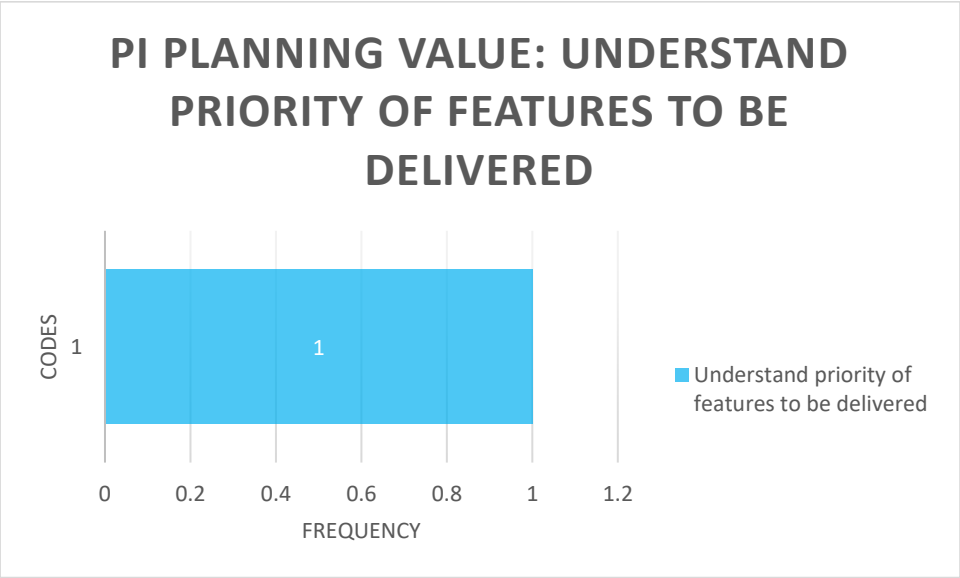


Figure 4.52: Frequency of codes in the PI planning: learning and sharing code group

Purpose and clarity

From participants responses, 1 code relating to purpose and clarity as values gained during PI planning was identified. The code within this group referred to the team gaining and understanding and purpose of the project to be delivered. The code was *determine purpose of project* (1).

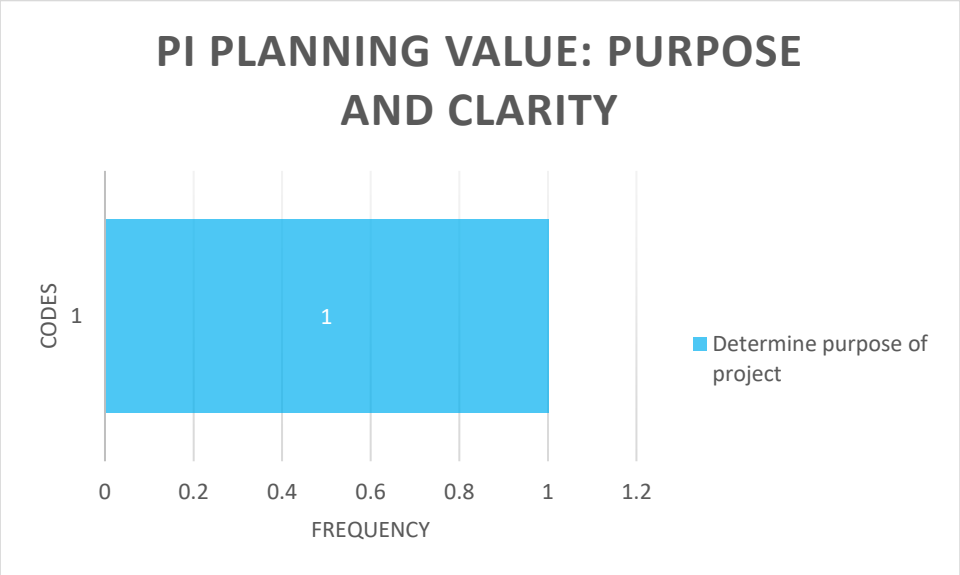


Figure 4.53: Frequency of codes in the PI planning: purpose and clarity code group

The emerging themes and key aspects of agile practices and its value gained within the expectancy category from participants responses are summarised below:

Table 4.9: Emerging themes: Value of agile ceremonies in the expectancy category

Emerging themes	Key aspects
Daily stand-up value: Tracking and progress	Track team members work
	Measure progress
	Determine if sprint goal will be met
Daily stand-up value: Identifying and resolving issues	Find solutions to blockers/risks
	Manage challenges
	Determine blockers/risks
Daily stand-up value: Communication and collaboration	Communication
	Collaboration

Daily stand-up value: Understanding and supporting team members	Understand team members work
	Continuous focus
	Pull new items
Sprint planning value: Planning and estimation	Determine team capacity
	Allow teams to plan
	Estimate work
Sprint planning value: Understanding and refining work	Understand what needs to be delivered
	Breaking down features
	Identify dependencies
	Use learnings from previous sprints
Sprint planning value: Goal setting and commitment	Determine sprint goals
	Committing to work
Sprint planning value: Team dynamics and engagement	Build team spirit and trust
	Feel engaged
Sprint planning value: Visibility and predictability	View of what is upcoming
	Accurately predict when work can be delivered
Backlog/sprint grooming value: Understanding and refining work	Unpack the detail further
	Define any misalignments for upcoming work
	Get feedback from team on requirements to further refine them
Backlog/sprint grooming value: Team awareness and visibility	Team understands what work is coming up
	Determine how far the team is
Backlog/sprint grooming value: Continuous improvement and engagement	Continuous improvement
	Open conversations with the customer
	Customer feels engaged
Sprint review value: Demonstration and recognition	Teams' ability to shine for work done
	Uplifts the team to see what work was delivered
	Improve presentation skills

Sprint review value: Evaluation and reflection	Determine what was planned and if it was achieved
Sprint retrospective value: Reflection	Reflect on previous sprint
Sprint retrospective value: Continuous improvement	Continuous improvement
	Realise growth points
Sprint retrospective value: Team trust and accountability	Team members hold each other accountable
	Build team trust
Sprint retrospective value: Acknowledgement and learning	Determine failures in the sprint
	Acknowledgement of work
	Understanding learnings from sprint
Knowledge and sharing value: Learning and sharing	Learn new things from different team members
	Share knowledge with the team
PI planning value: Scope management	Understand priority of features to be delivered
PI planning value: Purpose and clarity	Determine purpose of project

4.3.3 Instrumentality interview guide category

The secondary category incorporates the understanding of participants outcomes that they obtain from using agile. Questions within this category seek to gain insight into participants experiences of existing outcomes they take away from using agile practices and what outcomes using agile practices would motivate them to perform better in agile projects, and also their perception on their performance vs their outcomes. Instrumentality within the Expectancy refers to the belief that good performance will lead to desirable outcomes.

4.3.3.1. Question 4.1. Existing outcomes when using agile practices

The next question was to gain insight of what existing outcomes do participants obtain when working on successful projects using agile practices:

Can you provide examples of outcomes you take out from working in successful agile project performance?

The question posed was to understand what existing outcomes participants obtain when using agile practices during software development on successful projects.

There were several codes derived from participants describing existing outcomes during successful agile projects. These codes were categorized into the following groups: recognition, team dynamics, sense of achievement and accomplishment, professional development and product delivery and business value. The responses are stated below for each group.

a. Recognition

From participants responses, 2 codes relating to recognition were identified. The codes within this group described the team receiving recognition from both team members and the customer. The code with the highest mention was *peer recognition* (4). The additional code was *recognition from customer* (1).

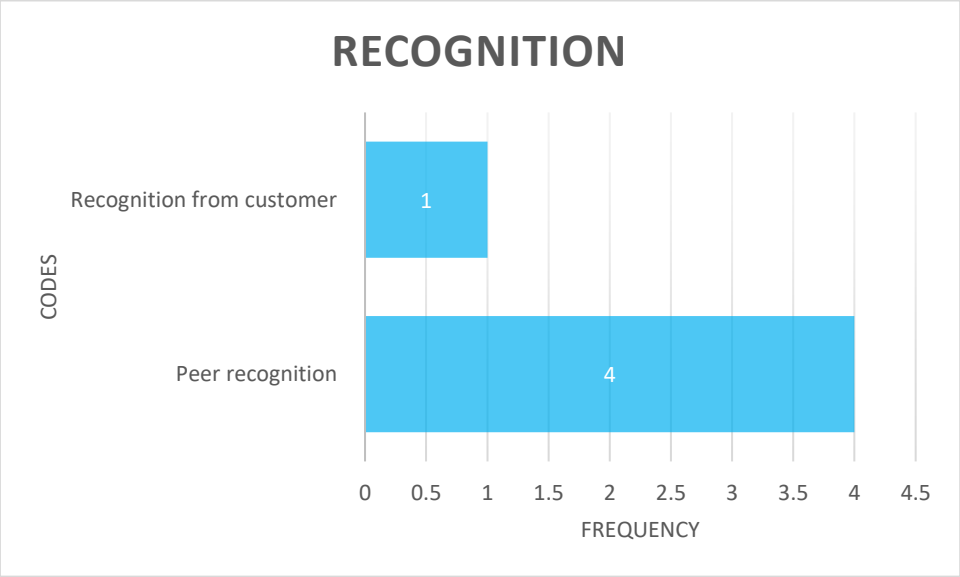


Figure 4.54: Frequency of codes in the recognition code group

b. Team dynamics

From participants responses, 4 codes relating to team dynamics were identified. The codes within this group described the outcomes participants take out that included building relationship with the team, working collaboratively and having a *healthy working environment*. The code with the highest mention was *team performance and culture* (4). The additional codes were *building relationships* (3), *working collaboratively* (1) and *healthy working environment* (2).

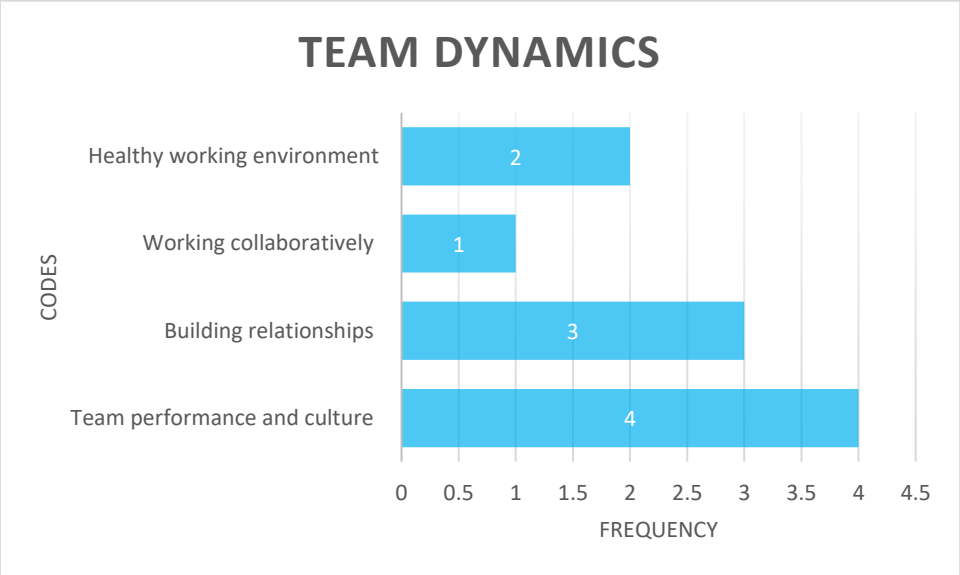


Figure 4.55: Frequency of codes in the team dynamics code group

c. Sense of achievement and accomplishment

From participants responses, 2 codes relating to sense of achievement and accomplishment were identified. The codes within this group described the outcomes participants take out that included completing the work that was committed to, and this provided a sense of accomplishment to them. The code with the highest mention was *delivering work that was committed to* (5). The additional code was *sense of accomplishment of sprint* (4).

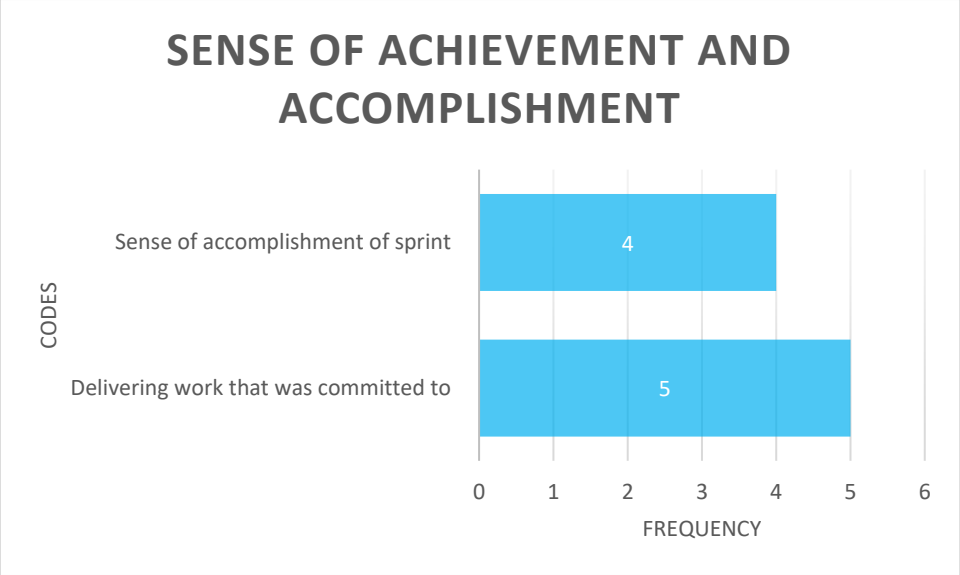


Figure 4.56: Frequency of codes in the sense of achievement and accomplishment code group

d. Professional development

From participants responses, 2 codes relating to professional development were identified. The codes within this group described the outcomes participants take out that referred to personal growth and learning from mistakes to continuously improve. The code with the highest mention was *learn from mistakes* (2). The additional code was *personal growth* (1).

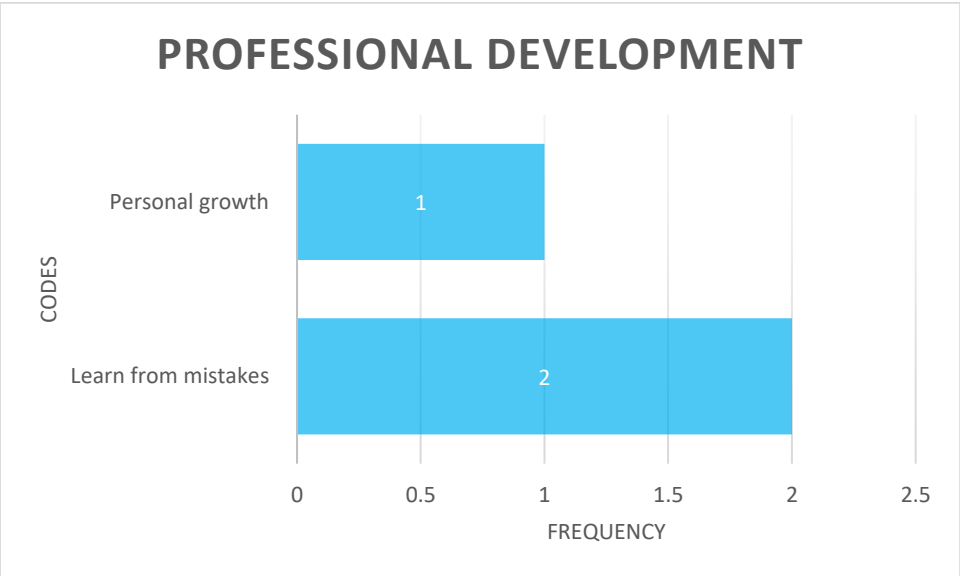


Figure 4.57: Frequency of codes in the personal growth code group

e. Product delivery and business value

From participants responses, 3 codes relating to product delivery and business value were identified. The codes within this group described the outcomes of delivering a product, the value it provided to the customer and what impact the product has made. The code with the highest mention was *customer value provided* (4). The additional codes were *product being delivered* (3) and *impact the product has made* (2).

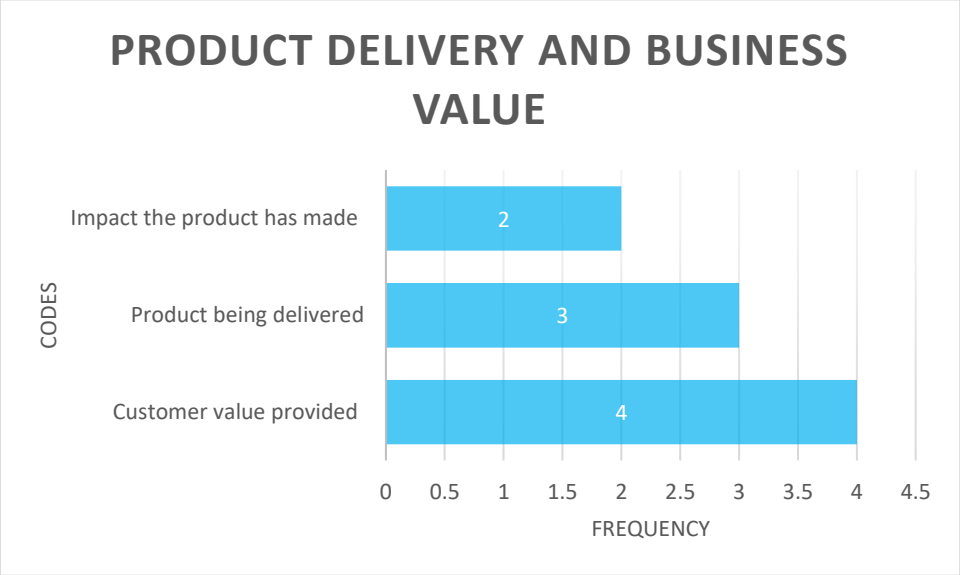


Figure 4.58: Frequency of codes in the product delivery and business value code group

The emerging themes and key aspects of existing outcomes using agile practices within the expectancy category from participants responses are summarised below:

Table 4.10: Emerging themes: Existing outcomes using agile practices in the instrumentality category

Emerging themes	Key aspects
Recognition	Peer recognition
	Recognition from customer
Team dynamics	Team performance and culture
	Building relationships
	Working collaboratively
	Healthy working environment
	Delivering work that was committed to

Sense of achievement and accomplishment	Sense of accomplishment of sprint
Professional development	Learn from mistakes
	Personal growth
Product delivery and business value	Customer value provided
	Product being delivered
	Impact the product has made

4.3.3.2. Question 4.2. Motivational outcomes when using agile practices

The next question was to gain insight of what outcomes would motivate participants to perform better when using agile practices:

What types of outcomes would motivate you to perform better in agile projects?

The question presented was to understand what outcomes would motivate participants when using agile practices to enhance their performance.

There were several codes derived from participants describing existing outcomes during successful agile projects. These codes were categorized into the following groups: personal growth and development, work satisfaction and accomplishment, respect and collaboration, agile practices and mindset, flexibility and work-life balance and recognition and value addition. The responses are stated below for each group.

a. Personal growth and development

From participants responses, 2 codes relating to personal growth and development were identified. The codes within this group described the motivational outcomes of constant learning and improving and having the freedom to express creativity. The code with the highest mention was *continuous learning* (2). The additional codes were *constant improving* (1) and *express creativity* (1).

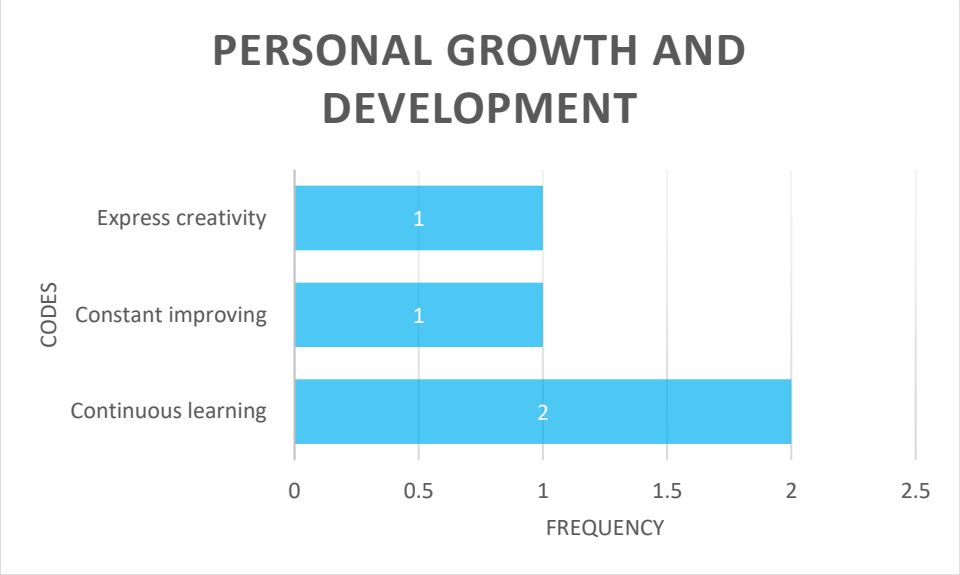


Figure 4.59: Frequency of codes in the personal growth and development code group

b. Work satisfaction and accomplishment

From participants responses, 3 codes relating to work satisfaction and accomplishment were identified. The codes within this group described the motivational outcomes of successfully completing a task and the satisfaction that these pieces of work allow the team to deliver a project to the customer. The code with the highest mention was *accomplishment of a task* (3). The additional codes were *satisfaction that project was delivered* (2) and *working efficiently* (1).

Figure 4.60: Frequency of codes in the work satisfaction and accomplishment code group

c. Respect and collaboration

From participants responses, 2 codes relating to respect and team collaboration were identified. The codes within this group described the team working collaboratively and the respect that should be given to the agile team as motivational outcomes. The code with the highest mention was *team collaboration* (4). The additional code was *respect the agile team* (2).

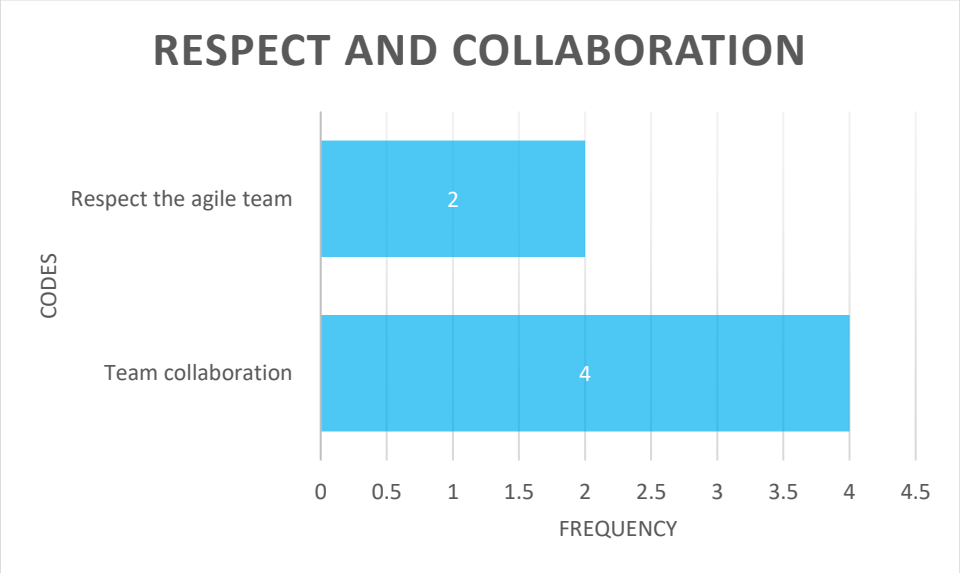


Figure 4.61: Frequency of codes in the respect and collaboration code group

d. Agile practices and mindset

From participants responses, 2 codes relating to agile practices and mindset were identified. The codes within this group described the team having the agile mindset to adapt and having agile processes defined in their team and following the practices. The codes were *agile mindset to adapt* (1) and *agile process defined beforehand* (1).

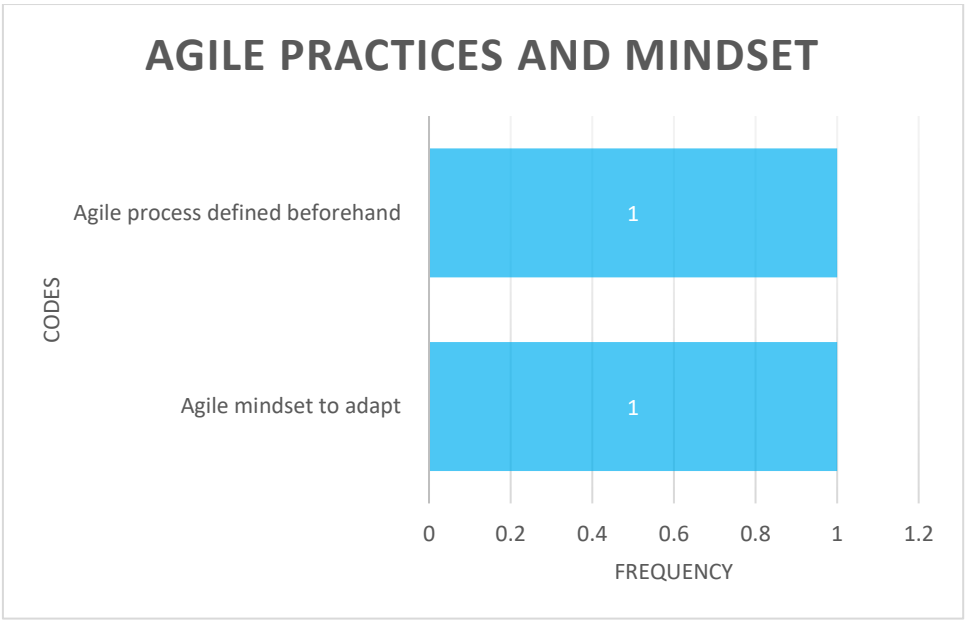


Figure 4.62: Frequency of codes in the agile practices and mindset code group

e. Flexibility and work-life balance

From participants responses, 2 codes relating to flexibility and work-life balance were identified. The codes within this group described agile practices having a work-life balance and working in an environment where you are not time boxed to deliver as motivational outcomes. The code with the highest mention was *work-life balance* (2). The additional code was *not time boxed to deliver* (1).

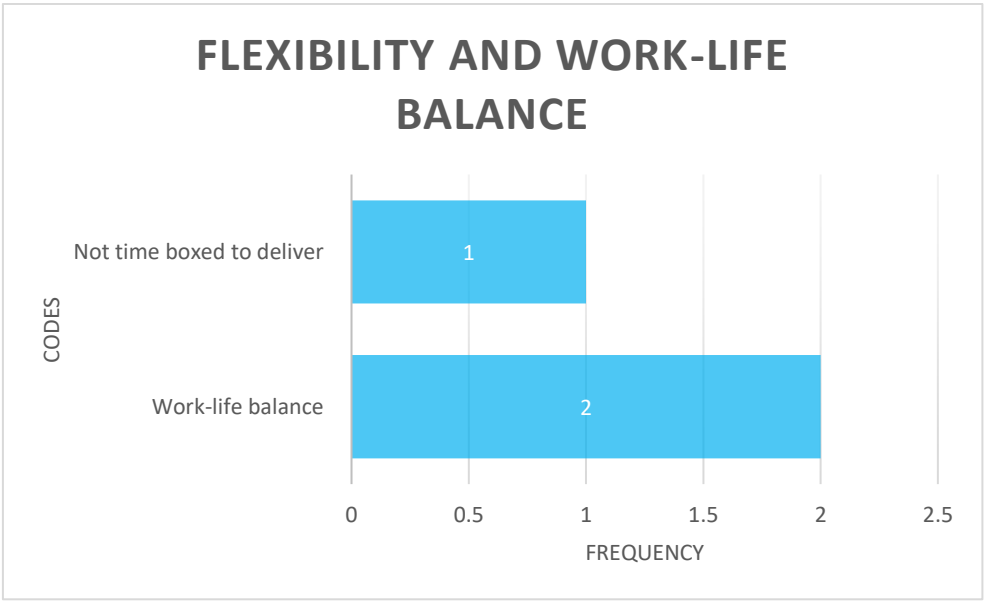


Figure 4.63: Frequency of codes in the flexibility and work-life balance code group

f. Recognition and value addition

From participants responses, 4 codes relating to recognition and value addition were identified. The codes within this group described the motivational outcomes of receiving recognition from peers and customers on the work delivered, delivering projects that add value to the customer and receiving feedback in terms of the project that was delivered. The codes with the highest mention were *recognition from peers and customer* (4) and *adding value to business* (4). The additional codes were *deliver more work than what was expected* (2) and receiving *feedback loop after a product goes live* (3).

