

UNIVERSITY OF KWAZULU-NATAL

**Effectiveness of Teamwork in a Petrochemical Industry in KwaZulu-
Natal, South Africa**

By

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**A dissertation submitted in partial fulfilment of the requirements
for the degree of
Master of Business Administration**

**Graduate School of Business and Leadership
Faculty of Management Studies**

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2017



College of Law and Management Studies

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Acknowledgements

I wish to express my sincere appreciation and gratitude to all those who have assisted me in the completion of my dissertation. Above all, thanks to the All Mighty for granting me the strength, perseverance and courage to complete this dissertation. I would, especially, like to thank the following people, without whose assistance, this study would not have been possible:

- My family for inspiring and motivating me to complete my MBA. I am truly blessed to have you all in my life.
- My MBA colleagues for all your motivation and support that you provided me throughout this dissertation.
- My supervisor, Dr. Muhammad Hoque, for providing me with clear directions and guidelines, as well as assisting me with my difficulties throughout this dissertation.
- My work colleagues for providing me with all the knowledge and assistance relating to the completion of my dissertation.

Om Nama Sivaya

Abstract

Globalisation has inherently changed the dynamics of the business environment. Organisations are now driven strongly by information and technology, requiring them to be innovative, effective and efficient in order to sustain profit and growth (Jones and George, 2011). Natcos is the crude oil supply point to the Natref crude oil refinery. Due to Natcos being geographically distanced from Natref, it requires that the team be versatile to handle many disciplines. As such this requires good team work amongst the team members to execute the Natcos strategic objectives. The focus of this study is to determine how to improve the efficiency and effectiveness of the Natcos team and hence Natref. A quantitative research approach was adopted with a descriptive research method. The research was conducted within a non-contrived environment using a cross-sectional time horizon. The data collecting method employed was a survey method through the administration of a questionnaire to the Natcos team consisting of 47 participants, the entire population. The study has identified the team development phase that the Natcos team is in as well as the team attributes for an effective team that are required by the Natcos team to become effective and efficient. The recommendations of the study have highlighted the areas of teamwork that the Natcos team needs to improve upon in order to become an effective co-ordinated unit that will make the business sustainable and profitable.

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List of Acronyms and Abbreviations

Natref	National Petroleum Refiners of South Africa
NKP	National Key Point
ULP	Un-Leaded Petrol
LPG	Liquid Petroleum Gas
Sapref	Shell and British Petroleum Refinery of South Africa
Natcos	Natref Crude Oil Storage
SHE	Safety Health and Environment
UKZN	University of KwaZulu-Natal
NNT	Natcos Non-management team
NMT	Natcos Management Team

Chapter 1: Introduction

1.1 Study Background

Globalisation has inherently changed the dynamics of the business environment. Organisations are now driven strongly by information and technology, requiring them to be innovative, effective and efficient in order to sustain profit and growth. The current business environment requires teams to be more agile and organic in order to meet the ever-changing requirements and demands (Jones and George, 2011).

This study focuses on the effectiveness of teamwork in a petrochemical industry in KwaZulu Natal, South Africa. The focus of the study is the Natcos (Natref Crude Oil Storage) facility in KwaZulu Natal.

National Petroleum Refiners of South Africa (Natref) conducts its business within the petrochemical sector of South Africa. Due to its strategic importance to the South African economy, Natref is recognised as a National Key Point (NKP). Natref is a Joint Venture between Sasol Oil (Pty) Ltd and Total S.A (Pty) Ltd. Natref produces Un-Leaded Petrol (ULP), Diesel, Liquid Petroleum Gas (LPG) and other petroleum related products from the refining of crude oil. The main competitors in this sector are Shell and British Petroleum Refinery of South Africa (Sapref), Caltex/Chevron Refinery and Engen Refinery.

Natref is the only in-land refinery, whilst the other refineries are coastal refineries. Being an in-land refinery means that crude oil has to be transported from the coast to the in-land, incurring additional refining costs. However, Natref has remained competitive with its competitors and maintained sustainability throughout the years due to innovative technology and effective management of the refinery.

The Petrochemical sector is regulated by the government and hence the main competition is for market share amongst the above-mentioned competitors. In order to gain market share, the product must be of an excellent quality that gives consumers value for money, easily available and accessible in the market place (on tap at any given time and place). One of the key business drivers is to ensure cost effectiveness. The crude oil required for the refining process is supplied to the refinery from Natcos.

Natcos is an unincorporated joint venture between Sasol Oil (Pty) Ltd and Total S.A (Pty) Ltd. Due to its strategic importance to Natref and hence the South African economy, Natcos is also recognised as a NKP. Natcos comprises two sites; namely Prospecton and Fynnland. Natcos Prospecton Site is situated near Isipingo Beach and receives crude oil from ships through a single buoy mooring point at sea. The crude oil is then transported through a pipeline to Natref in Sasolburg. There are fifteen crude oil tanks at the Prospecton facility. The Fynnland facility which is located near Durban Harbour consists of two sites, i.e. Fynnland Site 1 and Fynnland Site 2. The Fynnland Site 1 facility has four white oil tanks, whilst the Fynnland Site 2 facility has three crude oil tanks. The Fynnland facility is located approximately fifteen kilometres away from the Prospecton facility (Hayward, 2015).

The Natcos Fynnland site is situated in the Island View Works Terminal at the Durban Harbour. The site receives imported Diesel and ULP from ships at Berth 9 in the Durban Harbour and transports these products through pipelines to the relevant destination. Crude oil is received at the Fynnland Site from the Prospecton site via pipeline (Hayward, 2015).

The facility was built in the 1960's for the purpose of strategic storage of crude oil for the then government. Crude oil was stored at both sites and Natcos was used as a static tank farm. If the need arose, the crude oil would be transported to the required areas from Natcos. Natref was built in 1972 in Sasolburg. Since the refinery was a crude oil refinery, crude oil supply was a critical factor in ensuring that the refinery was able to operate. Natcos was acquired to secure supply of crude oil to Natref and the design intent of this static crude oil storage tank farm was

changed to a crude oil supply tank farm. Natcos is thus critical to the operation of Natref and interruption in the Natcos operation will result in Natref shutting down (Hayward, 2015).

The Natcos operations department is responsible for receiving and dispatching of crude oil, ULP and Diesel. The rate of receipt of crude oil varies between 5 000 and 10 000 cubic meters per hour whilst ULP and Diesel vary between 1 000 to 1 700 cubic meters per hour. Thus any incident of spills or leaks can be detrimental to the business in terms of environmental impact, business interruption, fines and negative publicity which could result in severe losses (Hayward, 2015).

1.2 Motivation for Study: Problem Statement

Ensuring that all mitigations to risk during operations are in place as well as response readiness to incidents is an ongoing requirement at Natcos. It is therefore important for Natcos to ensure the operations team are able to perform safely at maximum productivity. This ensures reliable crude oil supply to Natref as well as supply of ULP and Diesel to its customers whilst maintaining cost effectiveness (Hayward, 2015).

The age of the Natcos tank farm is such that it now requires serious maintenance attention and a huge amount of capital is been invested to ensure its' upkeep. Coupled with the maintenance requirement of the plant, legislation changes, technological improvements, learnings from the petrochemical industry and supply requirements have resulted in increased capital requirements and thus more projects to execute. Therefore consideration has to be given to the resources required to execute projects as well as maintain the current operation of both the facilities.

One of the key business drivers for Natcos and Natref is cost effectiveness. Natref is structured to execute operational, maintenance and project requirements. The functions have been centralised at Natref. Due to Natcos being geographically distanced from Natref, the Natcos team must therefore be versatile to handle many disciplines since Natcos does not have the

structure that is exemplified by Natref. This requires good team work amongst the team members to execute the Natcos strategic objectives and goals.

The focus of this study is to determine how to improve the efficiency and effectiveness of the Natcos team and hence Natref.

1.3 Study Objectives

This study aims to investigate the areas that can be improved within the Natcos team in order to ensure that the team is an effectively co-ordinated unit that will optimise the sum of all the individual talent available. This would therefore enable the business to become innovative, effective and efficient and hence contribute to the Natcos's objective of sustainable profit, cost effectiveness and growth whilst competing in a global environment. The study would benefit Natcos and hence Natref.

The objectives of this study are to:

- To determine the requirements for an effective and efficient team
- To determine the current Natcos team attributes
- To determine the current gaps that impact on the Natcos team effectiveness and efficiency
- To determine suitable opportunities that will allow the Natcos team to become efficient and effective

1.4 Study Key Research Questions

The key research questions that have to be answered are:

- What are the requirements for an effective and efficient team?

- What are the current Natcos team attributes?
- What are the current gaps within the Natcos team for the effective and efficient team?
- What are suitable opportunities that will allow the Natcos team to become efficient and effective?

1.5 Significance of Study

The significance of this study is to enable the Natcos team to work in unison in order to achieve the Natcos strategic objectives and goals. The learnings from this study can then be shared with Natref. This would then allow the organisation to become more effective and efficient hence achieving its goal of sustainable profitability.

