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Influence of organisational culture in the adoption of agile

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by

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DECLARATION OF OWN WORK

This serves to confirm that I, Krishna Prakash Jivan, hereby declare that this minor dissertation, Influence of organisational culture in the adoption of agile, submitted for the MEng in Engineering Management (CW) at the University of Johannesburg, is solely my work, apart from the help recognised. The study has not been submitted anywhere else for academic recognition either by me or by any other person.

ABSTRACT

With the increasing rate of globalisation and customer expectations, organisations are adopting agile management methodologies. With the growing rate of adoption of agile methodologies, there must be value in using such methods. Findings show that one of the reasons why organisations use agile methodologies is the fact that it allows them to be flexible and enable them to meet increasing customer expectations. Further advantages of agile have been investigated; however, it was found that if the organisational culture is counter that of the agile principles the use of agile methodologies can cause more harm than good, and the culture, shall pose a hindrance to the use and adoption of agile methodologies.

As organisational culture is an influential element in the successful implementation and adoption of agile methods, this investigation shall be to determine whether: the department in question has an organisational culture, which is conducive to the realisation of the benefits from the use of agile management methodologies. With the investigation of the culture present in the department, the department will be to able to make informed decisions on the use of agile principles with other projects going forward and thus resulting in a better outcome for the organisation and its customers.

In order to reach the studies objectives, firstly, the culture in the department needs to be determined, as certain culture types are better suited to agile methodologies. Secondly, one needs to determine if the department has cultural elements, which are necessary for the realisation of the benefits from agile principles. As such, the study makes use of a case study approach with the use of quantitative analysis of the questionnaire used. The questionnaire comprises of the Organisational Culture Assessment Instrument as well as a Likert scale.

Findings from the investigation show that the department portrays a culture, which is, to some degree, conducive to the adoption and use of agile methodologies. Furthermore, the cultural characteristic, which is deemed to be necessary to realise the benefits from agile methods were predominantly often present within the department. Thus, the department in question has an organisational culture, which has a limited favourability to the realisation of the benefits from the use of agile management methodologies.

The use of this research allows the reader and the broader community a criterion in which they can compare their culture against in order to determine if the culture is in line with the agile principles and core values. As a result, they can make an informed decision on the use of agile methodologies or determine if a culture change is required in order to realise the full benefits of agile methodologies.

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- Lastly to my friends who might have played a small role but the help which you provided I genuinely cherish.

Oṃ bhūr bhuvaḥ svaḥ

tát savitúr váreṇyaṃ

bhárgo devásya dhīmahi

dhíyo yó naḥ pracodáyāt

O Supreme one; who is the physical, astral and causal worlds himself.

you are the source of all, deserving all worship

O radiant, divine one; we meditate upon you

Propel our Intellect towards liberation or freedom

"*It always seems impossible until it's done.*"

Nelson Mandela

Remember, remember the 29th of November

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ABBREVIATIONS

C.HI.D.DI	Clan, Hierarchical, Democratic, Disciplined
CVF	Competing Values Framework
CVM	Customer Value Management
OCAI	Organisational Culture Assessment Instrument

1. CHAPTER 1: INTRODUCTION AND RESEARCH OVERVIEW

1.1. Background

Project management methodologies have been found to impact an organisation in the way it performs and ultimately, in its success [1]. The role of project management techniques or methodologies is to complete a project successfully while taking into consideration and controlling; time, cost and quality through the various stages in a project [2]. Thus these methodologies are commonly defined as a process which controls, rules and procedures, in order to achieve the project objectives [3]. The process of controlling the project can entail a simple task list or a specified approach to the project with predefined tools and techniques [3]. One such set of principles is agile methodologies. Agile methodologies allow for employees to control a project more effectively by reducing the overheard produced from managing the project [4]. Agile methodologies use an iterative process and short-design sprints, which allow for quick adaptation to rapid changes in an evolving environment [4]. As a result, there is a need to identify how to effectively manage both the company's needs and objectives but at the same time, still, be able to produce quality products that customers want continuously. According to Robertson and Jones [5], there is an increasing rate of globalisation and customer expectations. As such organisations are forced to rethink the business strategies. Robertson and Jones [5], further stated that the implementation of agile methodologies allows organisations the flexibility to meet increasing customer expectations.

There is evidence that shows that in the modern business realm, where customer needs and business requirements are dynamic, [6] agile methodologies can be used as "*the agile methodology was designed to provide better business value and reduce the overall risk associated with projects* [3]". A research study conducted to investigate if agile methodology works found that agile principles have a significant impact on projects [7]. Three dimensions were found to have an impact on project success. These include "*efficiency, stakeholder satisfaction, and perception of overall project performance* [7, p. 1049]". However, there are cases in which agile methodologies were not successful, [8] and as such, organisations should be cautious when adopting agile principles. A concept which was brought to light by Boehm and Turner [9] was that of legacy systems being difficult to change due to the historical culture which was cultivated by the organisations. The challenges experienced due to the entrenched culture affects the project life cycle and requirements. Some of these challenges which are faced by organisations are not only limited to implementation and integration issues but by "*people*" challenges as well [10]. Thus as Strode et al. [11] stated, there are specific cultural factors which are associated with effective adoption of agile methodologies.

1.2. Problem statement

With Strode et al. [11] stating that organisational culture is an influential element in the successful implementation and adoption of agile methods, this investigation shall be to determine whether:

The department in question has an organisational culture which is conducive to the realisation of the benefits from the use of agile management methodologies.

With the various cases mentioned above stating the successes and failures in the adoption of agile methodologies and principles, there is a need to determine how the organisational culture affects the realisation of the benefits of agile methodologies. Therefore an investigation needs to be conducted as the culture impacts the use of agile methodologies [11], and these methodologies have been found to have a direct impact on the success, control of time, cost and quality of a project [7]. These factors then go on to affect an organisation as the organisation could miss critical organisational and customer deadlines, and as a result, it could lead to a loss in revenue, loss of business and services rendered, service level agreement penalties, and lasting damage to an organisation's reputation.

1.3. Research questions

In order to derive a conclusion to the research problem, the following questions will be investigated:

1. What type of culture has a positive influence on the adoption of agile methodologies?
2. What cultural elements are needed in a business environment for agile principles to achieve the benefits?

1.4. Research objectives

The objective of this investigation is to determine if the department in question portrays an organisational culture and cultural traits which is conducive to the realisation of the benefits from the use of agile principles.

As a result of the investigation, the Customer Value Management department shall be able to make an informed decision on the use of agile principles with other projects going forward. Thus, this should result in a better outcome for the organisation and its customers.

1.5. Research justification

With the growing rate of adoption of agile methodologies, there must be value in using such methods. This section looks to identify the benefits that may be attributed to the use of agile methodologies. The primary focus of any agile methodologies is to achieve customer satisfaction [12], [13].

One of the benefits of using agile methodologies is the ability to reduce production time [14]. In a case study put forth by Mann and Maurer, developers stated that they

preferred to use agile methodologies as it helped reduce the time taken on their work process [15]. Thus showing that agile methodologies can reduce the time taken to do tasks which can lead to a reduction in overtime for employees [15]. The reduction in overtime of employees can also lead to employees being happier, resulting in higher morale [16]. The paper by Papadopoulos [12] observed an increase in employee satisfaction through the use of an agile methodology called Scrum.

Another benefit which goes hand in hand with the reduction of production time is that productivity increases with the use of agile methodologies [14]. The reduction in production time has been reaffirmed by the following articles [17], [18], which can be attributed to an increase in productivity when using agile methodologies. As a result of the higher rates of productivity, the quality of the product produced can also increase. According to Mann and Maurer [15] the use of Scrum, an agile methodology, developers can develop more meaningful and valuable solutions to the customer. This trait can be attributed to how agile methodologies require project teams to interact with customers. As customers are involved throughout the production process, the project team can iterate and tailor the product with regular feedback instead of receiving feedback only during the acceptance testing phase [15], [18].

Project feedback should be given through regular meetings which can be daily or weekly, thus lowering customer confusion on the product that will be delivered and assisting project teams in understanding customers' requirements. These meetings also serve as a platform to allow the project team to inform customers of problems quicker, resulting in quicker resolutions to problems which ultimately leads to higher customer satisfaction [15]. Thus, risk management and other general managerial tasks can be handled with greater ease [19]. Therefore organisations which use agile methodologies are more flexible and adapted to meet increasing customer expectations throughout the project lifecycle [5], [19].

An article by Nerur et al. [20] states that organisational culture influences:

- How organisations make decisions,
- The ability and strategy used to solve problems,
- Practices which can either encourage or discourage innovation and creative thinking,
- Collaboration and communication between employees, customers and other stakeholders,
- Planning and control mechanism used to deliver a final product.

Thus, it can be seen that organisational culture has an impact on the structure of an organisation which then influences the behavioural mannerisms of employees and their actions. Agile methodologies have their advantages and disadvantages. If the organisational culture is conducive for agile methodologies, then only, can these advantages be realised [18]. If an organisation has a culture which is counter that of the agile principles, the use of agile methodologies can cause more harm than good, and the culture, shall pose a hindrance to the use and adoption of agile methodologies.

Therefore, the purpose of this investigation is to determine if the department in question has an organisational culture which is conducive to the realisation of the benefits of agile methodologies.

Since there are cultural differences across different organisations and departments [21], a one size fits all approach is not appropriate. If an organisation uses such an approach, it could be detrimental. As a consequence of the individualised nature, the research into whether an organisation's culture is conducive with the use of agile principles is required on a per-segment approach.

1.6. Research design

In order to answer the research questions of this investigation, one needs to follow a structured approach.

Firstly, an in-depth literature review shall be performed to identify the organisational culture type and the cultural traits which are conducive to the realisation of the benefits from the use of agile principles.

The study is based on a single department. The department that will form the basis for this investigation is a customer value management department in a telecommunications company. Maintaining the objectivity of the investigation is of utmost importance; therefore, a structured approach in which the data obtained can be compared to the literature shall be used. Thus, the research method for this investigation shall be a case study. A case study allows for in-depth analysis as participants of the study can give their views on real-life events and projects. The case study shall endeavour to determine if the organisational culture is in line with what literature deems to be necessary in order to realise the benefits from agile principles. In order to derive a conclusion to the problem statement, a questionnaire shall be used to acquire the relevant data.

In conducting research, one should take into consideration the following challenges in order to eliminate any bias when drawing conclusions [22]:

- Researcher's preconceptions and reflexivity
- The theoretical frame of reference and transferability
- Researcher's meta position and interpretation and analysis of data.

In order to reduce and eliminate researcher's, bias or misrepresentation, one should stringently follow a predefined guideline or structure [22]. The research study shall use a wide range of sources and articles, allowing one to ensure that any conclusions and suggestions made are correct.

Finally, to ensure personal bias does not come into play, the conclusion shall be based on facts and not personal preferences and suggestions. Thus no evidence shall be disregarded if it does not support the objective of the research and all information gathered shall be challenged to ensure its validity [23].

1.7. Chapter overview

The research study outlaid in this document shall address the problem statement presented in section 1.2. The following chapter shall be covered:

1.7.1. Chapter 2: Literature review

An overview of the current standings in the field shall be discussed. The discussion includes theory, standards, applications and, implementation strategies that are associated with the agile project management methodology.

1.7.2. Chapter 3: Research design and methodology

A research strategy shall be utilised in order to derive findings from data gathered through interviews, focus groups and or participant observations.

1.7.3. Chapter 4: Results and analysis

The results obtained shall be analysed using an analysis tool to ensure all biases are removed and sound judgments can be made.

1.7.4. Chapter 5: Conclusion

An overall conclusion for the study shall be based on the results presented in chapter 4.

1.8. Conclusion

As a result of the increasing rate of globalisation and customer expectations, organisations are adopting agile management methodologies. This is because agile methodologies allow organisations to be flexible and enable them to meet increasing customer expectations. As project management methodologies affect the success of an organisation, agile methodologies must be correctly implemented and operate effectively. The department which shall form as the base of this research has recently adopted agile methodologies.

It is established that with a change of management methodologies, legacy systems are difficult and adverse to change and that organisational culture impacts agile methodologies. Furthermore, there are specific organisational cultural factors which are considered to correlate with the effective use of agile methods. Lastly, it was found that agile methodologies have benefits, but in order to realise these benefits, the culture needs to be appropriate. Therefore this research study aims to find out if the organisational culture, which is present in a Customer Value Management department in a telecommunications company is conducive to the realisation of the benefits from the use of agile management methodologies. The study shall use a case study approach in order to reach the studies objectives. For this study, the scope shall be limited to the Customer Value Management department within a telecommunications department. Finally, the research objective shall be accomplished by using a predefined, transparent and rigorous approach in order to remove any biased opinions.

2. CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

The focus of this study is the cultural characteristics which are associated with agile methodologies and principles. Through the investigation of these cultural characteristics, one will be able to determine the cultural factors and elements required by an organisation in order to realise the benefits of agile methodologies. In order to determine these characteristics, the literature review shall firstly look at the principles and values upon which agile methods are based. Thus, a brief overview of the agile manifesto shall be given. This shall allow one to see how organisational culture relates and influences the agile methods. The relation between organisational culture and agile methods and principles shall be further explored in order to determine the organisational cultural factors and elements needed in the use and adoption of agile methods.

2.2. Agile manifesto

In order to understand how organisational culture relates to agile methods, it is beneficial to look at the principles and values upon which agile methods are based. The values form the core upon which the principles form supporting structures for agile methodologies. Tolfo et al. stated that "*in order to adopt an agile method in a sustainable form, changing the way of working and thinking is not enough; a change in the principles and values must also occur* [24, p. 428]". The statement above has been reaffirmed by Tate [25]. Thus one can firstly explore the core values and then the principles which govern agile methodologies in order to determine the culture required to facilitate the realisation of the benefits from agile methodologies.

The core values of agile methodologies can be ascertained from the agile manifesto. These values are as follows [13]:

Customer collaboration	over	contract negotiation
Working software	over	comprehensive documentation
Individuals and interactions	over	processes and tools
Responding to change	over	following a plan

The manifesto states "*that while there are values in the items on the right, the items on the left (values in bold above) shall be valued more* [13]". These core values then lead to the supporting principles of agile methodologies.

According to the agile manifesto [13], the principle with the highest priority is to satisfy the customer. This should be done through continuous and early delivery of the product or service. The continuous and incremental iterations allow the project team to adapt fast to changes in customer requests and therefore allow the organisation to be competitive.

Early delivery allows for the customer to give valuable feedback and thus, the collaboration between customer and project team is promoted throughout the project life cycle. With the requirement for project teams to be able to adapt to rapid change, both business and technical people need to work closely together daily [13]. Individuals in the project team need to be highly motivated and trusted individuals [13]. Thus enabling the whole team to be accountable and trusted to fulfil their duties without rigid processes.

Agile principles promote face to face interactions and conversations in order to allow project teams to disseminate information throughout the team effectively and efficiently [13]. The project team should use a working product or service as a primary measuring tool for the progress of the project [13]. Agile principles promote sustainable development which then allows the project team and sponsors to maintain a continuous and steady pace indefinitely [13]. With the principle of people and not process, the organisation needs to continuously encourage and develop individuals to reach technical excellence [13]. They will consequently promote good designs which enhance the organisation's agility.

Simplicity is a fundamental principle throughout the project [13] as this enables teams to limit the amount of work needed to accomplish the desired objectives. With the encouragement from organisations to promote the continuous development of employees while affording a high level of autonomy to them; the development of holistic architects is created. Thus, allowing for excellent design and requirements to emerge during the project. Lastly, with incremental deliveries, the project team should reflect on regular intervals on how to streamline processes and become more productive and then fine-tune and adjust behaviours accordingly [13].

The core values and principles underpin every agile methodology (e.g. Scrum, SAFE, and Kanban) and represent a set of guidelines which dictates how employees should interact and behave both internally and externally. The relation between the principles, values and the various agile frameworks can be seen below in Figure 4.
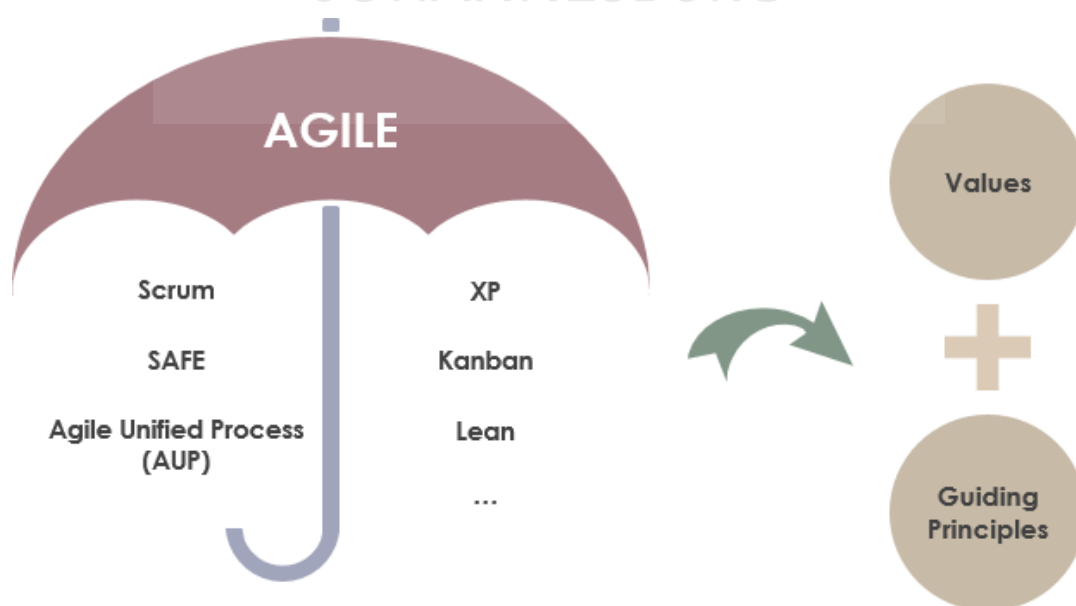
Figure 1: Agile core values and guiding principles [26]

Lastly, if an organisation wants to stay agile, a culture that encourages employees to do their tasks efficiently must be created [24], [27].