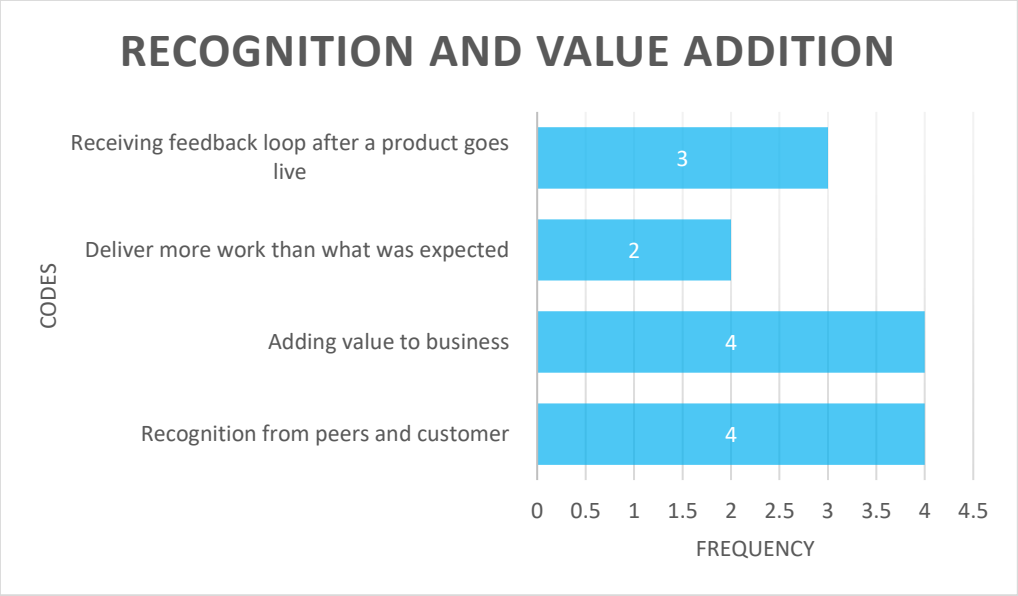


Figure 4.64: Frequency of codes in the recognition and value addition code group

The emerging themes and key aspects of motivation outcomes using agile practices within the instrumentality category from participants responses are summarised below:

Table 4.11: Emerging themes: Motivational outcomes using agile practices in the instrumentality category

Emerging themes	Key aspects
Personal growth and development	Continuous learning
	Constant improving
	Express creativity
Work satisfaction and accomplishment	Accomplishment of a task
	Satisfaction that project was delivered

	Working efficiently
Respect and collaboration	Team collaboration
	Respect the agile team
Agile practices and mindset	Agile mindset to adapt
	Agile process defined beforehand
Flexibility and work-life balance	Work-life balance
	Not time boxed to deliver
Recognition and value addition	Recognition from peers and customer
	Adding value to business
	Deliver more work than what was expected
	Receiving feedback loop after a product goes live

4.3.4 Valence interview guide category

The secondary category includes the understanding of participants outcomes that are valued from using agile practices. Questions within this category seek to gain an understanding into participants experiences of valued outcomes they obtain from using agile practices. Valence in the Expectancy defines the value that employees place on the outcomes.

4.3.4.1. Question 5.1. Valued outcomes when using agile practices

The next question was to obtain insight of what outcomes do participants value when working on projects using agile practices:

What types of outcomes do you value the most for your performance in agile projects?

The question asked was to understand what outcomes do participants value when using agile practices during software development.

There were several codes derived from participants describing valued outcomes during successful agile projects. These codes were categorized into the following groups:

recognition and feedback, team collaboration and culture, personal and professional growth and delivery and business impact. The responses are stated below for each group.

a. Recognition and feedback

From participants responses, 2 codes describing recognition and feedback were identified. The codes within this group described valued outcomes in receiving recognition from business and customer that are valuable outcomes that boost the team's confidence. Moreover, receiving feedback from the customer in terms of the feedback loop that provides the team with an understanding of how and if the product is favourable in the market. The code with the highest mention was *recognition from business and peers* (6). The additional code was *product feedback from customer* (4).

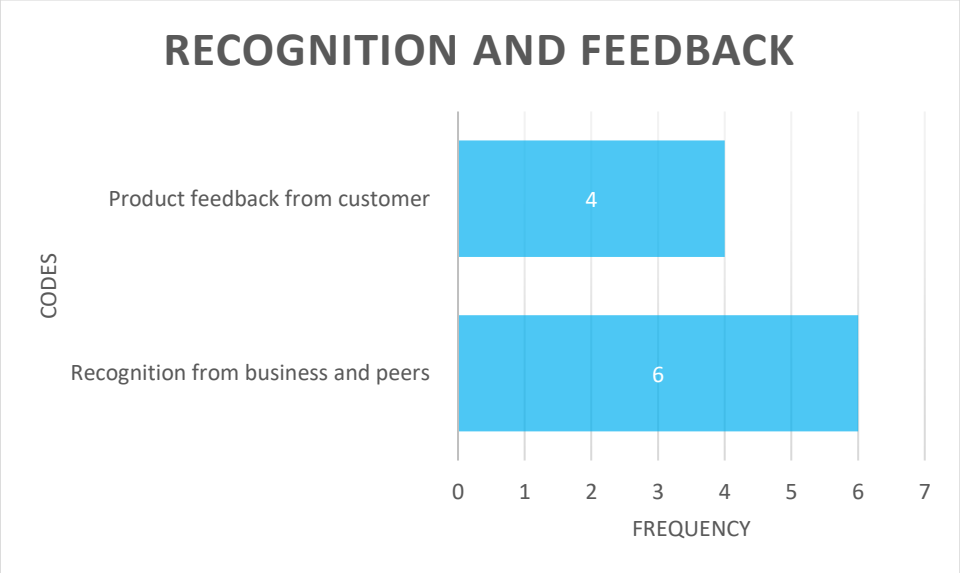


Figure 4.65: Frequency of codes in the recognition and feedback code group

b. Team collaboration and culture

From participants responses, 7 codes describing team collaboration and culture were identified. The codes within this group referred to valued outcomes that described working in a team that worked collaboratively, trusting team members and that leads to the culture. Additionally, having that work-life balance and management style that is free from micro-management. The codes with the highest mention were *team collaboration* (2), buil*ding trust in the team* (2), *culture created in the team* (2) and *problem solving with the team* (2). The additional codes were *ability to plan* (1), *no micromanagement* (1) and *work-life balance* (1).

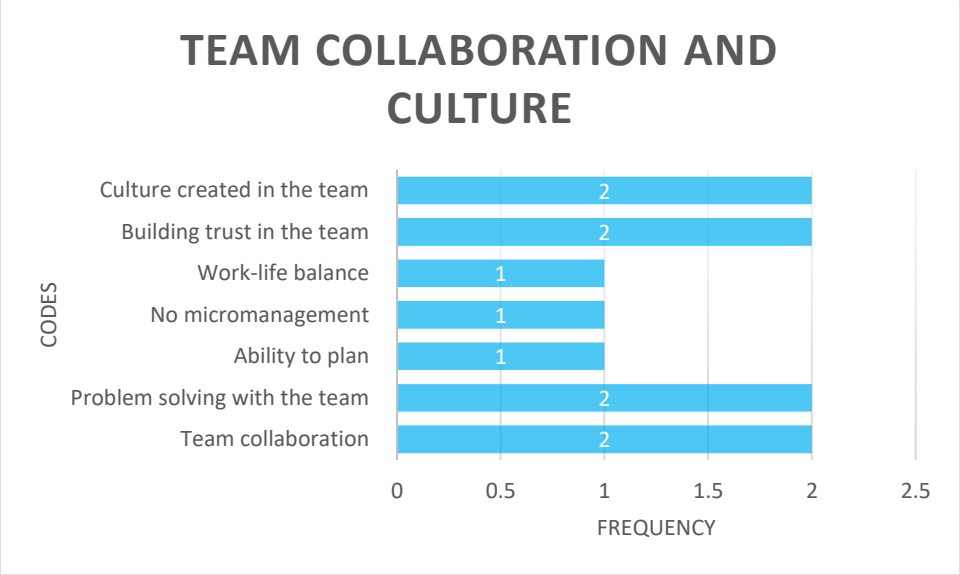


Figure 4.66: Frequency of codes in the team collaboration and culture code group

c. Personal and professional growth

From participants responses, 2 codes describing personal and professional growth were identified. The codes within this group referred to valued outcomes that described having that ability to grow by means of upskilling and playing different roles in a project that can assist in promotion. The code with the highest mention was *personal growth* (2). The additional code was *promotion* (1).

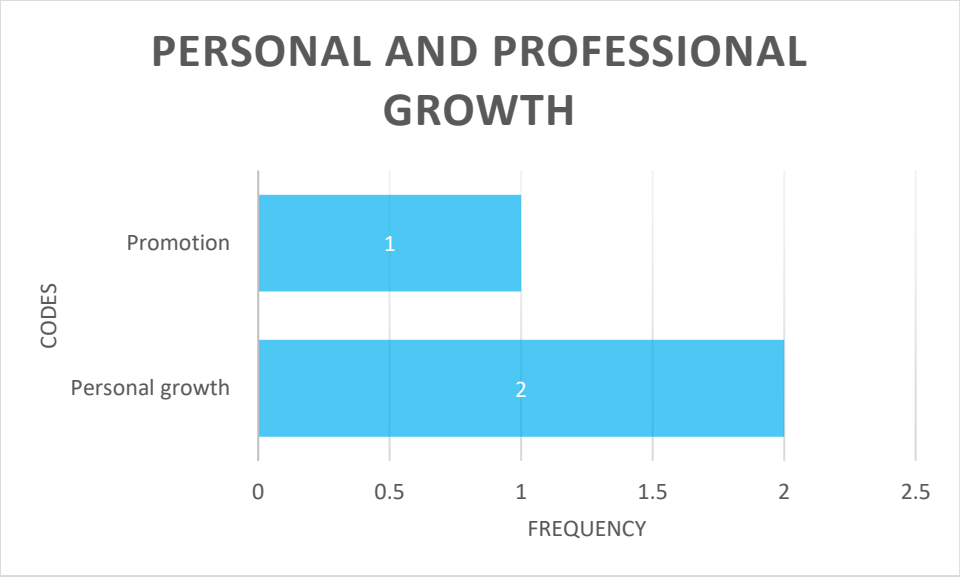


Figure 4.67: Frequency of codes in the personal and professional growth code group

d. Delivery and business impact

From participants responses, 2 codes referring to delivery and business impact were identified. The codes within this group referred to valued outcomes that described successfully delivering projects to customers on time and understanding the value the product has made to the customer. The code with the highest mention was *deliver on time* (6). The additional code was *adding value to business* (4).

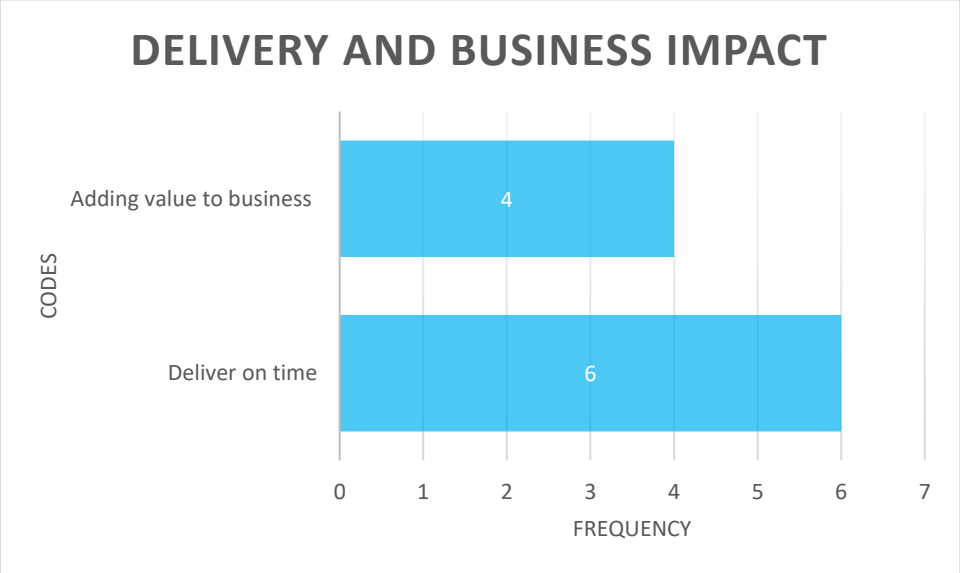


Figure 4.68: Frequency of codes in the delivery and business impact code group

The emerging themes and key aspects of valued outcomes using agile practices within the valence category from participants responses are summarised below:

Table 4.12: Emerging themes: Valued outcomes using agile practices in the valence category

Emerging themes	Key aspects
Recognition and feedback	Recognition from business and peers
	Product feedback from customer
Team collaboration and culture	Team collaboration
	Problem solving with the team
	Ability to plan
	No micromanagement
	Work-life balance

	Building trust in the team
	Culture created in the team
Personal and professional growth	Personal growth
	Promotion
Delivery and business impact	Deliver on time
	Adding value to business

4.3.4.2. Question 5.2. Undervalued outcomes when using agile practices

The next question was to obtain insight into what outcomes do participants feel are undervalued when working on projects using agile practices:

Are there any outcomes that you feel are undervalued in the current system?

The question asked was to understand what outcomes do participants feel are undervalued when using agile practices during software development.

There were several codes derived from participants describing undervalued outcomes during successful agile projects. These codes were categorized into the following groups: recognition, team dynamics and feedback and individual value. The responses are stated below for each group.

a. Recognition

From participants responses, 4 codes referring to recognition were identified. The codes within this group referred to undervalued outcomes that described not enough recognition being received from within the team. Additionally, often during agile projects individuals are putting in that effort that is taken for granted and some form of effort is taking place behind the scenes which are not noticed. The code with the highest mention was *appreciation of work within the team* (5). The additional codes were *project deliveries are overlooked* (1), *behind the scenes effort* (1) and *effort that people put in is taken for granted* (1).

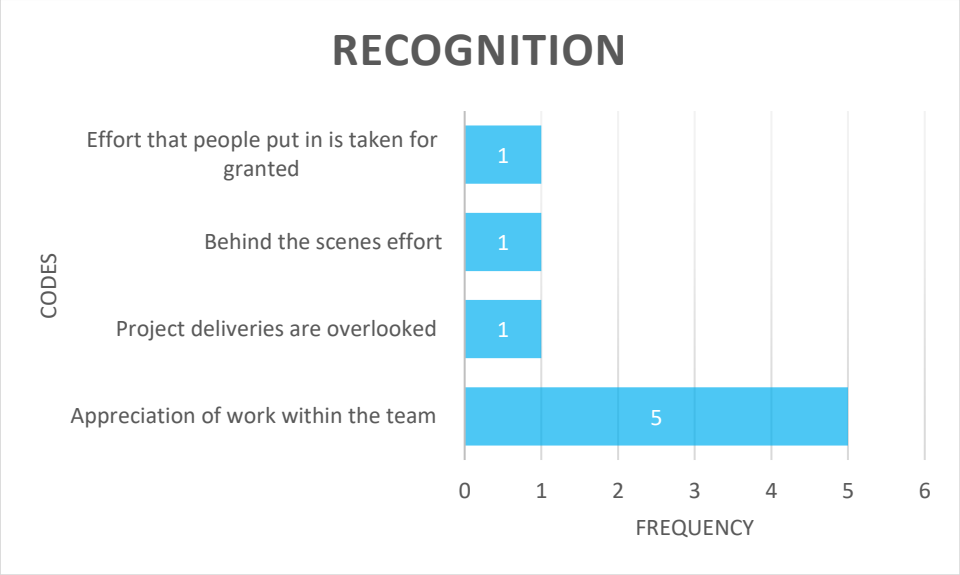


Figure 4.69: Frequency of codes in the recognition code group

b. Team dynamics

From participants responses, 4 codes referring to team dynamics were identified. The codes within this group describing undervalued outcomes that referred to agile team structure, trust within the team, respect of the agile team and the team self-coordinating to enhance high performing teams. The code with the highest mention was *respect the agile team* (2). The additional codes were *agile team structure* (1) and *trust* (1).

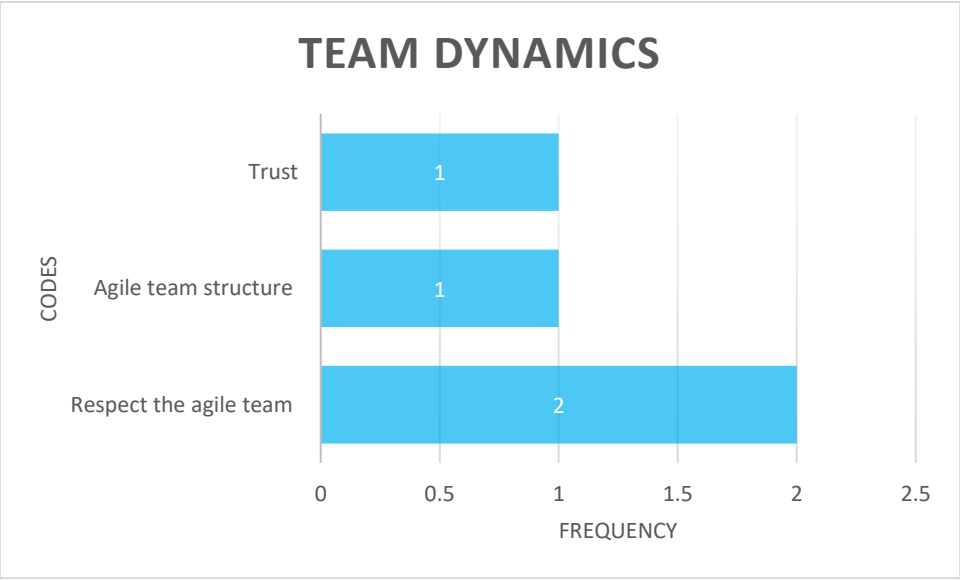


Figure 4.70: Frequency of codes in the team dynamics code group

c. Feedback and individual value

From participants responses, 3 codes referring to feedback and individual value were identified. The codes within this group describe undervalued outcomes that referred to receiving that level of feedback from the customer on the project delivered. Moreover, individuals need to understand the value that they bring in and know their value proposition. The code with the highest mention was *feedback loop* (2). The additional codes were *know your value proposition as an individual* (1) and *adding value as an individual* (1).

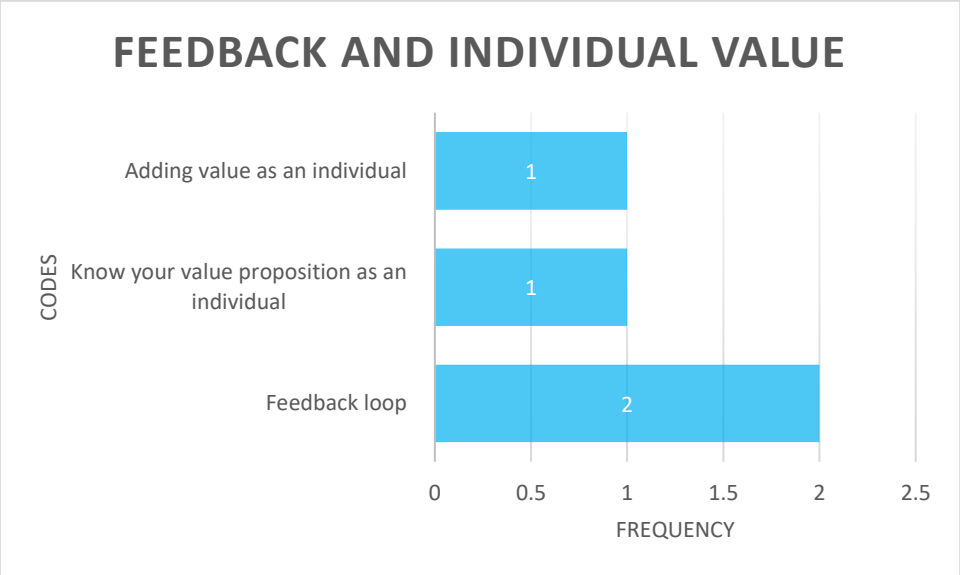


Figure 4.71: Frequency of codes in the feedback and individual value code group

The emerging themes and key aspects of undervalued outcomes using agile practices within the valence category from participants responses are summarised below:

Table 4.13: Emerging themes: Undervalued outcomes using agile practices in the valence category

Emerging themes	Key aspects
Recognition	Appreciation of work within the team
	Project deliveries are overlooked
	Behind the scenes effort
	Effort that people put in is taken for granted
Team dynamics	Respect the agile team

	Agile team structure
	Trust
Feedback and individual value	Feedback loop
	Know your value proposition as an individual
	Adding value as an individual

4.4 EMERGING THEMES

Through analysis of participants responses from the interviews, a total of 8 themes emerged. These themes included agile benefits, agile challenges, additional support, agile practices that lead to successful projects, agile practice that influence employee performance, agile ceremonies, value of agile ceremonies and agile practices outcomes. From each of these themes, there were secondary themes that occurred with key aspects relating to them. Table 4.14 displays the primary themes, secondary themes, key aspects and references of participants that mentioned significant information. Additionally, this section provides a high-level overview of each theme.

Table 4.14: Thematic analysis themes and key aspects

Primary Theme	Secondary Theme	Key aspects	Participant references
Agile benefits	Team dynamics and collaboration	Team collaboration	P1, P2, P3, P4, P5, P6, P7, P9, P10, P11, P12, P13, P14, P15, P17
		Everybody is accountable	P13
		Features driven by the team	P6, P10
		Working towards a common goal	P5, P6, P7, P9, P10, P15

		Ability to make mistakes and learn from them	P17
		Product owner mentality within teams	P13
		Team members carry individuals along the agile journey	P6
	Communication	Enhanced communication	P1, P2, P5, P7, P8, P10, P14, P17
		Transparency	P4, P7, P9, P16
		Constant feedback	P8, P10, P17
	Efficiency and productivity	Increased productivity	P1, P2, P3, P5, P7, P8, P10, P11, P13, P15, P16, P17
		Quicker turnaround times	P5, P11
		Efficiency	P1, P12, P16
	Quality and delivery	Quality delivery	P1, P15
		Decrease defects	P15
	Risk management and problem solving	Manage risks	P1, P7, P8, P16
		Solve problems	P9, P16, P17
	Planning and adaptability	Improved planning	P2, P3, P9, P17
		Adapt to change	P4, P7, P9, P8, P11, P10, P13, P14
	Continuous improvement and learning	Learning and upskilling	P2, P6, P15, P17, P12
		Continuous improvement	P1, P6, P12, P17

	Project management	Break down project and tasks	P5, P14, P16
		Manage scope	P14
	Personal development and well-being	Good mental shift	P6, P7
		Work life balance	P2, P15
Agile challenges	Adopting agile practices	Resistance to change	P12, P13
		Agile mindset	P2, P4, P5, P10, P12, P13, P15
		Adopting agile practices	P1, P4, P5, P6, P8, P12, P13, P14, P17
	Leadership and decision making	Micromanagement	P5, P14
		Dictatorship	P1, P3, P6, P11
	Team engagement	Making team members feel safe	P10
		Getting team members engaged	P10, P17
	Customer involvement	Business stakeholders not versed on agile	P6, P13, P15
		No alignment from business and IT on agile practices	P11
	Planning and predictability	Provide customer with a definite deadline	P9, P16
		Predict time and resources	P3, P10

Additional support	Training and education	Agile training	P2, P4, P10, P12, P15
		Self-study	P15, P17
	Additional role support	Agile coach	P5, P6, P8, P10, P13, P14, P16
	Acceptance and understanding	Understanding of agile practices	P7, P11, P12, P13, P17
		Acceptance of using agile practices	P7, P9
	Implementation and practices	Apply agile practices without time constraints	P1, P6, P9
		Share input from learnings	P14, P15
Agile practices that lead to successful projects	Team dynamics and collaboration	Increased collaboration	P3, P4, P7
		Team goal aligned	P5, P13
	Communication	Continuous communication	P1, P3, P4, P7, P11
	Agile practices and processes	Minimum viable product (MVP)	P5, P6, P9, P13, P17
		Understanding of project objectives and value	P10, P12, P13
		Deliver earlier to market	P9, P15
	Planning and management	Planning and management	P2, P4, P7, P11, P13, P14
		Task management and execution	P5, P8, P10, P11, P14

	Problem solving	Coming up with solutions	P3, P11
Agile practices that influence employee performance	Task management and planning	Handling delays	P1, P4
		Performance and delivery	P1, P14, P15
		Planning	P2, P3, P4, P8, P10, P11, P12, P15
		Risk management and analysis	P1, P4, P5, P7
		Involvement	P17
		Agile practices	P14, P16
	Transparency and communication	Communication	P4, P5, P7, P10, P14
		Regular feedback loop	P6, P10, P13, P15
		Transparency across the team	P4, P10
	Employee development and well-being	Autonomy and independence	P5, P9, P10, P17
		Personal growth and development	P3, P6, P17
		Efficiency and productivity	P15
		Employee well-being	P5
	Team collaboration and culture	Performance and accountability	P6, P10
		Continuous improvement and alignment	P5, P6, P7

		Team dynamics and culture5	P7, P8, P13, P15, P17
	Progress and outcomes	Immediate feedback and rewards	P1, P10, P11, P13, P15
		Clear outcomes and value	P5, P12, P14
Agile ceremonies	Ceremonies	Daily stand-up	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15, P16, P17
		Sprint planning	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P13, P14, P15, P16, P17
		Sprint retrospective	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12, P14, P15, P16, P17
		Backlog/sprint grooming	P4, P5, P6, P8, P10, P14, P15, P16, P17
		Sprint review	P2, P8, P10, P15, P16
		Knowledge and sharing	P8, P10
		PI planning	P13, P16
Value of agile ceremonies	Daily stand-up value	Tracking and progress	P1, P2, P8, P13, P14, P16, P17

		Identifying and resolving issues	P2, P3, P4, P5, P6, P7, P8, P9, P13, P14, P17
		Communication and collaboration	P3, P11, P12, P17
		Understanding and supporting team members	P4, P6, P10, P11, P13, P17
	Sprint planning value	Planning and estimation	P1, P2, P8, P10, P14, P15, P16, P17
		Understanding and refining work	P3, P5, P11, P13, P14
		Goal setting and commitment	P8, P9, P10, P11
		Team dynamics and engagement	P17
		Visibility and predictability	P15
	Backlog/sprint grooming value	Understanding and refining work	P5, P14, P15
		Team awareness and visibility	P4, P6
		Continuous improvement and engagement	P6, P17
	Sprint review value	Demonstration and recognition	P8, P10, P15
		Evaluation and reflection	P16
	Sprint retrospective value	Reflection	P1, P14, P15, P17
		Continuous improvement	P1, P4, P5, P6, P7, P9, P12, P15, P17

		Team trust and accountability	P6, P11, P15
		Acknowledgement and learning	P9, P14, P15, P16
	Knowledge and sharing value	Learning and sharing	P8, P10
	PI planning value	Scope management	P13
		Purpose and clarity	P16
Existing/motivational outcomes	Existing outcomes using agile practices	Recognition	P1, P4, P10, P14, P15
		Team dynamics	P5, P6, P7, P8, P16, P17
		Sense of achievement and accomplishment	P3, P5, P8, P10, P11, P16,
		Professional development	P3, P8, P17
		Product delivery and business value	P3, P5, P7, P9, P10, P13, P15
	Motivational outcomes using agile practices	Personal growth and development	P10, P12
		Work satisfaction and accomplishment	P3, P9, P12, P13
		Respect and collaboration	P1, P7, P9, P12, P17
		Agile practices and mindset	P7, P8
		Flexibility and work-life balance	P2, P11

		Recognition and value addition	P3, P4, P5, P6, P9, P10, P13, P14, P15
Value/undervalued outcomes	Valued outcomes using agile practices	Recognition and feedback	P2, P4, P6, P7, P8, P9, P11, P12
		Team collaboration and culture	P1, P2, P4, P5, P9, P13, P14, P16
		Personal and professional growth	P1, P3, P13
		Delivery and business impact	P4, P6, P7, P9, P10, P15, P16, P17
	Undervalued outcomes using agile practices	Recognition	P3, P4, P5, P7, P8, P11, P11, P12, P16, P17
		Team dynamics	P2, P7, P15
		Feedback and individual value	P9, P10, P12, P15

4.4.1 Theme 1: Agile practice benefits

There are various benefits of agile practices that were identified through the thematic analysis from responses from participants during the interviews. Feedback from participants provided several answers that describe and outline the specific benefits of agile, which would influence employee performance during software development in South African IT organisations. The agile practice benefits theme emerged and was mapped to the expectancy variable because this helps employees believe that agile benefits will lead to better performance.