1.6 Research Methodology

The research methodology that will be employed is a quantitative study. The Natcos Team is made up of 49 team members (excluding current vacancies). All members of the population (excluding the Senior Manager and the Area Manager) will participate in a survey (47 members).

1.7 Study Limitations

The limitation of this study is as follows:

- This study is restricted to Natcos.

1.8 Study Outline

Chapter one sets up the backdrop, the problem statement, the study motivation, objectives, key research questions, and the significance of the study as well as the research methodology that will be used in the study.

Chapter two investigates the attributes that make an effective and efficient team in the form of a literature review. These attributes are required for the Natcos team to become efficient and effective.

Chapter three investigates the research methods that will be adopted in order to determine the Natcos team attributes.

Chapter four analyses the information gathered from the survey. The survey was administered as hard copies to the respondents and drop boxes were made available for the surveys to be handed in confidentially. The results were then analysed and compared to the literature review to determine correlations.

Chapter five summarises the researchers' findings, recommendations and recommendations for further research.

1.9 Summary

In the wake of globalisation, organisations are moving toward a high performance culture in order to sustain profitability and maintain growth. As such teamwork in the organisation is crucial in achieving the objectives set out. Finding the correct dynamics in a team is difficult and hence the need for this study at Natcos. This study aims to unlock the potential of the Natcos team by improving teamwork within the team.

Chapter two provides the literature review for the characteristics of an effective and efficient team.

Chapter 2: Literature Review

2.1 Introduction

The Natcos operation is an integral input of the Natref refinery value chain. The crude oil required for refining is transported from Natcos to Natref via pipelines. Hence if supply of crude oil is stopped for any reason, the refinery would not be able to function. The Natcos team is responsible for achieving the objective of transporting crude oil to the Natref refinery (Hayward, 2015).

It is therefore critical to ensure that the team is able to work as a unit to ensure efficient and effective operation. During the execution of its main objective, the Natcos team must also ensure that the Natcos asset is effectively managed in terms of maintenance of the facilities and the costs associated with the running of the operation. This therefore requires the Natcos team to be efficient and effective when executing their objectives.

The characteristics of an efficient and effective team must therefore, first be determined, in order to determine if the Natcos team is efficient and effective.

2.2 Definition of Team

Due to the reference of groups as teams and teams as groups, the inability to elucidate the distinction is clearly evident in current literature (Nawi et al, 2011).

The members in a group, according to Thanh (2016), are individually responsible and accountable for their own performance. The definition of a group according to Robbins, Judge, Odendaal and Roodt (2009, p.243) is “two or more individuals, interacting and interdependent, who have come together to achieve particular objectives.”

According to Katzenbach and Smith (2011, p.178), a team is defined as a “small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable.”

A work team transforms co-ordinated effort into positive synergy where the result is significantly greater than the sum of the individual efforts (Robbins, Judge, Odendaal and Roodt, 2009). Grobler et al (2011, p.626), define a team as “a unit of two or more people who interact and co-ordinate their work to accomplish a specific goal.”

Dalcher (2016, p.4), defines a group as “two or more people who interact with each other to accomplish certain goals or meet certain needs” and a team as “a group whose members work intensely with one another to achieve a common goal or objective” hence implying that there are distinctive differences between groups and teams.

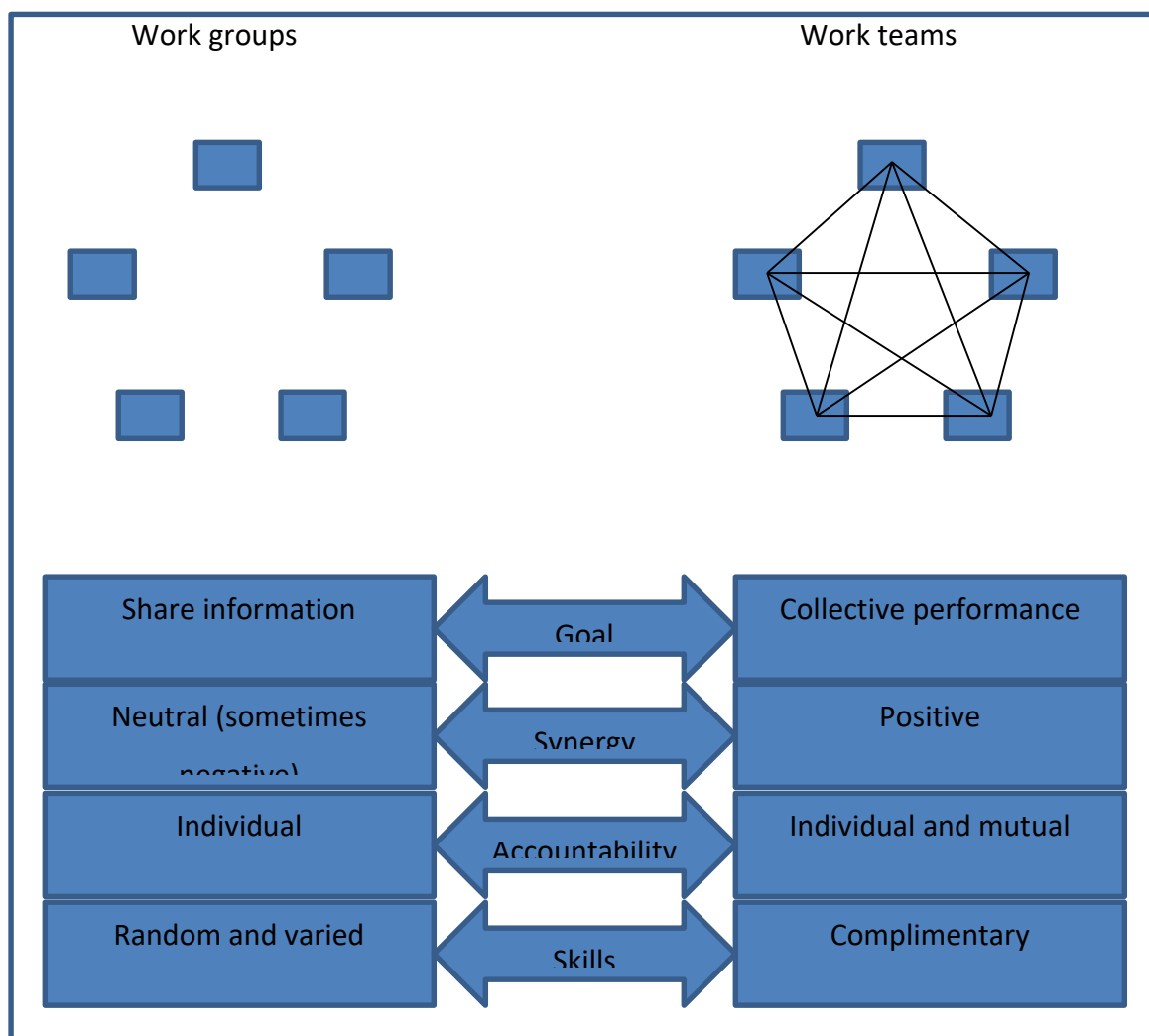


Figure 2.1: Comparing work groups and teams

Source: Adapted from Robbins, Judge, Odendaal and Roodt, 2009. Organisational Behaviour: Global and South African Perspectives

Figure 2.1 illustrates the differences between work groups and work teams. As can be seen, a team relies on the sum of the individual performance as well as individual and mutual accountability. Therefore teams are more effective and efficient when compared to groups.

2.3 Why is Teamwork Important?

Companies like Arcelor Mittal, Toyota, Nissan, Volkswagen, Santam, etc. have embraced the concept of using teams as an essential part of the way they conduct business. In order to compete more effectively and efficiently, organisations have restructured themselves into teams as a better way to utilise employee talent. Due to the flexibility and change adaptability of teams, other forms of permanent grouping or traditional departments have been cast away by management (Thanh, 2016).

Having a top team, according to Spinelli and Adams (2012), allows for the implementation of new strategies due to the team's ability to execute and adapt. This is an illustration of strategic differentiation (Spinelli and Adams, 2012) that is a trade mark of high reliability organisations (Dalcher, 2016).

The deploying of teams contributes to the organisational effectiveness by enhancing performance, spurring innovation, increasing responsiveness to customers and motivating employees (Dalcher, 2016). It is thus imperative to have the team functioning at its peak in order to be successful in the current business environment.

2.4 Stages of Team development

Team performance can be determined by the relationship that the team members have with one another in order to learn from each other. The stages of a team in its development are critical in understanding how to optimise and increase effectiveness and efficiency (Thanh, 2016).