The culture needs to promote employees to continuously fine-tune the way they complete their task in the project lifecycle in order for it to be efficient and effective [24], [27]. An organisation needs to enable employees to continuously learn and develop [24], [27].

With this background information on the principles and core values of agile methodologies, one can now look into what cultural factors are associated with these principles. In order to investigate what cultural factors are associated with agile methods, one needs an understanding of organisational culture. The next section defines what organisational culture is.

2.3. Organisational culture

This study is based on identifying the organisational culture and the cultural characteristics required to realise the benefits of agile methodologies. Therefore, it is essential first to get an understanding of what organisational culture is.

According to Barney "*organisational culture can be defined as a complex set of values, beliefs assumptions, and symbols that define how a firm or organisation conducts its business* [28, p. 657] ". This has been reaffirmed by Katzenbach et al. [29]. Lastly, organisational culture can be seen as a set of conventions that a group conforms to and deems valid in order to solve problems, both internally and externally [30]. In order to simplify the definition of culture, the metaphor by Stefan [31] in which he describes the culture as different layers of an onion shall be used. The image below depicts the layered construction of culture. This shows that underlying assumptions and beliefs are at the core while values reside in the next layer and behaviour on the outer most layer.
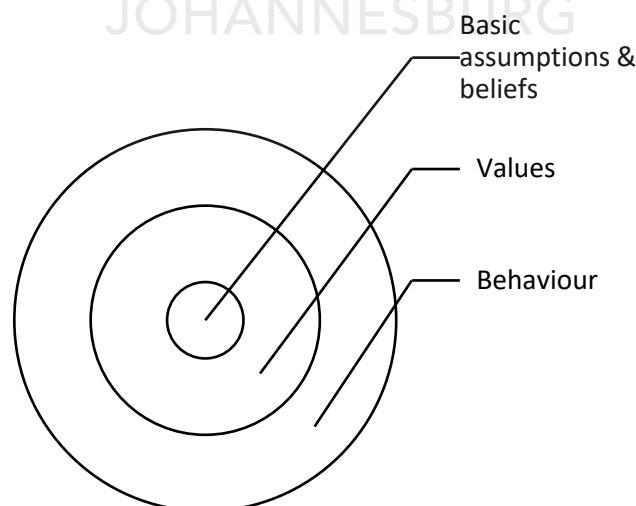
Figure 2: Layers of culture [31]

From these definitions, one can conclude that organisational culture is how an organisation interacts with its customers, external stakeholders and most importantly, how the organisation communicates, interacts and behaves with employees. Thus,

one can see the link between agile values and principles and organisational culture. The values and principles guide people on how they should interact and behave in order to use agile methods. Lastly, it is important to note that organisational culture is defined as a configuration of behaviour which is self-sustained and which ultimately determines how work is performed [29]. Thus from these definitions, one can see that an organisations culture plays a part in an organisations success or failure.

2.4. Cultural factors required to realise the benefits of agile methodologies

With knowledge now ascertained on the agile core values and the twelve guiding principles, one can now look at what cultural characteristic are associated with these core values and guiding principles.

A study conducted by DeMartine et al. [32] stated that the cultural elements needed when adopting agile methodologies. These cultural elements are as follows:

High trust: As agile methodologies promote the use of diverse and cross-functional teams, trust needs to be embedded in their culture in order for this to be successful [33]. This is because these cross-functional teams will have to work across organisational silos. Thus working and coordinating with team members out of their silos. Therefore, this relationship needs to be built on trust. This shall allow the team to work towards a common goal and move away from a blame culture which is counter the principles upon which agile is built [34].

Ability to learn quickly from mistakes:

As agile methodologies are built around iterative development, failures are part of delivering a customer-centric product; thus, organisational leaders need to embrace failure. Encouragement should also be given to employees not to be afraid of failures. This is because failure is a good source of providing learning opportunities [33]. Organisations need to focus more on reducing the time between repairs rather than focusing on extending the time between failures allowing the iterative process to flourish [33].

Full accountability: Every team member should be fully accountable for the success or failure of the product or project. This creates a decentralised decision-making system and breaks away from specific silos of the organisations being responsible for making the decisions [33].

A focus on the end customer: The focus of the organisation should be centred on the customer. Therefore, the organisation needs to take the customers views and requirements into consideration when developing the product or service.

Continuous improvement: In order to stay competitive and deliver high-quality product and services, an organisation needs to improve its product life cycle frequently. This can be done through radical steps or incremental steps [35].

Collaboration: Collaboration through cross-functional areas need to take place. This helps to avoid decisions being made in silos. Therefore collaboration skills need to be continuously learnt and improved on [33].

In order to investigate the relationship between Organisation Culture and agile methodologies, a set of organisational culture factors was developed. The set of factors was developed based on being considered necessary for the appropriate use of agile methods. This was done through a review of the literature by Strode et al. [11]. Using a competing value framework, they found that the following factors have a statistically significant correlation with the use of agile methodologies.

Table 1: Organisational culture factors that correlate significantly with agile methods [11]

	Organisational culture factors.
1	Organisations highly value feedback and learning.
2	Trustful collaboration is vital for interactions between customers and employees. Employees also need to be competent.
3	The project manager should facilitate.
4	The management style should be characterised as collaborative and participative.
5	Teamwork should be participative, flexible and socially interactive.
6	People empowerment.
7	Entrepreneurship, risk-taking and innovation should characterise the leadership of the organisation.
8	Loyalty, mutual trust and commitment are the base upon which the organisation is built.
9	Results-oriented

Through the literature review conducted by Strode et al. [11], the reasoning behind these factors can be seen. As agile methodologies were developed to handle projects which have many changes, feedback from user experts and continuous learning is essential. In order to adapt to these fast changes, the project teams need to collaborate effectively. Thus communication between project members needs to be trustful and competent.

Trust can be further facilitated with the use of agile methodologies as a project manager acts as a facilitator, thus promoting collaboration, decentralised decision making and accountability from every team member in order for the project to be a success. This can only take place if the culture is that of trust and people empowerment. These characteristics are conducive to continuous improvement, flexible and collaborative teamwork. Lastly, the organisation's leadership needs to be innovative and able to take a risk in order to stay competitive in the market.

Another study by Da Silva et al. [36] further investigated the cultural factors which are associated with agile methodologies. Da Silva et al. [36] observed that if the factors identified in Table 2 below were present in the organisational culture, it would facilitate

the adoption of agile methods and impact positively on its use. Conversely, if the factors listed in Table 2 below are not present, this would impact negatively on the adoption of agile methodologies [36].

Table 2: Factors that influence organisational culture in adopting agile methodologies [36]

	Organisational culture factors
1	Role division
2	Innovation
3	Feedback is encouraged by the leadership of the organisation
4	The leadership of the organisation is seen to be risk-takers
5	The organisation highly values collaboration and participation
6	The organisation allows flexibility of teams
7	The organisation does not have a centralised decision hierarchy. Decision making is shared
8	Satisfaction
9	Teamwork is valued.

As these factors where further developed from the factors listed in the study by Strode et al. [11], only the differentiating factors shall be discussed here. The study conducted by Da Silva et al. [36] stated that the division of roles in an organisation would aid in the adoption of agile principles. Siakas and Siakas [37] found that factors like specified roles have an impact on agile principles. Division of roles allows for greater job satisfaction, improved commitment, efficiency and coherent organisations with improved involvement from all employees resulting in greater job satisfaction.

The cultural factors found by [11], [36], [37] are seen as essential for a project team and organisation to have to enable the realisation of the benefits which are associated with agile methodologies. Although the cultural factors listed in Table 1 and Table 2 are not entirely identical one can see the cultural elements which link back to agile core values and principles. From Table 1 and Table 2 one can see that feedback, collaboration, teamwork, flexibility, risk-taking are common, whereas satisfaction, share decision making, results orientated, people empowerment were found in only one study. However, these characteristics are related to the principles found in the agile manifesto [13].

Two out of the three studies found that the cultural element of leaders being risk-takers, and the link to the agile core values and principles is not direct. This is because these studies looked at leaders and employees being able to take a risk in the sense that taking risks allows for creative and innovative thinking and if a failure does arise leadership should not play the blame game but look at this as a learning opportunity

for all. The cultural elements found in the studies above, which link back to the core values and principles are summarised below.

Table 3: List of cultural factors enabling agile methodologies from various studies

Factors\Study	DeMartine et al. [32]	Strode et al. [11]	Da Silva et al. [36]	Tsun Chow et al. [38]	agile manifesto [13]
Trust	High trust	loyalty and mutual trust	-	-	High Trust levels
Feedback	-	organisation values feedback	Leadership encourages feedback	-	Feedback is given by the team to tune and adjust in order to continuously be more effective
Orientation	Collaboration	Participative, collaboration, People orientated Results orientated	Teamwork and collaboration	Cooperative organisation	Individuals and social interactions over procedures and tools, collaboration
Leaders Role	-	Facilitator	-	-	
Management Style		Entrepreneurial, innovative, collaboration and risk-taking	Leadership takes risks and values innovation	light-touch or adaptive management style	Supportive and trusting
Decision Making	-	-	Decentralised decision hierarchy. Shared decision making	-	-
Team formation	-	Flexible teams	Flexible teams with a division of roles in order to promote job satisfaction	Coherent, self-organising teamwork	Self-organising teams
Accountability	Employees must be accountable and responsible	-	-	-	Employees must be accountable and responsible to get the job done
Communication	-	face to face communication and informal	Trustful social interactions,	High value on face-to-face communication	High priority on interactions between employees and customers utilising face-to-face communication
Customer-centric	Focus on the end customer	-	-	Excellent customer relationship, Strong customer commitment and presence	Satisfy the customer
Delivery Strategy	Continuously improving through regular iterations	-	-	Regular iterations delivered with the critical feature first	Early and continuous delivery of working or valuable software

Table 3 shows various studies, which were conducted in order to derive cultural factors, which are considered essential for a project team and organisation to have in order to realise the benefits, which are associated with agile methodologies. Although the cultural factors listed are not entirely identical one can see the cultural elements which link back to agile core values and principles found in the agile manifesto [13]. From the cultural factors in Table 3, one can see that the cultural factors found from the individual studies link back to the principles found in the agile manifesto. However, decentralised decision making, which was found by Da Silva et al. [36], is not mentioned in the agile manifesto. Da Silva et al. [36] motivates that decentralised decision making allows for participation and collaboration to flourish. This behaviour further enables employees to voice their opinions when decision are made, thus reducing confusion. It was also seen that the cultural element of leaders being risk-takers was found by [11], [36] does not have a direct link to the agile core values and principles from the agile manifesto [13]. This is because these studies looked at leadership and employees being able to take a risk in the sense that taking risks allows for creative and innovative thinking and if a failure does arise, leadership should not play the blame game but look at this as a learning opportunity for all. The cultural elements found in Table 3, which link back to the core values and principles from the agile manifesto [13] are summarised below:

- The organisation's culture needs to be people-orientated and allow employees the freedom to take risks and come up with creative and innovative ideas [11], [13], [36]. The organisation needs to promote the feature of a product or service, results and customer-centricity instead of process centricity [13], [32], [38].
- Leadership structure should be more horizontal than vertical to allow for decentralised decision making [36]. Leadership should also be that of mentorship, facilitation and collaboration [11], [13], [32], [36], [38].
- Employees need to be accountable, which creates a sense of pride and ownership and brings self-gratification [13], [32].
- Communication needs to be open, frequent, and face to face [11], [13], [36], [38]This helps to alleviate problems should they arise. Thus promoting feedback and continues learning [11], [13], [36].
- High level of trust should be present within teams and leadership in order to facilitate innovative thinking, open communication, teamwork and responsibility [11], [13], [32], [36], [38].
- Organisations need to be flexible in order to react fast to changes and adaptable in order to stay competitive [11], [13], [36].

With Cultural characteristic ascertained, one can now look into what organisational culture allows these cultural characteristics to flourish and in turn, allow for the realisation of the benefits from agile methods.

2.5. Cultural relation and Influence on agile methodologies acceptance and adoption

With an understanding of organisational culture and its relation to agile values and principles, one can now look at different types of organisational cultures, which are conducive to the adoption of agile methodologies.

Wurster et al. [39] stated that the adoption of agile methodologies involves a change or cultural shift instead of just a movement from one methodology to the next. The article by Strode et al. [11] stated that the organisational culture could have an impact on the use of agile methodologies. Furthermore, "*certain types of culture would be detrimental or make it impossible to successfully use agile methods* [11, p. 3 of 9]". This statement is further reaffirmed by the following statement, "*If an organisation's actual values are secrecy, isolation, complexity, timidity and disrespect; suddenly expressing the opposite values through a set of new practices will cause trouble rather than create improvement* [40, p. 144]". Lastly, Lindvall et al. [41] stated that if the organisational culture is not appropriate, the organisation shall struggle to become agile.

When investigating the relationship between organisational culture and agile methodologies, it is essential first to determine what culture means. Organisational culture can be seen as a set of cultural elements or a combination of different subcultures where one is dominant [24], [42]. Siaskas et al. [43] stated that an organisation or individual does not fit into a single group or category but belongs to several different groups or categories when looking at culture, as such there are different types of cultures which can be found in an organisation.

2.5.1. Hofstede's culture types

Hofstede [44] used the cultural dimensions of uncertainty avoidance and power distance to theorise four culture categories. These include Clan, Hierarchical, Democratic and Disciplined (C.HI.D.DI) [44]. The dimensions of uncertainty avoidance and power distance were found to be "*more work-related than the other dimensions* [45, p. 221]" and as such, applies to organisational culture [37], [45].
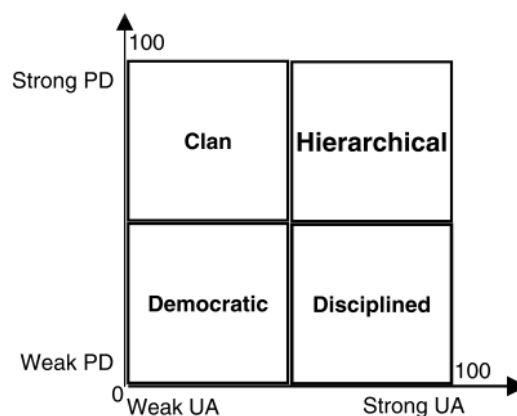
Figure 3: Clan, Hierarchical, Democratic, Disciplined organisational culture typology
[37]

The table below shows the cultural elements which can be found in these types of cultures.

Table 4: The C.HI.D.DI factors [43]

Factors\Type	Clan	Hierarchical	Democratic	Disciplined
Structure	Loose, flexible	Vertical hierarchy	Horizontal hierarchy	Formal Structure
Bonding	Loyalty, tradition	Formal, rules	Flexible rules, negotiations	Strong personal discipline
Orientation	In-group orientated	Product-orientated	People-oriented	Task-oriented, achievement-oriented
Leader's role	Mentor, facilitator	Commander, controller	Coordinator, organizer	Producer, hard-driver
Management Style	Participative, consultative	Authoritative, conservative	Supporting, consultative	Directive, goal oriented
Decision-making	Authoritative within-group consultation	Highly authoritative	Participative	Distributed
Change Orientation	Changes accepted if mutual gains are shown clearly	High resistance to change acceptance if no disturbance to the hierarchy	Acceptance of change if decision making participative	Change accepted if clear aims, milestones, autonomy can be assured
Rules	Flexible rule	Formal rules, regulations and procedures	Flexible Rules	Formal rules, regulations and procedures

From these cultural factors, the culture for these types can be seen below.

Clan

Clan type organisations generally have a flexible structure. Leadership from a Clan culture type portray characteristics of mentorship and facilitating [43]. This also promotes involvement and collaboration at various levels within an organisation [37]. This culture promotes group orientation, and therefore employees feel a sense of loyalty and ownership [37]. Thus one can see that this sort of culture focuses a lot on human resources and collaboration [37]. However, the decision making and the change orientation of this culture type are not in line with that found in Table 3.