The secondary themes identified were considered as important features of agile practice benefits. Nine secondary themes emerged from the primary theme of agile practice benefits: (1) team dynamics and collaboration, (2) communication, (3) efficiency and productivity, (4) quality and delivery, (5) risk management and problem solving and (6) planning and adaptability, (7) continuous improvement and learning, (8) project management and (9) personal development and well-being.

The key aspects of agile practice benefits represent the specific benefits for each of the emerging secondary themes. Seven key aspects of team dynamics and collaboration were identified: team collaboration, team members carry individuals along the agile journey, features driven by the team, working towards a common goal, everybody is accountable, product owner mentality within teams and ability to make mistakes and learn from them. Three key aspects of communication were identified: enhanced communication, transparency and constant feedback. Three key aspects of communication were identified: communication, transparency and constant feedback. Three key aspects of efficiency and productivity were identified: productivity, quicker turnaround times and efficiency. Two key aspects of quality and delivery were identified: quality delivery and decrease defects. Two key aspects of risk management and problem solving were identified: manage risks and solve problems. Two key aspects of planning and adaptability were identified: improved planning and adapt to change. Two key aspects of continuous improvement and learning were identified: learning and upskilling and continuous improvement. Two key aspects of project management were identified: break down project and tasks and manage scope. Two key aspects of personal development and well-being were identified: good mental shift and work-life balance.

4.4.2 Theme 2: Agile practice challenges

There are numerous challenges of agile practices that were identified through the thematic analysis during the interview process and responses received from participants. Responses received from participants provided specific challenges experienced when using agile practices. Agile practice challenges raised would have a negative influence on employee performance during software development in South African IT organisations. The emerging agile practices challenges theme was mapped to the expectancy variable in the Expectancy, if these challenges occur, it is the belief that employee performance may decrease.

The secondary themes that surfaced were vital aspects of agile practice challenges. There were five emerging secondary themes from the primary theme: (1) adopting agile practices, (2) leadership and decision making, (3) team engagement, (4) customer involvement and (5) planning and predictability.

Key aspects of agile practice challenges were identified that describes each of the secondary themes. Three key aspects of training and education were identified: resistance to change, agile mindset and adopting agile practices. Two key aspects of leadership and decision making were identified: micromanagement and dictatorship. Two key aspects of team engagement were identified: making team members feel safe and getting team members engaged. Two key aspects of customer involvement were identified: business stakeholders not versed on agile and no alignment from business and IT on agile practices. Two key aspects of planning and predictability were identified: provide customer with a definite deadline and predict time and resources.

4.4.3 Theme 3: Additional support

Various additional support requirements using agile practices were identified to assist participants in using agile practices more effectively through the thematic analysis. Feedback from participants described different forms of additional support that were needed. Additional support that was raised, if provided would enhance employee ability to use agile practices effectively during software development in South African organisations. The additional support was an emerging theme and was linked to the expectancy variable. When employees are provided with the necessary support in using agile practices, it is the belief that the additional support will lead to better performance.

The secondary themes that evolved were crucial support features that would assist participants when using agile practices. Four secondary themes were identified and linked to the additional support primary theme: (1) training and education, (2) additional role support, (3) acceptance and understanding and (4) implementation and practices.

The key aspects of additional support were identified and linked to the secondary themes. Two key aspects of training and education were identified: agile training and self-study. One key aspect of additional role support was identified: agile coach. Two key aspects of acceptance and understanding were identified: understanding of agile practices and acceptance of using agile practices. Two key aspects of implementation and practices were identified: apply agile practices without time constraints and share input from learnings.

4.4.4 Theme 4: Agile practices that lead to successful projects

Responses from participants during the interviews provided multiple components of agile practices that assisted participants in delivering successful projects. Analysis of the results though the thematic analysis described the different aspects of agile practices that led to successful projects. Features of agile practices do assist participants in delivering successful software development projects within South African IT organisations. The emerging theme was mapped to the expectancy variable of the Expectancy. When employees use agile practices that lead to successful projects, it is the belief that using the agile practices will have a positive influence on employee performance.

Additionally, secondary themes identified described in more details what forms of agile practices assisted in leading successful projects. Moreover, these emerging secondary themes were linked to the primary theme. There were five secondary themes that emerged: (1) team dynamics and collaboration, (2) communication, (3) agile practices and processes, (4) planning and management and (5) problem solving.

The key aspects of agile practices that lead to successful projects were identified and associated with the secondary themes. Two key aspects of team dynamics and collaboration were identified: increased collaboration and team goal aligned. One key aspect of communication was identified: continuous communication. Three key aspects of agile practices and processes were identified: minimum viable product (MVP), understanding of project objectives and value and deliver earlier to market. Two key aspects of planning and management were identified: planning and preparation and task management and execution. One key aspect of problem solving was identified: coming up with solutions.

4.4.5 Theme 5: Agile practices that influence employee performance

Responses from participants provided results of features of agile practices that had an influence on employee performance. Through the thematic analysis process, various features of agile practices were identified that influenced employee performance. Agile practices that influence employee performance was an emerging primary theme. Aspects of agile practices does have an influence on employee performance. The emerging theme was linked to the expectancy variable as it is the belief that according to the Expectancy agile practices will lead to better employee performance.

The secondary themes were important contributions of agile practices that contribute to employee performance. Five secondary themes emerged that were associated with the primary theme: (1) task management and planning, (2) transparency and communication, (3) employee development and well-being, (4) team collaboration and culture and (5) progress and outcomes.

Linked to the secondary themes were key aspects that provided specific agile practices that influence employee performance during software development in South African IT organisations. The key aspects were associated with each secondary theme. Six key aspects of task management and planning were identified: handling delays, performance and delivery, planning, risk management and analysis, involvement and agile practices. Three key aspects of transparency and communication were identified: communication, regular feedback loop and transparency across the team. Four key aspects of employee development and well-being were identified: autonomy and independence, personal growth and development, efficiency and productivity and employee well-being. Three key aspects of team collaboration and culture were identified: performance and accountability, continuous improvement and alignment and team dynamics and culture. Two key aspects of progress and outcomes were identified: immediate feedback and rewards and clear outcomes and value

4.4.6 Theme 6: Agile ceremonies

Responses from participants provided the various agile ceremonies that they have been using during software development in South African IT organisations. During the thematic analysis, the different agile ceremonies were identified. Agile ceremonies provide structure and process to track work progress and communication amongst team members. The agile ceremonies theme emerged and was associated to the expectancy variable. By conducting these agile ceremonies, teams can work on continuous improvement that assist in delivering successful projects. Within the Expectancy, it is the belief that using these agile ceremonies will lead to better employee performance.

The secondary theme described the ceremonies that groups the key aspects. The key aspects identified described the different agile ceremonies that participants have been using. Seven key aspects of ceremonies were identified: daily stand-up, sprint planning,

sprint retrospective, backlog/sprint grooming, sprint review, knowledge and sharing and PI planning.

4.4.7 Theme 7: Value of agile ceremonies

Participants provided responses to the value received from each of the agile ceremonies they use. Through the thematic analysis there have been various forms of value that participants obtain from the each of the agile ceremonies they have been exposed to. Value from each of the agile ceremonies provided different aspects that have an influence on employee performance during software development in South African IT organisations. Through analysis of responses, value of agile ceremonies emerged as a primary theme. The value of agile ceremonies was linked to the expectancy variable. Employees need to feel confident that the agile ceremonies provide value. Within the Expectancy, it is the belief that the value agile ceremonies provide will lead to better employee performance.

The secondary themes and key aspects described each type of agile ceremonies, and the respective values provided. There were seven secondary themes identified: (1) daily stand-up value, (2) sprint planning value, (3) backlog/sprint grooming value, (4) sprint review value, (5) sprint retrospective value, (6) knowledge and sharing value and (7) PI planning value.

The key aspects identified described the value received from each of the agile ceremonies that were mapped to the secondary themes. Four key aspects of daily stand-up value were identified: tracking and progress, identifying and resolving issues, communication and collaboration and understanding and supporting team members. Five key aspects of sprint planning value were identified: planning and estimation, understanding and refining work, goal setting and commitment, team dynamics and engagement and visibility and predictability. Three key aspects of backlog/sprint grooming value were identified: understanding and refining work, team awareness and visibility and continuous improvement and engagement. Two key aspects of sprint review value were identified: demonstration and recognition and evaluation and reflection. Four key aspects of sprint retrospective value were identified: reflection, continuous improvement, team trust and accountability and acknowledgement and learning. One key aspect of knowledge and sharing value were identified: learning and sharing. Two key aspects of PI planning value were identified: scope management and purpose and clarity.

4.4.8 Theme 8: Existing/motivational outcomes

Participants responses provided feedback relating to the existing and motivational outcomes obtained when using agile practices during software development in South African IT organisations. Using the thematic analysis, various existing and motivational outcomes were identified. Responses from participants provided different forms of existing and motivational outcomes that employees obtain when using agile practices. The emerging theme through the thematic analysis was existing/motivational outcomes. Employees need to obtain an outcome using agile practices when increased employee performance is met. Existing/motivational outcomes was mapped to the instrumentality variable within the Expectancy. Instrumentality refers to the belief that if an individual performs well, it will lead to desirable outcomes.

The secondary themes identified related to the existing and motivational outcomes that participants obtain when using agile practices. The secondary themes were linked to the primary theme. There were two emerging secondary themes: (1) existing outcomes using agile practices and (2) motivational outcomes using agile practices.

The key aspects identified described types of outcomes that are existing and motivational. Five key aspects of existing outcomes using agile practices were identified: recognition, team dynamics, sense of achievement and accomplishment, professional development and product delivery and business value. Six key aspects of motivational outcomes using agile practices were identified: personal growth and development, work satisfaction and accomplishment, respect and collaboration, agile practices and mindset, flexibility and work-life balance and recognition and value addition.

4.4.9 Theme 9: Valued/undervalued outcomes

There were multiple responses relating to valued and undervalued outcomes from participants' feedback. Using the thematic analysis, multiple forms of valued and undervalued outcomes were identified that participants noted from using agile practices. Using agile practices during software development in South African IT organisation, participants would like to obtain more of the valued and undervalued outcomes that are perceived in a positive approach that influences employee performance levels using agile practices. The emerging theme through the thematic analysis was valued/undervalued

outcomes that participants place on the outcomes received. Valued/undervalued outcomes was linked to the valence variable within the expectancy variable, this is the value that employees place on the outcomes received using agile practices.

The secondary themes described the different types of valued and undervalued outcomes received using agile practices. The emerging secondary themes were linked to the valued/undervalued outcomes primary theme. There were two secondary themes that emerged: (1) valued outcomes using agile practices and (2) undervalued outcomes using agile practices.

The key aspects described the different types of valued and undervalued outcomes received when using agile practices. Four key aspects of valued outcomes using agile practices were identified: recognition and feedback, team collaboration and culture, personal and professional growth and delivery and business impact. Three key aspects of undervalued outcomes using agile practices were identified: recognition, team dynamics and feedback and individual value.

4.5 CONCLUSION

The purpose of this chapter was to present the data from the 17 participants interviewed. The data collected was analysed and the findings were defined using the interview guide process. The interview guide process allowed the results to be analysed per group which consisted of the following categories: background, expectancy, instrumentality and valence.

Interview questions asked within the background category was aimed at introducing the participants and gathering an understanding of their experiences using agile practices. The expectancy interview questions were used to gain information on the benefits and challenges using agile practices, as well as additional support participants would need to use agile practices more efficiently. Additionally, this category explored to understand the influence of agile practices on employee performances and what parts of agile practices assisted participants to deliver successful agile projects. This category also aimed at gaining information of the different types of agile ceremonies participants conduct and the value received from each of the agile ceremonies. The instrumentality category investigated what existing outcomes participants obtain using agile practices and what types of outcomes

motivate them when using agile practices. The valence category aimed at understanding what outcomes participants value and what are undervalued when using agile practices that contribute to the level of performance put into using agile practices.

The findings of agile benefits when using agile practices were team dynamics and collaboration, communication, efficiency and productivity, quality and delivery, risk management and problem solving, planning and adaptability, continuous improvement and learning, project management, personal development and well-being.

The findings of agile challenges when using agile practices were adoption of agile practices, leadership and decision making, team management, customer involvement, planning and predictability. Moreover, additional support required to use agile practices more confidently were found, training and education, additional role support in relation to agile coaches, acceptance and understanding, implementation and practices.

Efforts using agile practices that assisted participants in delivering successful agile projects were, team dynamics and collaboration, communication, agile practices and processes, planning and management and problem solving.

During the analysis, the influence agile practices have on employee performance was task management and planning, transparency and communication, employee development and well-being, team collaboration and culture and progress and outcomes.

The following agile ceremonies were found to be used by participants with each of the ceremonies providing different forms of value: daily stand-up, sprint planning, backlog/sprint grooming, sprint review, sprint retrospective, knowledge and sharing and PI planning.

The findings of the existing outcomes participants received when using agile practices were recognition, team dynamics, sense of achievement and accomplishment, professional development and product delivery and business value. Additionally, the following outcomes that would motivate participants to perform better in agile projects were: personal growth and development, work satisfaction and accomplishment, respect and collaboration, agile practices and mindset, flexibility and work-life balance and recognition and value addition.

Findings from participants relating to valued outcomes received for performance in agile projects were recognition and feedback, team collaboration and culture, personal and professional growth and delivery and business impact. Additional findings were outcomes that participants identified that were undervalued in the current system were recognition, team dynamics and feedback and individual value.

From the findings of the analysed data, 9 themes emerged which are defined in Section 4.4. The emerging themes defined will be used in chapter 5 to form the discussions of the findings of the study. The emerging themes were agile practice benefits, agile practice challenges, additional support, agile practices that lead to successful projects, agile practice that influence employee performance, agile ceremonies, value of agile ceremonies, existing/motivational outcomes and valued/undervalued outcomes.

5 DISCUSSION OF FINDINGS

5.1 INTRODUCTION

The discussion chapter aimed to analyse and interpret the findings of the data analysis presented in Chapter 4 using thematic analysis. This chapter presents the results from the data analysis and associating the results to existing literature. The primary objective of this study is achieved through answering the sub-research questions. Section 5.2 discusses the main research question by integrating the findings from the sub-research questions. Section 5.3 discusses the importance of employee performance in the context of existing literature in line with SRQ1. Section 5.3 discuss the benefits and challenges of agile practices according to SRQ 2. Furthermore, it discusses the additional support necessary to use agile practices effectively. Section 5.4 discusses the implementation of agile practices using agile ceremonies and the value it provides in line with SRQ 3. Section 5.5 discusses the contribution of agile practices on employee performance. Additionally, it discusses what forms of agile practices lead to successful project delivery in accordance with SRQ4. Section 5.7 explains the theoretical framework in relation to agile practices and employee performance.

5.2 DISCUSSION MRQ: AGILE PRACTICES AND ITS CONTRIBUTIONS TOWARDS EMPLOYEE PERFORMANCE

How does the implementation of agile practices in a South African IT workforce contribute towards employee performance?

The main research question is made up by answering the sub-research questions. The discussion of themes that emerged in Chapter 4 using the thematic analysis was used in the discussion of the sub-research questions in this chapter.

The aim of this study was to understand how the implementation of agile practices in South African IT organisations contribute towards employee performance. The discussion of the main research question uses the findings from the sub-research questions to provide a comprehensive understanding of employee performance in the context of agile practices.

The findings from existing literature indicate that employees contribute to the effectiveness and success of an organisation. It is prudent for organisations to provide environments that cater to improve employee performance that include healthy working conditions, management support, learning environments that lead to organisational growth and sustainability.

The findings presented numerous benefits of agile practices and obstacles that are experienced by participants. The benefits included improved team dynamics, increased collaboration, enhanced communication, increased productivity, timeous product delivery with improved quality, risks are managed more effectively, and problem-solving capabilities are increased; planning is more effective and allows for adaptability when changes occur, teams are always working towards continuous improvement; employee personal development and well-being are considered to promote a healthy working environment. These benefits have a positive influence on employee performance. On the other hand, challenges that were found comprised of employee difficulties in adopting agile practices, ineffective leadership that comprised of micromanagement, employee are not fully engaged, lack of customer involvement and the struggle of predicting time and resources within iterations. The challenges are obstacles that can hinder employee performance. Furthermore, our finding highlighted additional support that would enhance employees' abilities in using agile practices more confidently, namely agile training, greater interest of agile coaches being present to guide teams, acceptance of agile and the ability to implement agile practices without any time constraints. Addressing these additional support criteria can improve employee performance further.

The findings showed how agile practices are implemented using the different agile ceremonies. Agile ceremonies used include daily stand-up, sprint planning, sprint retrospective, backlog/sprint grooming, sprint review, knowledge and sharing and PI planning. Value received from daily stand-up include tracking progress, identifying risks early on and finding quick resolutions to them, enhanced communication and collaboration. Sprint planning provides the following value: effective planning, clearer understanding of work, setting clear goals, increased team engagement and transparency of work. Backlog/sprint grooming value provides teams with an awareness of work to be delivered and gaining an understanding of tasks. Frequent backlog/sprint grooming sessions allows

teams to continuously improve. Sprint reviews provide teams with a platform to showcase their efforts and evaluate on the outcome of work completed which leads into the sprint retrospective ceremony that provides a lot of value by allowing teams to reflect on their performance and processes, and identify areas to improve on. Additionally, it's an environment that promotes learning from failure and trust within the team. Agile practices rely on continuous improvement and knowledge and sharing sessions which are not generally formal ceremonies encourage learning and upskilling within the team. Understanding the purpose of a project enhances team capability in progressing through the project. There have been various value additions identified from each of the agile ceremonies that have an influence on employee performance.

The findings showed how agile practices influence employee performance. The following aspects of agile practices influenced employee performance: planning, transparency, communication, employee development and well-being, team culture, continuous progress and defined outcomes. Furthermore, successful project delivery has an increased effect on employee performance (Sarwar, Orr, & Malik, 2021) (Lindsjørn, Sjøberg, Dingsøyr, Bergersen, & Dybå, 2016). The findings from aspects of agile practices that lead to successful projects are collaboration, communication, planning, defining an MVP, clear understanding of objectives, early to market delivery, task management and problem-solving.

5.3 DISCUSSION OF SRQ1: IMPORTANCE OF EMPLOYEE PERFORMANCE

Why is employee performance important in a workforce?

5.3.1 Purpose

Employees play a vital role in an organizations overall success. Understanding the importance of employee performance is key to any organization. Sub-research question 1 intended to identify the importance of employee performance from existing literature in Chapter 2. Understanding the importance of employee performance in this study, set the foundation for exploring how agile practices can contribute towards increased employee performance. The importance of employee performance is fundamental in improving the wider spectrum that encompasses productivity, morale and overall organizations

effectiveness. Understanding the importance of employee performance supports the main research question.

5.3.2 Employee performance

Employee performance is a key driver to effectiveness and success of organisations. For organisations to maintain a competitive advantage in their industry, is it critical to ensure that employee performance is at its highest level. This enhances organisations in achieving their business strategies and taking their employees along in the journey.

Increased employee productivity leads to increased employee performance. Additionally, increased productivity has a positive correlation to organisations being profitable (Hanaysha, 2016). It is important for organisations to provide a healthy working environment to allow employees to thrive. Working environments that are not appealing to employees have a negative influence on employee performance. Healthy working environments foster teamwork, collaboration and a culture that is supportive (Diamantidis & Chatzoglou, 2019). A working environment where communication channels are defined and employees are able to communicate both written and verbal enhance collaboration, productivity and performance (Diamantidis & Chatzoglou, 2019). Organisational trust towards employees is critical where short-term and long-term objectives are clearly defined. It provides employees with stability that relate to positive employee performance (Bapna, Langer, Mehra, Gopal, & Gupta, 2013). Furthermore, this relates to organisations' turnover rate, and instability affects employee performance. High performing employees tend to have a positive effect on organisational success, thus leading to increased retention of employees and reduction in recruitment cost (Hancock, Allen, Bosco, McDaniel, & Pierce, 2013).

The level of work autonomy promotes an employee's ability to be innovate and creative which in turn influences employee performance (Diamantidis & Chatzoglou, 2019). Additionally, providing employees with the opportunity to have control of tasks and make decisions impact their performance (Kooij, et al., 2013). Developing employees by providing training and mentorship improves their skills and leads to positive performance (Elnaga & Imran, 2013).

Employee performance is key to organisational success and its ability to grow. Healthy working environments promote team culture and collaboration. Increased employee performance promotes increased productivity, drives employee creativity and reduces staff turnover rate. It provides sustainability to organisations in achieving increased financials.

5.4 DISCUSSION OF SRQ2: AGILE BENEFITS AND CHALLENGES

What are the benefits and challenges of agile practices to employees in a South African IT workforce?

5.4.1 Purpose

Agile practices offer various benefits that have a positive influence on employee performance and agile also presents challenges that hinder performance. Additional support mechanisms can help teams navigate through the complexities of using agile practices to enhance employee performance. Sub-research question 2 aimed to identify the benefits and challenges derived when using agile practices in South African IT workforces. Additionally, this question intended to understand what additional support agile practitioners require in using agile practices more effectively. This question intended to provide a balance to the study in answering the main research question to understand the positive influence and obstacles experienced in agile practices that impact employee performance. Agile benefits, challenges and additional support is grouped under the expectancy variable where it is the belief that increased effort will lead to increased employee performance. The benefits of agile practices sought to determine what benefits have a positive influence on employee performance. The challenges aimed to define what obstacles affect employees when using agile practices that have a negative influence on their performance. Additional support required intended to define what mechanism can be provided to employees to use agile practices more confidently.

Theme 1 (agile benefits) identified the benefits gained from using agile practices. Feedback from participants showed that numerous benefits using agile practices are believed to have a positive influence on employee performance with regards to team dynamics and collaboration, communication, planning, continuous improvement, learning, problem solving, personal development and well-being. 9 secondary themes and their related key

aspects were identified as benefits derived from using agile practices from the perspective of agile practitioners using agile practices within South African IT workforces.

Theme 2 (agile challenges) defined the challenges derived from agile practices. Responses from participants presented various challenges using agile practices that are suggested to have an impact on employee performance which include adopting agile practices, leadership, team engagement, customer involvement and planning. 5 secondary themes and key aspects related to each secondary theme were identified from participants as challenges when using agile practices in South African IT workforces.

Theme 3 (additional support) noted the additional support required in using agile practices more effectively. Feedback from participants offered several additional support mechanisms in addressing the complexities when using agile practices which relate to training, the understanding and acceptance of agile practices, additional role support and the implementation of agile practices. 4 secondary themes were defined with key aspects related to them from the viewpoint of agile practitioners working within South African IT workforces.

5.4.2 Agile benefits

5.4.2.1 Team dynamics and collaboration

Our results found that agile practices have substantially enhanced team dynamics and collaboration. Participants reported that agile practices provide a setting that increases a sense of unity amongst the team, which is attributed to working towards a common goal and delivering as a team. Additionally, agile adopts a more cohesive team environment that allows for team members to work much closer and collaboratively. Below are the different key aspects explained within the team dynamics and collaboration secondary theme.

5.4.2.1.1. Collaboration

Collaboration makes provision for team members to work together for a purpose in order to achieve a common goal. Results show that collaboration is a benefit in agile practices. Participants reported that agile ceremonies allow for team members to work closely together in the various agile ceremonies to plan, give feedback and problem solve. Collaboration is a key component of the foundation of agile practices and great emphasis is place on it

according to Kropp, Meier and Biddle (2016). According to P7 "*the way we work has changed from being in silos to working and being more collaborative within the team."* This suggests that using agile practices and working collaboratively has broken down the disconnect where teams previously worked in silos. P11 indicated that collaborating with different teams are enhanced "*better cross team collaboration.*"

5.4.2.1.2. Team members carry individuals along the agile journey

Agile practices encourage an environment wherein team members support and mentor one another through the agile journey. Following this method allows the team to understand the agile practices that are being used which influences the employee performance. According to P6, "*individuals that are lagging behind in the journey as a team matures, the team will carry you along the journey and that is also the benefit of having an agile team setting perspective which is powerful.*" This suggests that the team will support each other in progressing quickly and highlights the collaborative and supportive culture. Carrying team members along the agile journey was not identified in the existing literature and thus emerged as a new benefit that can be added to the South African IT workforce context.

5.4.2.1.3. Features driven by the team

Agile teams have full context of the application from the processes and technical perspective and understand the functionality that exists within the application. Having this knowledge allows the team to make decisions on what work to take into iterations. P6 mentioned that "*the team knows the functionality that exists within the application at a business level as well as at the technical level. Effectively the team are guiding the decision making around what can and can't do together with the time frame of a particular announcement or new feature and this is done collectively with the business owner of that particular application or solution.*" This indicated that the team plays a crucial role in decision making regarding what is viable for the team to start working on. Iqbal, Omar and Yasin (2019) supports this where it's mentioned that the team determines what work is to be done once there is sufficient information relating to the feature.

5.4.2.1.4. Working towards a common goal

Having a shared vision and working towards a common goal is a benefit when using agile practices. Allowing the team to have focus on a single objective sets the basis of cohesion

and enhancing productivity. Collective team delivery leverages the diverse skillset all team members possess to achieve a single goal. "*They all individually flourish within their own areas since they all are focusing on a common goal*" was added by P6. Additionally, P7 indicated that different disciplines within the teams focus on a common a goal "*we work towards one goal as a team from different spheres.*" This capability provides a good mental shift around the team, and this allows them to succeed. According to (Iqbal, Omar, & Yasin, 2019), team members work collaboratively to achieve goals set out collectively.