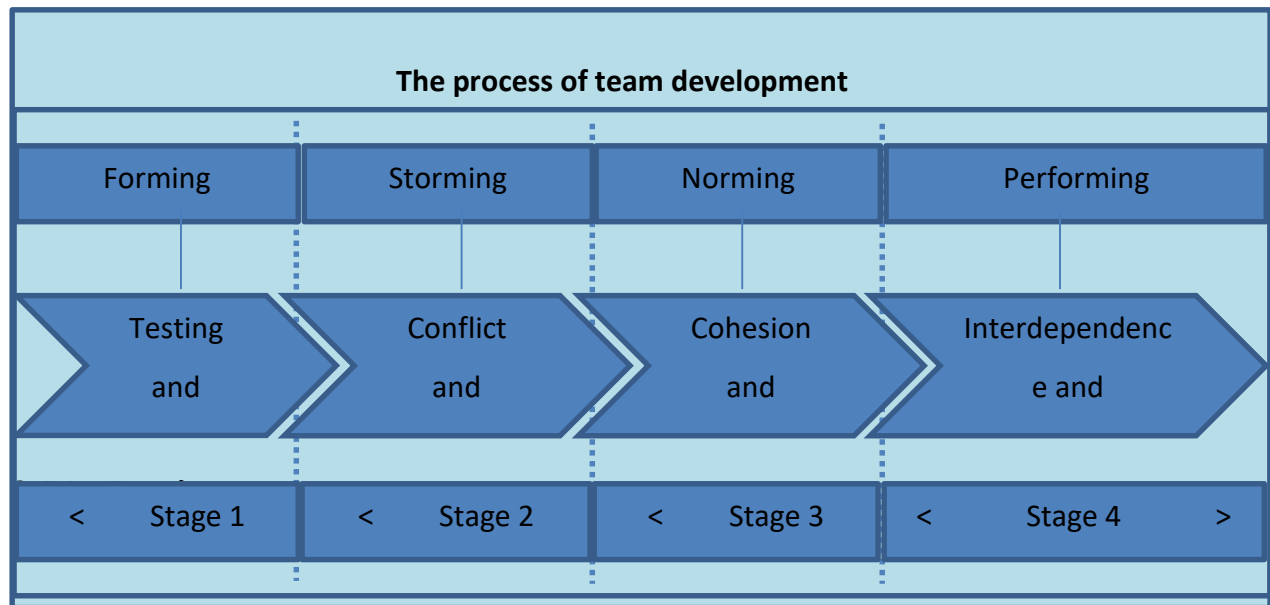


Figure 2.2: Tuckman's four stages of team development

Source: Adapted from Robbins, Judge, Odendaal and Roodt, 2009. Organisational Behaviour: Global and South African Perspectives

2.4.1 Forming

In the forming stage, there is usually anxiety and dependence on the leader since the team has basically started up. During this stage the team is unclear in terms of the objectives and individual expectations of each member. The team members are not familiar with one another and hence respond with appropriate behaviour in the circumstance being polite and obedient (Wende, Alt and King, 2017).

The team members will follow instructions as their status is based on their organisational roles. Their interactions and discussions with one another are superficial and are usually in line with that of the appointed leader (Matveev, 2016).

Some of the typical features are listed below (Matveev, 2016):

- General feeling of insecurity
- Reluctance to participate
- True feelings are hidden
- Attempts are made to conceal personal shortcomings
- Members make subjective evaluations of each other

The team leader must therefore exude the following behaviours (Matveev, 2016):

- Spell out expectations
- Provide sufficient structure
- Assure group members that participation is appreciated
- Reward good contributions
- Clearly define the process that should be followed

2.4.2 Storming

In this stage the team members have been working for a period where they have interacted with each other allowing them to have a basic understanding of each other. The initial reluctance to freely express opinions or feelings no longer exists. The team members now are able to express opinions and feelings and are hence free to disagree with each other and the team leader. The team member is able to express concerns, frustrations and question the team leader's decisions. Ideas are not accepted but challenged and analysed and in some cases even "thrown out" (Wende, Alt and King, 2017).

The team members also start to form their own alliances, thus resulting in more conflict and disharmony. Due to these circumstances, other members of the group start to become passively resistant and will go along with the team leader or the members that have formed alliances although they are in disagreement with decisions made (Matveev, 2016).

Some of the typical features are listed below (Matveev, 2016):

- Alliance, group formation and polarisation
- Sharp fluctuations in relationships
- Respect for certain members, but bitterness towards others
- An awareness of one's own shortcomings, but a focus on symptoms rather than the real problem
- Ulterior motives

The team leader must therefore exude the following behaviours (Matveev, 2016):

- Be discreet when compiling subgroups in order to prevent alliances, the forming of cliques and polarisation
- Focus on differences, but prevent arguments
- Create opportunities for groups to compete as a group in order to promote team-building

2.4.3 Norming

This phase is when the teams have successfully emerged from the storming phase. The team members have a good understanding of each other during the experiences from the storming phase. The rules of engagement for conflict resolution, decision making, assignment deadlines, interpersonal communication and meeting management have been established. More accountability and responsibility is exuded amongst the team members leading to shared leadership. This again improves the trust relationship amongst the team members and respect for each other even allowing them to disagree without conflict that leads to personal attack on each other (Wende, Alt and King, 2017).

Now team members actually start enjoying each other's company and thus improving the meeting environment. The team starts to feel superior to other teams as competitive cohesion develops through understanding each other and the ability to bond (Matveev, 2016).

Some of the typical features are listed below (Matveev, 2016):

- Establishment of values and norms

- Openness with group
- Group cohesion
- Willingness to experiment
- Sensitivity to the opinions and feelings of others
- Emphasis on individual rather than group performance

The team leader must therefore exude the following behaviours (Matveev, 2016):

- Provide a common vision
- Use group inputs to determine what should be done to become more effective
- Determine what can be done to support other groups in the organisation
- Be sensitive to individuals needs

2.4.4 Performing

This is the stage all teams strive for. This is the reason why the team was initially put together. The team has now embraced each other's diversity and have learned how to work as a team. There is an alignment with goals, members, rules and norms and getting the required results. There is innovation in problem solving and creative confrontation. The team has become self-sufficient and are able to periodically assess its performance and identify areas of improvement. Such is the team performance that recognition from all parts of the organisation is forthcoming (Wende, Alt and King, 2017).

Some of the typical features are listed below (Matveev, 2016):

- The team has a clear vision
- Decisions are of a high standard
- A high degree of synergy is attained
- Outside help is appreciated
- Action is taken to integrate the team's work with that of the other groups

The team leader must therefore exude the following behaviours (Matveev, 2016):

- Guiding the groups to redefine its vision at a high level
- Focusing on proactive action
- Allowing unstructured discussions

- Creating challenging opportunities
- Assigning specific group members to facilitate aspects of work sessions

A team's development rate is different from team to team and there are unique patterns that develop depending on the task, task environment, team member diversity and the leadership style. The leadership style certainly influences team development or lack of it.

The figure below illustrates the leadership demands during the forming, storming, norming and performing stages of group development (Wende, Alt and King, 2017).

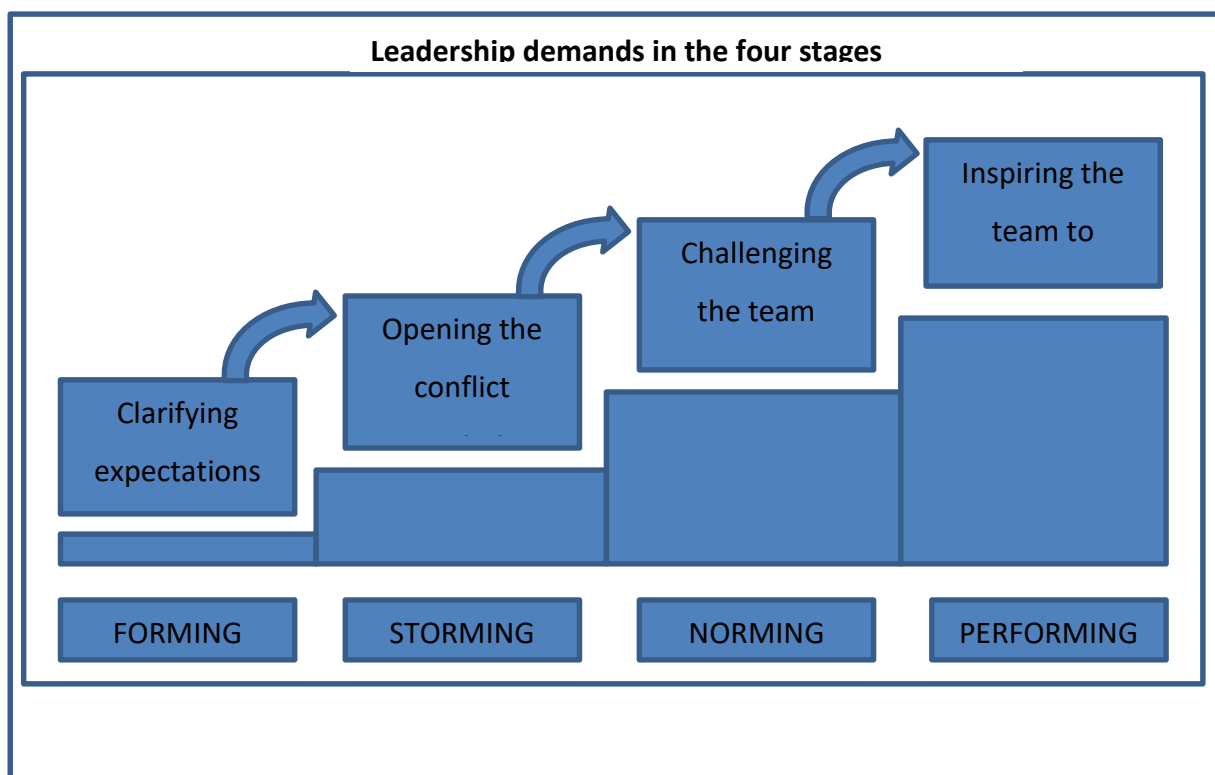


Figure 2.3: Leadership demands at the different stages of team development

Source: Adapted from Matveev, 2016. Intercultural Competence in Multicultural Teams

2.5 The Characteristics of a Good Team

According to Hough, Thompson, Strickland and Gamble (2011), the key attributes displayed by good teams are as follows:

- Efficient and competent execution of tasks

- A positive atmosphere is created when members work well together
- The team members experience is satisfying and individually rewarding
- There is good communication amongst the team members
- The team is led by a high calibre leader
- The team goals and objectives are clear for each member
- There is a high level of involvement and commitment from all team members
- There is adequate help and support for the individual team members

Teamwork is an important aspect in the role of many managers. Thus as a manager, practising and encouraging effective teamwork is a high priority (Hough, Thompson, Strickland and Gamble, 2011).