Hierarchical

This type of organisation has a robust vertical chain of authority and governance [43]. Responsibility is not shared as decisions are made by individuals in power and filtered down through the organisation [43]. This culture also focuses a lot on process and

control, which allows the organisation to be more product orientated [37]. This is counter agile values and principles.

Democratic

Democratic type organisations can be seen to more flexible and spontaneous [43]. This can be attributed to the horizontal like leadership structure, which fosters collaboration and teamwork in the organisation [43]. This also promotes responsibility to be taken from all employees as well as a decentralised decision-making process [37]. With the decentralised decision-making process innovation and creative thinking are cultivated in order to resolve problems through negotiations [37]. From this, it can be seen that this type of culture is people orientated.

Disciplined

In a disciplined type culture, an organisation tend to conform to formal rules and regulations. Thus leading to a formal management structure [37]. Generally, employees in management roles can be considered to be hard drivers and are concerned with product output. Thus, they can be seen as producers. Organisations with this type of culture emphasise efficiency and productivity, thus making them task and project orientated [37]. From this, one can see that this is not in line with agile principles.

According to Siaskas and Siaskas [37], agile methodologies should be considered as a subculture within the already existing culture, present in an organisation. They further investigated which of these cultures will allow for easy integration of agile methodologies. It was found that the Democratic culture best suited agile methodologies as it allows for factors such as flexibility and spontaneity to flourish within an organisation [37]. A Democratic organisation culture also demonstrates characteristics such as consultations, participation and empowerment of team members, consensus and compromises on decisions [37].

2.5.2. Culture types from competing values framework

Research conduct by Livari and Livari. [46], which used a different set of cultures to analyse which culture type shall be best suited to the adoption of agile methods. The culture type is called "*Developmental (Adhocracy) and is supposed to be more flexible and focused on adapting an organisation to change* [47, p. 231]". Livari and Livari [46] have also summarised some of the main advances of research that was conducted on the relationship between organisational culture and the use of agile Methodologies. Da Silva et al. [36] have claimed that the relationship between organisational culture and agile methodologies should be investigated with the use of the competing values framework. Quinn and Rohrbaugh [47] initially proposed this in order to identify critical factors of an effective business. Quinn and Rohrbaugh proposed a set of different types of cultures which were further studied by Othman and Zouaoui [48] in order to determine how they affect the acceptance of agile methods within an organisation. These culture types were identified using the competing values framework, which utilises two dimensions. The two dimensions are change vs stability and internal focus vs external focus [49]. In order to determine which of these culture types is suited to the use of agile methodologies, it is essential to explore the cultural characteristics

and factors associated with each. The figure below shows the values of leadership, effectiveness and organisational theory that can be found when the competing value framework is used.
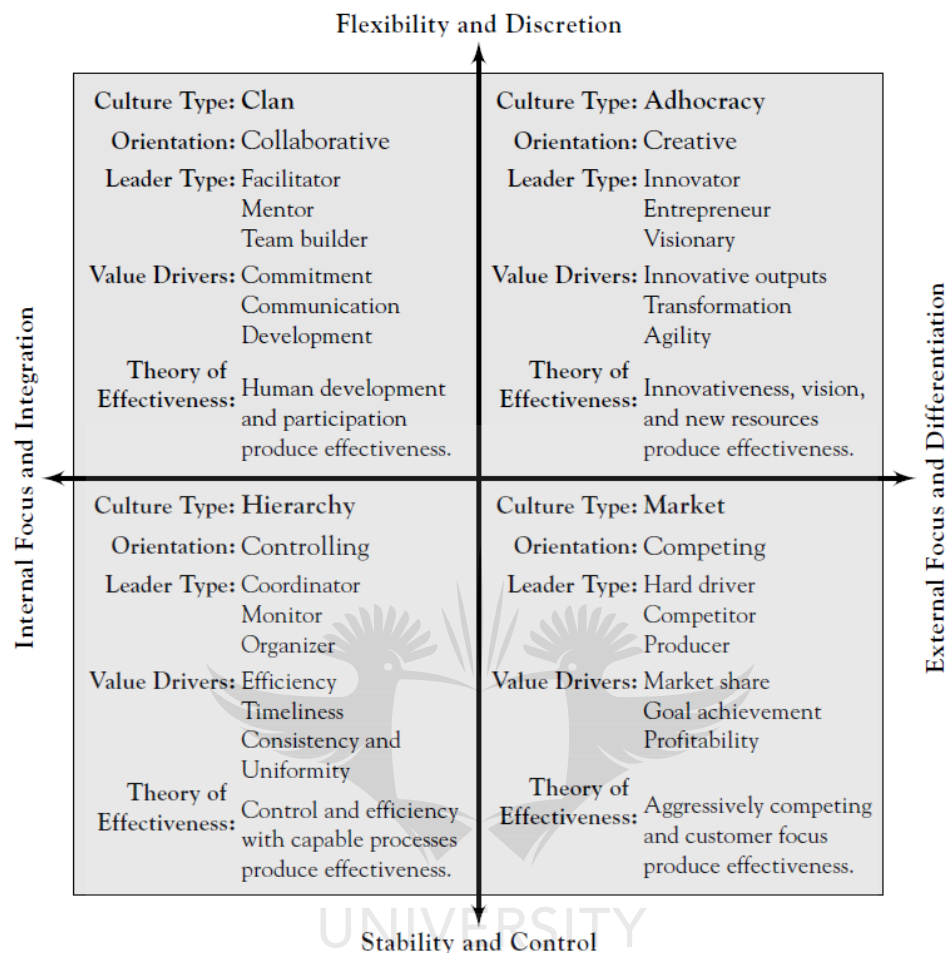
Figure 4: Values associated with the different culture types found by using the competing values framework [50]

Furthermore, the culture that can be associated with each culture type is described below and how it relates to agile methodologies.

Group culture (Clan):

Group culture facilitates the acceptance of agile methods as it creates an atmosphere in which employees are free to collaborate [48]. Thus enabling communication between employees and customer and allowing the project team to deliver a product effectively. This ties in with agile methods as agile methods consist of a better understanding from employees of the customer's needs and then applying effective teamwork to produce an efficient and meaningful output [13].

Development culture (Adhocracy):

Development Culture facilitates the acceptance of agile methods as this type of culture creates an environment in which employees are free to create and share [48]. This leads to creative and original ideas being developed [50]. This type of culture is linked

with agile methodologies as agile methodologies can be closely linked to the development of innovative and new solutions or ideas [48].

Rational culture (Market)

Rational culture looks to, create stability in an organisation [50]. This sort of culture emphasises productivity and success; however, it neglects the human aspects [48]. Although this culture does neglect the human aspects, it does promote both productivity and efficiency, which can help with the adoption of agile methods.

Hierarchical culture

This culture poses a hindrance to the acceptance and adoption of agile methodologies [48]. This is because tasks are handled through a formal process [50]. There is a centralised decision-making process which does not allow for creativity to flourish [48]. This culture type is highly in line with system control with the use of an internal process which opposes the agile methodologies core values [50].

In order to align the culture types associated with the competing values framework with the culture types from Hofstede's two dimensions, the table below was developed.

Table 5: Cultural Factors associated with competing values framework

Factors\ Type	Clan (Group)	Adhocracy (Developmental)	Hierarchy	Market (Rational)
Structure	Flat (Horizontal), autonomous teams and people [47]	Horizontal hierarchy [50]	Vertical hierarchy [50]	Formal Structure (vertical) [50]
Bonding	Loyalty, Tradition [50]	Innovation, development [50]	Rules, policies [50]	Achievement and goal accomplishment [50]
Orientation	Collaborative (People) [51]	Creative (Adaptive) [51]	Controlling (Stability) [51]	Competing (Task) [51]
Leader's role	Facilitator, mentor, team builder [51]	Innovator, entrepreneur, visionary [51]	Coordinator, monitor, organiser [51]	Hard driver, competitor, producer [51]
Management Style	Participative, consultative [50]	Innovative, visionary [50]	Authoritative, conservative [50]	Directive, Aggressive [50]
Decision-making	Participative, Consultative [50]	Fast and adaptive (readiness) [47]	Authoritative, Standardised [50]	Authoritative, Standardised [50]
Change Orientation	Changes accepted if mutual acceptance(Cohesion) [47]	Acceptance of change (flexible and adaptable) [47]	Resistance to change acceptance if it affects stability [47]	Change accepted if clear aims, milestones [47]
Rules	Flexible Rules [47]	Flexible Rules [47]	Formal rules, regulations and procedures [50]	Formal rules, regulations and procedures [47]

In order to track the most recent knowledge ascertained on the culture types that are deemed essential for the use of agile methods, Table 6 was created.

Table 6: Timeline of knowledge ascertained on organisational culture and agile methods

Date	Source	Summary
1983	[47]	The study presents a framework (CVF) to analyse organisational culture
1994	[44]	The study by Hofstede derived four dimensions in order to analyse cultural values
2002	[43]	Study based on a new typology (C.HI.D.DI) for national and organisational culture using Hofstede's power distance and uncertainty avoidance
2007	[37]	The study uses the C.HI.D.DI typology to investigate what type of culture is best suited for agile methodologies
2009	[11]	Investigated the impact of organisational culture on agile method use, by using CVF
2011	[46]	The study used competing values framework in order to investigate the relationship between organisational culture and the deployment of agile methods
2015	[36]	The study used CVF to investigate the influence of organisational culture in the adoption of agile methodologies in information systems development
2016	[48]	The study used CVF to investigate organisational culture and the acceptance of agile methodologies

Although these culture types are not identical, it was found to have similarities in the way it related to and influenced agile methodologies. According to Siaskas and Siaskas [37] the study which used Hofstede's dimensions, the Democratic type culture was best suited for the adoption of agile methodologies. However, the clan type culture does facilitate the adoption of agile methods but does have some drawbacks. One being its moderate flexibility. The study which was done using the competing values framework found that Developmental (also known as Adhocracy), Clan (also known as Group), Rational (also known as Market) culture types have a positive influence and impact on the adoption of agile methods [36], [49]. However, [11], [48] argue that Market culture may harm the adoption of agile methods and might only facilitate the adoption of agile methods to a certain extent.

This can be seen as the M culture type has sparse similarities with the agile core values and principles. However, [11], [36], [46], [48] concur that both Developmental and Clan have a positive impact. The following articles [11], [36], [46], [48] further concur that Hierarchical type culture had a negative impact and poses a hindrance to the acceptance and adoption of agile methodologies. From this, one can draw on the similarities, and in doing so, the culture type which facilitates the acceptance and adoption of agile methodologies can be seen. It is further evidence that there are culture types, which are closely aligned to the principles and values, stated in the agile manifesto.Although these studies use different dimensions in order to classify the

types of cultures in an organisation, one can identify how cultural aspects relate to the adoption of agile methodologies.

2.6. Conclusion

The objective of this chapter was to ascertain the current knowledge of the subject matter at hand. The focus of this study was twofold. Firstly, the cultural elements which are considered to be necessary for the realisation of the benefits from agile methodologies were investigated. Secondly, the organisational culture which allows for the cultural elements to flourish and is related to and influences the acceptance and adoption of agile methodologies and principles were investigated. The information which was needed was gathered using journal articles. To determine the organisational culture required to realise the benefits of agile methodologies, the principles and values upon which agile methods are based on were investigated. This was done through a brief overview of the agile manifesto. The agile manifesto briefly described how employees within an organisation should behave and interact with other employees and customers.

One is now able to determine what cultural factors allow for the realisation of the benefits from agile methods. The investigation than looked to determine the organisational cultural factors and elements needed to realise the benefits from agile when it is used or adopted. A list of cultural factors which are considered to correlate with agile methods was tabulated. From the tabulated cultural factors, it was found that all the factors listed were not entirely identical. However, it was found that some cultural elements linked directly to the principles and values found in the agile manifesto.

With the cultural factors ascertained, the next step was to identify what organisational culture will allow these cultural factors to flourish. This further allowed one to determine the relationship between organisational culture and the use of agile methods. The relation between organisational culture and agile principles was further explored using journal articles. There were different case studies in which different types of organisational cultures were proposed. This was because the authors of the studies used different dimensions. One article used two dimensions proposed by Hofstede, which are Uncertainty avoidance and Power distance. From the use of these dimensions, four culture types can be observed, namely: Democratic, Clan, Hierarchical and Disciplined. The other case study used a competing values framework. From this framework, the following culture types were identified: Group, Development, Rational, and Hierarchical.

Although these studies used different dimensions in order to classify the types of cultures in an organisation, one was able to identify how cultural aspects relate to agile methodologies. It was found that certain culture types have a positive impact, while other culture types may harm the use and adoption of agile methodologies. Lastly, it was stated that organisational culture impacts the structure of an organisation which then influences the behavioural mannerisms of employees and their actions.

3. CHAPTER 3: RESEARCH METHODOLOGY AND DESIGN

3.1. Introduction

The objective of this research study is to determine if the department in question has an organisational culture which is conducive to the realisation of the benefits from the use of agile management methodologies. This is supported by investigating whether the department in question has an organisational culture and the cultural traits which are conducive to the realisation of the benefits from agile methodologies. In order to reach the studies objectives, a literature study was conducted. This allowed for the information that is needed in order to create a comparison criterion.

This chapter briefs the reader on the research process and methodology used in this study. This chapter shall breakdown how the required information shall be obtained and analysed in order to derive a conclusion. This chapter shall outline the data gathering process that will be used in order to achieve the research objective.

3.2. Objectives

The objective of this investigation is to determine if the department in question has an organisational culture which is conducive to the realisation of the benefits from the use of agile management methodologies. The following research questions were developed to derive a conclusion.

1. What type of culture has a positive influence on the adoption of agile methodologies?
2. What cultural elements are needed in a business environment for agile principles to achieve the benefits?

The research question thus allows one to create a knowledge base and a comparison criterion. To conclude, one needs to determine what organisational culture is present in the department. This is because it has been determined that there are some organisational culture types which are more conducive to, and have a positive influence on, the adoption of agile principles compared to others. Therefore, determining the culture, which allows for the traits which are conducive to agile methods to flourish, is essential. Secondly, one needs to determine if the department has the cultural elements which are considered to be necessary for the realisation of the benefits from agile methods. This chapter outlines the method in which the data required to ascertain the department in question's organisational culture type and their cultural traits.

3.3. Research methods

The study looks to investigate a phenomenon within its real-life context. As such, the investigation shall use a case study research approach. This allows for one to understand the complexity of organisational culture and cultural elements in its natural occurrences [52], [53].

The use of a case study approach allows data to be gathered on real-life behaviours or events which happened in real-world context [53], [54]. Data of this type is not easily obtained using any other research method [54]. The use of a case study approach allows for flexibility as it allows the researcher the ability to adapt the investigation as it unfolds [55], [56]. Furthermore, it allows for a link to be established from the data that shall be collected to the research proposition [56].

Case study research approach allows for data to be gathered by both quantitative and qualitative methods [55]. Case studies also allow data to be gathered through multiple sources of evidence in contrast to experimental or survey research [57]. However, there are some disadvantages to the use of a case study approach. This is because the replication of a study could be limited due to the unique data collected. This notion was stated by Yin [55]. Also, it is essential to note that a case study approach can have some level of bias. This can be attributed to the subjectivity of the researcher when analysing data gathered. However, as organisational culture and cultural characteristics is a complex phenomenon, the method in which data is gathered is important. There is one key difference when looking into qualitative and quantitative research. This being that quantitative data is presented with scores, frequencies, numbers or rankings, in order to emphasise the items being measured [58]. Qualitative data emphasise meaning through an interpretation of the user stories, and participant descriptions [58].

As organisational culture is comprised of mostly conceptual and intangible phenomena, it cannot be easily measured or objectified. Thus, qualitative methods can be used to gather in-depth, subjective and unique aspect knowledge from user stories and observations [42]. The use of qualitative research methods allows for the exploration of social phenomena which are experienced by individuals in their natural context but limits generalisability and transferability [22].

With the lack of generalisability, labour and time demanding aspects of qualitative data, the use of quantitative tools for the assessment of organisational culture is enhanced [58]. The use of quantitative methods allows one to measure key variables of a phenomenon but does not allow for in-depth information and reasoning to be uncovered [58]. It is important to note that the various quantitative tools used for assessing organisational culture have limited use or scope [59]. The use of quantitative data allows for the examination of characteristics through deductive-objective-generalised procedures [58]. As such, the study makes use of a quantitative data collection approach.

A key concept for case study research is to derive information from multiple sources or use data triangulation [56], [60]. As such, the investigation that shall be followed shall entail a two-phased approach.

1. Phase one of the data collection process concentrates on determining the organisational culture type. This is because it has been determined that some organisational culture types are more conducive to a positive influence and or acceptance of agile principles than others and as such allows for the traits which are conducive to agile methods to flourish.

2. Phase two of the data collection process looks to assess the cultural elements present within the department. This is because it has been determined that there are cultural elements which are considered to be necessary for the realisation of the benefits from agile methods.

3.4. Research process

The two phases used in this study are discussed below.