5.4.2.1.5. Everybody is accountable

Agile practices promote a sense of responsibility and ownership to individuals within the team. Everyone has a part to play within the team that aids in the success of the project, thus ensuring commitment from everyone is given. P13 mentioned that "*everybody is accountable and not just top down and that everybody has a role to play in the agile framework which is quite beneficial.*" This notes that everyone has a specific role to play in influencing the success of the project outcome and the accountability is shared amongst the team members. (Gren & Ralph, 2022) states that team members from different skillsets within the team should have equal importance and share accountability for the work that is being delivered.

5.4.2.1.6. Product owner mentality within teams

Product owner mindset in agile practices allows everyone in the team to have a broader understanding of the product or solution that includes the strategic vision, being customer focused that allows the team to steer one another in a direction towards success so that the project evolves and meets customer expectations. P13 added that "*agile gives everyone that product owner mentality within the teams.*" This suggests that having that mindset in the team holistically, encourages the team to consider both the business value and technical perspective of the work being carried out. There is no existing literature that relates to this as a benefit which leads us to believe that this is a new agile benefit.

5.4.2.1.7. Ability to make mistakes and learn from them

Agile practices foster an environment which is safe and allows the team to make mistakes and take out learnings from it to work towards continuous improvement. P17 says that while using agile practices "*you have the ability to make mistakes, to learn from them, and then*

to incorporate in the very next iteration or very soon thereafter." This suggests that agile practices allow teams to fail fast and improve faster because of them. Choudhary and Piparo (2017) adds that the impact of failing, provides valuable learnings that can be taken forward.

5.4.2.2 Communication

Results from participants found that communication is a key component in agile practices. Great enthusiasm from participants noted communication as an agile benefit. Furthermore, the key aspects in the communication secondary theme are explained.

5.4.2.2.1. Enhanced communication

Agile practices foster an environment where team members can improve their level of communication. Communication is enhanced through the different agile ceremonies that the teams conduct which allows them to provide updates, raise impediments and solve problems. P2 mentioned "*a benefit of agile is communication that was quite important. Agile encourages more communication between different members of the team and it builds a good relationship with one another within your team.*" P1 indicated that agile upholds communication "*enforces communication.*" (Choudhary & Piparo, 2017) suggested that agile practices put emphasis on communication as a benefit as this allows the development team to work closer and communicate with the end user frequently.

5.4.2.2.2. Transparency

Agile practices allow teams to use tools to track progress of work being completed and this is visible throughout the team. It allows teams to have a clear understanding of progress and risks and sets a tone for open and honest conversations. "*Transparency in terms of where each of the team members are, how they are progressing on their tasks and the team are able to address any challenges that come about*" was added by P4. "*A lot of transparency*" was indicated by P9 when using agile practices. According to Solinski and Petersen (2014), transparency as one of the top benefits in his study.

5.4.2.2.3. Constant feedback

Agile practices encourage constant feedback between the delivery team and the customer. Agile practices provide setting for continuous feedback to allow teams to work towards continuous improvement and adapt to changes that arise. Additionally, feedback also

includes the feedback loop received from customers when engaging with the product. P17 mentioned "*agile environments are very closely tied to that it is being able to deliver business value significantly sooner, which then gives us feedback to be able to take into the next iteration as improvements to be made on what has been built to enhance user experience.*" Feedback is received a lot faster according to P10 "*feedback loop is shorter.*" This suggest that the team can receive feedback (both positive and negative) and receive this feedback sooner, which allows the team to improve on it in the next iteration. According to Masood and Farooq (2017), agile practices seek customer feedback after every deliverable to ensure the product is done in line with customer expectations.

5.4.2.3 Efficiency and productivity

Agile practices are setup to increase efficiencies during software development that assists teams in increasing productivity. Our results show that using agile, enhances efficiency, increases productivity and allows teams to deliver products quicker. The key aspects within the efficiency and productivity secondary theme are explained below.

5.4.2.3.1. Increased productivity

Processes followed within agile practices provide a smooth workflow and removes processes that do not provide value to the team by providing the team the ability to focus on product delivery. Agile practices include multiple cycles, and in each cycle working software is produced which increases productivity. P3 mentioned "*you have a clear outline of what you're going to do when the sprint begins and what you are working towards and this increases productivity.*" This suggests that once the team has a clear understanding of the sprint goals and what work needs to be done, it provides the team with focus and leads to increased productivity. Productivity is a key benefit in agile practices, and this is enhanced through communication, coordination and team member trust (Iqbal, Omar, & Yasin, 2019).

5.4.2.3.2. Quicker turnaround times

One of the principles of agile is to provide the customer with working software more frequently and faster, as opposed to traditional software development methodologies. This is made possible by splitting the project into smaller deliverables that allows for rapid development. "*Quicker we go to market in terms of delivery, we can enable the business while still building further upon the product*" was added by P5, this is supported by P11 who

indicated "*promotes a quicker turn around."* Reducing the time to market not only adds value to the customer but also reduces development costs and time (Choudhary & Piparo, 2017).

5.4.2.3.3. Efficiency

Agile practices provide a setting that encourages efficiency. This is assisted through the sprint retrospective sessions where teams identify inefficiencies and determine ways to address them to work towards continuous improvement. P12 added "*you begin to see how your value and how your effort translates to business value and then later becomes the delivery of the project. If the plan is executed well, you could reach market quicker and see the efficiency of the work*." This suggests that efficiency can be seen when planning is executed successfully. Agile promotes efficiencies and this can be measured by the quality of the solution delivered and the amount of system bugs raised (Iqbal, Omar, & Yasin, 2019).

5.4.2.4 Quality and delivery

Agile practices follow an iterative development approach, and this allows teams to identify bugs and fix them early on, leading to increased quality of software. Additionally, projects are broken down into manageable pieces of work, thus enabling the team to deliver working software frequently. Our result show that quality and delivery is a benefit of agile and the key aspects are explained below.

5.4.2.4.1. Quality delivery

Agile teams are made up of individuals from different roles that include product owners, developers and testers. These cross-functional teams work towards a common goal that ensures the product is delivered with high quality and that meets the customers' expectations. "*The quality aspect of the final delivery, since we have that time, we output much better quality, which leads to fewer defects in our production environment*" was mentioned by P15. Furthermore, P1 endorsed this as well "*deliver quality.*" This suggests that having sufficient time allows the team to develop software that has fewer bugs and increased quality. Quality is a benefit of agile practices that encompasses fewer system defects, increased reliability and an application that supports the end user experience (Solinski & Petersen, 2014).

5.4.2.4.2. Decrease defects

Agile practices are designed for continuous testing to be done as soon as a piece of code is completed, and this prevents bugs from rising into bigger issues. This makes it easier for the team to detect bugs and fix them earlier on. As mentioned above by P15, "*quality of the delivery leads to few defects being identified*." This ensures that customers are provided with good quality software, with a reduction on system issues that will not impact their business processes. A study done by Kiss and Rossi (2018) mentions that fewer defects are raised when using agile practices and that the fixed rate of defects were noted as one of the main benefits of agile.

5.4.2.5 Risk management and problem solving

Agile practices are designed to assist teams in raising risks earlier and finding mitigating processes to deal with them. Additionally, frequent communication within the team provides opportunities to brainstorm and propose solutions to problems. This section details how risk management and problem solving is a benefit according to our results.

5.4.2.5.1. Manage risks

Agile ceremonies provide a platform for regular team check-ins and allow for risks to be identified. Monitoring risks and defining ways to mitigate them promotes the team's adaptability to change. "*The ability to identify risk earlier in the process and to remove the impediments that one might experience*" was mentioned by P7. Additionally, P16 indicated that risks are managed much faster "*resolve them quicker.*" Having agile practices to promoting the team's ability to handle risks faster, allows the teams to find solutions to them sooner to continue working towards the sprint goal. Agile projects are efficient in identifying risks before they turn into bigger issues and this knowledge assists in future projects when similar risks occur (Masood & Farooq, 2017).

5.4.2.5.1. Solve problems

Agile practices put a great deal of emphasis on teams working collaboratively. This allows the teams to raise issues and collaboratively design effective solutions to solve them. P9 added that "*the team works together in the agile setting with individuals from different roles all part of the same team. By having that in place, you work as a team and it's easy to solve issues.*" P17 indicated that problem solving in agile is done collectively "*everybody is looking*

at the same problem at the same time and coming at that problem from different perspectives and solving it." This suggests that working together assists the team in solving problems. Agile practices allow for risks to be detected easier, and the solutions defined to these issues are more effective (Garcia, Hauck, & Hahn, 2022).

5.4.2.6 Planning and adaptability

Agile practices are designed to guide teams in continuously planning from the project inception to each iteration. Enhanced planning promotes teams' ability to respond to changes and adapt accordingly. One of the agile values is agile teams responding to changes quickly. This section details the planning and adaptability key aspects from our results.

5.4.2.6.1. Improved planning

Agile practices encourage teams to plan effectively and be flexible when changes occur. Sprint planning and daily standups allow teams to refine their plans when changes occur as the project evolves while still maintaining project goals to meet customer needs. "*Planning is more useful in the sense we are breaking down work using agile methodologies, and it gives you a better understanding of what is required*" was noted by P2. P3 indicated that agile practices aids team in planning "*helps a lot in your planning.*" This advises that effective planning sets the foundation for teams to work towards sprint and project success. According to Serrador and Pinto (2015), agile practices do not focus on intense planning, rather it ensures that the team has continuous control over the requirements so when changes occur, the team are flexible in adapting.

5.4.2.6.2. Adapt to change

One of the values of agile is responding to change over following a plan. Agile is designed to welcome change in requirements as needed to ensure customers are provided with products that meet their needs to increase their competitive advantage in the market. P10 adds "*you are able to respond to change a lot quicker and change your direction a lot quicker.*" P8 reinforces team's adaptiveness in agile where they are able to "*effectively adapt to the changes.*" For organisations to remain competitive in the industry, agile teams' flexibility to adapt to these changes allows businesses to compete in the market (Ciric, Lalic, Gracanin, & Palcic, 2018).

5.4.2.7 Continuous improvement and learning

Continuous improvements are what agile teams strive towards from iteration to iteration. This sets the foundation for working efficiently and delivering quality products. Learning is an important benefit that enhances individuals' skills over time. Results within this section can be attributed to continuous improvement and participant learning, which are benefits of agile.

5.4.2.7.1. Learning and upskilling

Agile teams are afforded the opportunity to work towards gaining new knowledge and improving their skills level. Continuous feedback and sprint retrospective sessions allow individuals to reflect on their performance and identify areas that they can improve on. This includes keeping up to date with the last technology and industry updates. P6 mentioned "*I've seen through experience that juniors excel phenomenally and also your seniors because they guide the juniors and through that they then upskill themselves from a leadership perspective and solutioning perspective.*" Learning opportunities provides teams with the ability to grow was indicated by P15 "*grow themselves from a learning.*" This suggests that agile practices promote learning amongst the team and this has a positive impact on personal and project delivery. By sharing knowledge within the team this leads to enhanced learning and innovation as a benefit to agile teams (Masood & Farooq, 2017). Continuous learning is an agile benefit, and that failure should be seen as valuable opportunities to learn from (Sandhu, 2021).

5.4.2.7.2. Continuous improvement

Agile teams follow development processes in an iterative nature that allow teams to work with manageable pieces of tasks to deliver. Using sprint retrospectives after each iteration enables the team to assess their progress and identify improvements elements to take into the next iteration. "*Continuous improvement, I've seen this in various teams improve iteration by iteration from a retrospective perspective*" was added by P6. P12 indicated that a benefit realized is "*we see that it is continuous improvement.*" This suggests that in every facet of agile practices that includes the project and agile processes being followed, teams are constantly seeking to improve on them. Continuous improvement is almost guaranteed when agile practices are implemented correctly and allows teams to flourish (Lous, Tell, & Michelsen, 2018).

5.4.2.8 Project management

Agile teams follow processes that provide structured approaches in planning, breaking down work and managing scope of the project which enhanced project management capabilities. Our results show that breaking down tasks and managing scope is a benefit of agile.

5.4.2.8.1. Break down project and tasks

Delivering working software frequently is one of the principles of agile. This is made possible by breaking down the project into smaller manageable pieces. Additionally, this relates to delivering value in smaller increments continuously. P16 mentioned "*it fosters the culture of collaboration and breaking down work into smaller functionalities which then helps us to see the results a bit quicker than we would when using waterfall.*" P14 supports this practice that makes the work attainable by indicating "*we are able to breakdown task into smaller deliverables.*" This practice makes the workload manageable on the team to be completed in a sprint so that workable software can be delivered thereafter. Breaking down the project into smaller activities is a fundamental difference that is applied to agile practices compared to traditional methodologies (Koi-Akrofi, Koi-Akrofi, & Matey, 2019).

5.4.2.8.2. Manage scope

Agile ceremonies offer teams the opportunity to manage project scope through sprint planning, sprint grooming and daily standups. Agile teams drive which features to bring into sprint and this provides the ability to manage scope that can be delivered within an iteration. "*Benefits are that we are able to manage scope within the agile methodology*" as mentioned by P14. While agile practices allow for changes, it allows the team to manage the scope of the project so that it does not spiral into unexpected project sizes. Project scope needs to be clearly defined from project inception and through the cycle of the project, this can be managed through effective planning sessions and regular scope reviews (Marnada, Reharjo, Hardian, & Prasetyo, 2022).

5.4.2.9 Personal development and well-being

Agile practices promote a healthy environment that has a positive influence on employees' personal development and well-being. Our results show a great deal on personal development and well-being as a benefit of agile.

5.4.2.9.1. Good mental shift

Agile practices encourage an environment for the agile team to continuously learn and grow. It provides opportunities for teams to reflect on their performance, celebrate successes and learn from failures. It instills a mindset to develop resilience and have a positive outlook. "*Agile provides a team setting for individuals to flourish within their own domain while all focusing on a common goal, and this becomes a good mental shift around the team*" was mentioned by P6. This suggests that while agile practices have processes that can be followed, it provides the team with a positive mindset change. Agile practices provide teams with a positive mindset change that allows teams to solve problems and work collaboratively (Miler & Gaida, 2019).

5.4.2.9.2. Work life balance

Agile practices put higher consideration on the people as opposed to the processes and tools. Agile teams are provided with a foundation to drive the planning of work for each iteration that is manageable, and this supports having that work-life balance. Workload is managed more effectively to avoid burnout of the team. P2 mentioned "*agile allows you to manage your work, manage your time better, and you are still able to complete your work on time with quality and you still have your time afterwards for your own life as well.*" According to P15, agile practices provide the team with a healthy balance "*benefits the team from a work life balance.*" This suggests it freezes up the teams' time and do not feel that they are overburdened with work. The implementation of agile practices effectively is a result of agile teams having a work life balance and reduction in stress levels (Kropp, Meier, & Biddle, 2016).

5.4.3 Agile challenges

5.4.3.1 Adopting agile practices

Agile adoption raises a few challenges that agile teams face during the transition period which include resistance to change, adopting an agile mindset and adopting agile processes. Our results show that these challenges occur when teams are transitioning to agile and when new team members join.

5.4.3.1.1. Resistance to change

Being accustomed to using traditional agile methodologies and having uncertainty in implementing new ways of work is a fundamental challenge agile teams experience. The resistance to change includes both agile teams and business stakeholders. "*Adoption takes time when people are conditioned in the way that they work to bring a new methodology. The new way of work is not easy, and some individuals are resilient, and others are resistant to change, and that is raised as the team's difficulties*" was mentioned by P12. Adopting agile practices without prior knowledge is posed as a challenge and this impacts the teams from the inception of an agile project (Masood & Farooq, 2017).

5.4.3.1.2. Agile mindset

Developing an agile mindset includes collaboration, continuous improvement, adapting to changes and being flexible. Instilling an agile mindset is challenging when agile teams are used to more rigid structures and processes. P10 adds "*bringing that agile mindset across is quite challenging, but once the team understands the importance of the processes and the ceremonies and how it contributes to them, it provides a shift in the thinking.*" P2 indicated that getting all members on the same mindset is a challenge "*everyone is not on the same mindset.*" This suggests that agile processes in a team can be mapped out, however if the team do not have that agile mindset instilled, it proves to be an obstacle in following agile practices. Adopting an agile mindset is a key challenge but less consideration is placed on it in agile teams that have a further impact on agile teams being successful (Neumann, Kuchel, Diebold, & Schon, 2021).

5.4.3.1.3. Adopting agile practices

Failure to understand agile practices affects agile teams in adopting agile practices, including processes, roles and responsibilities. This could be related to the lack of training. "*People trying to adopt agile practices that are unfamiliar to them, so they unwilling to adopt the agile methodology*" was mentioned by P5. "*Adopting to agile*" is a challenge raised by P6. This suggests that the reluctancy in adopting agile practices, makes it difficult for individuals to understand the value agile provides. Adopting agile practices is a major barrier for agile teams and this can be attributed to resistance to change and agile culture that includes respect and trust within the team (Neumann, Kuchel, Diebold, & Schon, 2021).

5.4.3.2 Leadership and decision making

Effective leadership support is vital within agile teams to deliver successful projects. This section explores issues from or results that include micromanagement and dictatorship as challenges experienced within agile teams.

5.4.3.2.1. Micromanagement

Innovation and creativity stem from self-organising teams that have increased autonomy. Empowering agile teams to continuously improve by reflecting and making informed decisions to succeed can be hindered when being micromanaged. This results in a reduction in productivity, performance and morale level. P5 mentioned "*agile is about flexibility, freedom and a work life balance. This can be affected by being micromanaged.*" This suggest that micromanagement leadership styles have a knock-on effect in teams being empowered and provide value. Agile leaders have adopted a coaching leadership style and individuals that were used to making decisions independently in the past, tend to bring back old habits that include micromanagement (Reunamäki & Fey, 2023).

5.4.3.2.2. Dictatorship

Dictatorship from leaders in agile contradict the collaborative and supportive style of agile. Decisions made by leaders without input from the team leads to a lack of engagement and buy-in. P6 mentioned "*I've seen many transformations fail because of dictatorship,*" furthermore P6 adds "*on this transformational journey that I was on, dictatorship was a super battle for me.*" P11 indicated that "*being dictated*" is a challenge that limits the teams in succeeding. This suggest that dictatorship does not allow for teams to be involved in decision making and providing value to the team. Leadership style that is authoritative has a negative effect on agile teams (Bapna, Langer, Mehra, Gopal, & Gupta, 2013).

5.4.3.3 Team engagement

Team engagement is a fundamental component for the success of agile projects. Our findings detail challenges related to team engagement that include teams feeling safe and getting teams to be engaged in agile teams.

5.4.3.3.1. Making team members feel safe

Developing a culture in agile teams where individuals trust and respect one another is important in agile. This creates an environment where teams work collaboratively and communicate effectively without any fear. Achieving this can be challenging when environments lack these team dynamics. P10 mentioned "*during retrospective sessions, a lot of the team tends to keep quiet, they don't feel safe or they're afraid of saying something wrong and that is one of the key challenges. It is to get them into a safe space to feel that they are able to communicate*." This presents a challenge to teams to be honest with each other and have open discussions. Psychological safety is critical in every workplace and to get teams to have that safety net, investing in social time provides that level of safety within the team. During sprint retrospectives, this can be facilitated by introducing ice breakers so that it calms the team and sets an atmosphere that allows for team engagement (Khanna & Wang, 2022).

5.4.3.3.2. Getting team members engaged

Collaboration and communication are benefits which create an environment for teams to be engaged. Additionally, having clear roles and being involved in decision making promotes team engagement. When these attributes are missing, it poses a challenge in getting the team involved. "*To get team members engaged is a challenge because a lot of times you will notice that only some of the team members are really engaged and to bring everyone on the on the same page so that everyone feels that they contribution to the project is important*" was noted by P10. This refers to team engagement being critical for teams to work collaboratively and communicate. The process of getting team members engaged is a challenge and this relates to the success rate of projects according to a case study done by Kalenda, Hyna and Rossi (2018).

5.4.3.4 Customer involvement

Having continuous customer involvement in agile projects is key to the success of agile projects. Our results detailed the challenges experienced in customer understanding and misalignment of agile practices between the customer and agile teams.

5.4.3.4.1. Business stakeholders not versed on agile

Agile practices require that both agile teams and business stakeholders have a clear understanding of agile practices. Misinterpretation of agile practices can prove to have misaligned expectations from the customer. This can lead to obstacles in collaboration and product delivery. P6 mentioned "*agile is seen an IT thing. The biggest challenge is at an organizational level where stakeholders are not well versed, and they need to buy into the processes that the teams is trying to implement and follow.*" This suggests that it is important for the customer to have knowledge on agile practices and the value it brings, this can enhance greater collaboration between the agile teams and customer to deliver projects that meet customer needs within an achievable timeframe. Agile practices are interpreted in different ways and having a clear understanding of it from agile teams and the customer promotes success and makes the adoption of agile easier (Magistretti1 & Trabucchi, 2024).

5.4.3.4.2. No alignment from business and IT on agile practices

Misalignment between IT teams and business can result in different expectations for product delivery. This creates barriers in communication, joint planning and common goals being defined between business and IT (agile) teams. "*Alignment from top down is important from the systems teams to align with the business strategy in order for product to go out as expected from the customer*" was mentioned by P11. Customer perception of their level of involvement in agile projects is important and a lower level of involvement provides negative and insufficient feedback. This relates to the understanding of what level of involvement is required from the customer from the project inception. This can be overcome by providing customers with a high-level understanding of agile practices, defining their role within the project and forming the right feedback methods to not overwhelm them (Yaman, et al., 2016).

5.4.3.5 Planning and predictability

Planning and predictability in agile aims to have teams deliver more efficiently. Planning has also been identified as a challenge of agile from our results. This section defines the ability to provide customers with definite deadlines of projects and predicting time and resources during development.

5.4.3.5.1. Provide customer with a definite deadline

Traditional methodologies allow teams to provide a more accurate deadline for the full solution of the product. Agile practices follow implementation of smaller working software over the different iterations. This can be challenging to the customer in when the full solution will be completed by. P9 mentioned "*business wants a date of when this whole project is going live, but the nature of agile is that you don't necessarily provide that date, and you work sprint by sprint. You do not have that long foresight and are unable to give them that deadline date and that things change.*" his suggests that while traditional methodologies provide teams with an estimated delivery of the complete project, agile practices are unable to do so since pieces of a full solution is provided after each iteration and changes can be done on previous implementation, this leads to difficulties in defining the deadline of the complete project. Project scope, planning and clearly defined customer role are factors that contribute to measuring the completeness of project deadlines. An A-SPSRI evaluation method that can be applied to each project in working towards a clearer defined deadline that includes measuring the scope of a project from inception (Amjad, et al., 2017).

5.4.3.5.2. Predict time and resources

Iterative cycles of agile practices require teams to predict time and resources to complete a set number of tasks in. Task prediction requires teams to allocate story points to each task based on the complexity. Team members involved in the project can select from that list which can be completed. It poses a challenge to accurately size work with the number of resources available within the team. P3 mentioned "*time and resources are not always easy to predict at the start of the sprint, sometimes you might underestimate which will leave you to push harder instead of completing them comfortably.*" This suggest as the team plan for each iteration, it can be challenging to provide exact timings on what work can be completed in an iteration, this results in less work being completed, or not completing all tasks. Sizing work where the team does not have sufficient training and standards to follow can be a challenge and this leads to either too little work being completed or too many tasks incomplete within an iteration. Self-organising teams must acknowledge their expertise and commit to work planned for (Mallidi & Sharma, 2021).

5.4.4 Additional support

5.4.4.1 Training and education

Providing agile teams with adequate training and educational resources are fundamental for the successful adoption and implementation of agile practices. This section entails the additional support in terms of training and self-study in using agile practices more effectively from our results.

5.4.4.1.1. Agile training

Equipping teams with the necessary agile training and workshops are important in relaying the knowledge and processes of agile. These training programs include formal training sessions, workshops and certified courses. P2 mentioned "*agile training gives you a bit of a different perspective on how things should work, and it makes sense. When you do this training, everyone is able to get into the same mindset.*" Furthermore, P15 adds that "*receiving that refresher course to almost take your understanding to the next level.*" This suggests that education is fundamental for teams to get an understanding of agile and the value, this can help the team in its agile transformation journey. Not receiving training at all or receiving inadequate training is an issue that affects the agile transformation process and adequate training to agile teams facilitates in agile transformation and understanding (Gandomani, Zuzzalil, Ghani, Sultan, & Parizi, 2015).

5.4.4.1.2. Self-study

Apart from training, a form of education that can assist agile teams with keeping up with the latest trends and best practices is self-study, which includes booking, online courses and joining agile groups. P17 mentioned "*for employees that are going through agile changes, there is whole host of self-study and in regulating the self-study to be able to understand how that fits into your team and your organization.*" Additionally, P15 indicated "*if we are educated and informed, it's easier for us to adopt certain ways of work and this could be done through learning centers.*" This suggests that with agile practices constantly evolving, it is important for teams to take the initiative to constantly keep up to date with agile practices material. There were not materials relating to self-study in agile practices to support teams. However, there are various studies in general that relate to self-study as a means of gaining knowledge and upskilling (Maddux, 2016).

5.4.4.2 Additional role support

For agile teams to implement agile practices effectively, it requires guidance and mentorship. Our results show that an involved agile coach being present often and following best practices, benefits the teams.

5.4.4.2.1. Agile coach

Agile coaches perform a key role in leading teams to continuously improve and follow practices. They provide a basis to train, guide, support and overcome challenges to agile teams in effectively applying agile practices. P13 mentioned "*to have an agile coach initially that will guide you on how things need to be done and as the project matures you see different problems that arise that you see teams struggle with.*" P5 as well indicated the importance of "*definitely having an agile coach.*" This suggests that agile coaches can support teams by creating an agile mindset and guiding teams on how to resolve impediments. It is important for agile coaches to observe the current team dynamics and processes before introducing multiple changes at the start (Klünder, Trommer, & Prenner, 2022).

5.4.4.3 Acceptance and understanding

Before agile practices can be implemented, it is crucial for agile teams and the customer to understand agile practices and the value it brings, and this guides their acceptance of agile practices. Our results show the understanding of agile practices to be key in getting agile teams to accept agile practices.

5.4.4.3.1. Understanding of agile practices

For agile teams to use agile practices to their fullest and provide value to customer, it is critical that there is a common understanding amongst agile teams and stakeholders. This can be done through educating individuals and providing practical experiences on the processes. "*If I don't have that buy in and understanding from the team and business stakeholder and the importance of why we are doing things in a certain way, the team will not lead to successful project delivery.*" This suggests that the understanding of agile practices play an important role in the outcome of projects. It is critical for agile teams and the customer to have a good understanding of agile practices, the lack of understanding may affect the outcomes of projects (Sarwar, Orr, & Malik, 2021).

5.4.4.3.2. Acceptance of using agile practices

Acceptance of using agile practices involves getting the buy-in from agile team members and the customer. Commitment from them ensures agile practices will be followed and makes the adoption easier. Getting buy-in from individuals can be assisted through providing and understanding agile practices and the value it brings. Furthermore, this can also be achieved through workshop sessions to explain the benefits and address any misconceptions. P9 mentioned "*you need buy in from all the teams to be able to effectively implement an agile process that is going to work and that buy in is extremely important from various teams to be able to go forward and put the processes in place, but also from management and other areas of the business and stakeholders that buy into the way agile works*." This suggests that in order for agile practices to be implement effectively and used to its fullest, it is critical that individuals in this journey have an understanding and embrace agile practices, this can lead to positive outcomes. For agile to be successfully implemented, it is dependent on the acceptance of agile approaches by agile teams and their perception on its value add (Heimicke, Kaiser, & Albers, 2021).