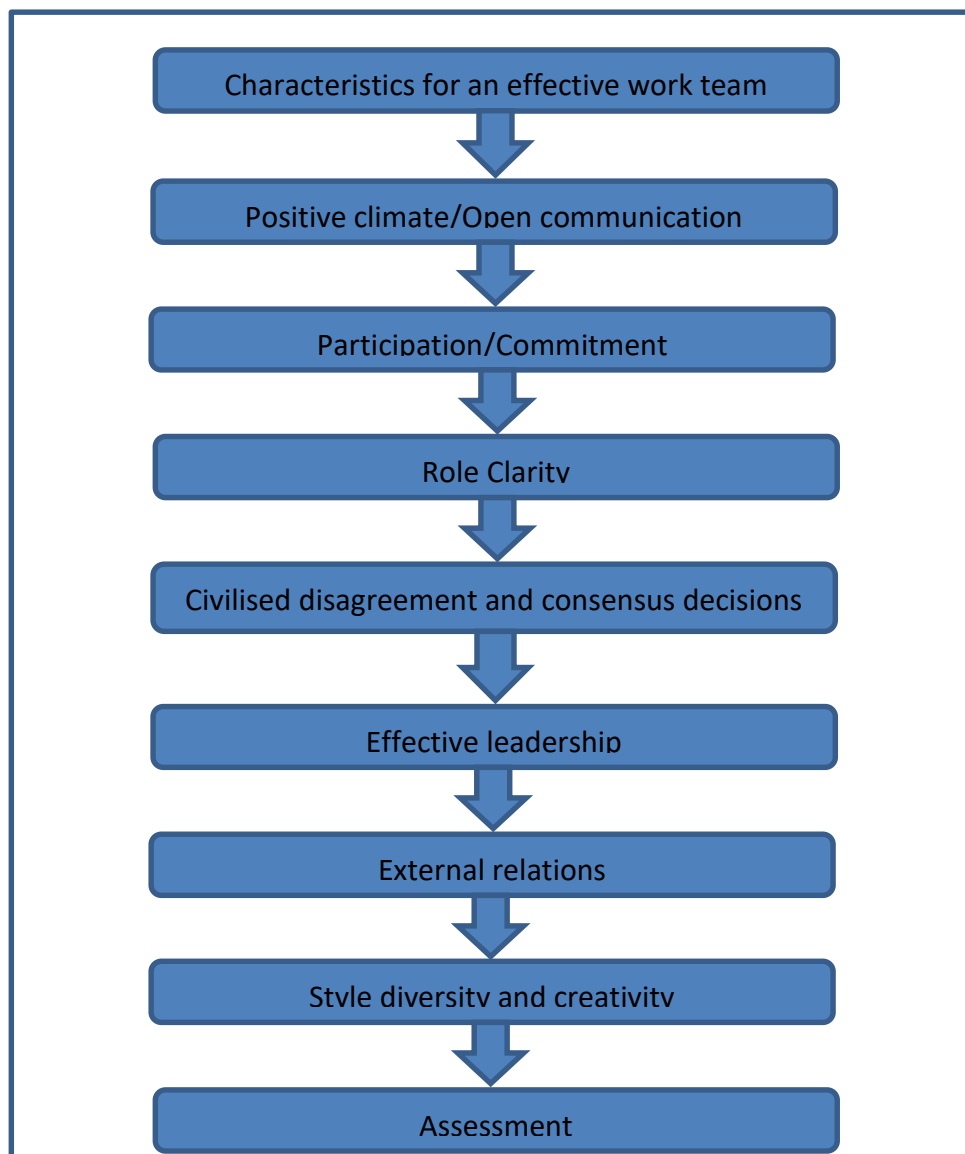


Figure 2.4: A model for building effective teams

Source: Adapted from Parker, 1991. Team players and teamwork: The new competitive business strategy

2.5.1 Clear Purpose Established

High performing organisations ensure that there is a sense of purpose and direction, the organisational culture is entrenched in order to perform the work that it requires and the organisation's members understand and are aligned with the organisation's strategic goals and objectives (Warrick, 2016).

Team members must share the goals or objectives if the team is to succeed in achieving its goal. The work team's energy must focus on the objectives and thus becomes the tool for integrating and directing the efforts of the team members (Hill and Bartol, 2016).

The collective intent and vision of the team is the statement of the work team's objectives. All members of the team, that can influence the team's transformation of the team's vision into a reality, must embrace the objectives set. Having objectives simplify the ability to prioritise, schedule and allocation of resources since there is a start and end point (Hill and Bartol, 2016).

2.5.2 Open Communication in a Positive Climate

The team characteristics are dependent upon the environment or climate in which it is operating. This climate is a combination of traditions, attitudes, rules, beliefs, habits, and relationship practices within the organisation and team. The combination of these characteristics contributes to the harmony amongst team members. As a result if meetings are called for, members actually look forward to attending and contributing. This bonding of the team members requires open communication between the team members and within the organisation (Evers and Berdrow, 2016).

2.5.3 Participation and Commitment Environment Created

The team members must actively participate in attaining team objectives which will result in achieving the effective participation objective. This will ensure that the team operates effectively and efficiently. The participation of team members may vary due to the knowledge or skill set that maybe required from the varying goals. In order to ensure that all members participate, the goals for the team should be set so that each member may have an equal part to play or if that team has no part to play then he/she should assist other team members in the parts that they play. This ensures that the entire team is committed since every member has to participate in the goals (Thompson, Buch and Kurvaas, 2017).

2.5.4 Establishment of Team Roles

The team can only function interdependently and effectively if the team members:

- understand their roles in the team
- commit to performing their roles well
- understand the roles of the other team members
- can adapt their roles to suit new requirements and changing needs

It is important to ensure that the team members are clear in their understanding of their roles in the team as well as each other's, the converse will result in the team's destruction (Gopee and Galloway, 2017).

2.5.5 Civilised Disagreement and Consensus Decisions Climate Established

For a team to be effective and efficient, requires that the team has progressed into the performing phase. This means that the team members trust and understand one and other and hence are transparent with each other and are able to express how they really feel. This however does not last indefinitely. If disputes or arguments are not sufficiently bedded then this may result in distrust and disharmony which could impact the team's effectiveness and efficiency.

Thus a climate for engaging in civilised disagreements and consensus decisions must be created in order to maintain the trust and harmony of the team. This may require to skill the team with conflict-resolution skills (Fleming and Delves, 2017).

In order for a team to be effective, the differences need to be expressed by team members by using their communication and listening skills to ensure that the correct views have being brought forward and understood. The diversity of the team is its strength and hence the team members must be comfortable to propagate new ideas and use their knowledge to challenge and discuss opinions in a constructive and positive manner (Fleming and Delves, 2017).

2.5.6 Lead Effectively

The key to success in any team is the way in which the team is led. This therefore brings to the forefront the leadership attributes required to lead effective teams (Hough, Thompson, Strickland and Gamble, 2011).

2.5.6.1 Definition of Leadership

Fullan (2007), describes leadership as an individuals' behaviour whilst directing the groups' activities to attain a shared goal. Leadership can also be defined as an individual or group of individual's ability to motivate, influence and enable other individuals or group of individuals to change and evolve business processes in order to adapt to the changing business environment by evolving the business culture in order to create efficient and effective processes that lead to an organisations success.

Encouraging other people to undertake a desired action is an executive behaviour trait of organisational behaviour as described by Burke and Litwin (1992). As per these definitions, the achievement of strategic alignment is a result of the influencing capability of the leader to get

the team members to achieve the goals and objectives of the team which will effectively result in the achievement of the organisational goals and objectives.

It is important to note that whilst the leader is responsible for ensuring that the organisation's strategy is executed, the organisation's strategy also plays a role in determining the kind of leadership required.