3.4.1. Phase 1: Organisational culture type assessment

As the study looks to assess the culture and compare it to other organisational culture types found through literature, the use of a quantitative tool shall be used. This shall be done using a quantitative tool built upon the competing values framework.

The framework was initially developed as an indicator of organisational effectiveness [50], [61]. It was later extended to study organisational culture [61]. The study shall use the Organisational Culture Assessment Instrument derived by Cameron and Quinn (OCAI) [50]. This assessment tool is said to be a scientifically rigorous instrument and has been used widely to assess and or diagnose an organisations culture and its implications to agile methods [11], [36], [42], [46], [48]. The OCAI tool can be used to assess an entire organisation, or one can use the tool to assess different subunit cultures within an organisation [50].

Through the literature review, it was determined that some organisational culture types are more conducive to a positive influence and or acceptance of agile principles than others and as such allows for the traits which are conducive to agile methods to flourish. Through the use of the competing value framework, it was determined that Developmental (Adhocracy), Clan, Rational (Market) culture types have a positive influence [36], [49]. However, some authors argue that the Rational culture type may harm the acceptance of agile methods and might only facilitate the adoption of agile methods to a certain extent [11], [48]. With this assessment tool, the organisational culture type profile can be derived. The organisation's culture can comprise of a mixture of all four culture types found within the competing value framework [50]. With this knowledge in mind, one can now compare the cultural profile of the organisation to the culture types found to have a positive influence and impact on the adoption of agile methods.

The OCAI makes use of ipsative scoring (a scoring method in which respondents compare two or more options and then rate the most applicable one to the area under investigation with the highest score). The Instrument is based on generalised questions. This allows one to determine the mix of organisational culture types in an organisation [42]. The use of generalised and straightforward questions allow for maximum participation, the ability for it to be used in different kinds of organisations, low cost and ease of use [42].

However, with the use of ipsative scoring, interpretation and clarity can be obscured as respondent's need to assign a score based on the score they gave to another factor as the total score needs to sum up to 100 for each section.

3.4.2. Phase 2: Questionnaire used to assess the cultural characteristics present in a department

This phase looks to use a questionnaire as a means of collecting data. Payne and Payne [62] stated that in order to use a questionnaire, a list of easily understandable and answerable questions need to be created and presented in a standardised form. The use of a questionnaire allows for uniformity in the data collected [57]. This is because each person responds to the same question.

The use of a questionnaire also allows for more people to be assessed, as it is a method which is less time consuming than obtaining data through oral responses [57]. However, it is essential to note that the use of questionnaires have some limitations, as they do not provide the same flexibility that interviews can [57]. Furthermore, the use of questionnaires allows the researcher to use deductive reasoning in order to verify the literature which was found [57]. This process looks to assess the cultural elements present within the department. This is because it has been determined that there are cultural elements which are considered to be necessary for the realisation of the benefits from agile methods. These cultural elements can be found in Table 3.

3.5. Data collection strategy

In order to ensure objectivity and relevance, the investigation uses a carefully planned data collection strategy. The investigation makes use of two phases in which data is gathered. These phases are described below.

3.5.1. Phases 1: Organisational Culture Assessment Instrument (OCAI)

The OCAI makes use of six items to describe the essential manifestation of organisational culture [50]. The six items address the organisation's dominant characteristics, the organisational glue, interaction patterns (leadership, management of employees) and organisational direction (strategic emphases, criteria of success) [50]. This sheds light on the way an organisation operates and the values which are at its core [50]. The Assessment instrument works by asking participants to divide 100 points among four alternatives. The highest rating should be based on the extent that each alternative is similar to the individual's organisation. Once completed, the computation of the mean score for each section comprising of the various alternatives shall be done.

The scores acquired for each alternative is related to the different culture types found in the competing value framework with A representing Clan, B representing Adhocracy, C representing Market and D representing Hierarchical cultural characteristics. With the scores for each alternative in the OCAI tool, one is then able to plot a graph which depicts the organisational culture type profile. Furthermore, underlying assumptions of the cultural elements can also be ascertained. Please see Appendix B: Section 1 for the OCAI tool.

Checks were put in place in order to make sure that the quality of the data obtained from this tool is of a high standard and usable. This included:

- Participants were not allowed to email the questionnaire if all sections of the questionnaire were completed, and if the total scores for the OCAI tool did not sum to 100. This was done using Adobe fillable forms.

This ensured only completed, and valid questionnaires were collected. Thus, minimising or completely removing the chance of acquiring incorrect or unusable data.

3.5.2. Phase 2: Assessment of cultural elements needed in a business environment for agile principles to achieve the benefits

The cultural elements found from [11], [13], [32], [36], [38] were used to derive a questionnaire. The questionnaire asked participants to rate the extent to which the cultural characteristics apply to their department. The statements which were put forward in the questionnaire was derived from Table 3. The questionnaire makes use of a Likert scale in which the presence of these cultural elements is assessed. Through this assessment, one will be able to determine the presence of these cultural elements, which are considered to be necessary for the realisation of the benefits from agile methods, in the department.

Table 7 below shows the questions which were developed using Table 3 and the area of focus for each question. The full questionnaire can be seen in Appendix B: QuestionnnaireSection 2.

Table 7: Questionnaire developed to assess the presence of cultural characteristic

	Statements used to assess Cultural characteristics	Area of focus
1	There is a high level of trust within the department with loyalty and mutual trust amongst all members of the department.	Trust
2	The department and its leadership place a high value on giving feedback which is then used to fine-tune and adjust the way people work in order to be more productive.	Feedback
3	The department is characterised by teamwork, collaboration, consensus and cooperation	Collaboration, teamwork and cooperation
4	The leadership in the department is generally considered to exemplify mentoring and or facilitating.	Leaders act as facilitators, mentors
5	The Management style in the department is considered to exemplify entrepreneurship, risk-taking and innovation.	Management style, risk
6	The department uses a distributed decision-making process.	Decision Making strategy
7	The department makes use of self-organising and flexible teams.	Team formation

8	All team members can be characterised by having a high level of accountability and responsibility.	Accountability
9	The department uses informal and face-to-face communication between employees and their customers.	Communication
10	The department has an excellent customer relationship with strong customer commitment and presence, and the department's highest priority is to satisfy the customer.	Customer centricity
11	The department makes use of early and continuous improvement through iterations while delivering the most critical features first.	Delivery Strategy

3.6. Data analysis process

Data which was gathered shall be analysed using a quantitative data analysis process. This can be done as the methods of investigation used in a case study, are flexible [55], [56]. The use of a case study approach allows the researcher to test and verify the data gathered to the data obtained in the literature review [56].

The role of the researcher during this phase of the case study is to test and verify the findings while performing testing procedures in an ethical manner which is aligned with good research practice. Thus, the study shall follow the procedure described below.

Phase 1 of questionnaire
- Derive a overall cultural profile with the OCAI questionnaire
- Derive specific cultural profile based on the different levels within the department with the OCAI questionnaire.

Phase 2 of questionnaire
- Use weigthed mean to determine the present level for the cultural elements in the department.

Comparison
- A comparison of the culture present in the department to the findings from literature

Figure 5: Analysis approach for data gathered

For phase one, the OCAI shall make use of a graph to represent the culture profile of an organisation [50]. In order to get a measure of central tendency, the data acquired from the OCAI shall be tabulated and the mean calculated from the various fields [63]. This shall allow for a generalised culture profile to be ascertained from the data gathered. From the culture profile associated with the department, one would be able to see the dominant culture type. The dominant culture type shall then be compared

to the culture types found to have a positive influence on the adoption of agile methodologies than others. From literature, the culture types that were found to have a positive influence and impact on the adoption of agile methods are Developmental, Clan, and Rational culture type. However, Rational culture type may have limited positive impact.

For phase two, the data collected from the questionnaire shall be used to assess the cultural characteristics present in the department. The data shall be tabulated and then analysed. This approach looks to analyse the data attained through the questionnaire and derive meaningful data. Lastly, analysis employing critical thinking shall be used to analyse both the findings from the OCAI tool and the questionnaire to ultimately determine if the organisational culture is conducive to the realisation of the benefits from the use of agile management methodologies.

3.6.1. Data verification and validation

The analysis of data through the means of a quantitative process relies on deriving and validating data in a manner in which the reader can easily understand it. Therefore the following tactics can be used to derive meaning from the data gathered [64]:

- The researcher needs to establish similarities and differences from the data set gathered.
- The data gathered should be tabulated or displayed with the use of a matrix.

The quantitative analysis process shall focus on transforming the data obtained through the questionnaires used in the two phases. The steps used in order to transform the data obtained shall include checking the data for completeness and uniformity, elimination of incomplete questionnaires, and lastly quantifying the data obtained into a numerical form which shall allow for further analysis.

3.7.   Unit of analysis

The unit of analysis for this study is the cultural elements in a department, in a telecommunications company, which focuses on customer value management. This department was chosen as they have been at the forefront for a companywide shift to agile methodologies. The department consists of employees of various levels from senior management (Executive head of department, Managing Executive) to recently graduated employees. Thus in order to derive information about the culture within the department, the assessment shall be done on employees from the department.

3.8.   Participants

As this research study aims to determine the cultural elements from a single department, the participants shall comprise of employees of the targeted department. Participants shall include individuals that are available and willing to participate in the study. Thus a convenience sampling technique is used [65].

It is important to note that the population of the department comprises of 70 employees in total, which come from various levels. The composition of the department can be seen in the table below.

Table 8: Composition of department

Role	Number of employees
Managing Executive	1
Executive Head of Department	5
Manager	6
Principal Specialist	6
Senior Specialist	25
Specialist	24
Graduate	3
Total	**70**

3.9. Research ethics

Various steps shall be taken to ensure that the study is conducted ethically. Firstly, ethical Clearance shall be obtained from the University of Johannesburg. All data gathered through this study shall be considered confidential. The right to anonymity shall be respected and given to all participants of the study. As such, the names of the participants and the organisation shall remain anonymous and confidential. Any participant may withdraw at any stage during the data gathering process. There shall be no benefits given to participants, monetary or otherwise. There shall be no risk, sanctions applied to the participants of this study Transparency and anonymity shall be given the utmost attention when gathering data and presenting the findings thereof. The researcher shall ensure that research is done in a manner which is both respectful and shows a high level of integrity. The researcher shall ensure that findings are based on facts and shall not misrepresent findings even if they might go against the research study.

3.10. Conclusion

This chapter presented the research methodology and process which shall be used in this study. The process followed allows one to reach the studies objectives. The objective of the investigation is to determine if the department in question has an organisational culture, which is conducive to the realisation of the benefits from the use of agile management methodologies. This shall be done by firstly determining the organisational culture in the department as it was found that certain culture types are better suited to agile methodologies. Secondly, one needs to determine if the department has the cultural elements which are considered to be necessary for the realisation of the benefits from agile principles. The study makes use of a case study approach in which questionnaires are used. Individuals from the department who are conveniently available and freely willing to participate in the study responded to the questionnaire. The OCAI instrument is used to derive underlying assumptions of the way an organisation operates and the values which are at its core and ultimately a culture profile. The use of a questionnaire in phase two allows for the assessment of

the cultural elements within the department. The data gathered from both phases shall be assessed quantitatively in order to determine if the organisational culture is conducive to the realisation of the benefits from the use of agile management methodologies.

4. CHAPTER 4: RESULTS AND ANALYSIS

4.1. Introduction

The objective of this investigation is to determine if the department in question portrays an organisational culture and cultural traits which is conducive to the realisation of the benefits from the use of agile principles. In order to determine this one needs first to determine if the organisational culture is one that allows for the adoption of agile methodologies and secondly if the employees within the department portray cultural characteristics which are conducive to realising the benefits of agile methodologies. As such, this study makes use of a two-phased approach, which further ensures that there are multiple sources of evidence. Both phases make use of questionnaires. In order to get participants for this investigation, the study makes use of a convenience sampling approach. Participants were asked to complete both questionnaires, resulting in the same participants for phase one and two.

In phase one of the study, the investigation looks to derive a cultural profile type of the department. This was done using the OCAI tool. With this assessment tool, the organisational culture type profile can be derived.

In phase two of the study, the investigation looks to determine the presence of cultural elements, which are considered necessary to realise the benefits of agile methodologies. In order to accomplish this, a questionnaire was derived with the use of a Likert scale. This allowed participants to rate the presence of the cultural elements within their department.

4.2. Analysis approach and participant profile

As this study makes use of a two-phased approach in order to gather data, the data analyses shall follow the procedure shown in Figure 5. In order to follow the procedure set out, the following steps were taken.

Phase 1 of the questionnaire

- In order to derive the culture profiles from the department, the data collected shall be presented as rounded figures to the nearest whole numbers. It is important to note that with rounding the figures to whole number some scores when added shall not add to 100 but either 99 or 101.
- The overall culture profile can be ascertained with the use of OCAI and the associated dominant culture type. However, it is essential to investigate the individual dominant culture characteristics from the OCAI tool. This is because the dominant culture could be one type, but when looking at the individual sections, the dominant cultural characteristic could be from a different culture type compared to the overall dominant culture type.

Phase 2 of the questionnaire

- Weighted mean was used to analyse the data from the Likert scale.

Discussion of Results

- A comparison of the culture present in the department to the findings from literature shall be made based on the data gathered.

Participants profile

The questionnaires were sent out to all the employees of the department, and 24 participants responded. This resulted in a response rate of 35% in total. The breakdown of the respondents are as follows:

Table 9: Participant Breakdown

Different levels of seniority with the department	Number of employees	Number of participants	Response rate per level
Managing Executive	1	1	100%
Executive Head of Department	5	2	40%
Manager	6	2	33%
Principal Specialist	6	2	33%
Senior Specialist	25	8	32%
Specialist	24	8	33%
Graduate	3	1	33%
Total	70	24	Total Average = 35%

4.3. Culture of the department

The OCAI tool was used to determine the culture of the department. The use of the OCAI tool generates a culture profile. It is separated into six sections with four alternatives in each section. The scores acquired for the alternatives in each section of the OCAI tool are related to the different culture types from the competing value framework. With alternative A representing Clan, B representing Adhocracy, C representing Market and D representing Hierarchical culture types. The mean scores for each alternative in the OCAI tool generate a point to plot on a graph. The graph depicts the organisational culture type profile. Furthermore, underlying assumptions of the cultural elements can also be ascertained by looking at the cultural elements, which received the highest ratings for each section in the OCAI tool. From the cultural profile, one can determine the culture and its dominant characteristics.

This allows one to compare the culture profile present in the department with the cultures which are considered to have a positive impact on the acceptance and adoption of agile management methodologies, as stated in section 2.5. It is important to note that the culture shall comprise of a combination of characteristics from each culture type [50]. As such, the culture could be a combination of the different culture types [50].

As participants from the department comprise of different seniority levels, the information gathered through the OCAI tool shall firstly be generalised for the entire department and then further broken down into the various levels in order to gather further insight. When looking at the cultural profiles for the various levels, it is essential to note the response rate for that particular level as this affects the findings. From the

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culture profiles that shall be derived, the following method of interpretation shall be used in order to ensure consistency.

- The dominant culture type shall be identified.
- Identify the underlying assumptions of the cultural elements from the department.
- Create and discuss the overview of the culture at every level.

4.3.1. Generalised culture profile

From all the participants, the following results were gathered from the OCAI tool. Using the results gathered the following culture profile was derived.
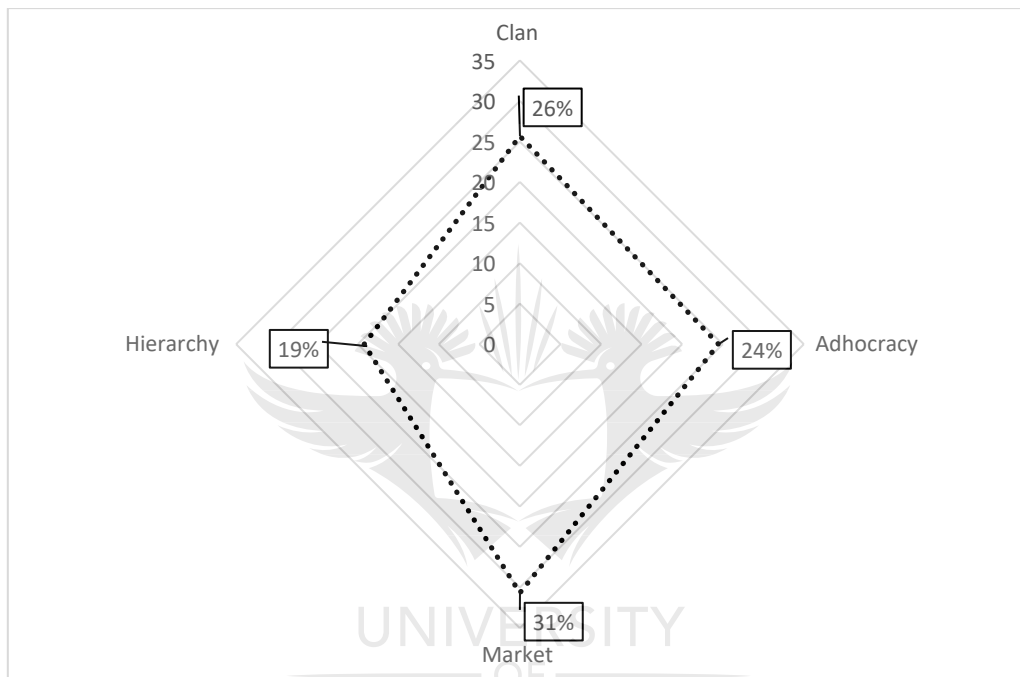
Figure 6: Overall culture profile for CVM

From Figure 6, one can see that the most dominant culture type is that of Market (Rational) culture with a value of 31%. Clan (Group) follows it closely with 26% and then Adhocracy (Developmental) with 24%. Lastly, hierarchical has the smallest dominance of all culture types, with 19%. From this, one can deduce that the most dominant values of the department are that of a Market culture type. The next section looks at the individual sections of the OCAI tool and discusses the dominant culture characteristic from these sections.