5.4.4.4 Implementation and practices

The success of agile practices implementation is dependent on understanding and acceptance. Additionally, it requires sufficient time for teams to apply them without any constraints, according to our results.

5.4.4.4.1. Apply agile practices without time constraints

For agile teams to embrace agile practices and its processes and value it provides, teams need to have sufficient time to follow the processes as opposed to pushing hard to meet deadlines. Adequate time is needed in terms of planning, requirements gathering, development and system testing. "*We can have the right tools to apply agile practices, but because of time constraints we unable to apply the processes properly*" was mentioned by P1. This refers to the teams having sufficient time in applying agile processes, that can include making time for the various agile ceremonies and following through the feedback from teams to improve. There was no literature that relates to applying agile without time constraints, however scholars have mentioned that effective planning, project success and delivery can shorten the number of iterations required for projects.

5.5 DISCUSSION OF SRQ3: IMPLEMENTATION OF AGILE PRACTICES THROUGH AGILE CEREMONIES

How are agile practices implemented in the workforce using agile ceremonies?

5.5.1 Purpose

Software development teams in the past have implemented traditional methodologies. Despite organisations understanding the techniques and processes, teams have struggled to deliver projects within budget, on time, with the agreed upon requirements. A growing number of organisations have now implemented agile practices with the benefit it provides that include quicker to market, adaptability, continuous improvement and customer satisfaction. Agile practices are designed to facilitate the software development life cycle by conducting various agile ceremonies that guide team dynamics, collaboration, communication, planning and managing challenges. Sub-research question 3 aimed to identify the various agile ceremonies used within South African IT workforces and the value that each of these ceremonies to provide teams. Agile ceremonies aimed to determine what agile ceremonies employees use during agile projects. The value of agile ceremonies sought to determine the value agile ceremonies bring to employees in relation to the broader agile ceremony value and employee performance. Additionally, this sub-research question aimed to provide a comprehensive understanding of how agile practices and specifically through the use of the various agile ceremonies and their value it provides to employees which contributes to their performance. Agile ceremonies and their value are grouped under the expectancy variable in order to understand what value do agile processes and ceremonies offer to employees which will result in increased employee performance.

Theme 6 (agile ceremonies) identified the various agile ceremonies used during agile projects. Responses from participants showed that various agile ceremonies are used in agile. 1 secondary theme and its related key aspects as agile ceremonies was produced when using agile practices from the view of agile practitioners within South African IT workforces.

Theme 7 (value of agile ceremonies) identified the value received from each agile ceremony in agile projects. Feedback from participants displayed a number of values received from each of the agile ceremonies that have a positive influence on employee performance. 7

secondary themes and their associated key aspects were derived from participants using agile practices within South African IT workforces.

5.5.2 Agile ceremonies

5.5.2.1 Ceremonies

Agile practices focus on increase collaboration and communication. Agile ceremonies facilitate these factors to allow teams to plan, feedback, reflect and determine improvement areas to work towards successful project delivery. Our results show the various agile ceremonies that participants use during agile projects. There are four agile ceremonies that govern the software development process during agile projects that include daily stand-ups, sprint planning, backlog grooming and sprint retrospectives (Sharma & Kumar, 2021).

5.5.2.1.1. Daily stand-up

Daily stand-up meetings allow teams to provide updates on progress and raise any issues. This promotes transparency within the team to ensure the team remains aligned and focused. Our results show that all participants use daily stand-ups as an agile ceremony. Daily stand-ups are time-boxed meetings to highlight the status of tasks and raise any impediments (Sharma & Kumar, 2021).

5.5.2.1.2. Sprint planning

Planning is fundamental for agile teams to work towards successful project outcomes. Sprint planning is designed to enable teams to define the work that can be completed for an upcoming sprint, and it includes sizing tasks and defining the sprint goal. Sprint planning is a key session that all participants use, identified from our results. Sprints timelines are generally set between two to four weeks and based on this time, agile teams define the amount of work the team can complete to reach their sprint goals (Sharma & Kumar, 2021).

5.5.2.1.3. Sprint retrospective

Sprint retrospectives are designed to assist team in working towards continuous improvement. Retrospectives provide a platform for agile teams to reflect on what went well, what didn't go well and define improvement initiatives to take into the next sprint. Our results show that the majority of our participants use sprint retros at the end of each iteration. It is important for agile processes within agile teams to be frequently inspected in order for teams

to improve and receive the full benefit of agile practices. Sprint retros can be enhanced by adopting retros games to enhance collaboration in the team. Retros align with the principle of agile for teams to reflect and define improvements to be more effective (Przybyłek & Kotecka, 2017).

5.5.2.1.4. Backlog/sprint grooming

Backlog grooming or sprint grooming requires teams to look ahead in their upcoming sprints by reviewing the sprint backlog frequently and ensure tasks or user stories are defined and ready to be planned for future sprints. This provides the team with a healthy backlog and makes sprint planning sessions more efficient. Just over more than 50% of participants use backlog grooming sessions in their organization. Backlog grooming is a fundamental ritual in agile practices and form part of agile best practice. A backlog that is not well maintained can have an impact on the team's performance and productivity (Azike, 2021).

5.5.2.1.5. Sprint review

Sprint review sessions allow the team to showcase their work efforts completed within the sprint. Sprint review sessions are conducted at the end of an iteration and provide the customer with an opportunity to give feedback and advise the agile team if the product is evolving in the right direction. Our results show that sprint review sessions are not a common ceremony that agile teams use. Sprint review sessions allow agile teams to demonstrate the work completed within the sprint. In some agile teams, sprint review sessions are replaced with a report that details what work has been completed by the team and sent to the customer (Przybyłek, Albecka, Springer, & Kowalsk, 2022).

5.5.2.1.6. Knowledge and sharing

Agile practices foster an environment for agile teams to continuously learn new things amongst the team. Our results show that participants conduct formal knowledge and sharing sessions within the team to foster that learning environment. P8 mentioned "*we have knowledge sharing sessions within the team. Team members would often meet from each discipline and each discipline basically present something from their discipline so that knowledge is shared across the teams.*" Knowledge seeking can be easily obtained within agile teams to allow individuals to increase their performances during agile projects. Existing literature does not define knowledge and sharing as a formal agile ceremony; however it is

associated with the stance where teams foster an environment to learn new things from one another to upskill (Ersoy & Mahdy, 2015).

5.5.2.1.7. PI planning

PI (Program increment) planning is designed to assist organisations working on large-scale projects. PI planning promotes the ability for teams to understand the vision of the project and ensures that there is a focus on a common goal teams are striving towards and understand what priorities the team will be working on. Our results show that a limited number of participants use PI planning. PI planning sessions are not widely used but teams using the SAFe framework commonly use them (Somda, Guel, & Kabore, 2024).

5.5.3 Value of agile ceremonies

5.5.3.1 Daily stand-up value

Daily stand-ups provide significant value to teams to understand progress, identify blockers and create transparency. Our results show the various value received from daily stand-ups.

5.5.3.1.1.Tracking and progress

Daily stand-ups provide a platform for agile teams to come together daily and provide feedback on their progress. This allows all team members to understand the status of the current work and how the team is tracking towards meeting the sprint goals. P10 adds "*you are able to measure progress, and teams are continually moving tasks towards completion to prepare for releases.*" P5 indicated that the value received is "*tracking deliverables and tracking that we meeting are our sprint goals and deadline.*" This suggests that the team ability to provide updates on progress provides visibility to the entire team. Daily stand-ups keep teams aware of the project status and improves transparency within the team (Kaur & Iftikhar, 2022).

5.5.3.1.2. Identifying and resolving issues

A fundamental feature of agile is collaboration that teams can use to raise issues and identify ways to solve them. Agile promotes this culture for teams to raise any obstacles and to determine resolutions for them earlier before they escalate into larger issues. P9 mentioned "*it is beneficial during stand-up to understand if there are any blockers or any issues that need to be resolved as soon as possible so that the team can continue working.*" P8

indicated "*defining impediments and how are we tracking with resolving them.*" During software development, teams experience various type of hurdles that stops the team from continuing, daily stand-ups promote these hurdles from being identified and finding ways to resolve them to eliminate any delays to the team. Daily stand-ups are not only to present an update from the team, but they are also to highlight impediments the team are experiencing so that collectively the team can try finding solutions to them (Kaur & Iftikhar, 2022).

5.5.3.1.3. Communication and collaboration

As mentioned in SRQ2, agile practices foster communication and collaboration, and daily stand-ups allow for that open communication and collaboration between team members to share information and offer support. "*Open communication in terms of tracking deliverables and tracking that we are meeting our sprint goals and sprint deadline*" was noted by P5. P3 indicated that daily stand-ups promote "*communication with the team.*" Communication fosters collaboration during stand-ups and this has a positive impact on solving problems and supporting teams. Daily stand-ups provide teams with a setting to collaborate and communicate important information to the team (Kaur & Iftikhar, 2022).

5.5.3.1.4. Understanding and supporting team members

Agile teams provide updates on the progress of their work, and this gives teams the ability to understand the work being done by team members. Additionally, it also allows the team to raise any issues for team members to support each other to find solutions (Kaur & Iftikhar, 2022). P10 mentioned "*the value which gets unlocked in the stand up is, if someone needs help, it's a great place to request help.*" Having an understanding of the work each team member has, allows the team to support each other and provide guidance.

5.5.3.2 Sprint planning value

Sprint planning sessions are important to set the stage for teams to work towards successful sprint delivery. Findings from our results identify the different value additions received from sprint planning.

5.5.3.2.1. Planning and estimation

Sprint planning sessions are designed for teams to provide sizing for user stories and plan the work that is achievable within the sprint. "*Teams are able to look at all the stories to plot*

in with their correct sizing and looking at your capacity to see if the team is able to get the work done in that particular sprint" was mentioned by P14. Furthermore, P12 adds "*I do see the value of sprint planning and the need for it, but if it's not executed properly, the team won't see the value.*" Estimation of work in a sprint is essential for teams to build momentum after each sprint. Planning effectively for a sprint lays the foundation for teams to achieve their goals (Alhazmi, 2020).

5.5.3.2.2. Understanding and refining work

Agile practices allow for teams to break down complex work further into manageable pieces. Additionally, it ensures teams are provided with sufficient information on a task to understand what is required and raise any potential challenges ahead of time. P11 mentioned "*the planning comes in and to understand if we need to refine these things further before we start taking this work on.*" P5 indicated "*understanding and unpacking what features are being included within the sprint*." Understanding of requirements, makes it easier for the team to identify dependencies and aids in the planning. In the initial sprints of a project, refining work into smaller pieces and having more clarity allows the teams to complete more tasks, and as the iterations follow teams' velocity start to increase (Freitasa, Silva, Campilhoa, imentel, & Godina, 2020).

5.5.3.2.3. Goal setting and commitment

In order for agile teams to work towards completion of a sprint, it is vital that a sprint goal is defined, and this aligns the team towards a common goal that is committed to. P8 mentioned "*we plan our sprints and set a goal so that the team can provide updates on how they are tracking towards the sprint goals and define if they are any impediments.*" Defining a goal for a sprint is key for teams to have focus and an objective to work towards. Sprint planning allows teams to set goals and plan according to it to ensure teams are committed to meeting them (Freitasa, Silva, Campilhoa, imentel, & Godina, 2020).

5.5.3.2.4. Team dynamics and engagement

Sprint planning builds team spirit and promotes engagement with the team since the agile team is responsible for delivery of work for an iteration. It allows teams to have honest and open discussions to commit to what work can be done. "*Planning is an opportunity for the team to come together to build team spirit after the analysis is completed*" was mentioned

by P17. Building team spirit during sprint planning can increase team engagement for the upcoming that includes trust and commitment in the team. There have been limited studies on team engagement as value during sprint planning (Müller, Kropp, Anslow, & Meier, 2021). When sprint goals are defined and focus is determined, it has the potential to increase team dynamics (Al-Sabbagh & Gren, 2018).

5.5.3.2.5. Visibility and predictability

Agile practices are transparent and promote visibility during sprint planning for teams to understand what work is required and makes it easier for teams to estimate what work can be completed in an iteration considering time and resources that are available. "*We are looking at work at a granular level and we can then accurately predict when we will deliver these items*" was added by P15. Having the freedom to break down work into smaller pieces, allows for deliverable to be predicted more accurately. Agile practices enforce visibility that provides the team with the ability to plan better (Aalst, Mylopoulos, Rosemann, Shaw, & Szyperski, 2016).

5.5.3.3 Backlog/sprint grooming value

Backlog/sprint grooming requires teams to frequently groom items in the backlog to ensure a healthy backlog is maintained which makes sprint planning sessions easier. Our results show multiple forms of value which backlog grooming ceremonies provide.

5.5.3.3.1. Understanding and refining work

Similarly to sprint planning, backlog grooming sessions provide agile teams with an understanding of items in the backlog that will be completed in future sprints. It allows teams to get clarity on work earlier on in time to further refine them. "*It also helps the product owner to then further refine the requirements before we get into sprint planning*" was noted by P15. Collaborating during backlog/sprint grooming, allows for teams to understand work from different perspective and raise any gaps ahead of time. Backlog grooming allows the teams to refine work which includes adding, removing, updating or splitting tasks (Ribeiro, Tereso, & Andrade, 2018).

5.5.3.3.2. Team awareness and visibility

Backlog grooming allows teams to have a view of what work is still to come. It provides teams with first eyes on upcoming work. P15 mentioned "*allows the team to get their first eyes on what is upcoming in the backlog and ask some pertinent questions at that point.*" Being aware of work ahead of time, allows the team to plan of time. Providing teams with visibility of upcoming work makes it easier to plan future tasks (Ribeiro, Tereso, & Andrade, 2018).

5.5.3.3.3. Continuous improvement and engagement

Agile teams strive for continuous improvement and backlog grooming facilitates this by teams frequently maintaining the backlog that allows them to keep engaged with the project. P6 indicated "*teams mentally have an idea of what's forthcoming and that drives the team to continuous improvement.*" These sessions assist teams in improving their planning skills and ensure that the backlog remains relevant. Frequent backlog grooming sessions significantly improve team collaboration and product quality (Azike, 2021).

5.5.3.4 Sprint review value

Providing a platform for agile teams to shine for their work is crucial. It motivates going into the next sprint to celebrate their achievement with the customer at the end of the iteration. Our results show the value received from sprint review meetings.

5.5.3.4.1. Demonstration and recognition

Agile teams have an opportunity to demonstrate the work completed to the customer to gather their feedback. It allows teams to stay in line with the project expectations as it grows. Furthermore, it provides teams with the opportunity to receive recognition for their efforts, and that builds the teams confidence and morale. P10 mentioned "*it allows the team to shine. Providing them a platform to shine that allows them to build their trust and confidence.*" Having a stage for the team to demonstrate their work is critical in ensuring product alignment, boosts morale and encourages positive behaviour with the team and customer. Sprint reviews provide a platform for agile teams to receive recognition for their efforts in the work completed during a successful iteration (Kaufmann, Kock, & Gemünden, 2020).

5.5.3.4.2. Evaluation and reflection

Sprint review ceremonies provide teams with the ability to evaluate the progress made during the sprint and reflect on the outcome. Evaluation of outcomes is important to foster a culture of continuous improvement. P16 mentioned "*we have to track if we have closed all the items that we had planned for that particular sprint and understand why we haven't completed open tasks.*" The key to improvement is reflection and this allows the team to evaluate their performance in the sprint and how can it be improved. Sprint reviews allow product owners to provide feedback on the outcome of the sprint and provide the team with improvement initiatives (Ribeiro, Tereso, & Andrade, 2018).

5.5.3.5 Sprint retrospective value

A principle of agile practices is for teams to reflect regularly and determine improvements for them to continuously improve. Our results show the value received from sprint retrospective that includes reflection, continuous improvement, team trust and learning.

5.5.3.5.1. Reflection

For teams to work towards improvements, sprint retrospectives allow them to reflect on a completed iteration before determining ways to improve. P17 "*it is an opportunity for the team to reflect back on how they can improve.*" As the principles of agile states that team must reflect on how to become effective, retrospectives support this principle. Retrospective is designed for teams to reflect on the previous sprint and understand the present state of the teams' processes and progress. Furthermore, it was mentioned that some teams do not spend sufficient time in reflecting which affects teams in addressing the problem areas (Patzak, 2018).

5.5.3.5.2. Continuous improvement

Driving teams to continuous improvements are promoted through sprint retrospective sessions. It allows teams to define improvement areas within the team to enhance performance, productivity and quality. P4 adds "*what could be improved and how would to then address these in the coming sprints.*" Furthermore, P2 mentioned "*if there is no participation, you are not getting value out of it and you need people to participate in these ceremonies.*" Honest and open conversations during retros promote identifying areas of improvement to have a positive effect in the next iteration. Agile teams are self-managed,

and retrospectives are a platform for teams to determine improvement points (Patzak, 2018).

5.5.3.5.3. Team Trust and Accountability

Building team trust sets a culture for honest and open conversations. It allows teams to have discussions that express the issues without any fear. It enables teams to hold one another accountable for their efforts and issues. P6 adds "*trust is a phenomenal thing, and it is a primary thing around moving the team and themselves forward*." P11 indicated "*creates the group culture and the trust.*" Team trust promotes a psychological safety net to teams to have open conversation and provide constructive feedback. Sprint retrospectives provide various benefits to teams that include process improvements, productivity and trust within the team (Hundhausen, Conrad, & Tariq, 2024).

5.5.3.5.4. Acknowledgement and Learning

Failure is an opportunity for teams to learn from and improve on. Sprint retrospectives allow teams to acknowledge each one's efforts and also reflect on failures that the team can then use as an opportunity to learn from. "*Determine learnings that you would have taken from that particular sprint and then what is it that you can do better in the new sprint*" was noted by P14. Identifying improvement areas for teams to learn from fosters team cohesion. Agile practices foster an environment for teams to continuously learn from each other and retros provide the ability for teams to learn from each other and learn from failures (Patzak, 2018).

5.5.3.6 Knowledge and sharing value

Continuous learning in agile practices allows teams to produce better quality and enhance performance. Results from our findings show the value of learning from knowledge and sharing sessions.

5.5.3.6.1. Learning and sharing

Knowledge and sharing sessions are designed for teams to share their knowledge, experiences and skills with the teams to learn new knowledge that can be used in agile project delivery. P10 mentioned "*showcase some of the tech the team are busy working with and just pull members together to understand how it works, and it becomes a very technical discussion for the team just to share that knowledge.*" As agile practices are evolving,

technology and product knowledge too are evolving, and knowledge and sharing sessions provides that educational foundation for teams to learn and upskill collectively. Agile practices have proven to be very successful in fostering an environment for teams to share knowledge with one another (Kuusinen, et al., 2017).

5.5.3.7 PI planning value

PI planning provides teams with the understanding of the value and vision of the product, and this provides agile teams with the 'why' which should always be kept in mind during upcoming planning sessions. Findings in this section explain the value PI planning provides.

5.5.3.7.1. Scope management

Scope management is critical in agile projects as the project evolves. It provides a forum for agile teams and business stakeholders to collaborate and define priority items to work on. It guides the life cycle of the project and keeps alignment of project goals. P13 mentioned "*the value is what we planned for initially, are we still on track and if scope changes come in, how do we move forward on that.*" Managing scope in agile ensures teams are aligned and plan effectively. Agile practices allow for changes through the project and also provide control on scope management throughout the project (Marnada, Reharjo, Hardian, & Prasetyo, 2022).

5.5.3.7.2. Purpose and clarity

PI planning is designed to provide clarity and purpose of the project that assists in setting goals and objectives. Having a shared vision of the project from agile teams and the customer facilitates the team with delivering projects that meet customer needs and expectations. P16 said "*to understand the purpose of each feature and what are we trying to implement for this season…the product goodness will play a very important role later when we are doing our planning sessions.*" This suggests that having an understanding of the product vision and purpose is important for teams to always keep in mind, so that team goals and objectives are aligned to the vision. Project success is measured in line with teams understanding the project goal and that allows for higher customer expectations being met (Marnewick & Marnewick, 2022).

5.6 DISCUSSION OF SRQ4: CONTRIBUTION OF AGILE PRACTICES TO EMPLOYEE PERFORMANCE

How do agile practices affect employee performance in IT workforces, as measured by key metrics such as collaboration, communication, planning but not limited to these?

5.6.1 Purpose

Agile practices put high focus on the human element during software development in the success of project delivery. This is associated with the agile values in as much as tools and processes are important, the agile team is prioritised with regards to their skills, collaboration and enabled to perform at increased levels to produce successful projects. Agile practices and its emphasis on individuals provide numerous aspects that influence employee performance. Sub-research question 4 intended to identify the various aspects of agile practices which contribute to employee performance during software development in South African IT workforces. Furthermore, this question aimed to understand what features of agile practices assisted employees in delivering successful projects that are fundamental in employee performance. The aspects of agile practices which influence employee performance and the features of agile practices which guide successful projects sought to determine on a granular level how these findings contribute to the overall main research question of agile practices and its contribution towards employee performance. Aspects of agile practices that contribute towards employee performance and features of agile practices that lead to successful projects are grouped under the expectancy variable to understand what aspects of agile practices influence employee performance.

Theme 4 (agile practices that lead to successful projects) identified the features of agile practices that guided employees to deliver successful agile projects. Feedback from participants presented various features of agile practices that guide teams to successful agile projects. 5 secondary themes and their associated key aspects were defined when using agile practices in South African IT workforces.

Theme 5 (Agile practices that influence employee performance) distinguished the aspects of agile practices that influence employee performance. Great enthusiasm was shown from respondents from our findings that identified numerous aspects of agile practices that

contribute positively to employee performance. 5 secondary themes with their linked key aspects were presented when using agile practices in South African IT workforces.

5.6.2 Agile practices that influence employee performance

5.6.2.1 Task management and planning

Agile teams' ability to conduct effective planning and manage tasks efficiently are key features that contribute to employee performance. Our results show how effective planning and task management have a positive influence on employee performance within this section.

5.6.2.1.1. Planning

Agile practices promote continuous planning that include managing work across the team, which is done through the various agile ceremonies such as sprint planning and backlog grooming. It allows teams to break down tasks, prioritize them and plan them so that they are achievable. P4 mentioned "*being able to break down stories into manageable bits*." Additionally, P2 added "*you are able to manage your time better and because of that you able to actually produce better.*" Organisations need to set a culture that instills trust and transparency during planning within the team to contribute to positive employee performance (Suomalainen, Kuusela, & Tihinen, 2015).

5.6.2.1.2. Risk management and analysis

Risk management is a key to any project and agile practices facilitate this through raising impediments earlier on without fear and identifying mitigation plans before they impact on the project delivery. It allows employees to manage any uncertainty with defined actions to continue working without affecting performance. "*Highlighting risks early on and not being afraid of being held individually responsible but as a collective team and together plan for solutions*" was mentioned by P5. P7 noted the key to managing risk is "*unlocking minds in the conversation.*" This suggests that identifying risks and defining possible solutions to them as a team, has a positive influence on employee performance. There has been limited literature available on risk management and its influence on employee performance.

5.6.2.1.3. Performance and delivery

A principle of agile practices is to provide working software regularly. Agile teams' fundamental goal is to provide working software that meets the customers' needs. When agile teams do deliver projects on time and are early to market, this will enhance employee performance and foster a sense of accomplishment. P14 mentioned "*we were able to deliver software on time to business in small iterations and being able to enable the customer to be able to work efficiently.*" This suggests that working on smaller deliverable, allows the team to complete them and improves performance. A factor of employee performance identified is the ability for teams to deliver software and be early to market (Kropp, Meier, Anslow, & Biddle, 2018).

5.6.2.1.4. Agile practices

Agile practices provide structure to agile teams in terms of agile ceremonies that foster collaboration, setting goals and adapting to change. This culture allows teams to focus and collectively work towards improving performance. "*Most agile ceremonies that are being held, it provides the capability to communicate amongst different teams and different stakeholders and that is the key thing that we need to do*" was added by P14 which suggest that effective communication through agile ceremonies unlocks a lot of potential and benefits. Empowering teams in using agile practices has a positive influence on the performance of teams (Sarwar, Orr, & Malik, 2021).

5.6.2.1.5. Involvement

Agile practices are designed to empower teams to be involved and make decisions. Teams are able to take on tasks that are not ambiguous but rather clearly defined and that are manageable. Empowering teams to be involved and provide value to the team contributes to employee performance. P17 mentioned "*I can really step up to the bar and I can take on as much and I can be as involved as I want to.*" This suggests that agile practices allow the team to take initiative, by taking on as much work as possible that is manageable. Additionally, it also allows individuals to challenge their skills and take on tasks that are put them out of their comfort zone, and once completed it improve their performance. Enabling teams instills individuals' confidence in their efforts during agile projects that enhance performance levels (Sarwar, Orr, & Malik, 2021).

5.6.2.1.6. Handling delays

Delays in projects can be driven by issues highlighted or changes in the projects. However, agile projects allow for teams to manage risks and be flexible to changes. The quick responses from teams in managing risks and changes effectively, reduces the times in delays so that teams can maintain performance levels. P1 said "*it is quicker to pick up when things are going wrong and there are delays in work*". This allows for delays to be managed effectively and for teams to provide solutions and plan effectively. There has been limited literature on employee performance when delays are highlighted and planned for, the existing literature noted that effective handling of delays in agile projects, has a positive outcome on project delivery (Muhammad, et al., 2021).

5.6.2.2 Transparency and communication

Communication is the driver to effective collaboration and team dynamics. Transparency promotes honest and open discussions. Our results show that communication and transparency are key factors that contribute to employee performance.

5.6.2.2.1. Communication

Foundation of agile practices are set on communication as a key aspect. This is facilitated through the various agile ceremonies that allow teams to continuously communicate on planning, project updates and risks. Healthy communication environments ensure teams stay aligned on the project goals, collaborate and work towards a common goal that enhances employee performance. P7 adds "*continuously communicating with each other and I believe that the fact that we have daily sessions to meet and have those discussions, it unlocked a lot of things because in the process of asking those questions, we tend to find that there are impediments that we need to deal with and a lot of unlocking minds in the conversation.*" P11 indicated "*open communication channels to all the relevant parties*." This suggests that communication has the ability to drive effective discussion and decisions that contribute to employee performance. Organisational support that includes clear and open communication channels within the teams has a positive influence on employee performance. Communication allows teams to be valued and empowered (Ahli, Hilmi, & Abudaqa, 2024).

5.6.2.2.2. Regular feedback loop

Feedback loops are fundamental to guiding teams towards continuous improvement. Agile promotes regular reviews from both the customer in relation to product expectations being met, and within the agile team feedback relating to processes being followed. Regular feedback loops make employees aware of their performances and can use this to enhance their performance. According to P10 "*The feedback loop based on your data you gather back from business can determine how to improve the system or if it is not even valuable.*" P6 indicated "*the feedback loop in terms of whether the solution is viable, is quicker and then the changes and amendments, if any, to a particular solution becomes more prudent.*" Receiving feedback is key for improvement in terms of developing quality software and adjusting agile processes within the team. Agile teams constantly depend on feedback loops to increase productivity and continuously improve (Fatema & Sakib, 2017).