2.5.6.2 Components of Leadership

There are four levels from inside out that are integral to leadership. These are:

- Personal
- Interpersonal
- Managerial
- Organisational
-

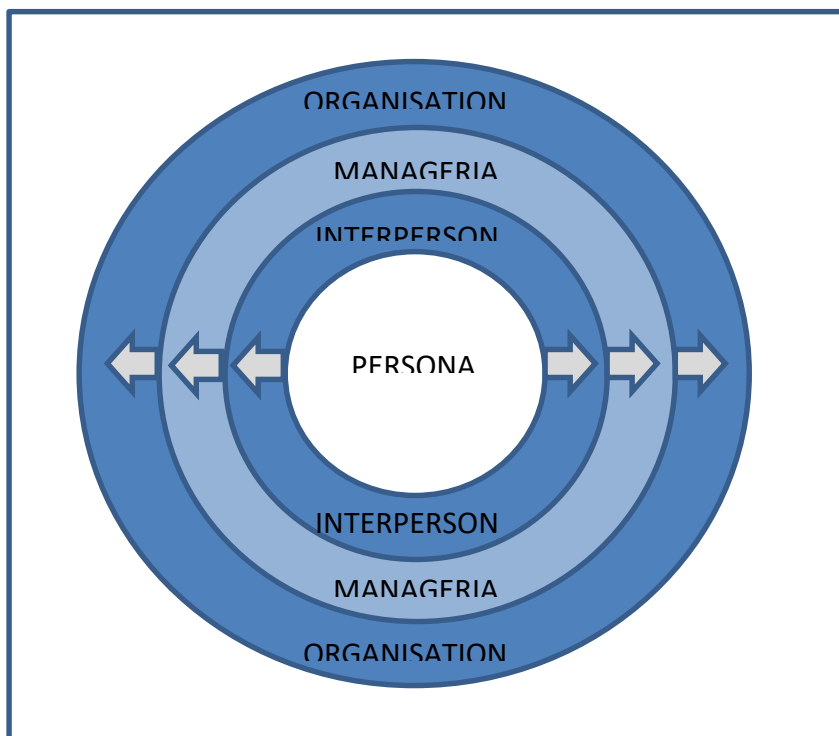


Figure 2.5: The four levels integral to leadership

- Source: Adapted from Covey, 1991. Principle – Centred Leadership

Personal Level

At this level an individual's trustworthiness is integral to his/her leadership competency (Schein and Schein, 2017). This relies on the following:

- **Leadership character**
 - Integrity of the leader
 - The type of values that the leader embraces and the personality of the leader
- **Leadership competence**
 - What skills, traits, and abilities does the leader possess in order to get the organisation to follow him in the direction of the organisation's objectives

Interpersonal Level

At this level an individual's ability is integral to his/her leadership competency. This relies on the following:

- **Build mutual trust and co-operation**

The team members must trust in each other and embrace each other's diversity by understanding each other in order to resolve conflict and disagreements in a positive and constructive way in order to be effective in the performance of a collective task. The leader must be able to inculcate trust respect and co-operation amongst his team members if he/she is to be effective (Schein and Schein, 2017).

- **Interpret the meaning of events**

The leader must be effective in these circumstances and help the team members to identify threats and opportunities. Change is a result of organisational growth and hence will impact on team members lives. The leader must help the team members understand and find meaning in these complex circumstances (Schein and Schein, 2017).

- **Obtain necessary resources and support:**

During execution of tasks the team members must seek approval, resources, assistance from other departments and sometimes political support. An effective leader must ensure that he is able to support his team members and provide the resources, assistance and approvals required in order for the team to achieve their goals (Schein and Schein, 2017).

Managerial Level

At this level there are a few determinants for an individual in relation to his/her leadership competency. These are:

- **Develop and empower people**

An active role from the team members is required for problem solving, decision making and supporting organisational changes. These are the fruits of a successful team. The team members must be skilled in order to fulfil growth into leadership roles, new challenges and even organisational change. The best leaders are the ones that create more leaders by skilling their team members and giving the team members empowered roles within the team (Schein and Schein, 2017).

- **Build task commitment and optimism**

In order to execute a task with a high level of difficulty and stressors, the team members must exude commitment and persistence (a never say die attitude) in order to overcome any setbacks or obstacles. The leader must inspire, motivate and charge his team members in order to gain more commitment and optimism to complete goals or objectives (Schein and Schein, 2017).

- **Organise and co-ordinate activities**

Due to the drive for effectiveness and efficiency many different interrelated activities must be achieved in the same breath. The leader must have the ability to co-ordinate these activities whilst effectively and efficiently utilising the resources available. Successful organisations rely on their leaders' ability to co-ordinate these several complex interrelated tasks whilst people and materials are effectively and efficiently utilised (Schein and Schein, 2017).

Organisational Levels

At an organisational level there are a few determinants for an individual in relation to his/her leadership competency which is as follows:

- **Create alignment of objectives and strategies**

The efficient execution of a task requiring collaboration in terms of what to do and how to do involves agreement amongst the team members. This is a key milestone for newly formed teams as they are navigating uncharted waters trying to build consensus amongst each other. An effective leader is required to create the platforms that will assist constructive agreements regarding the team's priorities, objectives and strategies (Schein and Schein, 2017).

- **Strengthen collective identity**

A team's identity is important in terms of identifying with each other and with other members of the organisation if they are to succeed in achieving their objectives and goals. If the team does not have an identity, it will become easy for the team members to lose focus and line of sight of the teams goals and objective. It is therefore a requirement the

team leader help define the teams' identity and resolve issues within the team in line with the team's identity (Schein and Schein, 2017).

- **Encourage and facilitate collective learning**

The current global climate requires organisations to adapt to the ever-changing market landscape to remain profitable, sustainable and competitive. This requires the organisation to implement continuous learning and innovation in order to stay afloat and compete. The individuals in these organisations thus have to become more innovative and continuously improve the way they execute goals and objectives. The team leader hence must encourage and support these developments in order to ensure the team members are competitive in the current global climate (Schein and Schein, 2017).

- **Promote social justice and morality**

The team environment must be consistent and promote fairness, a humane side (compassion) and an ethical behaviour towards the environment outside the organisation (social responsibility). This means that the individuals within the team should respect one another's rights and not behave in an unethical fashion that leads to negative impacts to the team and organisation. Thus the team leader must lead by example and promote ethical behaviour, efficiently and effectively action social injustices within the team to build social responsibility (Schein and Schein, 2017).

2.5.6.3 Situational Leadership

Hersey and Blanchard (1982, p291) situational leadership model is based on the following interactions:

- "The amount of socio-economical support (relationship behaviour) a leader provides.
- The amount of guidance and direction (task behaviour) a leader gives.

- The readiness (“maturity”) levels that follower’s exhibit in performing a specific task, function or objective.”

Figure 2.6 illustrates the situational behaviour model indicating the appropriate leadership style that should be employed for the task and associated maturity level.

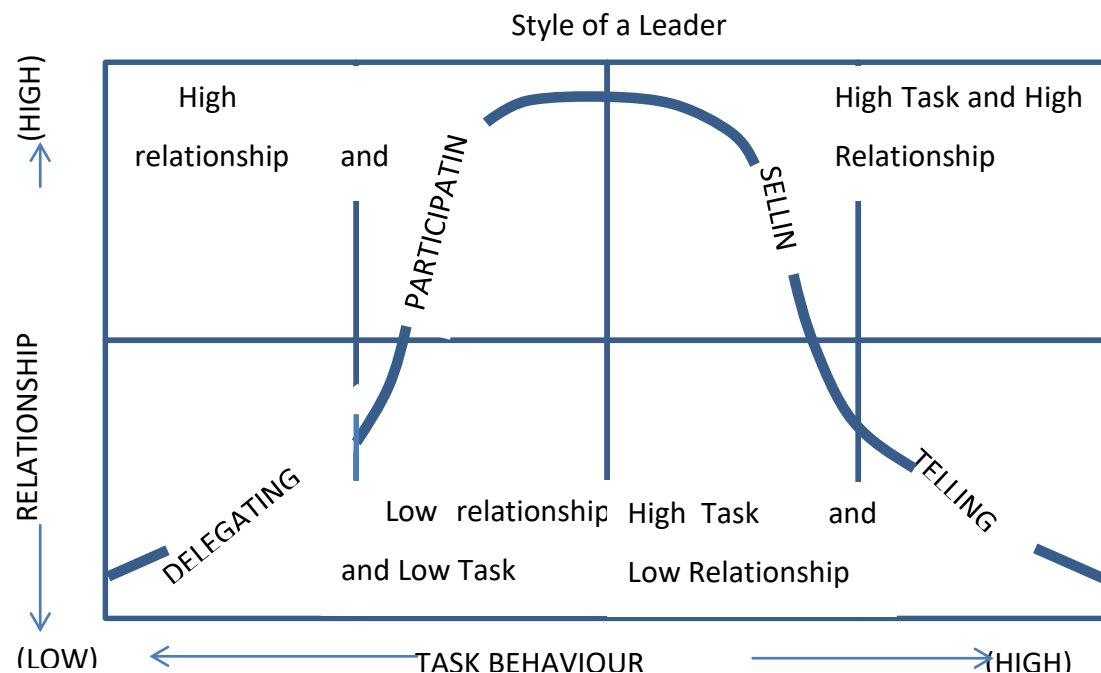


Figure 2.6: Leadership demands in the different situations

Adapted from Robbins, Judge, Odendaal and Roodt, 2009. Organisational Behaviour: Global and South African Perspectives.