The dominant cultural characteristics which were rated the highest from each section in the OCAI tool was ascertained. From the data gathered the dominant cultural characteristic is shown in Appendix C: Table 18. This was determined from the characteristics, which were rated the highest from the six different sections in the OCAI tool by the participants. From Appendix C, Table 18, the cultural characteristics, which were rated the highest in the different sections of the OCAI tool by the participants, can be ascertained. As such, we can see that the departments dominant characteristic is that of a competitive and achievement orientated as it was rated at 33%. The department's leadership was rated to; generally to exemplify entrepreneurship,

innovation, or risk-taking, at 26%. The management style associated with the leadership in the department was rated to be; hard-driving competitiveness, high demands, and achievement, at 30%. However, the organisational glue is tightly knit between a Market 29% and Clan 28% culture type. As these cultural characteristics were both a percentage point away, the organisational glue could either be held together by an emphasis on achievement and goal accomplishment (Market) or be held together by loyalty and mutual trust (Clan). More participants are required to get a clearer picture of this particular characteristic. With such a close margin, it is hard to establish the most dominant characteristic of this section. The strategic emphases were rated to be; that of an organisation, which emphasises competitive actions and achievement, while hitting stretch targets and winning in the marketplace is dominant, at 34%. Lastly, the criteria of success were rated; that the department defines success based on winning in the marketplace and outpacing the competition, at 34%.

4.3.2. Cultural profile from managing the managing executive's perspective

The following results were obtained from the departments managing executive. Using the results gathered the following culture profile was derived.

Figure 7: Cultural profile from the managing executive's perspective

From the managing executive's position, the view of the culture type is that of a close combination between Adhocracy 38%, Clan 32% and Market 30%, with Adhocracy culture type being the most dominant. In contrast to the overall culture profile from the department, it can be seen that the managing executive does not see any Hierarchical culture type attributes in the department as this section was rated at 0%. However, the results could be skewed as the managing executive-level comprises of a single individual. The next section looks at the individual sections of the OCAI tool and discusses the dominant culture characteristic from these sections.

The dominant cultural characteristics, which were rated the highest from each section in the OCAI tool, was ascertained. From the data gathered the dominant cultural characteristic from the view of the executive manager's view is shown in Appendix C:

Table 20. This was determined from the characteristics, which were rated the highest from the six different sections in the OCAI tool by the participants. From Appendix C: Table 20, the cultural characteristics, which were rated the highest in the different sections of the OCAI tool by the executive manager, can be ascertained. This type of organisational culture profile was rated to have strategic emphases as being one such that competitive actions and achievement is highly valued while hitting stretch targets and winning in the marketplace is dominant at 60%. The managing executive of the department rated the criteria of success to be based on winning in the marketplace and outpacing the competition at 50%. The organisational glue was rated to be one that is held by an emphasis on achievement and goal achievement at 40%. The dominant characteristic was rated to be that of an organisation which is a dynamic and entrepreneurial place where people are willing to stick their necks out and take risks, at 40%. However, the organisational leadership and management of employees both had equal ratings at 50% between Clan and Adhocracy characteristics. It is important to note that this could be a result of the department only comprising of one managing executive. Thus the organisational leadership could either exemplify entrepreneurship, innovation and risk-taking, or it could exemplify mentoring facilitating and nurturing. Lastly, the management of employees could either be characterised by teamwork, consensus and participation or characterised by individual risk-taking, innovation, freedom and uniqueness.

4.3.3. Cultural profile from the executive heads of departments' perspective

The following results were obtained from the executive head of departments from CVM. Using the results gathered the following culture profile was derived.

Figure 8: Cultural profile from executive heads of departments perspective

From the executive heads of departments' position, the view of the culture type is that of a close combination between Adhocracy 28%, Clan 23% and Market 33%, with Market culture type being the most dominant. It can also be seen that there are Hierarchical attributes as it has a rating of 17%. The next section looks at the individual sections of the OCAI tool and discusses the dominant culture characteristic from these sections.

The dominant cultural characteristics, which were rated the highest from each section in the OCAI tool, was ascertained. From the data gathered the dominant cultural characteristic from the view of the executive heads of the department is shown in Appendix C: Table 22. This was determined from the characteristics, which were rated the highest from the six different sections in the OCAI tool by the participants. From Appendix C, Table 22, the cultural characteristics, which were rated the highest in the different sections of the OCAI tool by the executive heads of department, can be ascertained. The executive heads of department rated the criteria of success to be; based on winning in the marketplace and outpacing the competition, at 55%. However, the dominant characteristic section was rated that; the department is one in which people are willing to take risks and is dynamic and entrepreneurial, at 40%. The organisational leadership was rated that, the leadership in the organisation generally exemplify entrepreneurship, innovation or risk-taking, at 30%. The management of employees was rated to be characterised by, security of employment, conformity, predictability and stability in relationships, at 33%. The organisational glues were rated to be, held together by an emphasis on achievement and goal accomplishment, at 35%. Lastly, the strategic emphasis was rated to be, emphasised by acquiring new resources and creating new challenges while trying new things and prospecting for opportunities are valued, at 30%

4.3.4. Cultural profile from the managers' view

The following results were obtained from managers for CVM. Using the results gathered the following culture profile was derived.
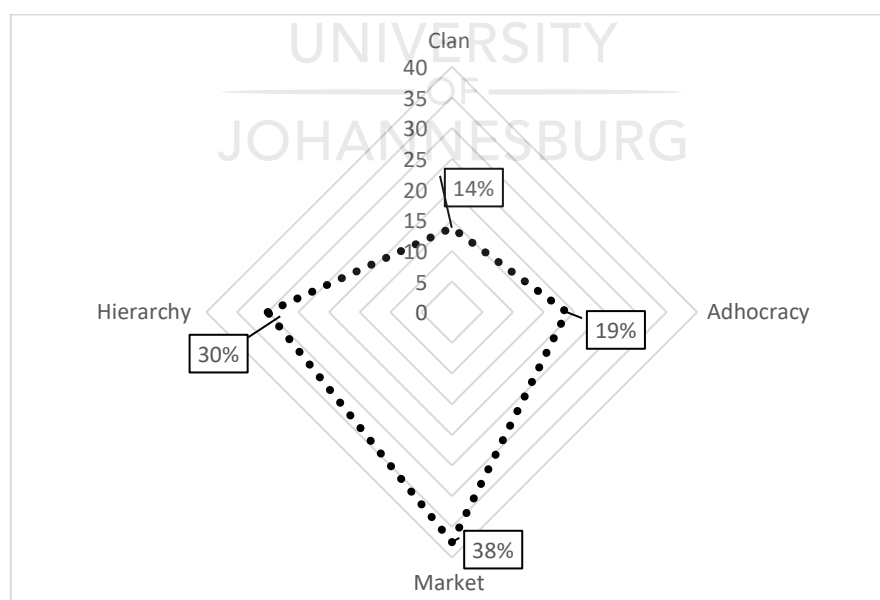
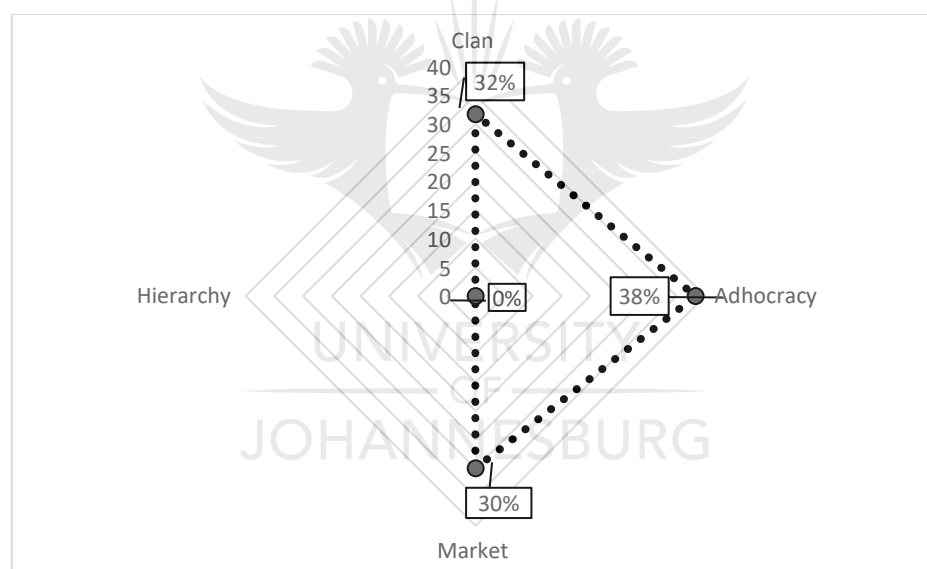*Figure 9: Cultural profile from the managers' perspective*

From the Managers position, the view of the culture type is vastly different compared to all the other levels within the department. This may be attributed to that fact that not enough managers were used in order to gather data. However, the percentage of

Managers that participated in this study is at 33%. From the above graph, one can see that unlike the other levels within the department the view from the managers about the organisational culture profile is a close combination of Hierarchical 30% and Market 38% while Adhocracy 19% and Clan 14% have minimal roles. From this profile, the Market culture is the most dominant. The next section looks at the individual sections of the OCAI tool and discusses the dominant culture characteristic from these sections.

The dominant cultural characteristics, which were rated the highest from each section in the OCAI tool, was ascertained. From the data gathered the dominant cultural characteristic from the view of the managers is shown in Appendix C: Table 24. This was determined from the characteristics, which were rated the highest from the six different sections in the OCAI tool by the participants. From Appendix C: Table 24, the cultural characteristics, which were rated the highest in the different sections of the OCAI tool by the managers, can be ascertained. The managers rated the strategic emphases to be; that of one that is competitive actions and achievement is highly valued while hitting stretch targets and winning in the marketplace is dominant, at 45%. The leadership was rated to; exemplify a no-nonsense, aggressive and results orientated, at 40%. The dominant characteristics were rated to be, the organisation is very results orientated with a major concern on getting the job done, and people are very competitive and achievement orientated, at 43%. The management of employees was rated to be, characterised by hard-driving, competitiveness, high-demands and achievement, at 35%. The organisational glue was rated to be, held together by rules and policies while maintaining a smoothly running organisation, at 38%. Lastly, the criteria for success was rated to be, based on winning in the marketplace while hitting stretch targets and outpacing the competition, at 35%.

4.3.5. Cultural profile from the principal specialists' perspective

The following results were obtained from Principal specialists from CVM. Using the results gathered the following culture profile was derived.
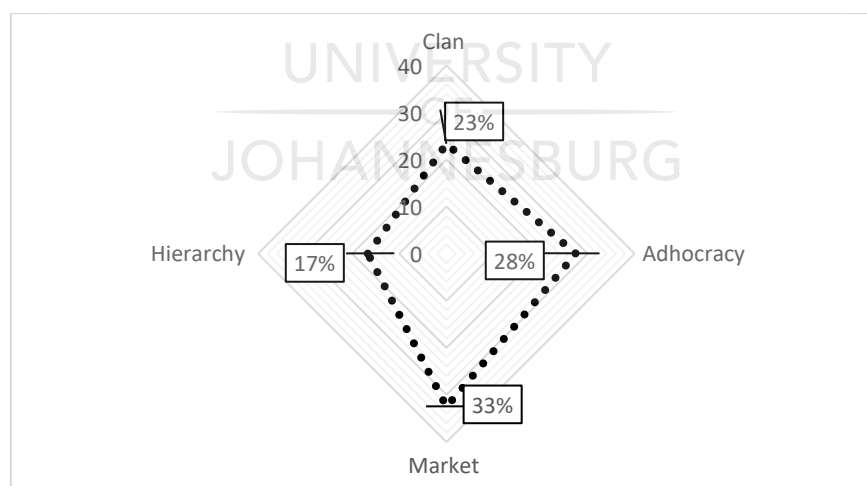

Figure 10: Cultural profile from principal specialists' perspective

From the Principal specialist position, the view of the culture type is that of a close combination between all four culture types with Market culture type being the most dominant with a rating of 34%. It can also be seen that there is a relatively high Hierarchical presence with 20%. As such, attributes, which are linked to a control orientation, can be expected in this level of the department. The next section looks at the individual sections of the OCAI tool and discusses the dominant culture characteristic from these sections.

The dominant cultural characteristics, which were rated the highest from each section in the OCAI tool, was ascertained. From the data gathered the dominant cultural characteristic from the view of the principal specialists in the department is shown in Appendix C: Table 26. This was determined from the characteristics, which were rated the highest from the six different sections in the OCAI tool by the participants. From Appendix C: Table 26, the cultural characteristics, which were rated the highest in the different sections of the OCAI tool by the principal specialists, can be ascertained. From the results shown in Appendix C: Table 26, it can be seen that on the principal specialist in the department rated the strategic emphases to be; one such that competitive actions and achievement is highly valued while hitting stretch targets and winning in the marketplace is dominant, at 45%. Principal specialists have rated the organisational glue to be; that which is held together by a commitment to innovation and development, promoting being on the cutting edge, at 30%. The criteria of success was rated to be, defined based on winning in the marketplace and the outpacing the competition, at 33%. The dominant characteristic was rated to be, defined by being results orientated with a major concern on getting the job done while people are very competitive and achievement orientated, at 38%. The organisational leadership was rated to be, exemplify entrepreneurship, innovation or risk-taking, at 28%. The management of employees was rated to be, characterised by hard-driving competitiveness, high demands and achievement, at 38%.

4.3.6. Cultural profile from the senior specialists' perspective

The following results were obtained from the senior specialists from CVM. Using the results gathered the following culture profile was derived.

Figure 11: Cultural profile from senior specialists' perspective

From the senior specialist position, the view of the culture type is that of a relatively close combination between all four culture types with Market 34% culture type being the most dominant. It can also be seen that there is a Hierarchical presence which was rated at 19%. The next section looks at the individual sections of the OCAI tool and discusses the dominant culture characteristic from these sections.

The dominant cultural characteristics, which were rated the highest from each section in the OCAI tool, was ascertained. From the data gathered the dominant cultural characteristic from the view of the senior specialists is shown in Appendix C: Table 28. This was determined from the characteristics, which were rated the highest from the six different sections in the OCAI tool by the participants. From Appendix C: Table 28, the cultural characteristics, which were rated the highest in the different sections of the OCAI tool by the senior specialists, can be ascertained. From the results shown in Appendix C: Table 28 it can be seen that on the senior specialist in the department rated the management style to be; characterised competitive actions and achievement, while also emphasising hitting stretch targets and winning in the marketplace, at 38%. Thus, competitive market leadership is considered crucial. The dominant characteristic was rated to be, defined by being results orientated with a major concern on getting the job done while people are very competitive and achievement orientated, at 33%. The organisational leadership was rated to, exemplify mentoring, facilitating or nurturing, at 27%. The organisational glue was rated to be, held together by an emphasis on achievement and goal accomplishment, at 34%. The Strategic emphases were rated to be, characterised by competitive actions and achievement while hitting stretch targets and winning in the marketplace, at 38%. Lastly, the criteria of success was rated to be, based on winning in the marketplace and outpacing the completion, at 36%.