5.6.2.2.3. Transparency across the team

Transparency in agile practices provides visibility into project progress, risks and decisions made. There are various tools available that teams use which include agile boards, graphs and reports to ensure transparency. Transparency fosters team alignment, progress and focus that contribute to employee performance. P4 indicated that agile practices that aid in performance is "*transparency across the board.*" "*You do get non-performance in the team, and I think with the agile way of working, because of the transparency, there is ultimately no way to hide for non-performance because the team is regularly reviewing progress and delivering features*" was mentioned by P10. Transparency has the power to identify lower performing individuals and find ways to support and assist them in increasing performance. Providing transparency in agile projects has an increased level of satisfaction on employee performance. Transparency is associated with trust, honour and empowerment within the team (Biddle, Meier, Kropp, & Anslow, 2018).

5.6.2.3 Employee development and well-being

A principle of agile practices is to build agile teams with motivated individuals who are supported and given the level of autonomy necessary to get work done. This culture is essential to promote personal growth, employee well-being and autonomy. Our results show these factors as key drivers to employee performance.

5.6.2.3.1. Autonomy and independence

Enabling teams within agile practices to be autonomous and independent in agile projects allows teams to make decisions, show their value and take responsibility for their work. Increased autonomy has a positive influence on employee performance. "*In an agile environment, teams have more autonomy and more say in the type of features that are going into a sprint. They have a lot more influence and that can improve their performance, and you may find out that they are actually really good decision makers through this*" was added by P9 which suggests that agile teams have great influence and autonomy, and this has a positive influence on employee performance. Agile teams that are given authority and provided opportunity to take responsibility on tasks contributes positively to their performance (Moe, Šmite, Paasivaara, & Lassenius, 2021). There are barriers that impact agile teams in autonomy that include decisions made by leaders without involving the team (Moe, Dahl, & Stray, 2019). Additionally, agile teams perform roles out of their scope which increases job autonomy (Riemenschneider & Thatcher, 2016).

5.6.2.3.2. Personal growth and development

Agile practices are designed to provide teams with the ability to grow and continuously improve. Agile ceremonies enable this through regular review sessions, knowledge and sharing sessions and retrospectives to reflect and highlight growth and development areas. This encourages teams to continuously work towards improvement that improves employee performance. P6 mentioned "*transformation of individuals that are growing together with the team as well and as they start maturing, you see that performance over individuals and across the team itself which is absolutely phenomenal.*" Agile practices have the ability for employees to grow that has significance on their performance. Employees can transform during their agile journey as they get to understand the practices. Agile practices allow teams to grow and improve performance and this can be experienced with new joiners in a team (Fagerholm, et al., 2015).

5.6.2.3.3. Efficiency and productivity

Agile practices follow processes that eliminate unnecessary wastage and that enhance efficiencies and productivity. Agile teams are able to deliver working software in shorter iterations to provide value to the customer early on. This practice enables teams to gain momentum and enhance their performance. P15 mentioned "*what I have seen is when you*

free up that time from an individual because they are not working on multiple items, the sort of the mood and attitude of individuals improves because they're able to take on additional work." Productivity is related to teams completing tasks and the sense of achievement in it contributes to performance positively (Fatema & Sakib, 2017).

5.6.2.3.4. Employee well-being

Agile teams are created around motivated individuals. To keep teams with that increased motivational level, agile practices foster healthy working environments that encourage a balanced working culture. Effective planning allows for teams to have a work-life balance that reduces stress and anxiety. "*Enabling and empowering the employee through their performance to provide their best and the principles that contributes towards the well-being of an agile team member*" was said by P5. Employee well-being is crucial to ensuring that their mental and physical health is kept in check, to allow them to have the strength and clear mind in completing work and enhancing their performance. Agile practices provide a workplace that reduces stress levels and allows teams to share innovative ideas without any fear that maintain their well-being (Ahli, Hilmi, & Abudaqa, 2024).

5.6.2.4 Team collaboration and culture

Agile practices consist of continuous teamwork in working towards a common goal. This is enhanced through team collaboration and culture which contributes to performance. Findings from our results show team dynamics, accountability and continuous improvement as aspects that influence employee performance.

5.6.2.4.1. Team dynamics and culture

Agile ceremonies encourage team collaboration and communication. This contributes to building strong team dynamics that guide and support each other, leading to contributing to employee performance. "*The culture point I raised, the team has that level of trust amongst themselves and that they all are engaged and contributing and that they understand the problem being presented and the value they are providing*" was mentioned by P17. P7 indicated "*the pride of it working together as a team.*" Team dynamics and culture provides that environment of togetherness within the team to support and trust each other and influences their performance. Building that culture within teams increases trust and the team understands the value they contribute collectively as a whole that influence employee

performance. Team spirit and values are key aspects in driving high performing teams (Fagerholm, et al., 2015).

5.6.2.4.2. Performance and accountability

Agile teams focus on a common goal. Each member of the team understands their role and responsibilities within a project. Having this defined allows teams to be accountable for their contributions and values them for their efforts which improves employee performance. "*The agile manifesto, regarding communication and delivery that all the disciplines that come into agile teams live by those messages that is fundamental and that ultimately becomes a high performing team, and you can easily pick-up the non-performer in a team because of the accountability*" was said by P10. Accountability and commitment from teams not being effectively done, can hinder performance negatively. Accountability can also be seen in terms of individuals not performing, which ultimately impacts the team and the delivery. Agile practices afford teams a great deal of autonomy, and with transparency and visibility, individuals that are not performing at their expected levels and letting team down can be easily detected (Sarwar, Orr, & Malik, 2021).

5.6.2.4.3. Continuous improvement and alignment

Agile practices promote alignment by working towards a common goal. This is maintained through regular feedback from the team and customer. Retrospective sessions and feedback loops encourage teams to reflect on their current state and define ways to continuously improve that has a big impact on employee performance. P5 adds "*with your retros you implement, you move forward, you resolve stuff that didn't work previously. It is continuous improvement, not only in delivery of an item, but also in ways of working on. And that goes towards employee well-being as well improving employee performance.*" P7 indicated "*continuous improvement within people, automatically people are driven to work together.*" Aiming to be more effective after each iteration is principle of agile, and this drives continuous improvement that contributes to employee performance. Agile teams are frequently finding ways to improve their processes from iteration to iteration to pursue continuous improvement. Continuous improvement is a basic objective to enhance employee performance (Fagerholm, et al., 2015).

5.6.2.5 Progress and outcomes

Agile practices are designed to frequently track progress and outcomes. Daily stand-ups enable teams to track progress towards meeting the goals that are defined. Our findings show that meeting the outcomes by delivering working software frequently has the potential to enhance employee performance.

5.6.2.5.1. Immediate feedback and rewards

Regular feedback updates allow teams to understand their performance and how it can be improved on further, unlike traditional methodologies where working software is only realized towards the end of the project. Agile practices promote working software earlier and output can be seen earlier, which improves employee performance. P1 mentioned "*you able to see the deliverables and that you have met the objectives which is a reward you can see immediately.*" P11 indicated "*you get that sense of progress as opposed to the waterfall process sitting on a project for three 4-5 months and then only seeing the fruits of your labour.*" Frequent delivery of tangible software displays a sense of progress to the team that builds momentum and enhances their performance. Earlier delivery of working software provides a sense of accomplishment to agile teams and the customer, and that influences employee performance. Using agile practices allow teams to work with smaller pieces of tasks to add value iteratively and earlier. This mindset builds high performing teams (Denning, 2016).

5.6.2.5.2. Clear outcomes and value

Outcomes are clearly defined in agile and promote focus across the team. A principle of agile is to add value to the customer earlier on in time. This mindset influences employee performance by integrating customer and employee goals. Each task provides value to the overall project delivery. "*You understand what you are trying to achieve. The point is working in the team and adding value as a team and that is how performance is realized. Also just adding from an employee point of view*" was mentioned by P12. Agile teams are more effective when goals are clearly defined that results in increased productivity, quality and team performance (Strode, Dingsøyr, & Lindsjorn, 2022).

5.6.3 Agile practices that lead to successful projects

5.6.3.1 Team dynamics and collaboration

The foundation of agile team success is set around collaborative and supportive teams. Our results show that team dynamics and collaboration are important aspects that guide teams to successful project outcomes.

5.6.3.1.1. Increased collaboration

Agile teams are afforded the ability to work closely with each other in working towards a common goal. Enhanced collaboration allows teams to problem solve, design creative solutions and learn from each other. This setting increases teams' ability to deliver successful projects. Customer collaboration is an important value in agile. P5 mentioned "*it is also about unpacking and understanding the project by the team and making it easier for the team to achieve their goals so that each team member can perform their duties and responsibilities towards the goal.*" Additionally, P8 also indicated collaboration as an aspect to enhance employee performance. Collaboration includes communication, coordination and engagement. These aspects are fundamental to the success of agile projects (Batra, Xia, & Zhang, 2017).

5.6.3.1.2. Team goal aligned

Team goal alignment is a key component in agile practices. This is facilitated through frequent planning and progress updates that maintain agile team focus. This provides a direction to delivering successful agile projects that meet the customer expectations. "*From a very large complex product to a very simple idea, we were able to narrow it down that would achieve the same value for business. We were able to focus the teams on a very targeted approach in terms of delivery and we simplified the solution that needed to be delivered*" was noted by P5. "*Performance is improved and that simply is because the team are aligned*" was indicated by P6. Agile practices focus on delivering projects as a unit, and having a common alignment in the team can improve performance and producing successful projects. Large projects tend to scare teams in the beginning. By breaking down the project to allow teams to focus on parts of the project, the team is guided to deliver successful pieces of a project after each iteration. Clearly defined goals that include objectives and milestones help guide agile teams to successful project delivery (Crowder & Freiss, 2015).

5.6.3.2 Communication

Communication is a fundamental aspect for successful agile projects. Our findings show that continuous communication within agile projects help teams to deliver successful projects.

5.6.3.2.1. Continuous communication

The nature of agile practices which aligns with the principles is that agile teams and customers need to communicate daily throughout the project. It helps teams maintain focus, highlight risks and plans to ultimately deliver successful projects that meet the customer's needs. P7 mentioned "*it is a project that needed that required continuous communication with each other and the fact that we had daily scrums session to meet and have those discussions, it unlocked a lot of things in the project for us to deliver.*" P1 indicated a key to delivering success projects is "*effective communication.*" Additionally, according to P11, there should be "*open communication channels.*" Communication is fundamental to driving collaboration with the team to provide progress updates, identify and solve risk and ensure projects goals are maintained. Continuous communication with the team helped the project be delivered by raising impediments earlier and providing solutions and guidance to the team to deliver successful projects (Kaur & Iftikhar, 2022).

5.6.3.3 Agile practices and processes

Agile was introduced as a result of software development projects that were failing, caused by inefficient processes. Since the inception of agile in 2001, agile practices have tremendously assisted agile teams in delivering successful projects. Our results show how using agile practices assists in providing value to customers and ultimately delivering successful projects.

5.6.3.3.1. Minimum Viable Product (MVP)

MVP is a strategic manner of delivering products to customers. It involves focusing on the most essential features of the product for teams to work towards. An MVP is a smaller feature of the entire product and still allows value to be provided to the customer. An MVP provides agile to deliver earlier, has clear focus and allows feedback to be received early to improve on. "*Based on the way we had broken things up and how we use the agile methodologies, we were able to deploy a minimum viable product at MVP initially, by*

working through sprints and putting the most important features 1st and prioritizing them on the backlog and then what we saw was after we released the MVP, we were able to see they were quite a few areas where things didn't necessarily work or things needed to change and we were able to update them" was mentioned by P9. To deliver successful projects, P13 indicated that the teams should "*focus on the MVP to achieve it.*" This suggests that defining an MVP creates focus with the teams, the developed solution can be further enhanced based on customer feedback, to ultimately deliver a project that provides value to the customer which in line with their expectations. Developing towards an MVP encouraged the cost saving factor of development. It allows agile teams to deliver faster successful projects, and the feedback loop provide teams to gauge if they need to shift direction (Duc & Abrahamsson, 2016).

5.6.3.3.2. Understanding of project objectives and value

Agile practices promote closer working relationships between agile teams and customers. This provides teams with an environment where objectives are defined, and regular collaborative sessions ensure that teams maintain the project objectives. The end goal for agile teams is to continuously provide value to customers with working software that improves business processes. P13 indicated "*understanding business objectives, why we doing this?*" Having the project goal and value it aims to provide at the center is a fundamental feature in delivering successful projects. It is critical that agile teams understand the value and vision of a product. The understanding of the product value is more important than the requirements itself. Understanding the value guides the team to develop code in line with the requirements to meet customer value. Successful projects are created around understanding the value (Sambinelli & Borges, 2022).

5.6.3.3.3. Deliver earlier to market

A principle of agile is meeting customer needs earlier on in the project through frequent delivery of working software. As stipulated, delivering projects earlier to market is a benefit of agile. Following this approach, promotes teams' ability to deliver projects earlier to market to assist businesses in maintaining a competitive advantage. "*Using the agile methodology with large scale initiative allows you to break down into an MVP so that can we go to market as soon as possible that will be able to draw a client in and be able to convert a sale. So breaking that down, you identify the key features that are needed, and that approach*

helps with successful delivery. It allowed us to go to markets and put something in production within a six-month window" was noted by P15 from previous project experience. P9 indicated "*because we were able to go to the market quicker, it helped deliver the product successfully*." This suggests that earlier delivery has the potential to increase project success. Early project delivery is significant to the organization in facilitating day-to-day business functions. It allows teams to deliver smaller pieces of work earlier on in time and ensures teams are aligned with the agile principle to provide value to customers faster (Sambinelli & Borges, 2022).

5.6.3.4 Planning and management

Effective planning and management of agile projects is the keystone to delivering successful agile projects. Our findings show how planning and management assists teams in delivering successful projects.

5.6.3.4.1. Planning and preparation

Agile practices prepare teams to deliver successful projects. Agile ceremonies that include backlog grooming, sprint planning and daily stand-ups that occur frequently enables teams to plan effectively. It involves defining goals, prioritizing work and assigning tasks to team members to understand their responsibilities. "*Planning sessions have given us a road map in a sense of how we are going to achieve work. Projects do not always go as smoothly as you planned for, but because we have those sessions, we able to adjust accordingly and are still able to meet our goals. Planning has been very influential for our project success*" was mentioned by P2. P13 indicated "*to do planning, helped the teams deliver successful projects.*" Effective planning assists with projects and allows teams to adjust according to the plan. According to Serrador and Pinto (2015), early planning in agile projects was found to be a key element in agile project success. Continuous planning allows teams to be flexible to change and manage risks effectively. There is a positive correlation between agile practices that include planning and the success of project delivery.

5.6.3.4.2. Task management and execution

Agile practices in line with the principles is to deliver working software frequently as opposed to the full solution at the end. This approach enables teams to split the tasks into smaller achievable pieces which can be delivered incrementally. It allows teams to have focus and

provide better quality projects. P11 added "*you develop something small, and you hand it over and then the next day you develop something small, and you hand it over. Those small iterations of incrementally breaking up a bigger problem into smaller chunks helped deliver the project successfully.*" Agile practices encourage teams to plan work and spilt the work into achievable pieces, this allows the team to deliver small pieces of work frequently, which makes up tasks of a bigger feature, which results in successful project delivery. Continuous planning and feedback sessions provides teams with the ability to check progress of tasks that allows efficiency for tasks to be completed that make up a feature of successful delivery (Serrador & Pinto, 2015).

5.6.3.5 Problem solving

Agile practices with increased collaboration allow teams from different skillsets to brainstorm and come up with innovative solutions to solve problems that influence project success. Our findings show that defining solutions are key aspects to the success of agile projects.

5.6.3.5.1. Coming up with solutions

Agile practices provide teams with the freedom to be innovative and creative. This culture promotes the team's capability to work together in defining solutions. Additionally, agile projects cater for the risk element, this ensures teams deal with them faster and come up with solutions to solve them. P13 mentioned "*giving everyone a voice, it helps with your performance measurements, you start to focus more on solutions in a way we can do this feature better by coming up with a better solution, it helps performance as an employee and you feel motivated. Now you are part of this team that is able to deliver this product successfully.*" P3 indicated "*input team members to discuss and resolve issues.*" Solutioning on impediments, enhances quality and allows team to maintain momentum to deliver the project. Giving teams an environment where they feel safe and do not need to be afraid to speak up. This allows all individuals to feel valuable to the project by proposing solutions. Empowering teams is key for individuals to address problems quicker and find solutions to them. This has a bigger impact on the success of project delivery (Moloto, Harmse, & Zuva, 2020).

5.7 THEORETICAL FRAMEWORK

This study used the Expectancy as the theoretical framework to be used as a lens to help answer the research questions. This theory is key to understanding employee performance and how it can be improved. Enhancing employee performance when using agile practices can be integrated using the Expectancy.

The Expectancy is grouped into three variables: expectancy, instrumentality and valence. The expectancy variable refers to the belief that increased effort will lead to improved performance. The valence variable indicates that improved performance will result in a reward or outcome. The instrumentality variable describes the value that individuals place on the rewards. The interview questions were guided by the Expectancy by grouping the interview questions in the relevant variable groups.

In relation to the expectancy variable, it is the belief that good effort using agile practices will result in increased performance. Agile practices promote increased effort from our findings of the agile benefits that are associated to increased productivity improved team dynamics, clearly defined goals, increased efficiencies and continuous improvement. Agile obstacles highlighted need to be addressed for employees to feel confident that their efforts using agile practices will lead to enhanced performance. These challenges guide employees in easing the adoption of agile practices, decrease micromanagement by promoting autonomy in employees and create a safe environment for teams. Furthermore, there are missing aspects when using agile practices that can be implemented to increase employee's confidence in using agile practices. These include providing agile training to gain a better understanding of agile practices, have agile coaches present and provide environments that are conducive to learning and upskilling.

Instrumentality is the belief that improved employee performance will be rewarded with an outcome. Theme 8 (existing/motivational outcomes) defined the existing outcomes and motivational outcomes that participants obtain when using agile practices. Employees need to trust that their increased performance during agile projects will lead to an outcome. Our results show that recognition from peers and customers, enhanced team dynamics, sense of achievement of successful project delivery, professional development and providing value to the customer are existing outcomes that participants take away when using agile

practices. Additionally, our results show outcomes when using agile practices that motivates them, namely personal growth and development, respect and collaboration within the team, work-life balance, recognition and adding value to the customer.

Valence is the value that individuals place on the outcome that is obtained when using agile practices. Theme 9 (valued/undervalued outcomes) identified the valued and undervalued outcomes obtained when using agile practices. Our results show that recognition from peers and customers, enhanced team culture, personal growth, delivering successful projects and the impact it makes to the customer are valued outcomes. Furthermore, our results show the outcomes that are undervalued in the current system include not enough recognition to agile teams, team dynamics being overlooked, feedback loop to analyse and define improvement areas in the teams and the project and individual value not recognised. It is prudent that organisations align with ways to provide these valued outcomes to agile teams for improved performance.

By providing the relevant working conditions, additional support, addressing challenges, using agile practices effectively, including the agile ceremonies, it can increase employee's efforts which will result in increased performance. Increased employee performance can be maintained if outcomes obtained align to the outcomes that employees value.

5.8 CONCLUSION

This chapter outlined the findings of this study associated with the main research question and sub-research questions.

The main research question was discussed with the findings from the four sub-research questions. The importance of employee performance was discussed in Section 5.3 through existing literature. Section 5.4 discussed the benefits, challenges and additional requirements when using agile practices. Nine key aspects of agile benefits were discussed, which included team dynamics and collaboration, communication, efficiency and productivity, quality and delivery, risk management and problem solving, planning and adaptability, continuous improvement and learning, project management and personal development and well-being. Unanticipated benefits of agile that surfaced in relation to existing literature were team members carrying individuals along the agile journey and

product owner mentality is seen across all members of the agile team. Five key aspects of agile challenges were discussed, which included adopting agile practices, leadership and decision making, team engagement, customer involvement and planning and adaptability. Four key aspects of additional support were discussed which included training and education, additional role support, acceptance and understanding and implementation and practices.

Agile ceremonies that are used and the value that it provides were discussed in Section 5.5. Agile ceremonies commonly used were discussed. Agile practices promote the ability to learn and share knowledge. Our findings identified knowledge and sharing to be formal sessions in some agile teams. Values associated with each type of agile ceremony were discussed.

The influence of agile practices towards employee performance and agile practices that lead to successful projects were discussed in Section 5.6. Five key aspects of agile practices that contribute towards employee performance were discussed which included task management and planning, transparency and communication, employee development and well-being, team collaboration and culture, and progress and outcomes. Five key aspects of agile practices that lead to successful projects were discussed which included team dynamics and collaboration, communication, agile practices and processes, planning and management and problem solving.

Lastly, the Expectancy and how it can be used with agile practices to improve employee performance was discussed in Section 5.7. It discusses how the benefits of agile practices increase the efforts of employees. Furthermore, it defines the obstacles and additional support required of agile practices that need to be addressed to allow employees to increase their effort. Outcomes that are obtained using agile practices need to be aligned to those outcomes that are valued to maintain high employee performance.

6 CONCLUSION

6.1 INTRODUCTION

The objective of this chapter is to sum up the findings of the research questions for this paper and to present the conclusion. Additionally, a summary of the contributions and guidelines for future research were presented. The purpose of this study was to explore agile practices and its contribution to employee performance in South African IT workforces.

The principal research question shaped to guide this research:

How does the implementation of agile practices in a South African IT workforce contribute towards employee performance?

To ensure that this topic reaches an acceptable conclusion, the following set of questions must be answered:

- Why is employee performance important in a workforce?
- What are the benefits and challenges of agile practices to employees in a South African IT workforce?
- How are agile practices implemented in the workforce using agile ceremonies?
- How do agile practices affect employee performance in IT workforces, as measured by key metrics such as collaboration, communication, planning but not limited to these?

This research paper was broken down into 6 Chapters. Chapter 1 presented the background information, problem statement, research questions, research objectives and significance of the study. Chapter 2 presented the literature review to provide a comprehensive evaluation of existing research. Additionally, gaps in existing research were uncovered. Chapter 3 provided an overview of the research methodology used for this study which included the research paradigm, approach, strategy, methodology, sampling technique, data collection method and data analysis method. Chapter 4 presented data analyses of the data collected and presented the results. The discussions of the findings for each of the research questions were presented in Chapter 5.

The Expectancy was used to guide the study. The interview questions were guided using the Expectancy. Participants consisted of agile practitioners within South African IT workforces.

6.2 SUMMARY OF FINDINGS

The study used semi-structured interviews as method to collect data on the topic. This was used to gain an understanding of the contribution of employee performance when implementing agile practices from agile practitioners within South African IT workforces. To answer the main research question, the sub-research questions were created. Using the thematic analysis, 9 themes emerged from the data analysis which was used to explore the contribution of agile practices towards employee performance.

Existing literature mentioned the importance of employee performance, including the impact that high performing employees have on organisations. Increased employee performance is fundamental to the success of organisations. It allows organisations to maintain their competitive advantage in their industries. High performing employees tend to stay longer at organisations with the appropriate support and training and this results in a decrease in staff turnover rate. Healthy working conditions, autonomy and increased levels in productivity has a positive effect on employee performance.

Theme 1 from the findings captured the benefits of agile practices. Six secondary themes further emerged from within this theme. The first secondary theme entails team dynamics and communication (which participants identified as increased collaboration within the team and with customers, and on which existing literature places high emphasis); team driven (provides level of autonomy and decision-making); the alignment of team members working towards a common goal to provide focus; the definition of roles and responsibilities (which ensures everyone has a contributing part to play in the completion of work) and fostering a safe environment which allows individuals to fail and learn from their mistakes quickly, which existing literature supports in terms of the impact of failures offering valuable learnings. Additionally, new findings that emerged that were not found in existing literature was that team members are able to carry individuals along the agile journey and with agile teams and customers working closer together, agile teams are able to foster a product owner mentality and makes the project objectives and vision clearer. The next secondary theme

encompassed communication being further enhanced with closer collaboration; transparency is visible to understand progress and risk and the constant feedback within teams and the customers augments continuous improvement in terms of agile process and products delivered respectively. Another secondary theme that emerged as a benefit of agile practices from participants' feedback was that productivity is increased; existing literature mentions that through communication, coordination and trust, frequent delivery of working software is produced, which existing literature states adds value to the customer and reduces development costs and agile practices, reducing waste in software development processes to increase efficiency. Another of the secondary themes include projects being delivered are of a higher quality with reduced system defects, and existing scholars mention that the bug fix rate of agile is on an improved scale. A secondary theme defined from participants' responses were that risk management is heightened as working in cross-skilled teams collaboratively, promotes problem solving capabilities. An additional secondary theme from our findings identified that agile ceremonies provide a platform for teams to plan more effectively and this allows them to respond faster when changes occur. Agile practices foster continuous improvement, and this can be aided through learning from our findings. Lastly, agile values focus on people over processes and our findings in this secondary theme defines work-life balance and personal development to be key benefits to employees. Existing literature supports this, and this allows for a healthy working environment with reduced stress levels and anxiety.

Theme 2 included the challenges of agile practices experienced by participants from our findings. Five secondary themes emerged from our data analysis. The first secondary theme identified from participants was the resistance to change and existing literature states that this can be due to the lack of understanding of agile practices, cultivating an agile mindset was an important challenge raised by participants, and existing literature identified that this is overlooked in agile teams and has an impact later on the success of agile teams. Adopting agile practices is a major barrier that needs to be unlocked and existing literature notes that this is due to the resistance from employees due to the lack of education relating to agile. Another secondary theme found based on our findings where participants felt that micromanagement and dictatorship is an obstacle, and this leads to limiting teams in being innovative and creative. Existing literature states this stems from leaderships still adapting to traditional methodology leadership styles. Team engagement also emerged as a

secondary theme, where participants identified that making team members feel and getting them engaged are challenges, this can be seen through sprint retrospectives where teams are not involved. Existing literature mentions that this can be done by finding ways to get teams to feel calm, for example by introducing ice breakers in sprint retrospectives. Another secondary theme that emerged from our findings relates to agile teams and their experience with the customer, where the lack of understanding on agile practices with the customer can have an effect on project expectations and goals. Existing literature supports this and can be overcome by providing the customer with an understanding of agile practices and clearly defining the customer's role. Planning and predictability emerged as a secondary theme from our findings, and this included the difficulties experienced in predicting time and resources, which existing literature attributes to lack of training and not following standards in estimating – which in turn results in too much or too little work being completed in a sprint.

Theme 3 encapsulates the additional support participants defined that are required for them to use agile practices more confidently. Four secondary themes emerged from our findings. The first secondary theme that emerged included training and education. Existing literature states that adequate training helps teams with the agile transformation journey and understanding. Furthermore, our participants identified that self-study is an important driver to ensure teams keep up with agile updates and best practices. There was no existing literature that states self-study would help teams use agile effectively, rather self-studying in general helps individuals gain new knowledge and upskill. Great enthusiasm was noted from participants that in this secondary theme agile coaches being present is key to guiding teams along their agile journey and helping resolve issues that arise. Existing literature states that agile coaches are important helping teams inculcate an agile mindset. Another secondary theme that emerged that related to a new finding was that although agile processes can be defined within a team, it is prudent that teams are afforded the time to follow these processes effectively. There were no existing literature relating to providing sufficient time to apply agile practices as an additional support mechanism, however existing literature states that applying agile practices without time constraints comes down to effective project planning to allow teams sufficient time to complete their processes and tasks.