Telling

Telling requires elucidating to the employee his/her role specifics by providing supervision due to their low level of maturity. This specific leadership style is most effective for employees that lack the ability and willingness to execute their tasks. The leaders must therefore define roles and instruct the employees as to what the task is and at which time it must be completed. Hence as per the Figure 2.6, this is a high task, but low relationship behaviour that the leader must exude (Northouse, 2016).

Selling

Selling requires elucidating to the employee his/her role specifics by providing supervision due to their low to moderate level of maturity. This specific leadership style is most effective for employees that lack the ability to execute their tasks. The leader must also display supportive behaviour since the employees show the willingness to execute their tasks. Hence as per the Figure 2.6, this is a high task and high relationship behaviour that the leader must exude (Northouse, 2016).

Participating

Participating is the leadership style required for employees that have a moderate to high level of maturity. This is whereby the employee shares in the decision making with the leader since the employee is able to execute the task but not willing to do what the leader wants. The leader must thus support, exude trust and not micro manage these type of employees. Hence as per Figure 2.6, this is high relationship behaviour, but low task behaviour that the leader must exude (Northouse, 2016).

Delegating

Delegating is the leadership style required for employees that have a high level of maturity. In this stage, the employee has the ability and the willingness to execute the task by accepting the responsibility thereof and thus requires very little or no support and direction from the leader. The leader may still set out the tasks that require execution; however the employee may decide the course of their own action plans. Hence as per Figure 2.6, this is a low relationship and task behaviour that the leader must exude (Northouse, 2016).

2.5.6.4 Leadership Behaviours and Skills

In order to achieve organisations success, the leadership must exude a complimentary range of behaviours to suit the organisations goals and objectives (Rees and Porter, 2015). These behaviours are listed below as:

- **Task orientated**

Employees and resources must be utilised in an effective and efficient manner, whilst maintaining control and reliability, during the execution of tasks relating to this behaviour (Rees and Porter, 2015).

- **Relation orientated**

In order to execute tasks, there must be co-operation and support amongst the team members resulting in harmony and job satisfaction. The leader must support the team members and advocate co-operation and team identity to increase job satisfaction of the team members (Rees and Porter, 2015).

- **Change orientated**

As the business environment changes, organisations must be structured to become dynamic and innovative in order to align with new strategies to accommodate the changing environment. The organisation must gain commitment from the members in order to undertake these changes (Rees and Porter, 2015).

These three types of behaviours must be used symbiotically in order to gain effectiveness and efficiency from the team. In order for the team leader to be effective and efficient in the undertaking of any task, he/she must be able to use these behaviours in tandem as the type of tasks demand. Some examples of task related behaviours are:

- **Plan work activities**

This means in laymen terms knowing “what to do, when to do it, how to do it and who is going to do it”. The ultimate purpose of planning is to efficiently and effectively utilise people and resources by proper co-ordination and organising. This includes decision making and work prioritisation in accordance to their importance (Rees and Porter, 2015).

- **Clarify roles and objectives**

The communication of “who is doing what and why” as well as the expected result and what it means to the team members must be clear as daylight. This increases co-operation and reduces conflict as each member knows what their purpose in the task is (Rees and Porter, 2015).

- **Monitor operations**

This is more an information gathering process. The operational structure of the business is executing the required tasks. Part of the monitoring process is to determine if these tasks are being executed effectively and efficiently and determine if there are improvements that can be made (Rees and Porter, 2015). Essentially, monitoring provides information for the following:

- Evaluation of individual performances
- Recognition of achievements
- Performance deficiency identification
- Identification of training needs
- Provision of assistance
- Allocation of rewards (salary increases or promotions)

2.5.6.5 Change Leadership

All organisations must go through change as the business environment is ever-changing. How the organisation responds to these changes is essential since their very survival depends on it. The organisational strategy may change accordingly and it is here that the change management within the organisation must be implemented with care. This is a delicate skill the organisation's leaders must display (Robbins, Judge, Odendaal and Roodt, 2009).

Hough, Thompson, Strickland and Gamble (2011, p.295) state that "Effective leaders must view managing change as an integral responsibility, rather than a peripheral one. Effective leadership is required to revitalise an organisation and facilitate adaption to a changing environment".

Here the leader must recognise what are the individual's attitude and expectations and help them understand what the purpose is and need for change in the organisation.

The processes or phases that typically need to be facilitated by leaders when the organisation must implement a strategy could be summarised as follows:

- **Phase 1: Denial and disbelief**

The employees during this phase tend to choose to ignore the fact that there is a change taking place. They often exude the behaviour of disbelief and denial: "why do we need to change?" The employees thus avoid any information related to the change the organisation is undergoing. The typical question: "Why is it necessary to adopt a new strategy, as the previous one worked?" is asked. Leaderships' challenge is therefore to reinforce the point that the strategy is about continuous improvement hence the reason for the change (Orridge, 2017).

- **Phase 2: Fear and Anxiety**

The employees during this phase tend to realise and accept the fact that change is taking place or is going to take place. The employees now start to think and wonder about the impacts that the change will have on them and thus feeling overwhelmed due to the fear of the unknown: “Can I cope?” or “What impact will this have?” or “How will this affect me?” Leadership’s challenge now is to ensure that employees understand why it is necessary for the organisation to revise its strategy. They must also elucidate to the employees that small incremental changes would be better for the sustainability of the business, customers and staff compared to big fundamental changes (Orridge, 2017).

- **Phase 3: Adjustment and Reluctant Acceptance**

As more information regarding a particular change is communicated to the employees, they reluctantly begin to accept the change and start to explore their role in it. Chaos and indecisiveness is one of the main characteristics of this phase displayed by employees. Statements such as: “OK, let’s try it, but who’s doing what now?” or “I will never learn this new system-I need training” maybe heard. During this phase, individuals just want to be informed about what “The Plan” is (Orridge, 2017).

- **Phase 4: Commitment and Integration**

During this phase, the employees have understood the role that they play in the change process and have bought into the positive aspects of the change. They have now themselves committed to the change process. The employees can now focus on the future and stop dwelling on the past because they have committed to the change. They now have a clear sense of their roles within the organisation and they also know the direction in which the organisation is heading (Orridge, 2017).

It is therefore essential as a leader to ensure that the following is communicated to the employees to ensure that the change due to the new strategy is necessary is understood:

- The revised vision and strategy is for the sustenance of the organisation and improved efficiency and effectiveness of delivery of services to customers within an environment of increased competition
- Strategy is a continuous process of improvement
- Role descriptions and specifications, personal relationships with colleagues, and communication with management could be impacted due to the change (Orridge, 2017)

2.5.6.6 Leadership and Trust

Leadership and trust are directly related in that if there is no trust between the leader and followers, then the followers don't follow. Thus the leader has to earn the trust of his followers in order to influence them as to what the organisation requires. There has to be predictability in the behaviour and actions of the leader so that a consistency is developed for the followers to be able to openly communicate. This leads to the follower developing trust in the leader. The leader must also show a degree of co-operation and hold true to what is said to followers by "practicing what you preach" (Northouse, 2016).

- "Trust is the foundation for human relationships within organisations
- Trust can be built or destroyed by the actions of both leaders and followers
- It takes faith, hope and connectedness to want to follow leaders which would imply an element of risk for both parties" (Maxwell, 2002, p.34)

2.5.6.7 Culture

The organisations leader's styles and behaviour, the manner in which they lead directly impacts and shapes the organisations culture and teamwork. The followers tend to look up to and imitate their leaders, ultimately shaping the organisations culture. One of the key impacts to an organisation's profitability is an effective, efficient and robust culture. Culture is an underpinning attribute or trait that influences a team member's ability to make informed decisions, understanding the organisations environment and managing the dynamics that are required to keep the organisation profitable. Leaders are therefore challenged to identify, create and sustain the organisational culture that drives effectiveness and efficiency of the organisation in order to generate sustainable profitability (Mohanty and Pattanayak, 2016).

2.5.7 Establishment of External Relations

Key relationships are forged with people outside the group when the team is effective. The creation of a positive image of the team involves management of the external aspects which also involves building a network of contacts that can assist the team (Keller, 2013). Team members help the team become effective by building external relations by:

- Sharing the credit for team successes with the external team members
- Informing external team members of impact regarding important actions that may affect their interactions with the team
- Encouraging customers, clients and sponsors to provide honest feedback

2.5.8 Style, Diversity and Creativity Celebrated

Diversity within a team is a strong agent for creativity, uniqueness and style which improves effectiveness and efficiency of the team and increases the range and audience that the team can reach. Such a team challenges each other and increases competitiveness within the team, thus always pushing the team to improve and evolve (Robbins, Judge, Odendaal and Roodt, 2009).