4.3.7. Cultural profile from the specialists' perspective

The following results were obtained from the specialists from CVM. Using the results gathered the following culture profile was derived.
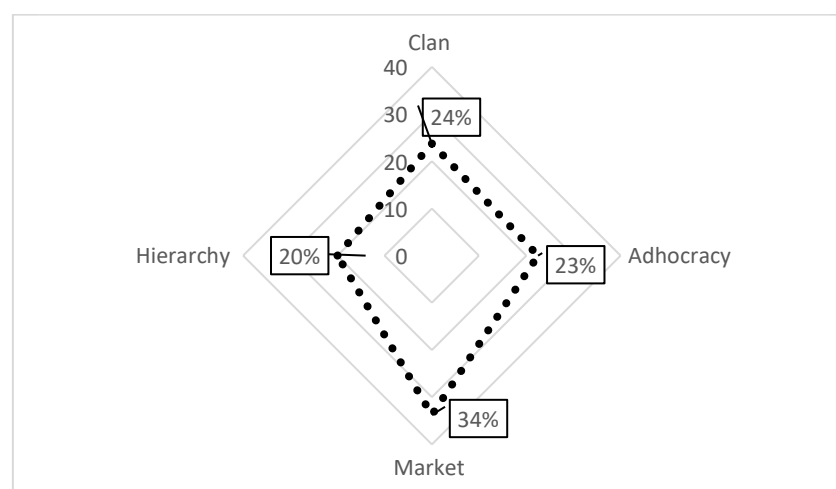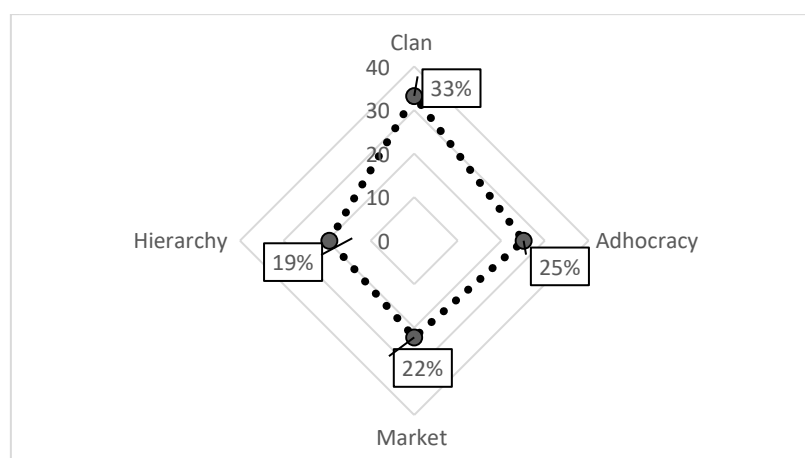

Figure 12: Cultural profile from the specialists' perspective

From the specialist position, the view of the culture type is that of a dominant Clan 33% type culture. Adhocracy 25%, Market 22% and Hierarchy 19% are of a similar level from the view of the specialists. The next section looks at the individual sections of the OCAI tool and discusses the dominant culture characteristic from these sections.

The dominant cultural characteristics, which were rated the highest from each section in the OCAI tool, was ascertained. From the data gathered the dominant cultural characteristic from the view of the specialists is shown in Appendix C: Table 30. This was determined from the characteristics, which were rated the highest from the six different sections in the OCAI tool by the participants. From Appendix C: Table 30, the cultural characteristics, which were rated the highest in the different sections of the OCAI tool by the specialists, can be ascertained. From Appendix C: Table 30, the specialist rated that the organisation glue to be; held together by loyalty and mutual trust while commitment to this organisation runs high, at 38%. However, it was also seen that at this level that the leadership in the organisation is rated to; generally exemplify coordinating, organizing, or smooth-running efficiency was rated highly, at 29%. The dominant characteristic was rated to be, very results orientated with a major concern on getting the job done while people are very competitive and achievement orientated, at 26%. The management style was rated to be, characterised by teamwork, consensus and participation, at 34%. The strategic emphases was rated to be, emphasised by human development with high trust, openness and participation persist, at 34%. Lastly, the criteria of success was rated to be, bases on the development of human resources, teamwork, employee commitment and concern for people, at 33%.

4.3.8. Culture profile from the graduates' view

The following results were obtained from the graduates from CVM. Using the results gathered the following culture profile was derived.
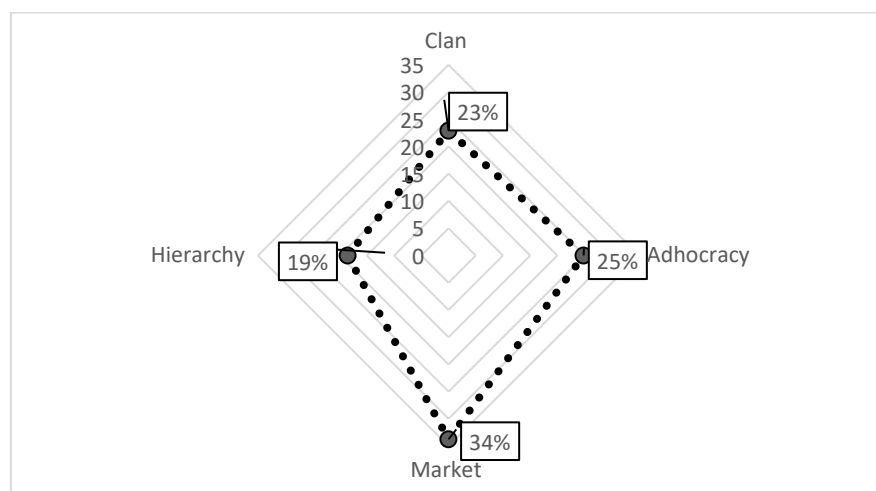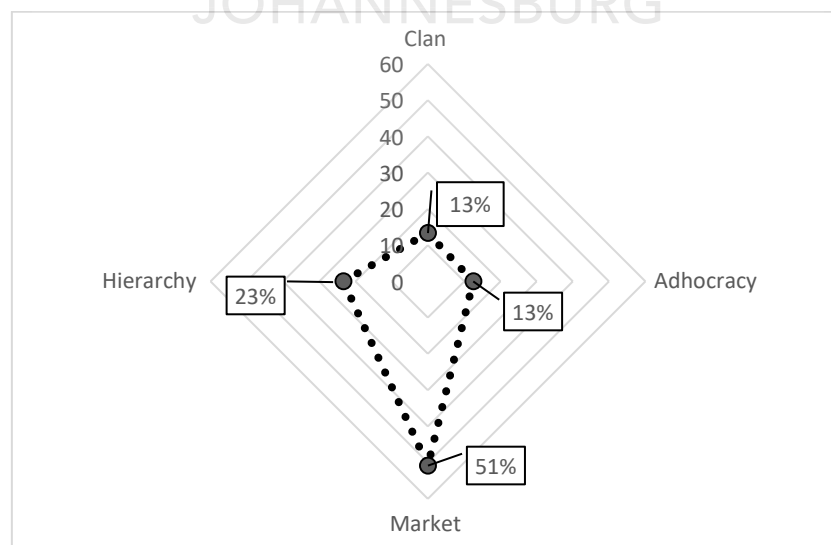

Figure 13: Cultural profile from the graduate's perspective

From the graduate's position, the view of the culture type is that of a dominant Market 51% type culture with an active Hierarchical 23% culture component as well. Adhocracy 13%, Market 13% culture characteristic can be seen; however, they both play an equally small contribution from the graduate's point of view. The next section looks at the individual sections of the OCAI tool and discusses the dominant culture characteristic from these sections.

The dominant cultural characteristics, which were rated the highest from each section in the OCAI tool, was ascertained. From the data gathered the dominant cultural characteristic from the view of the graduates is shown in Appendix C: Table 32. This was determined from the characteristics, which were rated the highest from the six different sections in the OCAI tool by the participants. From Appendix C: Table 32, the cultural characteristics, which were rated the highest in the different sections of the OCAI tool by the specialists, can be ascertained. From the results shown in Appendix C: Table 32, the graduates, rated the leadership to; exemplify a no-nonsense, aggressive and results orientated, at 60%.

Furthermore, they rated the management style to be; characterised by hard-driving competitiveness, high demands and achievement at this level, at 60%. With the competitiveness seen at this level, the strategic emphasis was rated to be; that of hitting stretch targets and winning in the marketplaces as dominant cultural characteristics, at 60%. The criteria of success was rated to be, based on winning in the marketplace and outpacing the competition, at 50%. The dominant characteristic was rated to be, very results orientated with a major concern on getting the job done while people are very competitive and achievement orientated, at 50%. Lastly, the organisational glue was rated at 25% for both Market and Hierarchical culture type. Hence the organisation could either be held together by an emphasis on achievement and goal accomplishment or be held together by formal rules and policies while maintaining a smoothly running organisation. The result of this section could be enhanced if more than one graduate participated in the study.

4.3.9. Overall cultural profile from the CVM department

The data gathered for the cultural profile for the various levels of the department are summarised below.

Table 10: Cultural profile for the various levels within the CVM department

	Managing Executive	Executive head of Department	Manager	Principal specialist	Senior specialist	Specialist	Graduate	Overall Departmental mean
Clan	32%	23%	14%	24%	23%	33%	13%	26%
Adhocracy	38%	28%	19%	23%	25%	25%	13%	24%
Market	30%	33%	38%	34%	34%	22%	51%	31%
Hierarchy	0%	17%	30%	20%	19%	19%	23%	19%

From Table 10, it can be seen that there are three unique dominant cultures as rated by the different levels. The managing executive rated that Adhocracy culture type was the most dominant whereas the executive heads' of departments, managers', principal specialists', senior specialists' and graduates all rated that Market type culture was the most dominant. Lastly, the dominant culture, as rated by the specialist is that of a Clan type culture.

From Table 10 above, one can see the overall trend of a dominant Market culture. Clan and adhocracy culture types are generally within the same dominance rating from the view of the various levels. Interestingly looking at Table 10, the sense of Hierarchy culture looks to be relatively constant. However, the view on Hierarchal culture type was rated by managing executive as 0% and the managers 30%. It can be seen that there is a trend for the Clan and Adhocracy culture types to generally diminish as one moves from the highest level to the lowest. However, for the Market and Hierarchical culture types, the trend seems to generally increase as one moves from the highest to the lowest level.

4.4. Presence of cultural elements

In order to assess the presence of the cultural elements, which are necessary for the realisation of the benefits from agile methodologies, the data gathered, shall be tabulated and weighted average determined. As the data collected for this assessment resulted in very close figures, two decimal places where used. This allowed for the differences in the data to be seen.

In order to determine if the weighted average scores for the cultural factors are in line with agile principles, the scores were categorised. The table below shows the categories used:

Table 11: Categorisation of weighted average scores

Weighted Average score	Agile Alignment	Presence level
X ≥ 4	In line with agile principles and core values.	Present often to Present almost always
3.5 ≤ X < 4	Limited alignment with agile principles and core values and room for improvement needed.	Present sometimes to Present often
3 < X < 3.5	Not entirely in alignment with agile principles and core values, however not entirely counter agile values. Significant room for improvement needed.	Present sometimes to Present often More emphasis on present sometimes
X < 3	Counter agile values	Almost never present to present sometimes

The same participants from phase one completed phase 2 of the questionnaire. The questionnaire required employees to rate the extent to which cultural characteristics apply to their department. This was because it was determined that there are cultural characteristics, which are considered necessary for the realisation of the benefits from

agile methods. These cultural characteristics can be found in Table 3. The data gathered with the questionnaire can be seen below.

Table 12: Table showing the percentage spread of the results obtained

Characteristics	TOTAL	Almost never, present (%)	Rarely present (%)	Present Sometimes (%)	Present Often (%)	Almost always Present (%)
Trust	24	4%	4%	8%	58%	25%
Feedback	24	4%	13%	21%	38%	25%
Collaboration and teamwork	24	4%	0%	13%	38%	46%
Leaders role	24	8%	17%	13%	33%	29%
Management style and risk	24	4%	8%	8%	46%	33%
Decision making strategy	24	8%	17%	29%	29%	17%
Team formation	24	4%	4%	13%	50%	29%
Accountability	24	4%	0%	13%	46%	38%
Communication	24	13%	8%	21%	38%	21%
Customer centricity	24	4%	0%	21%	33%	42%
Delivery strategy	24	4%	4%	13%	42%	38%

In order to get a better understanding of the weighting of the data gathered the table below shows the weighted mean of the data. This was done by giving an; almost never present the value of 1, rarely present the value of 2, present sometimes the value of 3, present often the value of 4 and almost always present the value of 5.

Table 13: Weighted mean for presence level for the cultural characteristics

Ranking		Almost never present (1)	Rarely present (2)	Present Sometimes (3)	Present Often (4)	Almost always Present (5)	Total	Weighted mean
1	Collaboration and teamwork	1	0	9	36	55	101	4,21
2	Accountability	1	0	9	44	45	99	4,13
3	Customer centricity	1	0	15	32	50	98	4,08
4	Delivery strategy	1	2	9	40	45	97	4,04
5	Trust	1	2	6	56	30	95	3,96
6	Management style and risk	1	4	6	44	40	95	3,96
7	Team formation	1	2	9	48	35	95	3,96
8	Feedback	1	6	15	36	30	88	3,67
9	Leaders role	2	8	9	32	35	86	3,58
10	Communication	3	4	15	36	25	83	3,46
11	Decision making strategy	2	8	21	28	20	79	3,29

From the table above the present level of the cultural characteristic from the CVM department can be seen.

Table 14: Present level of agile cultural characteristics in the CVM department

Categorisation according to agile alignment	Statements use to assess Cultural characteristics	Weighted mean	Presence level
In alignment with agile principles and core values.	The department is characterised by teamwork, collaboration, consensus and cooperation	4,21	Present often to Present almost always
	All team members can be characterised by having a high level of accountability and responsibility.	4,13	Present often to Present almost always
	The department has an excellent customer relationship with strong customer commitment and presence, and the department's highest priority is to satisfy the customer.	4,08	Present often to Present almost always
	The department makes use of early and continuous improvement through iterations while delivering the most critical features first.	4,04	Present often to Present almost always
Limited alignment with agile principles and core values and room for improvement needed.	There is a high level of trust within the department with loyalty and mutual trust amongst all members of the department.	3,96	Present sometimes to Present often
	The Management style in the department is considered to exemplify entrepreneurship, risk-taking and innovation.	3,96	Present sometimes to Present often
	The department makes use of self-organising and flexible teams.	3,96	Present sometimes to Present often
	The department and its leadership place a high value on giving feedback which is then used to fine-tune and adjust the way people work in order to be more productive	3,67	Present sometimes to Present often
	The leadership in the department is generally considered to exemplify mentoring and or facilitating.	3,58	Present sometimes to Present often
Not entirely in alignment with agile principles and core values, however not entirely counter agile values. Significant room for improvement needed.	The department uses informal and face-to-face communication between employees and their customers.	3,46	Present sometimes to Present often More emphasis on present sometimes
	The department uses a distributed decision-making process.	3,29	Present sometimes to Present often More emphasis on present sometimes

From the data gathered, one can see the present level for all the identified cultural characteristics, which have been determined as necessary to realise the benefits of agile methodologies. Teamwork and collaboration, high level of accountability and responsibility, customer centricity and early and continuous iterative delivery of most essential features first were rated to be highly present in the department. Trust, management exemplifies risk-taking and innovation, flexible and self-organising teams, feedback and leaders role was rated to present often, however, based on the weighted average for these characteristics the department could improve on them. Lastly, communication style and decentralised decision making were rated to be predominantly present sometimes. As such, the department needs significant improvement in these areas if they want to realise all the benefits from the use of agile methodologies. Communication style and decentralised decision making need significant improvement as agile requires fast and adaptive decision making. Communication style affects decision making as if regular meetings and face-to-face communication are not used project teams have to wait for the directive from upper management. Further, not having a decentralised decision-making system shows that trust in the department is not optimal.

Interestingly trust, teamwork and collaboration, leaders role and management style were all highly rated with the OCAI tool as well, thus further strengthen the argument. These can be seen in questions 2A, 3A, 4A, 5A, 6A and 2B from Table 17. The employees from the department, however, rated decentralised decision-making and communication style equally for present sometimes.

4.5. Comparison of the culture found in the department to that found from the literature review

From the results obtained for the overall department, the highest-rated culture type is the Market (Rational) 31% culture. Clan 26% (Group) and then Adhocracy 24% (Developmental) follow it closely. Lastly, hierarchical 19% had the smallest dominance of all culture types. From this, it was deduced that the most dominant values of the department are that of a Market culture type. From literature it was determined that Adhocracy (Developmental), Clan (Group) have a positive influence and impact on the adoption of agile methods [36], [49] whereas a Hierarchical type culture has a negative impact and poses a hindrance to the acceptance and adoption of agile methodologies [11], [36], [46], [48]. However, Rational (Market) culture, only facilitates the adoption of agile methods to a certain extent [11], [48]. Thus with one can deduce that the culture type portrayed by the CVM department is that which shall only have a limited positive impact on the adoption of agile management.

From [36], it was found that when agile is used or adopted a flat or horizontal leadership structure should be present. However, the department has seven levels of seniority, as seen in Table 8. Vertical structures generally exemplify decision making, which is highly authoritative, top-down and centralised [50] which is counter that of which agile requires. From phase 2 of the questionnaire, participants rated that decentralised decision making is only present sometimes. This further strengthens the notion of a vertical leadership structure. The leadership of the departments is generally

considered to exemplify that of a Hard driver, competitor, producer while it has been found that agile methodologies require leaders the leadership to be that of mentorship, facilitation and collaboration [11], [13], [32], [36], [38]. The communication style used by the department includes face-to-face communication only sometimes. However, the communication needs to be open and frequent and face to face [13], [31], [35], [37]. This minimises and helps to alleviate problems should they arise as project teams can disseminate information throughout the team effectively and efficiently [13].