Theme 4 contains the aspects of agile practices that guide teams to deliver successful projects. Five secondary themes were identified from our findings. The first secondary theme that emerged from our findings was that improved team dynamics and collaboration within the teams allowed the team to resolve issues and focus on a common goal. Existing literature states that agile is designed for teams to work on manageable features and this creates focus in the teams as opposed to attempting to deliver a full project at once. Another secondary theme identified from participants was the continuous communication that facilitates planning, managing risks and aligning to project expectations. A secondary theme that emerged from participants responses was having an understanding of the project objectives and its value, and that defining an MVP is a strategic enabler to build on realising the full success of a project at the end. Existing literature states that this allows the team to deliver faster, and feedback loops allow to improve on the project. Furthermore, delivering quicker to market enables the customer to perform business functions earlier. Agile practices promote continuous planning and the ability for work to be managed that assist in successful projects defined by participants. Lastly, agile practices promote autonomy within teams, and this develops their creative instincts in order to come up with meaningful solutions to produce successful products. Existing literature mentioned that making employees feel valued empowers them to feel confident and propose solutions.

Theme 5 which was key to this study encapsulates agile practices that influence employee performance. Five secondary themes were identified from our findings. The first secondary theme from participants identified planning and task management as a contributor to employee performance. This included agile ceremonies facilitating effective planning and frequent delivery of working software. Existing literature supports this in that continuous project delivery in agile is a factor that drives employee performance. Furthermore, participants identified that agile practices which include agile ceremonies provide structure that facilitates valuable discussions in collaboration, problem solving and defining project objectives that contribute to employee performance. Scholars have mentioned that agile ceremonies are important in unlocking employee performance. Employees are enabled to be empowered, and this heightens their level of involvement in projects that steers them to perform better, and existing literature supports this. Delays during agile projects are handled much more effectively and this is due to teams' flexibility to come up with solutions and move on. A new finding was that the team abilities to manage risk has a positive influence on

employee performance that was not found in existing literature. This is related to employee ability to manage that level of uncertainty. Another secondary theme identified which influence employee performance was enhanced communication and transparency. Existing literature mentioned that clear and open communication channels in agile aid in increasing employee performance. Additionally, authors have identified that agile teams rely on regular feedback to identify areas of improvement. Transparency ensures teams are kept up to date in terms of progress, risks and changes and existing literature attributes this to trust, honour and empowerment in the team that provides satisfaction to employee performance. An additional secondary theme from our findings relate to employee development and well-being which includes increased autonomy and independence, employee personal growth and development. Scholars mentioned that employees are able to grow in agile teams and this can be seen with new joiners. Increased productivity in agile practices provide teams with a sense of accomplishment and employee well-being is considered in agile to encourage a healthy work-life balance. Existing literature mentioned that agile practices provide conditions that reduces stress to promote teams to have a clear mind in developing innovative and creative ideas. Another secondary theme that emerged from our findings were team collaboration and culture that influenced employee performance. A principle of agile is building teams around motivated individuals and this relates to responses from participants were motivated individuals build strong teams dynamics and culture, while existing literature supports that team spirit drives high performance. Furthermore, continuous improvement was identified as an important factor enhancing employee performance. Scholars state that continuous improvement is an objective to drive high performance. Lastly, our findings identified that outcomes are clearly defined to ensure alignment on expectations, and existing literature mentioned that clearly defined goals aid in improving quality, productivity and performance. Immediate rewards and feedback in relation to delivering working software frequently and receiving feedback on the implementation also enhances employee performance.

Theme 6 entails what agile ceremonies are used by participants during agile projects. One secondary theme was identified from our findings. This secondary theme included the various agile ceremonies that participants conduct which included daily stand-up, sprint planning, sprint retrospective, backlog/sprint grooming, sprint review, knowledge and sharing and PI planning. Existing literature supports this as formal agile ceremonies

excluding knowledge and sharing ceremonies. Knowledge and sharing are an agile benefit, and our findings confirmed this in that formal sessions help teams learn from each other and grow collectively.

Theme 7 included the value provided to participants by each agile ceremony. Seven secondary themes emerged from our findings. The first secondary theme identified the value received from daily stand-ups which included tracking progress, which allows employees to determine if they are tracking towards meeting the sprint goals, identifying impediments early on and solutions around them, enhanced communication and collaboration, gaining an in depth understanding of the work and supporting team members. Existing literature supports the values of stand-ups which include highlighting risks and creating transparency; daily stand-ups provide a basis for communication and collaboration. The next secondary theme from participants identified the value of sprint planning which included efficient planning, opportunities to size the effort of work, breaking down complex tasks to be able to complete it within a sprint, gain an understanding of the requirements, define goals and commit to them, increased team engagement and visibility of work to be achieved. Existing research stated that estimating work is important to increase the team's velocity, breaking down work allows teams to complete more tasks and sprint planning sessions are designed for teams to set a goal and have an objective to work towards within the sprint. Another secondary theme that emerged was backlog/sprint grooming value which entails gaining first sight of work to create awareness in the teams, breaking down work, continuous improvement and engagement from the team. Backlog grooming allows teams to add, edit, update and break down tasks that makes sprint planning sessions later efficient, and this was found in existing literature. Additionally, existing literature supports continuous improvement during backlog grooming that results in quality products. Sprint review value emerged as a secondary theme from our findings which included a platform for teams to shine, and demonstrating the work achieved within the sprint and scholars state that this allows the team to be recognised for their efforts. Furthermore, it provides teams a basis on which to evaluate the work that was achieved or not achieved. The next secondary theme covered the value of sprint retrospectives which included reflection of the performances and effort in the sprint, and defining ways collectively to improve in the next sprint; this was also found in existing literature. Furthermore, retros build trust in the team that attributes to open and honest conversations, where employees are acknowledged for their efforts and

provided learning opportunities from failures. Value of knowledge and sharing sessions promote learning opportunities for teams to upskill and grow. Existing literature states that agile practices promote environments to learn. Lastly, PI planning sessions allow teams to collaborate with the customer and prioritise work to manage scope and gain an understanding of the purpose of the project. Existing literature refers to this as determining the objective of the project, allowing the project to be delivered in line with the customers' expectations, thereby providing value to them.

Theme 8 from our findings entails the existing and motivational outcomes obtained when using agile practices. The aim of this theme was to support the Expectancy using agile practices. Two secondary themes emerged. The first secondary theme identified the existing outcomes that participants obtain from using agile practices which include receiving recognition for their performance, building team dynamics within the team, experiencing a sense of accomplishment for the work delivered, being able to develop and delivering a project that provides value to customers. The next secondary theme from our findings encompasses the outcomes obtained when using agile practices that motivates them which are personal growth and development, work satisfaction and accomplishment, building respect and collaboration in the team, adapting an agile mindset, having work-life balance that is flexible and receiving recognition from peers and customers and understanding the value that they have added.

Theme 9 covers the outcomes that are obtained from agile practices that are valued and undervalued. This theme was used to support the Expectancy using agile practices. Two secondary themes emerged. This first secondary theme from our findings included the outcomes that were obtained using agile practices that are valued, namely receiving recognition and feedback on work which goes a long way, collaborating with the team and building a healthy team culture, personal and professional growth, and delivering work that has a positive impact to the business. The next secondary theme identified the undervalued outcomes that are obtained when using agile practices, namely not enough recognition to the agile teams, team dynamics helping promote healthy working environments that are taken for granted, and the lack of feedback received from customers regarding the product once delivered, as well as the value of individuals provide to the project being overlooked.

This study used the Expectancy as lens to guide the study. Interview questions were grouped in the relevant variables, with the expectancy variable referring to increased effort leading to improved performance. Our findings identified benefits of agile that allow employees to increase their efforts that will lead to improved performance. Furthermore, participants identified obstacles in agile that need to be addressed for employees to increase their effort. Additional supports were identified from participants to using agile more effectively and which needs to be provided for employees to increased effort. The instrumentality variable refers to increased performance leading to an outcome. Findings from our results identified the existing and motivational outcomes participants obtain from using agile practices. Lastly, the valence variable describes the value that employees place on the outcome. Results from participants identified the valued and undervalued outcomes obtained from agile practices that need to be made available.

6.3 RESEARCH CONTRIBUTIONS

The summary of the contributions this study from a theoretical and practical perspective is presented below.

6.3.1 Theoretical contribution

This study contributed to the academia on agile practices by providing evidence on how employee performance is influenced by agile practices within South African IT workforces. It provides further details into the aspects of agile practices that contribute towards employee performance. It provides existing literature on agile practices to be further developed to gain deeper understanding on its effectiveness.

When applying the Expectancy to understand what aspects of agile practices lead to increased effort, it is believed that increased effort will lead to improved performance. Providing this insight can help describe how agile practices influence employee performance and create a framework on how to implement agile practices to increase employee performance.

6.3.2 Practical contribution

This study contributed to South African IT organisations and provides insight into how effectively implementing agile practices enhance employee performance. This study defines the benefits experienced using agile practices and how organisations should maintain these benefits. Furthermore, by highlighting the obstacles experienced using agile practices, organisations can introduce strategies to address them. Additional support to use agile practices effectively were identified. Organisations within the IT sector can be proactive and provide this support to employees to guide employees into using agile practices more confidently.

Aspects of agile practices that guide teams to successful project delivery were defined. Agile teams can ensure that their practices and processes align with them to continuously deliver quality agile projects.

Agile teams are designed to follow agile practices which include agile ceremonies. The value of each agile ceremony was defined. Agile teams can ensure that their ceremonies support the value additions to set a basis for them to succeed from iteration to iteration and continuously work towards improvement.

The outcome of agile practices for employees should be valued and motivate employees. IT workforces can use this research to ensure that outcomes that employees obtain when using agile practices, should align with outcomes that employees value.

6.4 RESEARCH LIMITATIONS

It is fundamental to note the limitations experienced during this study. This study was restricted to employees using agile practices within South African IT workforces. Therefore, the findings cannot be generalized and may not be applicable to IT workforces out of South Africa.

The researcher used participants from agile teams that support the various roles within agile. However, not all the roles within agile projects were represented. The responses and perceptions from participants were limited to product owners, business analyst, test analyst, software developers, business architects, systems architects, scrum masters and project

managers. Future research can use the additional roles that include UX experts and stakeholders.

The sample size was limited to seventeen participants which might not represent the broader IT workforce in South Africa accurately. Future research can study a broader sample size to support the broader IT workforce in South Africa.

Exclusion of employees with less than two years of agile experience omitted the ability of gaining the perspectives of employees that could provide insight into their current agile journey transformation.

6.5 FUTURE RESEARCH

Agile practices place high emphasis on the human element. As such this research identified various aspects of the human element that influence performance. Sticking to the human element concept, future researchers could conduct a qualitative study to explore employee satisfaction when using agile practices. The results could provide additional information to researchers exploring methods to improve employee satisfaction in South African IT workforces.

Future researchers could conduct a comparative study to test agile projects success with traditional in-office, fully remote and hybrid working agile teams in South African IT workforces. The results could provide value to IT organisations in understanding what type of work setup has an influence in the success of agile projects.

Future researchers can create a conceptual framework using the Expectancy as a basis for understanding how agile practices influence employee performance. This framework can provide IT organisations with a platform to base their agile practices on and find ways to improve employee performance in their teams. Additionally, it can be used to gain an understanding on what do employees look to obtain from using agile practices.

Future researchers can delve deeper into understanding the influence of employee performance in specific agile frameworks such as Scrum; Kanban; Extreme Programming (XP), Feature-Driven Development (FDD); Test-Driven Development (TDD); Adaptive

Software Development (ASD) or Crystal and Dynamic Systems Development Method (DSDM). The outcomes could provide IT workforces with a better understanding of which agile framework is best suited to enhance employee performance.

Future researchers could conduct detailed understanding of challenges and benefits experienced by the various agile roles and how these challenges and benefits influence employee performance. The results could show what challenges and benefits each agile role experiences using agile practices that impact employee performance and provide recommendations on how to overcome the challenges and enhance the benefits.

6.6 CONCLUSION

This chapter reiterated the main research question, sub-research questions and the aim of the study. Section 6.2 identified the findings from the discussion from the emerging themes. Section 6.3 defines the contribution of this study from a theoretical and practical perspective. Section 6.4 identified the limitations experience during this study and Section 6.5 provides future research ideas that researchers can explore in the future.

7 REFERENCES

Aalst, W. c., Mylopoulos, J., Rosemann, M., Shaw, M. J., & Szyperski, C. (2016). *Agile Processes in Software Engineering and Extreme Programming.* Edinburgh: Springer Open.

Abdulrahman, R. A. (2015). The investigation on the best practices of extreme programming (XP) quality implementation at UUM IT. 21-32.

Aboagye, E., Björklund, C., Gustafsson, K., Hagberg, J., Aronsson, G., Marklund, S., . . . Bergström, G. (2019). Exhaustion and impaired work performance in the workplace: Associations with presenteeism and absenteeism. *Journal of occupational and environmental medicine 61.11*, 438-444.

Abrahamsson, P., Salo, O., Ronkainen, J., & Warsta, J. (2017). Agile Software Development Methods: Review and Analysis. *VTT publication*, 107.

Ahli, R., Hilmi, M. F., & Abudaqa, A. (2024). Moderating effect of perceived organizational support on the relationship between employee performance and its determinants: A case of entrepreneurial firms in uae. *Aptisi Transactions on Technopreneurship (ATT) 6.2*, 199-212.

Akhtar, M. (2016). Research design. *Research design*.

Al Kurdi, B., Alshurideh, M., & Alnaser, A. (2020). The impact of employee satisfaction on customer satisfaction: Theoretical and empirical underpinning. *Management Science Letters*, 3561-3570.

Alhazmi, A. S. (2020). Decision support technology for sprint planning. *Radio Electronics, Computer Science, Control 1*, 135-145.

Al-Sabbagh, K., & Gren, L. (2018). The Connections Between Group Maturity, Software Development Velocity and Planning Effectiveness. *Journal of Software: Evolution and Process 30.1*.

Al-Saqqa, S., Sawalha, S., & AbdelNabi, H. (2020). Agile Software Development: Methodologies and Trends. *International Journal of Interactive Mobile Technologies 14.11*.

Amjad, S., Ahmad, N., Saba, T., Anjum, A., Manzoor, U., Balubaid, M., & Malik, S. U. (2017). Calculating completeness of agile scope in scaled agile development. *IEEE Access*, 5822-5847.

Asproni, G. (2004). Motivation, Teamwork, and Agile Development. *Agile Times*, 5-8.

Astuty, I., & Udin, U. (2020). The effect of perceived organizational support and transformational leadership on affective commitment and employee performance. *Journal of Asian Finance, Economics and Business Vol 7 No 10*, 401-411.

Atatsi, E. A., Stoffers, J., & Kil, A. (2019). Factors affecting employee performance: a systematic literature review. *Journal of Advances in Management Research 16.3*, 329-351.

Avison, D., Lau, F., Myers, M., & Nielsen, P. (1999). To make academic research relevant, researchers should. *January 1999/Vol. 42, No. 1 COMMUNICATIONS OF THE ACM*.

Azike, J. (2021). Strategic Insights into Scrum Framework: Making a Compelling Case for Backlog Grooming as an Integral Scrum Event. *AI, IoT and the Fourth Industrial Revolution Review 9.2*, 11-22.

Badrianto, Y., & Ekhsan, M. (2020). Effect of work environment and job satisfaction on employee performance in pt. Nesinak industries. *Journal of Business, Management, & Accounting*.

Balaji, S., & Murugaiyan , D. (2012). Waterfall vs. V-Model vs. Agile: A comparative study on SDLC. *International Journal of Information Technology and Business Management, 2(1)*, 26-30.

Bapna, R., Langer, N., Mehra, A., Gopal, R., & Gupta, A. (2013). Human capital investments and employee performance: An analysis of IT services industry. *Management Science*, 641-658.

Batra, D., Xia, W., & Zhang, M. (2017). Collaboration in Agile Software Development: Concept and Dimensions. *Communications of the Association for Information Systems*, 20.

Baumann, M. R., & Bonner, B. L. (2017). An Expectancy Theory Approach to Group Coordination: Expertise, Task Features, and Member Behavior. *ournal of Behavioral Decision Making*, 407–419.

Beck, K., Grenning, J., Martin, R. C., Beedle, M., Highsmith, J., Mellor, S., . . . Marick, B. (2001). *Principles behind the agile Manifesto*. Retrieved from Manifesto for Agile Software Development: https://agilemanifesto.org/iso/en/principles.html

Beerbaum, D. (2021). Applying Agile Methodology to regulatory. *Journal of Applied Research in the Digital Economy (JADE)*.

Ben-Zahia, M., Aburas, A., & Ghuwar, M. (2022). The Challenges of Software Development: Waterfall and Agile. *International Science and Technology Journal*.

Bhattacherjee, A. (2012). Social Science Research: Principles, Methods, and Practices. *Creative Commons Attribution-NonCommercial-ShareAlike 3.0.*

Biddle, R., Meier, A., Kropp, M., & Anslow, C. (2018). Myagile: sociological and cultural effects of agile on teams and their members. *Proceedings of the 11th International Workshop on Cooperative and Human Aspects of Software Engineering*, 73-76.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*.

Brough, P. (2019). *Advanced Research Methods. Design, Analysis and Reporting.* Abingdon: Taylor & Francis Group, an informa business.

Bryant, C. (1985). Positivism in social theory and research. *Macmillan International Higher Education*.

Çeti, B., & Hassan, A. T. (2019). Bibliometric profile of studies related with equity theory. *Journal of Tourismology*, 17-29.

Chan, F. K., & Thong, J. Y. (2009). Acceptance of agile methodologies: A critical review and conceptual framework. *Decision Support Systems*, 803-814.

Chande, S. V., & Flora, H. K. (2014). A Systematic Study on Agile Software Development Methodologies and Practices . *nternational Journal of Computer Science and Information Technologies 5.3*, 3624-3637.

Chih-Pei, H. U., & Chang, Y.-Y. (2017). John W. Creswell, research design: Qualitative, quantitative, and mixed methods approaches. *Journal of Social and Administrative Sciences 4.2*, 205-207.

Choudhary, B., & Piparo, T. L. (2017). Agile in distributed environment. 5 - 55.

Ciric, D., Lalic, B., Gracanin, D., & Palcic, I. (2018). Agile project management in new product development and innovation processes: challenges and benefits beyond software domain. *In 2018 IEEE International Symposium on Innovation and Entrepreneurship (TEMS-ISIE)*, 1-9.

Cockburn, A., & Highsmith, J. (2001). Agile Software Development: The People Factor. *Software Management*.

Cohn, M. (2004). *User stories applied: For agile software development.* Boston: Addison-Wesley Professional.

Cooke, J. L. (2012). *Everything You Want to Know about Agile.* IT Governance Ltd.
Creswell, J. W. (2016). *Qualitative inquiry and research design: Choosing among five approaches.* London: Sage Publications.
Crowder, J. A., & Freiss, S. (2015). *Agile Project Management: Managing for Success.* Springer.
Davies, A. (2019). Waterfall vs Agile: Which Methodology is Right for Your Project.
De Clercq, D., Ul Haq, I., & Azeem, M. U. (2021). Unpacking the relationship between procedural justice and job performance. *Management Decision 59*, 2183-2199.
Dearden, A., Haider, R., & Subodh, G. (2010). Roles and responsibilities in agile ICT for development. *India HCI 2010/Interaction Design & International Development 2010*, 1-12.
Denning, S. (2016). Understanding the three laws of Agile. *Strategy & Leadership*, 3-8.
Diamantidis, A. D., & Chatzoglou, P. D. (2019). Factors affecting employee performance: an empirical approach. *International Journal of Productivity and Performance Management*.
Dima, A. M., & Maasen, M. A. (2018). From Waterfall to Agile software: Development models in the IT sector, 2006 to 2018. Impacts on company management. *Journal of International Studies*, 315-326.
Duc, A. N., & Abrahamsson, P. (2016). Minimum viable product or multiple facet product? The role of MVP in software startups. *n Agile Processes, in Software Engineering, and Extreme Programming: 17th International Conference, XP 2016, Edinburgh, UK, May 24-27, 2016, Proceedings 17* , 118-130.
Elnaga, D., & Imran, A. (2013). The Effect of Training on Employee Performance. *European Journal of Business and Management*, 137-147.
Ersoy, I. B., & Mahdy, A. M. (2015). Agile Knowledge Sharing. *Int. J. Softw. Eng.(IJSE) 6.1*, 1-5.
Fagarasan, C., Popa, O., & Cristea, C. (2021). Agile, waterfall and iterative approach in information technology projects. *n IOP Conference Series: Materials Science and Engineering (Vol. 1169, No. 1, p. 012025)*.
Fagerholm, F., Ikonen, M., Kettunen, P., Münch, J., Roto, V., & Abrahamssonc, P. (2015). Performance Alignment Work: How software developers experience the continuous adaptation of team performance in Lean and Agile environments. *Information and Software Technology 64*, 132-147.
Faisal, H., Rehman, A., Arif, K. S., Wahab, K., & Abbas, M. (2019). The influence of agile methodology (Scrum) on software project management. *In 2019 20th IEEE/ACIS International Conference on Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing (SNPD)*, 145-149.
Fatema, I., & Sakib, K. (2017). Factors influencing productivity of agile software development teamwork: A qualitative system dynamics approach. *017 24th Asia-Pacific Software Engineering Conference (APSEC)*, 737-742.
Flewelling, P. (2018). *The agile developer's handbook : get more value from your software development: get the best out of the agile methodology.* Packt Publishing.
Freitasa, F., Silva, F. J., Campilhoa, R. D., imentel, C., & Godina, R. (2020). Development of a suitable project management approach for projects with parallel planning and execution. *Procedia Manufacturing, 51*, 1544-1550.
Frenkel, S. (1998). Beyondbureaucracy?Work organization in call centres. *The International Journal of Human Resource Management*, 957-979.

Gandomani, T. J., Zuzzalil, H., Ghani, A. A., Sultan, A. M., & Parizi, R. M. (2015). The impact of inadequate and dysfunctional training on agile transformation process: A grounded theory study. *Information and Software Technology*, 295-309.

Garcia, F. V., Hauck, J. C., & Hahn, F. N. (2022). Managing Risks in Agile Methods: a Systematic Literature Mapping. *In SEKE*, 394-399.

Gawke, J., Gorgievski, M., & Bakker, A. (2019). Measuring intrapreneurship at the individual level: Development and validation of the Employee Intrapreneurship Scale. *Management Journal*, 806-817.

Gemma, R. (2018). Introduction to positivism, interpretivism and critical theory. *Nurse researcher*, 41-49.

Global, 3. P. (2021, January 2020). *Why Software Development Porjoects Fail*. Retrieved from https://www.3pillarglobal.com/insights/why-software-development-projects-fail/

Goduka, N. (2021). From positivism to indigenous science: A reflection on world views, paradigms and philosophical assumptions. *Africa Insight 41.4*, 123-138.

Gren, L., & Ralph, P. (2022). What Makes Effective Leadership in. *In Proceedings of the 44th international conference on software engineering*, 2402 - 2414.

Hameed, A., & Waheed, A. (2011). Hameed, A., & Waheed, A. (2011). Employee development and its affect on employee performance a conceptual framework. *International journal of business and social science, 2(13)*.

Hanaysha, J. (2016). Improving employee productivity through work engagement: Empirical evidence from higher eductation sector. *Evidence from higher education sector." Management Science Letters*, 61-70.

Hancock, J. I., Allen, D. G., Bosco, F. A., McDaniel, K. R., & Pierce, C. A. (2013). Meta-analytic review of employee turnover as a predictor of firm performance. *Journal of management*, 573-603.

Harris, K., Hanks, Lydia, Line, N., & Mcginley, S. (2014). Understanding responses to posted restaurant food safety scores: An information processing and regulatory focus perspective. *Internation journal of hospitality management*, 67-76.

Hartman, R. S. (2011). *The structure of value: Foundations of scientific axiology.* Wipf and Stock Publishers.

Hawk, S., Beath, C., Beath, C., Bullen, C., Gallagher, K., Goles, T., & Wion, R. (2006). The Information Technology Workforce: Trends and Implications 2005-2008. *MIS Quarterly Executive, 5(2)*, 47-54.

Heimicke, J., Kaiser, S., & Albers, A. (2021). Agile product development: an analysis of acceptance and added value in practice. *31st CIRP Design Conference 2021*, 768-773.

Hermina, U. N., & Yosepha, S. Y. (2019). The model of employee performance. *International Review of Management and Marketing*, 69.

Heron, J. (1996). *Co-operative Inquiry: Research into the Human Condition.* London: Sage.

Hoda, R., Salleh, N., & Grundy, J. (2018). The Rise and. *IEEE software*, 58-63.

Hundhausen, C., Conrad, P., & Tariq, A. (2024). An Empirical Study of the Content and Quality of Sprint Retrospectives in Undergraduate Team Software Projects. *46th International Conference on Software Engineering: Software Engineering Education and Training*, 104-114.

Iqbal, J., Omar, M., & Yasin, A. (2019). An Empirical Analysis of the Effect of Agile. *2019 2nd International Conference on Computing, Mathematics and Engineering Technologies*, 1 - 8.

Jaspal, R. (2020). Content analysis, thematic analysis and discourse analysis. *Research methods in psychology 1*, 285-312.
Joakim, V. (2016). *Practical DevOp.* Birmingham: Packt Publishing Ltd.
Jones, T. S., & Richey, R. (2000). Rapid prototyping methodology in action: A developmental study. *Educational Technology Research and Development, 48(2)*, 63-80.
Junker, T. L., Bakker, A. B., Gorgievski, M. J., & Derks, D. (2021). Agile work practices and employee proactivity: A multilevel study. *human relations*, 1-29.
Jurs, S., & Wiersma, W. (2008). *Research Methods in Education: An Introduction. 9th ed.* London: UK: Pearson.
Kalenda, M., Hyna, P., & Rossi, B. (2018). Scaling agile in large organizations: Practices, challenges, and success factors. *ournal of Software: Evolution and Process*.
Kaufmann, C., Kock, A., & Gemünden, H. G. (2020). Emerging Strategy Recognition in Agile Portfolios. *International Journal of Project Management 38.7*, 429-440.
Kaur, M., & Iftikhar, S. (2022). Why is it not important to follow guidelines when conducting Daily Standup Meetings?
Khanna, D., & Wang, X. (2022). Are your online agile retrospectives psychologically safe? The usage of online tools. *International Conference on Agile Software Development. Cham: Springer International Publishing*, 35-51.
Khoshnaw, S., & Alavi, H. (2020). Examining the interrelation between job autonomy and job performance: A critical literature review. *Multidisciplinary Aspects of Production Engineering*, 606-616.
Kišš, F., & Rossi, B. (2018). Agile to lean software development transformation: A systematic literature review. *In 2018 Federated Conference on Computer Science and Information Systems* , 969-973.
Klünder, J., Trommer, F., & Prenner, N. (2022). How agile coaches create an agile mindset in development teams: Insights from an interview study. *Journal of Software: Evolution and Process*, 12-34.
Koch, A. (2004). *Agile Software Development.* Artech House.
Koi-Akrofi, G. Y., Koi-Akrofi, J., & Matey, H. A. (2019). Understanding the characteristics, benefits and challenges of agile it project management: A literature based perspective. *International Journal of Software Engineering & Applications*, 25-44.
Kollmann, T., Stöckmann, C., Kensbock, J. M., & Peschl, A. (2020). What satisfies younger versus older employees, and why? An aging perspective on equity theory to explain interactive effects of employee age, monetary rewards, and task contributions on job satisfaction. *Human Resource Management* , 101-115.
Kooij, D. T., Guest, D. E., Clinton, M., Knight, T., Jansen, P. G., & Dikkers, J. S. (2013). How the impact of HR practices on employee well-being and performance changes with age. *Human Resource Management Journal*, 18-35.
Kooij, D., Woerkom, M., Wilkenloh, J., Dorenbosch, L., & Denissen, J. J. (2017). Job crafting towards strengths and interests: The effects of a job crafting intervention on person–job fit and the role of age. *Journal of Applied Psychology*, 971-981.
Krekel, C., Ward, G., & de Neve, J.-E. (2021). Employee well-being, productivity, and firm performance: Evidence and case studies. *Harvard Business School, Chapter 5*, 72-92.
Kropp, M., Meier, A., & Biddle, R. (2016). Agile practices, collaboration and experience: an empirical study about the effect of experience in agile software development. *n Product-Focused Software Process Improvement: 17th International Conference,*

PROFES 2016, Trondheim, Norway, November 22-24, 2016, Proceedings 17, 416-431.