2.5.9 Assessment of Team Effectiveness

The primary tool for communicating direction, allocating resources, monitoring and evaluating performance, linking performance goals, establishing accountability, defining roles and responsibilities and conducting changes is team assessments. Teams should assess themselves periodically in order to determine how well they function and as well as how to improve their effectiveness. Members of the team should analyse the strengths and weaknesses of their individual and collective performance during the assessment in order to ensure that assessments are effective. They must accept criticism without resentment and be honest in their personal assessments (Hough, Thompson, Strickland and Gamble, 2011).

2.6 Summary

Based on the research available, it is clear that an effective and efficient team does improve and sustain an organisation's profitability. For Natcos, this is also true and hence from the research available, an assessment of the current team effectiveness and efficiency must be established. The factors that contribute to team effectiveness and efficiency must be identified and compared with the Natcos team.

A gap analysis can then be conducted and opportunities for improving team performance can then be identified and implemented. This will thus conclude the significance of this study. Further to this study an assessment can be conducted within an acceptable period after implementation of the recommendations of this study to determine if the study had successfully identified the gaps within the Natcos team.

Chapter three will determine the research methodology applicable to Natcos and factors critical to team effectiveness and efficiency will be put in the form of a questionnaire in order to ascertain the current team status at Natcos.

Chapter 3: Research Methodology

3.1 Introduction

The Natcos team is responsible for the crude oil supply to the Natref refinery in Sasolburg as well as distribution of white oil product to the partners' depots. In order for the refinery and partners to maintain sustainable profit, the Natcos team must therefore operate efficiently and effectively.

A questionnaire is used to gauge the Natcos teams' current state of affairs with the use of appropriate research methods. This chapter elucidates the research methodology that was selected for this study including the research strategy, approach and design. It also includes the sample population and sample size, the study backdrop and time lines and the data collection instrument as well as the instrument validation, creditability and reliability.

3.2 Research Methodology

In order to start with the research a clear distinction must be made between research and research methodology. Sekaran and Bougie (2010), define research as deriving solutions from a problem through thorough and rigorous study and analysis of the situational factors.

Research methodology is the proper systematic approach in dealing with a problem by identifying the research method and the logic behind selecting the research method according to Kulkarni (2015). Research methodology is the structure linking defined assumptions during the undertaking of research studies.

The aim of research methods is therefore to determine solutions for the research problem whereas research methodology is the determination of the correct protocol to employ when seeking solutions for the research problem.

3.3 Research Design

Sekaran and Bougie (2013, p94) define research design as “a blue print for the collection, measurement and analysis of data, based on research questions of the study.”

Research studies have been broadly grouped by Kothari (2008) into the following:

- Case studies
- Descriptive – describes beliefs, opinions, preferences, knowledge of an individual, group or situation
- Hypothesis Testing – verification of the casual dynamics of variables
- Diagnostic – determination of the occurrence frequency of a phenomenon or in relation to other phenomenon's
- Explorative – when more detail is required in understanding a phenomenon

The research study method employed for this study is descriptive research to determine how effective and efficient teamwork at Natcos can improve the business units' performance. Descriptive research study also describes the existing state of affairs as suggested by Kothari (2013).

The information that was obtained from the study was used to determine the current team environment and performance level at Natcos. Thereafter the gaps, as compared with the pre-requisites for effective and efficient teams, were determined in order to provide solutions for improving the Natcos team's effectiveness and efficiency. Descriptive research studies as described by Sekaran and Bougie (2013), also help in elucidating characteristics of a group and systematic thinking required for the phenomenon which results in ideas for additional research and easy decision making.

3.4 Research Approach

Qualitative and quantitative are two of the basic types of research approaches commonly used.

According to Sekaran and Bougie (2013), the qualitative research approach is data generation in the form of words as gathered from responses to open ended questions in questionnaires or through observations or interviews. This research approach is generally used when studying human behaviour (Kulkani, 2015).

According to Sekaran and Bougie (2013), the quantitative research approach is data generation in the form as gathered from numbers in response to structured questions on a questionnaire and can be sub classed into simulation, inferential and experimental (Kothari, 2013).

The quantitative research approach was selected for this study since the characteristics determined from the sample population can be inferred to the study population in order to draw conclusions (Kothari, 2013).

3.5 Study Setting and Time Horizons

The two types of study settings are as follows:

- Non-contrived (setting in which the phenomenon occurs)
- Contrived (artificial setting)

The contrived setting was selected for the study since the research was conducted in the Natcos work environment which is the natural environment for the phenomenon researched without any or minimal interference from the researcher (Sekaran and Bougie, 2013).

The two types of time settings are as follows:

- Longitudinal
- Cross-sectional

A cross-sectional time setting for a study is selected when the data is gathered in “one shot” or at once within a specific, short time frame whereas a longitudinal time setting for a study is selected when the data is gathered over a multiple time frames. For study at Natcos, the cross-

sectional time setting was chosen since the data for the study could be ascertained over a short single period (Sekaran and Bougie, 2013).

3.6 Study Population and Sample Design

Gomm (2009, p240), describe population as the “group you wish to infer with” and the sample as the “group that you select from this population.” Sekaran and Bougie (2013, p245), describe population as “the entire group of people, events or things of interest that the researcher wishes to investigate” and the sample “is the subset of this population.” During the undertaking of research as sample of the population is selected as the focal point of the study.

Samples are used as focus of studies especially if the population being studied is large and thus possibility of collecting data becomes improbable, impractical, expensive time exhaustive. Sekaran and Bougie (2013), hence recommend the selection of a sample of the population to be inferred on the whole population. Kothari (2013) stipulates that if valid conclusions are to be articulated, the sample of the population selected must be unbiased and must be a true representation of the population.

For this study, the sample selected is the entire population of Natcos, which is 47. This will hence give an accurate measure of Natcos state of affairs as no inference is required. This is so since the Natcos team is small and all respondents are easily accessible for undertaking the survey.

3.7 Sample Design

Sekaran and Bougie (2013, p247), define a sample frame as a “representation of all the elements in the population from which the sample is drawn”. To determine how to improve the efficiency and effectiveness of the Natcos team all Natcos employees will be considered as part of the sample frame.

The two types of sampling design are as follows:

- Probability Sampling – sample selection is possibly known by the elements
- Non-probability Sampling –sample selection is not known by the elements

Random sampling and complex probability sampling is the derivative of probability sampling. Kothari (2013, p.34) advocates that “random sampling ensures the law of statistical regularity which states that if on average the sample chosen is a random one, the sample will have the same composition and characteristics of the population.” For this study, the sample size is the entire population being the Natcos team which is 47.

3.8 Sample Size

Sekaran and Bougie (2013), established the following rules for determining sample size:

- Most research studies generally consider a sample size of 30 to 500 as appropriate
- When subsamples exist, a minimum of 30 elements are required (female/male, non-managerial role/managerial role, operations/non operations)
- In multivariate studies, the sample size must at least 10 times larger than count of variables in the study
- For simple experimental research with tight experimental controls, sample sizes of 10 to 20 are acceptable

3.9 Research Strategy

The different types of research strategies are as follows:

- Surveys
- Experiments
- Grounded Theory
- Action Research
- Observations
- Case Studies

The research strategy selected for this study is surveys. Sekaran and Bougie (2013, p102), define surveys as a “system for collecting information from or about people to describe, compare or explain their knowledge, attitudes and behaviour.” Gomm (2009, p84), describe surveys as

“relatively inexpensive to administer and can be sent to a number of people in a relatively short time.” Sekaran and Bougie (2013), comment that surveys can be used for cross-sectional time settings for studies that require primary data for the determination of the solution to the problem presented.

For this study, the research strategy selected was surveys. The survey method employed was a questionnaire which was used to collect the data required for the study. According to Kothari (2013, p117), a questionnaire is made up of “a number of questions printed or typed in a definite order on a form or on a set of forms.” Sekaran and Bougie (2013), states that questionnaires influence the surveyed respondent to answer specific alternatives to pre-formulated questions in order to gain data along the research parameters. A single questionnaire was created for this study in order to establish the state of affairs in the Natcos team, in order to compare with parameters established in the literature review.

3.10 Questionnaire Design

Sekaran and Bougie (2013), propose that there are three questionnaire design principle requirements that must be met in order to prevent or minimise respondent measurement errors and bias and these are as follows:

- The questionnaire wording must be appropriate and sophisticated.
- The question type, form and sequencing must be well structured and ordered.
- The coding, scaling and categorisations of the variables after the receipt from respondents must be planned well by the researcher
- The questionnaire appearance must be such that the respondent doesn't feel like it is a burden and therefore not respond whole heartedly

The questionnaire developed for this study included simple language in order to gain more accurate responses without or minimal doubt and bias. The questions put forward were short and concise and not vague, contradictory or tricky. The questionnaire contained rating and interval scales for “responses to varying number of points on a scale can be tapped and measured and then summed across the points.”