From phase 2 of the questionnaire, participants rated that the department has a good customer relationship with strong customer commitment and presence, and the department's highest priority is to satisfy the customer. The department makes use of early and continuous improvement through iterations while delivering the most critical features first was also rated to be present often. This is in line with the agile manifesto [13] as it states that the highest priority should be to satisfy the customer by continuous delivering early and continuous iterations of the product or service. This can enable the department to adapt fast to changes in customer requests and therefore allow the organisation to be competitive. The teamwork, collaboration and participation are seen in the department and is present often in the department. This is in line with that which is required for the realisation of the benefits from agile methodologies [11], [32], [36].

As one can see from phase two of the questionnaire, the department generally has cultural factors, which have been determined to be necessary to realise the benefits of agile methodologies, often present. However, the department's culture type is that of one which does have a limited positive influence on the adoption and use of agile methodologies. Thus if the culture remains the same, the department might not realise the full benefits of agile methodologies as their cultural characteristics are not entirely aligned with the core values and principles of agile methodologies.

The table below summarises the data gathered from both phases of the questionnaire in order to draw comparisons for the culture of the CVM department and the information found through the literature. The table derived from literature can be seen in Table 5. Hierarchical culture attribute was left out of this comparison table as the department did not show any dominant Hierarchical culture type characteristics. It is important to note that the questionnaires did not assess the change orientation or the rules of the department. As such, these characteristics are left blank in the comparison table and can be seen as limitations of the study.

Table 15: A comparison of the department's cultural profile with literature

	Culture types which have a positive influence on the adoption of agile methods derived from literature		Culture type which has a limited positive influence on the adoption of agile methods derived from literature	Derived from the analysis of the questionnaire
Factors	Clan (Group)	Adhocracy (Developmental)	Market (Rational)	CVM Department
Structure	Flat (Horizontal), autonomous teams and people [47]	Horizontal hierarchy [50]	Formal Structure (vertical) [50]	Vertical Seven levels of seniority can be seen from Table 8

Bonding	Loyalty, Tradition [50]	Innovation, development [50]	Achievement and goal accomplishment [50]	Achievement and goal accomplishment (As seen in Table 18)
Orientation	Collaborative (People) [51]	Creative (Adaptive) [51]	Competing (Task) [51]	Competing results-oriented (As seen in Table 18)
Leader's role	Facilitator, mentor, team builder [51]	Innovator, entrepreneur, visionary [51]	Hard driver, competitor, producer [51]	Hard driver, competitor, producer (As seen in Table 18)
Management Style	Participative, consultative [50]	Innovative, visionary [50]	Directive, Aggressive [50]	Competitiveness, high demands and achievement (As seen in Table 18)
Decision-making	Participative, Consultative [50]	Fast and adaptive (readiness) [47]	Standardised [50] Centralised	Generally centralised. Top-down approach (As rated by Phase 2 of the questionnaire
Change Orientation	Changes accepted if mutual acceptance(Cohesion) [47]	Acceptance of change (flexible and adaptable) [47]	Change accepted if clear aims, milestones [47]	Not assessed, limitation
Rules	Flexible Rules [47]	Flexible Rules [47]	Formal rules, regulations and procedures [47]	Not assessed, limitation

4.6. Conclusion

The purpose of chapter 4 was to provide the reader with insight into the data, which was gathered in order to derive a conclusion to the proposed research questions. The results from the two phases of the questionnaire were tabulated and discussed.

The results obtained through the OCAI tool generated a culture profile type associated with the department, and a dominant culture type was identified. From the results obtained, one can see that the highest-rated culture type is that of Market (Rational) culture. It is followed closely by Clan (Group) and then Adhocracy (Developmental). Lastly, hierarchical has the smallest dominance of all culture types. From this, one can deduce that the most dominant values of the department are that of a Market culture type. It was found that the dominant characteristics found from the OCAI tool for the department to be that the department is one that is very results orientated. A significant concern for the department is that of getting the job done. People in the department are very competitive and achievement orientated. The leadership in the department was rated highly to exemplify entrepreneurial, innovative and risk-taking generally. The management style was rated to be characterised by hard-driving competitiveness, high demands and achievement. The glue that holds the department together was found to be a mixture of, a commitment to innovation and development, and an emphasis on achievement and goal accomplishment with the latter being more dominant than the former. The department emphasises competitive action and achievements while hitting stretch targets and winning in the market place as its

dominant strategic emphases. Last, the criteria of success is dominantly that of a department which defines its success based on winning in the market place and outpacing the competition.

The results from the Likert scale questionnaire showed that the majority of the identified cultural characteristics that are deemed necessary for the realisation of the benefits from agile methodologies were present often in the department. In general, the cultural characteristic which was assessed is present often in the department. However, the communication style and decentralised decision making need significant improvement to align the department with agile principles and core values. Lastly, trust, feedback, management style and risk, team formation and leaders role are present often but can be improved on, in order to further align the department with agile methodologies.

From the results obtained, it was concluded that the department generally has the cultural factors present, which have been determined to be necessary to realise the benefits of agile methodologies. However, the department's culture type is that of one which does have a limited positive influence on the adoption and use of agile methodologies. Thus if the culture remains the same, the department might not realise the full benefits of agile methodologies as their cultural characteristics are not entirely aligned with the core values and principles of agile methodologies.

With a preliminary conclusion drawn from the data gathered in this chapter, a culture profile and the cultural characteristics were determined, which is associated with the department. This section thus concludes the research study by answering the main research question. Thus, allowing one to conclude the validity of the research proposition.

5. CHAPTER 5: CONCLUSION

5.1. Chapter purpose

The objection of this chapter is to compile a summary of the research presented while deriving conclusions based on the data gathered, including the analysis thereof. This is done in order to address the main research question that is if the department in question has an organisational culture, which is conducive to the realisation of the benefits from the use of agile management methodologies. Recommendations shall be discussed within this chapter; however, they warrant further investigations. This chapter shall address the studies limitation

5.2. Introduction

With an increasing rate of globalisation and customer expectations [5], many organisations are adopting agile management methodologies. This is due to the fact that agile methodologies allow organisations to be flexible and enable them to meet increasing customer expectations [5]. It was also found that project management methodologies play an essential role in the performance and success of an organisation [1]. Therefore agile methodologies must be appropriately implemented and operate effectively.

It is established that with a change of management methodologies, legacy systems are difficult and adverse to change [9] and that organisational culture impacts agile methodologies [11]. Furthermore, there are specific organisational cultural factors which are considered to correlate with the effective use of agile methods [11]. Lastly, it was found that agile methodologies are beneficial to use [12], [14]–[19] but in order to realise these benefits, the culture needs to be appropriate [18]. Therefore the problem statement for the research study was to determine whether:

The department in question has an organisational culture, which is conducive to the realisation of the benefits from the use of agile management methodologies.

In order to derive a conclusion the following questions need to be answered:

1. **What type of culture has a positive influence on the adoption of agile methodologies?**
2. **What cultural elements are needed in a business environment for agile principles to achieve the benefits?**

Thus to answer these questions, a literature review was conducted. This was done to ascertain the current knowledge of the subject matter at hand. The focus of this study was twofold. Firstly, the cultural elements which are considered to be necessary for the realisation of the benefits from agile methodologies were investigated. Secondly, the organisational culture which allows for the cultural elements to flourish and is related to and influences the acceptance and adoption of agile methodologies and principles were looked into. The information, which was needed, was gathered with journal articles.

In order to determine the organisational culture required to realise the benefits of agile methods, the investigation first looked at the principles and values upon which agile methods are based on. This was done through a brief overview of the agile manifesto. The agile manifesto briefly described how employees within an organisation should behave and interact with other employees and customers. With this knowledge ascertained, the cultural factors, which allow for the realisation of the benefits from agile methodologies, was determined. A list of cultural factors, which are considered to correlate with agile methods, was derived, and the factors are listed below (The full table can be seen in Table 3.

- Trust
- Feedback
- Orientation
- Leaders role
- Management style
- Decision making
- Team formation
- Accountability
- Communication
- Customer centricity
- Delivery strategy

With the cultural factors ascertained, the need to identify what organisational culture will allow these cultural factors to flourish. This further allowed one to determine the relationship between organisational culture and the use of agile methods. There were different case studies in which different types of organisational cultures were proposed. Thus in order to track the most recent knowledge ascertained on the culture types that are deemed essential for the use of agile methods a timeline of journals articles related to this topic was developed and can be seen in Table 6. From the timeline developed, it was determined that the CVF was used in different studies, which are current. The CVF utilises two dimensions change vs stability and internal focus vs external focus), which result in the following culture types: Group, Development, Rational, and Hierarchical. Researchers found that Developmental (also known as Adhocracy), Clan (also known as Group), Rational (also known as Market) culture types have a positive influence and impact on the adoption of agile methods [36], [49]. However, some authors argue that rational (Market) culture may have a negative impact on the acceptance of agile methods and might only facilitate the adoption of agile methods to a certain extent [11], [48]. This can be seen as the rational culture type has limited similarities with the agile's core values and principles.

However, all the researches concur that both Developmental and Clan have a positive impact [11], [36], [46], [48]. All the researchers further concur that Hierarchical type culture has a negative impact and poses a hindrance to the acceptance and adoption of agile methodologies [11], [36], [46], [48].

In order to reach this studies objective, a case study approach in which questionnaires were used. A stratified random sampling method approach was used. This allowed for

a holistic picture on the cultural profile and cultural elements to be obtained from employees from various levels in the department. The OCAI instrument was used to derive underlying assumptions of the way the organisation operates and the values, which are at its core. Secondly, the use of a questionnaire in phase two allowed for the assessment of the cultural elements within the department. The data gathered from both phases were assessed in order to determine if the organisational culture is conducive to the realisation of the benefits from the use of agile management methodologies.

5.3. Research conclusion

Data was gathered with the use of questionnaires in a two-phased approach. The questionnaires comprised of the OCAI tool in phase 1 and a Likert scale questionnaire in phase 2.

5.3.1. Culture from the CVM department

From the results obtained, one was able to see that the highest-rated culture type was that of a Market (Rational) culture. Followed closely by Clan (Group) and than Adhocracy (Developmental). Lastly, hierarchical had the smallest dominance of all culture types. From this, it was deduced that the most dominant values of the department are that of a Market culture type. It was found that the dominant characteristics found from the OCAI tool for the department to be that the department is one that is very results orientated. A significant concern for the department is that of getting the job done. People in the department are very competitive and achievement orientated. The leadership in the department was rated highly to generally exemplify entrepreneurial, innovative and risk-taking characteristics. The management style was rated to be characterised by hard-driving competitiveness, high demands and achievement. The glue that holds the department together was found to be a mixture of, a commitment to innovation and development, and an emphasis on achievement and goal accomplishment, with the latter being more dominant. The department emphasises competitive action and achievements while hitting stretch targets and winning in the market place as its dominant strategic emphases. Lastly, the criteria of success is dominantly that of a department which defines its success on the basis of winning in the market place and outpacing the competition.

From the dominant culture-derived for the department on can compare it with the literature. From literature, it was found that Market (Rational) culture types have limited positive impact on the influence and adoption of agile methodologies.

5.3.2. Cultural elements present in the CVM department

The results from the Likert scale questionnaire showed that the majority of the identified cultural characteristics that are deemed necessary for the realisation of the benefits from agile methodologies were present often in the department.

Teamwork and collaboration, high level of accountability and responsibility, customer centricity and early and continuous iterative delivery of most essential features first were rated to be highly present in the department. Trust, management exemplifies risk-taking and innovation, flexible and self-organising teams, feedback and leaders role was rated to present often, however, based on the weighted average for these

characteristics the department could improve on them. Lastly, communication style and decentralised decision making were rated to be predominantly present sometimes.

From the data gathered and the analyses thereof, one can see that the department portrays a culture, which is, to some degree, conducive to the adoption and use of agile methodologies. This is because the most dominant cultural attributes are that which has limited or no positive impact on the use and adoption of agile methods. Furthermore, the cultural characteristic, which is deemed to be necessary to realise the benefits from agile methods were predominantly present often within the department; however, five out of the eleven characteristics can be improved on, and two characteristics need significant improvement. This further strengthens the argument that is made. As such, it can be concluded that:

The department in question has an organisational culture, which has a limited favourability to the realisation of the benefits from the use of agile management methodologies.

5.4. Recommendations

From the findings of this study, we can see that the department has a strong Markert (Rational) culture. From the literature review that was compiled, it was found that Clan (Group) and Adhocracy (Developmental) are the best-suited culture types as they are in alignment with agile core values and principles. As such, they have a positive influence on the use and adoption of agile methodologies. Consequently, for the department to have a stronger alignment with agile principles and its values, it would be beneficial if the organisation looks to make a shift in its culture. This could either be to a dominant Adhocracy or Clan culture type. Table 16 shows recommendations to move from a dominant Markert culture to either a dominant Clan or Adhocracy culture type [50].

Table 16: Recommendation for culture change

Clan Culture Increase the following characteristics	Adhocracy Culture Increase the following characteristics
- Promote teamwork and collaboration - Increase morale employees through the empowerment - Foster greater levels of trust - Create opportunities for self-management - All employees should support each other and recognition should be given to team players - Leadership should show more concern for their people	- Employees should be encouraged to take risks. - Employees need to be future aware (forward-looking). - Employees should have a clear vision of the future and the department's goals. - Creative alternatives and innovation should be nurtured. - In order to facilitate innovation bold innovation programs can be used.

Hierarchy Culture	Market Culture
Decrease the following characteristics	Decrease the following characteristics
- Eliminate useless rules and regulations and processes - Eliminate unnecessary reports and paperwork - Minimises decisions being pushed down instead make it a collaborative decision-making process - Eliminate the micromanagement of employees.	- Care must be given to adapt to both people and market needs. - Leadership should move away from being hard drives - Focus can be placed on innovation and people development instead of gaining in the market.

Careful consideration should be taken when initiating culture change as moving from one dominant culture does not mean disregarding rules and regulations and running the business recklessly.

5.5. Study limitation

It is important to note that, with the case study approach used in this investigation, certain limitations apply. These limitations include

- Due to the relatively small sample size, only 24 participants out of 70, it cannot be concluded that the cultural profile and cultural characteristic assessment portray the views of the entire department, including the non-participants.
- The questionnaires used in the study were not able to assess the change orientation or the rules of the department. As such, these characteristics are left blank in the comparison table and can be seen as limitations of the study.
- The effect of an individual's cultural norms has on the cultural behaviours at work have not been considered.

5.6. Future Research

As the department has adopted agile management methodologies, future research can investigate the use of agile methodologies with other management methodologies. This can investigate how these management methodologies work together and how the culture of the organisation affects this. This will help organisations which want to adopt agile methodologies throughout the company.

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APPENDIX A: RESEARCH CONSENT FORM

Informed consent of the research participant

> Name: _____

> I truly appreciate your participation in my research study.

Title of Study

Influence of organisational culture in the adoption of agile.

Purpose of the study

The objective of this investigation is to determine if the department in question portrays an organisation culture which is conducive to the realisation of the benefits from the use of agile principles. The investigation shall be two-fold. Firstly, identification of the organisation's culture type shall be ascertained, and secondly, the cultural characteristics which are considered to be directly related to the successful use of agile methods shall be explored.

As a result of the investigation, the Customer Value Management department shall be able to make an informed decision on the use of agile principles with other projects going forward. Thus, this should result in a better outcome for the organisation and its customers.

Procedure

In order to determine the organisational culture type, the Organisational Culture Assessment Instrument shall be used. The OCAI tool consists of 6 segments, each with four options. The assessment tool makes use of a scoring system where each section needs to sum to a total of 100. Based on the scoring given to the generalised questions in each section, an organisational culture type profile shall be ascertained. Secondly, a questionnaire shall be used in order to investigate the cultural traits present in the department. This questionnaire comprises of 11 statements in which the participants are asked to rate the extent to which the cultural characteristics apply to their department. The study shall employ a quantitative data analysis approach to derive a conclusion and reach the research investigations objectives.

Benefits and financial compensation

Participation in this study is entirely voluntary. The participant may withdraw at any stage during the data gathering process. As participation in this questionnaire is entirely voluntary there are no shall be no financial compensation of any kind. There shall be no risk; sanctions applied to the participants of this study.

Confidentiality

All the information gained through this study shall be treated as confidential. The results of this study may either be published in professional journals or presented at a professional conference

I want to take this opportunity to thank you for your participation in this study. If there are any questions or concerns, please feel free to contact me.

I hereby give my consent to participate in this research study:

This document was signed at _____on the _____ day of September 2019.

_____   _____

Participant's Signature   Researcher's Signature

APPENDIX B: QUESTIONNNAIRE

Section 1: The Organisational Culture Assessment Instrument [50]*.*

The Organisational Culture Assessment Instrument consists of six items, each with four alternatives.

- Divide 100 points among the four alternatives, depending on the extent to which each choice is similar to your organisation.
- Give a higher number of points to the alternative that is most similar to your organisation.
- Example: on section 1, if you think alternative A is very similar to your organisation, alternatives B and C are somewhat similar, and alternative D is hardly similar at all, you might give 55 points to A, 20 points each to B and C, and 5 points to D

1. *Characteristics*	*Score*
A. *The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.*	*55*
B. *The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.*	*20*
C. *The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.*	*20*
D. *The management style in the organization is characterized by individual risk-taking, innovation, freedom, and uniqueness.*	*5*
Total	*100*

- Please be sure that the total equals 100 for each numbered item.