Kropp, M., Meier, A., Anslow, C., & Biddle, R. (2018). Satisfaction, Practices, and Influences in Agile Software Development. *Proceedings of the 22nd International Conference on Evaluation and Assessment in Software Engineering 2018*, 112-121.

Kumar, R. (2018). *Research methodology: A step-by-step guide for beginners.* SAGE.

Kuusinen, K., Gregory, P., Sharp, H., Barroca, L., Taylor, K., & Wood, L. (2017). Knowledge Sharing in a Large Agile Organisation: A Survey Study. 136-150.

Laanti, M., Salo, O., & Abrahamsson, P. (2010). Agile methods rapidly replacing traditional methods at Nokia: A survey ofopinions on agile transformation. *InformationandSoftwareTechnology*, 276-290.

Lerina, A., Carmine, G., & Maria, T. (2016). Managing the alignment between business processes and software systems. *nformation and Software Technology 72*, 171-188.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Sage.

Lindsjørn, Y., Sjøberg, D. I., Dingsøyr, T., Bergersen, G. R., & Dybå, T. (2016). Teamwork quality and project success in software development: A survey of agile development teams. *Journal of Systems and Software*, 274-286.

Lloyd, R., & Mertens, D. (2018). Expecting more out of expectancy theory: History urges inclusion of the social context. *International Management Review*, 28-43.

Locke, E. A., & Latham, G. P. (1990). *A Theory of Goal Setting and Task Performance.* Englewood Cliffs, NJ: Prentice Hall.

Lous, P., Tell, P., & Michelsen, C. B. (2018). rom Scrum to Agile: a journey to tackle the challenges of distributed development in an Agile team. *In Proceedings of the 2018 International Conference on Software and System Process*, 11-20.

Maddux, J. E. (2016). Self-efficacy. *Interpersonal and intrapersonal expectancies*, 41-46.

Magistretti1 , S., & Trabucchi, D. (2024). Agile-as-a-tool and agile-as-a-culture: a comprehensive review of agile approaches adopting contingency and configuration theories. *Review of Managerial Science*, 1-31.

Maguire, M., & Delahunt, B. (2017). Doing a Thematic Analysis: A Practical, Step-by-Step. *All Ireland journal of teaching and learning in higher education*, 3351-3359.

Mallidi, R. K., & Sharma, M. (2021). Study on agile story point estimation techniques and challenges. *International Journal of Computer Applications*, 9-14.

Malterud, K., Siersma, V. D., & Guassora, A. D. (2015). Sample Size in Qualitative Interview. *Qualitative Health Research*, 1-8.

Mardani, A. (2009). Qualitative Research in Applied Linguistics. *Accelerating the world's research.*

Marnada, P., Reharjo, T., Hardian, B., & Prasetyo, A. (2022). Agile project management challenge in handling scope and change: A systematic literature review. *Sixth Information Systems International Conference*, 290-300.

Marnewick, C., & Marnewick, A. L. (2022). Benefits realisation in an agile environment . *International Journal of Project Management*, 454-465.

Martínez-Mesa, J., González-Chica, D. A., Duquia, R. P., Bonamigo, R. R., & Bastos, J. L. (2016). Sampling: how to select participants in my research study? *Anais brasileiros de dermatologia, 91*, 326-330.

Masood, Z., & Farooq, S. (2017). The Benefits and Key Challenges of Agile Project. *International Research Journal of Management Sciences*, 20 - 28.

Matharu, G. S., Mishra, A., Singh, H., & Upadhyay, P. (2015). Empirical study of agile software development methodologies: A comparative analysis. *ACM SIGSOFT Software Engineering Notes 40.1*, 1-6.

Mathias, K., & Franz, P. (2019). *Value-Driven Robotic Process Automation (RPA) A Process-Led Approach to Fast Results at Minimal Risk. Business Modeling and Software Design: 9th International Symposium.* Lisbon: Springer International Publishing.

Matturo, G., Cordovés, F., & Solari, M. (2018). Role of product owner from the practitioner's perspective. An exploratory study. *In Proceedings of the International Conference on Software Engineering Research and Practice (SERP). The Steering Committee of The World Congress in Computer Science, Computer Engineering and Applied Computing (WorldComp).*, 113-118.

McConnell, C. (2004). Managing Employee Performance. The Health Care Manager. 273-283.

Miler, J., & Gaida, P. (2019). On the Agile Mindset of an Effective Team – An Industrial Opinion Survey. *In 2019 federated conference on computer science and information systems (fedcsis)*, 841-849.

Miner, J. B. (2015). *Organizational Behavior 1.* London: M. E. Sharpe Inc.

Mnkandla, E. (2008). A Selection Framework For Agile Methodology Practices: A Family of Methodologies Approach. *Diss. University of the Witwatersrand*.

Moe, N. B., Dahl, B., & Stray, V. (2019). Team Autonomy in Large-Scale Agile. *Proceedings of the 52nd Hawaii International Conference on System Sciences*, 6997-7006.

Moe, N. B., Šmite, D., Paasivaara, M., & Lassenius, C. (2021). Finding the sweet spot for organizational control and team autonomy in large-scale agile software development. *Empirical Software Engineering*.

Mohapatra, P. (2000). *Software Engineering.* New Age International Ltd.

Moloto, M., Harmse, A., & Zuva, T. (2020). Impact of Agile Methodology Use on Project Success in Organizations - A Systematic Literature Review. *Software Engineering Perspectives in Intelligent Systems*, 267-280.

Moran, A. (2015). *Managing agile. Strategy, implementation, organisation and People.* Zurich: Springer International Publishing AG Switzerland.

Morse, J. M. (2000). Determining sample size. *Qualitative health research, 10(1)*, 3-5.

Muduli, A. (2013). Workforce Agility: A Review of Literature. *The IUP Journal of Management Research, Vol. XII, No. 3,*.

Muhammad, U., Nazir, T., Muhammad, N., Maqsoom, A., Nawab, S., Fatima, S. T., . . . Butt, F. S. (2021). Impact of agile management on project performance: Evidence from IT sector of Pakistan. *Plos one 16.4*, 1-24.

Müller, D., Kropp, M., Anslow, C., & Meier, A. (2021). The Effects on Social Support and Work Engagement with Scrum Events. *13th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE)*, 101-104.

Myers, M. (2009). *Qualitative research in business & management.* Sage Publications Ltd.

Nageswara Rao, D. (2011). A Study of the Agile Soware Development Methods, Applicability and Implications in Industry. *International Journal of Software Engineering and Its Applications Vol. 5*.

Nerur, S., Mahapatra, R., & Mangalarag, G. (2005). Challenges of migrating to agile. *Communications of ACM*, 73-78.

Neumann, M., Kuchel, T., Diebold, P., & Schon, E.-M. (2021). Scaling with an Agile Mindset-A Conceptual Approach to Large-Scale Agile. *AMCIS*.

Nkomo, S., Bell, M. P., Roberts, L. M., Joshi, A., & Thatcher, S. M. (2019). Diversity at a critical juncture: New theories for a complex phenomenon. *cademy of Management Review, 44(3)*, 498-517.

Noruwana, N., & Tanner, M. (2012). Understanding the structured processes followed by organisations prior to engaging in agile processes: A South African Perspective. *Research Article – SACJ No. 48*, 41-56.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic Analysis: Striving to Meet. *International Journal of Qualitative Methods*, 1–13.

Oates, B. J. (2006). *Researching Information Systems and Computing.* London: SAGE Publications Ltd.

O'Brien, J. A., & George, M. M. (2013). *Introduction to information systems.* New York: McGraw-Hill/Irwin.

Onyebuchi, O., & Obibhunun, L. (2019). Impact of employee job satisfaction on organizational performance. *Academic Journal of Current Research 6.12*, 6-12.

Orlikowski, W., & Baroudi, J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information Systems Research 2(1)*.

Pandey, P., & Pandey, M. M. (2021). *Research methodology tools and techniques.* Romania: Bridge Center.

Parker, S. K., Wang, Y., & Liao, J. (2019). When Is Proactivity Wise? A Review of Factors That Influence the Individual Outcomes of Proactive Behavior. *Annual Review of Organizational Psychology and Organizational Behavior 6.1*, 221-248.

Patzak, C. (2018). Realizing the potential of retrospectives with team reflexivity: an intervention study to improve reflection and planning in evaluation meetings of Scrum teams. *Master's thesis, University of Twente*.

Peter, C., & Tavis, A. (2018). HR goes agile. . *Harvard Business Review*, 45-52.

Pinto, J., & Serrador, P. (2015). Does Agile work? — A quantitative analysis of agile project success. *International Journal of Project Management*.

Pope, J. E., Tingey, D. P., Arnold, J. M., Hong, P., Ouimet, J. M., & Krizova, A. (2003). Are subjects satisfied with the informed consent process? A survey of research participants. *The Journal of rheumatology, 30(4)*, 815-824.

Prause, C. R., & Zoya, D. (2012). Architectural design and documentation: Waste in agile development? *2012 international conference on software and system process*.

Przybilla, L., Wiesche, M., & Krcmar, H. (2018). The Influence of Agile Practices on Performance in Software. *Proceedings of the 2018 ACM SIGMIS Conference on Computers and People Research*, 33-40.

Przybyłek, A., & Kotecka, D. (2017). Making agile retrospectives more awesome. *Computer Science and Information Systems*, 1211-1216.

Przybyłek, A., Albecka, M., Springer, O., & Kowalsk, W. (2022). Game-based Sprint retrospectives: multiple action research. *Empirical Software Engineering*, 2-56.

Purvis, R. L., Zagenczyk, T. J., & McCray, G. E. (2015). What'sinitforme?Usingexpectancytheoryand climatetoexplainstakeholderparticipation,itsdirection andintensity. *International Journal of Project Management*, 3-14.

Reunamäki, R., & Fey, C. (2023). Remote agile: Problems, solutions, and pitfalls to avoid. *Business Horizons 66.4*, 505-516.

Ribeiro, F. d., Tereso, A., & Andrade, D. P. (2018). Development of a grooming process for an agile software team in the automotive domain. *Trends and Advances in Information Systems and Technologies: Volume 1 6. Springer International Publishing*, 887-896.

Ricky, R., Ritter, T., & Gemünden, H. G. (2004). The impact of information technology deployment on trust, commitment and value creation in business relationships. *Journal of business & industrial marketing*.

Riemenschneider, C., & Thatcher, J. B. (2016). Job satisfaction in agile development teams: Agile development as work redesign. *Journal of the Association for Information Systems, 17*, 17.

Rivaldo, Y., & Nabella, S. D. (2023). Employee performance: Education, training, experience and work discipline. *Calitatea, 24(193)*, 182-188.

Rodrigues, R., Butler, C. L., & Guest, D. (2022). Evaluating the employability paradox: When does organizational investment in human capital pay off? *HRM and Employability. Routledge*, 40-62.

Rodríguez, P., Mäntylä, M., Oivo, M., Lwakatare, L., Seppänen, P., & Kuvaja, P. (2020). Agile Software Development: Methodologies and Trends. *International Journal of Interactive Mobile Technologies, 14(11)*.

Ruparelia, N. B. (2010). Software development lifecycle models. *ACM SIGSOFT Software Engineering Notes*, 8-13.

Ryan, M. R., & Deci, E. L. (2017). Self-determination theory. Basic psychological needs in motivation, development, and wellness. *American Psychologist*, 68-78.

Sabanovic, S., & Zegarra, C. A. (2022). Cross-functional team in a project with an agile management: Effective strategies and common challenges in a cross-functional team while using agile project management.

Sabuhari, R., Sudiro, A., Irawanto, D. W., & Rahayu, M. (2020). The effects of human resource flexibility, employee competency, organizational culture adaptation and job satisfaction on employee performance . *Management Science Letters 10.8*, 1775-1786.

Sahay, A. (2016). Peeling Saunders's Research Onion. *Research Gate, Art*, 1-5.

Sambinelli, F., & Borges, M. F. (2022). What Software Agile Teams Do To Create Customer Value: A Mixed-Methods Analysis In Brazil. *International Journal of Computer Information Systems and Industrial Management Applications.* , 68-91.

Sandhu, N. (2021). The benefits of agile HR for a company.

Sanyal, S., & Hisam, M. W. (2018). The impact of teamwork on work performance of employees: A study of faculty members in Dhofar University. *IOSR Journal of Business and Management 20.3*, 15-22.

Sarfo, J. O., Debrah, T. P., Gbordzoe, N. I., Afful, W. T., & Obeng, P. (2021). Qualitative Research Designs, Sample Size and Saturation:. *Journal of Advocacy, Research and Education. 2021*, 60-65.

Sarwar, S., Orr, S., & Malik, M. (2021). Agile practices and performance: Examining the role of psychological empowerment. *International Journal of Project Management*, 10-20.

Saunder, M., Lewin, P., & Thornhill, A. (2014). *Research Methods for Business Students (6th edn).* Harlow: Pearson Education Limited.

Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods Fifth Edition.* Harlow: Pearson Education Limited.

Schroeder, A., Klarl, A., Mayer, P., & Kroiß, C. (2012). Teaching Agile Software Development through Lab Courses. *In Proceedings of the 2012 IEEE Global Engineering Education Conference (EDUCON)*, 1-10.

Sedano, T., Ralph, P., & Péraire, C. (2019). The product backlog. *n 2019 IEEE/ACM 41st International Conference on Software Engineering (ICSE)*, 200-211.

Serrador, P., & Pinto, J. K. (2015). Does Agile work?—A quantitative analysis of agile project success. *International journal of project management*, 1040-1051.
Shankarmani, R., Pawar, R., & Mantha, S. (2012). Agile Methodology Adoption: Benefits and Constraints. *International Journal of Computer Applications*.
Shankarmani, R., Pawar, R., Mantha, PhD., S., & Babu, PhD. , V. (2012). *International Journal of Computer Applications. Volume 58– No.15,*, 32.
Sharma , S., Sarkar , D., & Gupta , D. (2012). Agile processes and methodologies: A conceptual study. *International journal on computer science and Engineering, 4(5)*, 892.
Sharma, G. (2017). Pros and cons of different sampling techniques. *International journal of applied research, 3(7)*, 749-752.
Sharma, S., & Kumar, D. (2021). An Impact Assessment of Agile Ceremonies on Sprint Velocity Under Agile Software Development. *021 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO)*, 1-5.
Sharp, H., & Robinson, H. (2010). *Three 'C's of Agile Practice: Collaboration, Co-ordination and Communication.* Berlin: eidelberg: Springer Berlin Heidelberg.
Singh, J. K., & Jain, D. (2013). A study of employees' job satisfaction and its impact on their performance. *Journal of Indian research*, 105-111.
Šmite, D., Moe, N. B., & Gonzalez-Huerta, J. (2021). Overcoming Cultural Barriers to Being Agile in Distributed Teams. *Information and Software Technology 138*.
Solinski, A., & Petersen, K. (2014). Prioritizing Agile Benefits and Limitations in Relation to Practice Usage. *Software Quality Journal*, 1 - 36.
Somda, F. H., Guel, D., & Kabore, K. K. (2024). Advancing Program Increment (PI) Planning: A Comprehensive Metamodel and Framework for Effective Modeling and Impact Assessment. *Revue Africaine de Recherche en Informatique et Mathématiques Appliquées*, 41.
Sommer, A. F. (2019). Agile Transformation at LEGO Group. *Research-Technology Management*, 26.
Stevenson, A. (2010). *Oxford Dictionary of English.* New York: Oxford University Press.
Strode, D., Dingsøyr, T., & Lindsjorn, Y. (2022). A teamwork effectiveness model for agile software development. *Empirical Software Engineering*, 56.
Suomalainen, T., Kuusela, R., & Tihinen, M. (2015). Continuous planning: an important aspect of agile and lean development . *International Journal of Agile Systems and Management 8.2*, 132-162.
Suprayitno, D. (2024). The Influence of Leadership on Employee Performance. *Journal of Law, Social Science and Humanities*, 87-91.
Teper, A. M., Aaltonen, K., & Gotcheva, N. (2021). Design thinking perspective for developing safety management practices in nuclear industry. *Human Factors in the Nuclear Industry*, 309-326.
Titisari, P., Susanto, A. B., & Permatasari, Y. I. (2021). The Role of Internal Communication, Work Discipline, And Employee Loyalty on Employee Performance. *Quality-Access to Success 22.184*.
Uraon, R. S., Chauhan, A., Bharati, R., & Sahu, K. (2024). Do agile work practices impact team performance through project commitment? Evidence from the information technology industry. *International Journal of Productivity and Performance Management*, 86-102.
Vaismoradi, M., & Snelgrove, S. (2019). Theme in Qualitative Content Analysis and Thematic Analysis.

Venable, J., Pries-Heje, J., & Baskerville, R. (2016). FEDS: a Framework for Evaluation in Design Science Research. *European Journal of Information Systems*, 77-89.

Verburg, R. M., Nienaber, A.-M., Searle, R. H., Weibel, A., Harthog, D. N., & Rupp, D. E. (2018). The role of organizational control systems in employees' organizational trust and performance outcomes. *Group & organization management, 43(2)*, 179-206.

Wedawatta, G., Ingirige , B., & Amaratunga , D. (2011). Case study as a research strategy: Investigating extreme weather resilience of construction SMEs in the UK. *University of Salford Manchester*.

West, C. J. (2018). A comparison of software project architectures: agile, waterfall, spiral, and set-based. *Doctoral dissertation, Massachusetts Institute of Technology*.

Wong, W. Y., Lee, C. W., & Tshai, K. Y. (2013). The Importance of a Software Development Methodology in IT Project Management: An Innovative Six Sigma Approach - A Case Study of a Malaysian SME Organization. *IEEE Symposium on Business, Engineering and Industrial Applications*.

Wyatt, j., & Eysenbach, G. (2002). Using the Internet for Surveys and Health Research. *ol 4, No 2 (2002): Theme Issue: Disease Management and the Internet*.

Yaman, S. G., Sauvola, T., Riungu-Kalliosaari, L., Hokkanen, L., Kuvaja, P., Oivo, M., & Männistö, T. (2016). Customer involvement in continuous deployment: a systematic literature review. *Requirements Engineering: Foundation for Software Quality: 22nd International Working Conference, REFSQ 2016*, 249-265.

Yeti, K. (2020). The effect of motivation on employee performance. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, 995-1002.

Yogeshwar, S., Rashina, H., & Amor, R. (2021). Spearheading agile: the role of the scrum master in agile projects. *Empirical Software Engineering*, 26.

Zayat, W., & Senvar, O. (2020). Framework study for agile software development via scrum and Kanban. *nternational journal of innovation and technology management*, 17.

Žukauskas, P., Vveinhardt , J., & Andriukaitienė, R. (2018). Philosophy and Paradigm of Scientific Research. *Management culture and corporate social responsibility*.

8 APPENDICES

8.1 APPENDIX A: ETHICAL CLEARANCE APPROVAL

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

6 August 2024

Reference number: EBIT/14/2024

Mr MHR Mookadam
Department: Informatics
University of Pretoria
Pretoria
0083

Dear Mr MHR Mookadam,

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Approval is granted for the application with reference number that appears above.

1. This means that the research project entitled "The study of employee performance when implementing an agile methodology in a South African IT workforce" has been approved as submitted. It is important to note what approval implies. This is expanded on in the points that follow.
2. This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Research Ethics Committee.
3. If action is taken beyond the approved application, approval is withdrawn automatically.
4. According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.
5. The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof K.-Y. Chan
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

8.2 APPENDIX B: INFORMED CONSENT FORM

Informed Consent Form

1. Project information

1.1. Research Title:

The study of employee performance when implementing an agile methodology in a South African IT workforce

The Purpose of the Study:

This research aims to explore employee performance within an agile environment for IT workforces in South Africa. Specifically, I seek to determine how the implementation of agile methodology influences employee performance. While various factors affect employee performance in general, some are particularly relevant to agile project success. The study aims to ascertain whether adopting agile practices in an IT workforce leads to improved employee performance.

1.2. Research study description

Project objectives:

The below research objective has been formulated that are aligned with the research questions. The objectives have been divided in numerous fragments that will be addressed individually. This gives guidance on how the main research question will be achieved:

a. To examine the importance of employee performance a workforce.
b. To identify and describe the benefits and challenges of agile that contribute towards employees in a South African IT workforce.
c. To investigate and understand the various methods, metrics, and approaches used to evaluate and assess the performance of employees working within an agile environment.
d. To explore the relationship between agile practices and employee performance.

How you identified and why you are being invited to participate in this research:

You have been identified as a potential participant because your profile aligns with the qualifying criteria for this study. Specifically, you work in a South African IT organization that utilizes the Agile methodology. Your insights and experience are invaluable for gaining a deeper understanding of employee performance in an Agile context. We invite you to participate, as your involvement will significantly contribute to our research.

Voluntary nature of the study:

Your participation in this research study is entirely voluntary. You may withdraw at any time without facing any penalties or consequences.

Compensation:

There will be no compensation provided for your participation in this study.

Research participation details:

- **Duration:** The interview is expected to take approximately 30 minutes.
- **Format:** The research can be conducted either in person or virtually via platforms such as Microsoft Teams, Zoom, or Google Meets.

Research results feedback:

Participants will have the opportunity to receive the research study results via email from the principal investigator.

Risks:

There are no anticipated risks associated with participating in this study. During the semi-structured interview, you are not obligated to answer any specific questions, and you are free to stop the interview at any point. All information collected will be used solely for research purposes and will not pose any risk to you or your organization.

Benefits:

The findings of this research will be valuable to any IT workforce that implements agile or is considering doing so. By contributing to the body of knowledge on how agile implementation affects employee performance in South African IT workforces, this study will help organizations better understand the advantages of adopting agile methodologies. Successful agile implementation can lead to improved project deliveries and increased business value. Additionally, the impact on employee performance directly influences organizational productivity, innovation, and financial outcomes.

Confidentiality:

Your participation will remain confidential. All information collected will be treated as sensitive and handled with care. Only the researcher and the research supervisor will have access to the raw data. Your personal information will not be used for any purposes beyond this research project.

Voice Recordings:

The interview will be voice recorded during the session to facilitate accurate transcription. The transcribed data will then be analyzed to draw meaningful conclusions for the study.

Storage of Your Data:

Data collected during the interview which include the voice recordings and transcriptions will be stored in a secured Google Drive account. Access will be restricted to the principal investigator (Hamid Mookadam) and the supervisor (Mr. Ridewaan Hanslo). The coded data and analysis results will be stored in the University of Pretoria research data repository. All data stored on these platforms will be retained for ten years after the study's commencement, following the University of Pretoria's Information Management policy.

Agreement to participate in this research:

If you agree to participate in the interview and consent to be voice recorded, please complete the informed consent form below and email the signed informed consent form to me at hr.mookadam@gmail.com. You will be emailed a copy of the form, including the researcher's signature.

Concerns:

If you have any concerns about the nature of this project, please contact the research supervisor using the details provided in the next section. For concerns related to the interview process, feel free to reach out to me directly.

1.3. Researcher contact details

Researcher name: Mr Hamid Mookadam

Email address: hr.mookadam@gmail.com

Contact number: 076 371 1413

Faculty of Engineering, Built Environment, and Information Technology

Department of Informatics

Supervisor name: Mr Ridewaan Hanslo

Email address: ridewaan.hanslo@up.ac.za/ridewaan@gmail.com

Contact number: 012 420 3798

Faculty of Engineering, Built Environment, and Information Technology

Department of Informatics

Voice Recordings:

2. Informed Consent

2.1. I, _____hereby voluntarily grant my permission for participation in the project as explained to me by Hamid Mookadam.

2.2. The nature, objective, possible safety, and health implications have been explained to me, and I understand them.

2.3. I understand my right to choose whether to participate in the project and that the information furnished will be handled confidentially. I am aware that the results of the investigation may be used for the purposes of publication.

2.4. Upon signature of this form, the participant will be provided with a copy.

Signed: _____ Date: _____

Witness: _____ Date: _____

Researcher: _____ Date: _____

8.3 APPENDIX C: LETTER OF INVITATION

Dear _____,

My name is Hamid Mookadam. I am reaching out to invite you to participate in an exciting research study that aims to explore employee performance when implementing an agile methodology in a South African IT workforce. It is being conducted as part of my master's in information technology at the University of Pretoria.

The study aims to explore employee performance in an agile environment for IT workforces in South Africa. The purpose of this research paper is to determine the impact agile methodology has on employee performance in a South African IT workforce. Although several aspects influence employee performance in general, some employee performance factors are significant to agile project success.

Participation in this study will involve an interview with semi-structured questions to be completed in 30 minutes. Your involvement is voluntary, and all information provided will be kept confidential and used solely for research purposes.

I would greatly appreciate your participation in this research and look forward to learning about your experiences and gaining new insights. Please read through the information attached and complete the informed consent form if you wish to participate.

Thank you for considering this invitation. Your participation is highly valued and will contribute significantly to the success of this research endeavour.

Kind regards,
Hamid Mookadam
076 371 1413

8.4 APPENDIX D: INTERVIEW STRUCTURE

Interview Questions:

Section A: Background questions

1.1 Have you ever worked in an organisation or team that implements agile practices during software development in a South African IT workforce?

- No **(Stop interview)**
- Yes

1.2 How many years of experience do you have working in agile practices?

- Less than 2 years **(Stop interview)**
- Provide years

2.1 What were the most common used agile methodologies in those years?

2.2 While working in your most recent company or agile team where agile practices were used, what was your role?

Section B:

Expectancy category

3.1 From your experience, what are some specific benefits that employees in the South African IT workforce derive from adopting agile methodologies?

3.2 From your perspective, what are some common challenges that employees in the South African IT workforce encounter when adopting agile methodologies?

3.3 What additional support or resources would help you feel more confident in using agile practices?

3.4 Can you describe a time when your efforts in agile practices led to a successful project outcome?

3.5 Can you identify key aspects of agile practices that directly influence and contribute to employee performance?

3.6 What agile ceremonies do you have within your organisation?

3.7 What value do each of these ceremonies bring to you?

Instrumentality category

4.1 Can you provide examples of outcomes you take out from working in successful agile project performance?

4.2 What types of outcomes would motivate you to perform better in agile projects?

Valence category

5.1 What types of outcomes do you value the most for your performance in agile projects?

5.2 Are there any outcomes that you feel are undervalued in the current system?

8.5 APPENDIX E: LANGUAGE EDITING CERTIFICATE

Date: 25 October 2024

DISSERTATION AUTHOR

Muhammad Hamid Raza Mookadam
10499068

DISSERTATION TITLE

THE STUDY OF EMPLOYEE PERFORMANCE WHEN IMPLEMENTING AGILE PRACTICES IN A SOUTH AFRICAN IT WORKFORCE

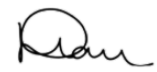
To Whom it May Concern:

I hereby confirm that the manuscript referred to above was proof-read for language, spelling and grammar and formatting, as per the supplied guidelines as furnished to me by the author.

The research content contained within the manuscript has not been altered in any way and remains as drafted by the author.

The author may accept or reject any of my comments or suggestions upon receipt of the manuscript – all comments and edits have been clearly tracked and are visible to the author.

Kind regards



DJ Horn

Email: diane.horn@outlook.com