NOTE:

The Assessment instrument probes one into rating their "organisation" in the items. Please review the organisation that is managed by your boss, the strategic business unit to which you belong or the organisational unit in which you are a member that has clearly identifiable boundaries.

1. Dominant Characteristics	Score
A. The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	
B. The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	
C. The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	
D. The organization is a very controlled and structured place. Formal procedures generally govern what people do.	
Total	
2. Organisational leadership	
A. The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	
B. The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	
C. The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	
Total	
3. Management of Employees	
A. The management style in the organization is characterized by teamwork, consensus, and participation.	
B. The management style in the organization is characterized by individual risk-taking, innovation, freedom, and uniqueness.	
C. The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	
D. The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	
Total	

4. Organisation Glue	Score
A. The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	
B. The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	
C. The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	
D. The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	
Total	

5. Strategic Emphases	Score
A. The organisation emphasises human development. High trust, openness, and participation persist.	
B. The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	
C. The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	
D. The organisation emphasises permanence and stability. Efficiency, control, and smooth operations are important.	
Total	

6. Criteria of Success Total	Score
A. The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	
B. The organisation defines success on the basis of having unique or the newest products. It is a product leader and innovator.	
C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.	
Total	

Section 2: Questionnaire used assess the cultural characteristics present in a department.

For the statements below, please rate the extent to which the cultural characteristics apply to the department. The cultural characteristics derived in the table below was generated from Table 3.

	Cultural characteristics present with the department	Almost never present	Rarely present	Present Sometimes	Present Often	Almost always Present
1	There is a high level of trust within the department with loyalty and mutual trust amongst all members of the department.					
2	The department and its leadership place a high value on giving feedback which is then used to fine-tune and adjust the way people work in order to be more productive.					
3	The department is characterised by teamwork, collaboration, consensus and cooperation					
4	The leadership in the department is generally considered to exemplify mentoring and or facilitating.					
5	The Management style in the department is considered to exemplify entrepreneurship, risk-taking and innovation.					
6	The department uses a distributed decision-making process.					
7	The department makes use of self-organising and flexible teams.					
8	All team members can be characterised by having a high level of accountability and responsibility.					
9	The department uses informal and face-to-face communication between employees and their customers.					
10	The department has an excellent customer relationship with strong customer commitment and presence, and the department's highest priority is to satisfy the customer.					
11	The department makes use of early and continuous improvement through iterations while delivering the most critical features first.					

APPENDIX C: DATA AND TABLES

OCAI questionnaire results

The results depicted below show the average results obtained using the OCAI. In order to determine the dominant cultural characteristics for the department and each level within the department, the highest-rated alternative from the six different sections in the OCAI tool was identified.

Table 17: Results for overall cultural profile

1. Dominant Characteristics	Average Rating %
A. The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	26
B. The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	24
C. The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	33
D. The organization is a very controlled and structured place. Formal procedures generally govern what people do.	18
2. Organisational leadership	**Average Rating %**
A. The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	25
B. The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	26
C. The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	24
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	25
3. Management of Employees	**Average Rating %**
A. The management style in the organisation is characterised by teamwork, consensus, and participation.	27
B. The management style in the organization is characterised by individual risk-taking, innovation, freedom, and uniqueness.	24

C.	The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	30
D.	The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	19
4. Organisation Glue		**Average Rating %**
A.	The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	28
B.	The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	26
C.	The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	29
D.	The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	17
5. Strategic Emphases		**Average Rating %**
A.	The organisation emphasises human development. High trust, openness, and participation persist.	24
B.	The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	23
C.	The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	34
D.	The organisation emphasises permanence and stability. Efficiency, control, and smooth operations are important.	19
6. Criteria of Success		**Average Rating %**
A.	The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	23
B.	The organisation defines success on the basis of having unique or the newest products. It is a product leader and innovator.	25

C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.		34
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.		19

Table 18: Cultural Characteristics based on the OCAI tool for the overall departmental cultural profile

Culture type associated with characteristic		Rating %
	Dominant Characteristics	
Market	The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	33
	Organisational leadership	
Adhocracy	The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	26
	Management of Employees	
Market	The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	30
	Organisation Glue	
Market	The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	29
Clan	The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	28
	Strategic Emphases	
Market	The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	34
	Criteria of Success	
Market	The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	34

Table 19: Results for the cultural profile from the executive managers perspective

1. Dominant Characteristics	Average Rating %
A. The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	30
B. The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	40
C. The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	30
D. The organization is a very controlled and structured place. Formal procedures generally govern what people do.	0
2. Organisational leadership	**Average Rating %**
A. The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	50
B. The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	50
C. The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	0
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	0
3. Management of Employees	**Average Rating %**
A. The management style in the organisation is characterised by teamwork, consensus, and participation.	50
B. The management style in the organization is characterised by individual risk-taking, innovation, freedom, and uniqueness.	50
C. The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	0
D. The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	0

4. Organisation Glue	Average Rating %
A. The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	30
B. The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	30
C. The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	40
D. The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	0
5. Strategic Emphases	Average Rating %
A. The organisation emphasises human development. High trust, openness, and participation persist.	20
B. The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	20
C. The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	60
D. The organisation emphasises permanence and stability. Efficiency, control, and smooth operations are important.	0
6. Criteria of Success Total	Average Rating %
A. The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	10
B. The organisation defines success on the basis of having unique or the newest products. It is a product leader and innovator.	40
C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	50
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.	0

Table 20: Cultural characteristic based on the OCAI tool for the managing executive's culture profile

Culture type associated with characteristic		Rating %
	Dominant Characteristics	
Adhocracy	The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	40
	Organisational leadership	
Adhocracy	The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	50
Clan	The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	50
	Management of Employees	
Clan	The management style in the organisation is characterised by teamwork, consensus, and participation.	50
Adhocracy	The management style in the organization is characterized by individual risk-taking, innovation, freedom, and uniqueness	50
	Organisation Glue	
Market	The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	40
	Strategic Emphases	
Market	The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	60
	Criteria of Success	
Market	The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	50

Table 21: Results for the cultural profile from the executive head of departments perspective

1. Dominant Characteristics	Average Rating %
A. The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	18
B. The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	40
C. The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	35
D. The organization is a very controlled and structured place. Formal procedures generally govern what people do.	8
2. Organisational leadership	**Average Rating %**
A. The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	23
B. The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	30
C. The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	25
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	23
3. Management of Employees	**Average Rating %**
A. The management style in the organisation is characterised by teamwork, consensus, and participation.	28
B. The management style in the organization is characterised by individual risk-taking, innovation, freedom, and uniqueness.	20
C. The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	20
D. The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	33

4. Organisation Glue	Average Rating %
A. The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	33
B. The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	23
C. The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	35
D. The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	10
5. Strategic Emphases	Average Rating %
A. The organisation emphasises human development. High trust, openness, and participation persist.	25
B. The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	30
C. The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	25
D. The organisation emphasises permanence and stability. Efficiency, control, and smooth operations are important.	20
6. Criteria of Success Total	Average Rating %
A. The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	15
B. The organisation defines success on the basis of having unique or the newest products. It is a product leader and innovator.	23
C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	55
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.	8

Table 22: Cultural characteristic based on the OCAI tool for the executive heads of departments' culture profile

Culture type associated with characteristic		Rating %
	Dominant Characteristics	
Adhocracy	The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	40
	Organisational leadership	
Adhocracy	The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	30
	Management of Employees	
Hierarchical	The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	33
	Organisation Glue	
Market	The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	35
	Strategic Emphases	
Adhocracy	The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	30
	Criteria of Success	
Market	The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	55

Table 23: Results for the cultural profile from the managers perspective

1. Dominant Characteristics	Average Rating %
A. The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	5
B. The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	15
C. The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	43
D. The organization is a very controlled and structured place. Formal procedures generally govern what people do.	38
2. Organisational leadership	**Average Rating**
A. The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	13
B. The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	20
C. The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	40
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	28
3. Management of Employees	**Average Rating**
A. The management style in the organisation is characterised by teamwork, consensus, and participation.	25
B. The management style in the organization is characterised by individual risk-taking, innovation, freedom, and uniqueness.	25
C. The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	35
D. The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	15

4. Organisation Glue	Average Rating %
A. The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	18
B. The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	18
C. The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	28
D. The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	38
5. Strategic Emphases	Average Rating %
A. The organisation emphasises human development. High trust, openness, and participation persist.	10
B. The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	15
C. The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	45
D. The organisation emphasises permanence and stability. Efficiency, control, and smooth operations are important.	30
6. Criteria of Success Total	Average Rating %
A. The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	13
B. The organisation defines success on the basis of having unique or the newest products. It is a product leader and innovator.	20
C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	35
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.	33

Table 24: Cultural characteristic based on the OCAI tool for the managers' culture profile

Culture type associated with characteristic		Rating %
	Dominant Characteristics	
Market	The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	43
	Organisational leadership	
Market	The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	40
	Management of Employees	
Market	The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	35
	Organisation Glue	
Hierarchical	The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	38
	Strategic Emphases	
Market	The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	45
	Criteria of Success	
Market	The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	35

Table 25: Results for the cultural profile from the principal specialists' perspective

1. **Dominant Characteristics**	**Average Rating %**
A. The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	30
B. The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	20
C. The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	38
D. The organization is a very controlled and structured place. Formal procedures generally govern what people do.	13
2. **Organisational leadership**	**Average Rating %**
A. The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	23
B. The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	28
C. The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	25
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	25
3. **Management of Employees**	**Average Rating %**
A. The management style in the organisation is characterised by teamwork, consensus, and participation.	23
B. The management style in the organization is characterised by individual risk-taking, innovation, freedom, and uniqueness.	23
C. The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	38
D. The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	19

4. Organisation Glue	Average Rating %
A. The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	25
B. The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	30
C. The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	25
D. The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	20

5. Strategic Emphases	Average Rating %
A. The organisation emphasises human development. High trust, openness, and participation persist.	13
B. The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	15
C. The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	45
D. The organisation emphasises permanence and stability. Efficiency, control, and smooth operations are important.	28

6. Criteria of Success Total	Average Rating %
A. The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	30
B. The organisation defines success on the basis of having unique or the newest products. It is a product leader and innovator.	20
C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	33
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.	18

***Table 26: Cultural characteristic based on the OCAI tool for the principal specialists'
culture profile***

Culture type associated with characteristic		Rating %
	Dominant Characteristics	
Market	The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	38
	Organisational leadership	
Adhocracy	The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	278
	Management of Employees	
Market	The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	38
	Organisation Glue	
Adhocracy	The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	30
	Strategic Emphases	
Market	The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	45
	Criteria of Success	
Market	The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	33

Table 27: Results for the cultural profile from the senior specialists' perspective

1. Dominant Characteristics	Average Rating %
A. The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	23
B. The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	23
C. The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	33
D. The organization is a very controlled and structured place. Formal procedures generally govern what people do.	21
2. Organisational leadership	**Average Rating %**
A. The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	27
B. The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	25
C. The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	24
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	24
3. Management of Employees	**Average Rating %**
A. The management style in the organisation is characterised by teamwork, consensus, and participation.	22
B. The management style in the organization is characterised by individual risk-taking, innovation, freedom, and uniqueness.	24
C. The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	38
D. The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	16

4. **Organisation Glue**	**Average Rating %**
A. The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	23
B. The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	28
C. The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	34
D. The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	16
5. **Strategic Emphases**	**Average Rating %**
A. The organisation emphasises human development. High trust, openness, and participation persist.	23
B. The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	25
C. The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	38
D. The organisation emphasises permanence and stability. Efficiency, control, and smooth operations are important.	15
6. **Criteria of Success Total**	**Average Rating %**
A. The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	20
B. The organisation defines success on the basis of having unique or the newest products. It is a product leader and innovator.	25
C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	36
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.	19

***Table 28: Cultural characteristic based on the OCAI tool for the senior specialists'
culture profile***

Culture type associated with characteristic		Rating %
	Dominant Characteristics	
Market	The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	33
	Organisational leadership	
Clan	The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	27
	Management of Employees	
Market	The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	38
	Organisation Glue	
Market	The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	34
	Strategic Emphases	
Market	The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	38
	Criteria of Success	
Market	The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	36

Table 29: Results for the cultural profile from the specialists' perspective

1. Dominant Characteristics	Average Rating %
A. The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	35
B. The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	24
C. The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	26
D. The organization is a very controlled and structured place. Formal procedures generally govern what people do.	15
2. Organisational leadership	**Average Rating %**
A. The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	26
B. The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	27
C. The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	18
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	29
3. Management of Employees	**Average Rating %**
A. The management style in the organisation is characterised by teamwork, consensus, and participation.	34
B. The management style in the organization is characterised by individual risk-taking, innovation, freedom, and uniqueness.	23
C. The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	23
D. The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	20

4. Organisation Glue	Average Rating %
A. The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	38
B. The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	24
C. The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	23
D. The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	15
5. Strategic Emphases	Average Rating %
A. The organisation emphasises human development. High trust, openness, and participation persist.	34
B. The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	26
C. The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	22
D. The organisation emphasises permanence and stability. Efficiency, control, and smooth operations are important.	19
6. Criteria of Success Total	Average Rating %
A. The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	33
B. The organisation defines success on the basis of having unique or the newest products. It is a product leader and innovator.	28
C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	21
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.	19

Table 30: Cultural characteristic based on the OCAI tool for the specialists' culture profile

Culture type associated with characteristic		Rating %
	Dominant Characteristics	
Market	The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	26
	Organisational leadership	
Hierarchical	The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	29
	Management of Employees	
Clan	The management style in the organisation is characterised by teamwork, consensus, and participation.	34
	Organisation Glue	
Clan	The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	38
	Strategic Emphases	
Clan	The organisation emphasises human development. High trust, openness, and participation persist.	34
	Criteria of Success	
Clan	The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people	33

Table 31: Results for the cultural profile from the graduates' perspective

1. **Dominant Characteristics**	**Average Rating %**
A. The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	30
B. The organisation is a dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	5
C. The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	50
D. The organization is a very controlled and structured place. Formal procedures generally govern what people do.	15
2. **Organisational leadership**	**Average Rating %**
A. The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.	15
B. The leadership in the organization is generally considered to exemplify entrepreneurship, innovation, or risk-taking.	5
C. The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	60
D. The leadership in the organisation is generally considered to exemplify coordinating, organizing, or smooth-running efficiency	20
3. **Management of Employees**	**Average Rating %**
A. The management style in the organisation is characterised by teamwork, consensus, and participation.	5
B. The management style in the organization is characterised by individual risk-taking, innovation, freedom, and uniqueness.	5
C. The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	60
D. The management style in the organisation is characterised by security of employment, conformity, predictability, and stability in relationships.	30

4. Organisation Glue	Average Rating %
A. The glue that holds the organization together is loyalty and mutual trust. Commitment to this organisation runs high.	10
B. The glue that holds the organisation together is a commitment to innovation and development. There is an emphasis on being on the cutting edge.	10
C. The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	25
D. The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	25
5. Strategic Emphases	Average Rating %
A. The organisation emphasises human development. High trust, openness, and participation persist.	10
B. The organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	10
C. The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	60
D. The organisation emphasises permanence and stability. Efficiency, control, and smooth operations are important.	30
6. Criteria of Success Total	Average Rating %
A. The organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	10
B. The organisation defines success on the basis of having unique or the newest products. It is a product leader and innovator.	10
C. The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	50
D. The organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low - cost production is critical.	30

Table 32: Cultural characteristic based on the OCAI tool for the graduates' culture profile

Culture type associated with characteristic		Rating %
	Dominant Characteristics	
Market	The organisation is very results-oriented. A major concern is with getting the job done. People are very competitive and achievement-oriented.	50
	Organisational leadership	
Market	The leadership in the organisation is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus	60
	Management of Employees	
Market	The management style in the organisation is characterised by hard-driving competitiveness, high demands, and achievement.	60
	Organisation Glue	
Market	The glue that holds the organization together is the emphasis on achievement and goal accomplishment.	25
Hierarchical	The glue that holds the organization together is formal rules and policies. Maintaining a smoothly running organisation is important.	25
	Strategic Emphases	
Market	The organization emphasises competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	60
	Criteria of Success	
Market	The organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	50

Results obtained through the Likert scale questionnaire

Table 33: Results obtained through the Likert scale questionnaire

	Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8	Question 9	Question 10	Question 11
Almost never present	1	1	1	2	1	2	1	1	3	1	1
Rarely present	1	3	0	4	2	4	1	0	2	0	1
Present Sometimes	2	5	3	3	2	7	3	3	5	5	3
Present Often	14	9	9	8	11	7	12	11	9	8	10
Almost always Present	6	6	11	7	8	4	7	9	5	10	9
TOTAL Number of respondents	24	24	24	24	24	24	24	24	24	24	24