The research questions that were put forward in the questionnaire were formulated in order to answer the following questions:

- What stage of team development is the Natcos team at?
- Is there effective communication within the team at all levels?
- Are team goals and objectives clear?
- Does the team have the resources to execute their roles?
- Do the team members understand their roles and responsibilities?
- How is organisational change experienced?
- Does leadership support and motivate the team?
- What is the team culture within the Natcos team?
- Does the Natcos team assess its' performance?

3.11 Questionnaire Administration

Sekaran and Bougie (2013), advocate that questionnaires may be administered to respondents either personally or by e-mail. Personally administered questionnaires are advantageous since the completed questionnaires can be collected within a short space of time in bulk. Also, the respondents can clear any doubts by gaining on the spot clarification during the completion of the questionnaire. The main disadvantage of this administration is that the researcher may involuntarily and unknowingly introduce bias from the respondent due to the explanation of the questions that require clarification.

E-mail or electronic questionnaires are advantageous since they can be administered to a larger group within a small time period. The respondent is under no pressure and is able to complete the questionnaire at leisure. The main disadvantage of this administration is that the time period for the completion of the study may lapse without questionnaires being completed. This therefore requires additional effort from the researcher by sending reminder e-mails for the respondents to complete the questionnaire.

The questionnaire for this study was administered personally as hardcopies to the respondents within Natcos. The researcher witnessed the respondent filling in the questionnaire to ensure

that there were no outside influences regarding the respondents' state of mind. Once complete the researcher witnessed the respondent inserting the questionnaire into the drop box. Drop boxes were located within all departments for the respondents to drop off completed questionnaires. A period of one week was allocated for the completion of the surveys since there are four shifts being worked to ensure that all Natcos members were able to participate. The surveys were collected all at once in bulk once all respondents had completed the questionnaires.

3.12 Reliability and Validity

The instruments that are developed to precisely measure study/research variables determine the quality of the study hence the validity and reliability of such instruments is critical. Sekaran and Bougie (2013, p228), define reliability as a "test of how consistently a measuring instrument measures whatever concept it is measuring" and validity as a "test of how well an instrument that is developed measures a particular concept it is intended to measure."

Reliability

In terms of instruments reliability, consistency and stability of measuring the variable is critical in order to ensure accuracy. Sekaran and Bougie (2013), confirm two tests for both consistency and stability.

For consistency, the two tests are:

- Split-half reliability – Both halves of the instruments are checked for correlation
- Interim consistency reliability - To what degree of correlation is there between the independent measures of the same concept, the higher the co-efficient, and the more reliable the instrument

For stability, the two tests are:

- Parallel-form reliability – This test requires the changing of the wording and order of the questions from the initial administration. This helps the researcher to determine errors caused by the wording and order of the questions. The parallel-form coefficient is the

determination of the correlation between each of these administrations of the test and the higher the co-efficient, the more reliable and stable the instrument.

- Test-retest reliability – This test requires the administering of an identical set of questions to an identical group of respondents at different times. The test-retest coefficient is the determination of the correlation between each of these administrations of the test and the higher the co-efficient, the more reliable and stable the instrument.

Validity

According to Sekaran and Bougie (2013), the few tests that measure validity may be grouped under three broad categories which are as follows:

- Construct Validity
- Content Validity
- Criterion Validity

Sekaran and Bougie (2013, p310), established validity in the following ways:

- “Correlation analysis for concurrent, predictive, convergent and discriminant validity
- Factor analyses for establishing construct validity
- In establishing measure robustness, the multi trait, multi-method matrix of correlations can be used”

The questionnaire developed by this study was evaluated by three MBA post graduates for reliability. All feedback that was received was evaluated and valid changes were made to the questionnaire. The test-retest reliability was confirmed as no further recommendations or corrections were noted. The questionnaire was then administered as per section 3.11 (Questionnaire Administration).

3.13 Ethical Consideration and Study Permission

Singh (2012) describes ethics in research as the appropriate behaviour required by the research since the data collected must be ethically managed. This means that the researcher must

consider the respondents' rights to privacy and hence all data collected must be treated with the utmost confidentiality. Any information collected without the respondents' knowledge and consent is deemed as unethical behaviour by the researcher. Sekaran and Bougie (2013), support the fact that the researcher may not force respondents to participate in the survey and the researcher may not in any circumstance violate the self- respect and self-esteem of any respondent.

Attached to this study as annexures are:

- The ethical clearance form that was obtained from the University of KwaZulu Natal's research office, to ensure that all ethical requirements are cleared upfront prior to research
- The informed consent letter that is attached to the questionnaire in order gain respondents acceptance to participate in the survey
- The respondents could choose to participate or decline on their own without bias or repercussion
- The gatekeepers pass was obtained from the 16.2 or Senior Manager at Natcos on behalf of the organisation, allowing the researcher to proceed with the study and administer the questionnaire to the relevant members of the Natcos team

All information gained from this study shall be shared with the organisation and maybe used to help improve deficiencies that may exist.

3.14 Summary

Chapter three has described how the research question to this study will be answered. A quantitative research approach was adopted with a descriptive research method. The research was conducted within a non-contrived environment using a cross-sectional time horizon. The data collecting method employed was a survey method through the administration of a

questionnaire to the Natcos team. All ethical clearances and permissions required for this study were obtained to ensure that the data assimilated is an accurate measure of the state of affairs at Natcos.

Chapter four details the analysis of the data collected.

Chapter 4: Survey Analysis and Discussion

4.1 Introduction

In this chapter the primary data that was obtained from a survey questionnaire from the Natcos team members is analysed. The objectives stated in the introduction of this dissertation are compared to the results obtained from the survey. The survey questionnaire was rolled out to the Natcos team on the 12 January 2017 and collected on the 20 January 2017.

The Natcos team consists of 47 members excluding the writer and the senior manager. All 47 members participated in the survey. The members participating in the survey were from different departments including Operations, Maintenance, Projects, Oil Movements, Security, Administration and Safety Health Environment (SHE).

The operations department includes the operations foreman, senior product controllers and product controllers. The maintenance department includes the maintenance foreman, planner, fitters, electrician and a general labourer. The security department includes the chief security officer, control officers and NKP guards. The rest of the departments form part of the general support function.

The analysis of the survey was conducted on two levels, the Natcos management team (NMT) and the Natcos non-management team (NNT).

4.2 Survey Demographics

4.2.1 The NNT Demographics

The NNT demographic per race group is indicated below in Figure 4.1. The majority of the NNT is made of 55% African employees, 31% Indian employees, 10% Coloured employees and the

remaining are White employees. This demographic is in line with the demographics of the population located in the vicinity of Natcos, which is the Durban South region of KwaZulu Natal (Anon, 2011). This also indicates the diverse nature of the workforce.

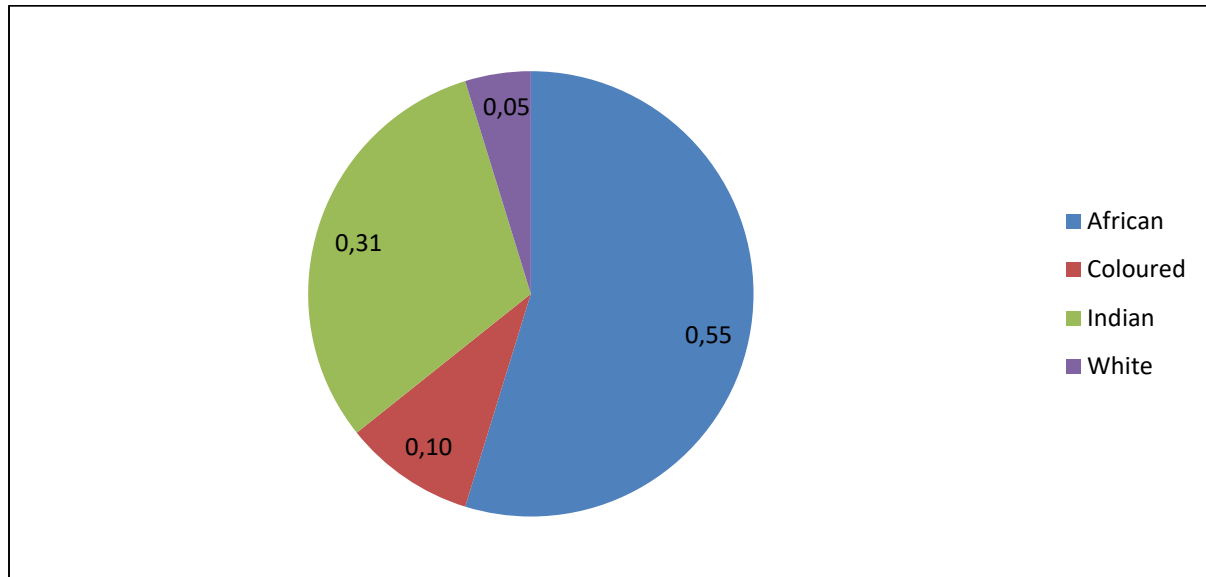


Figure 4.1 NNT demographic - race

The NNT demographic per sex is indicated below in Figure 4.2. The majority of the NNT in terms of sex is male, accounting for 79% of the workforce. The petrochemical industry has been considered a male dominated industry and this can be seen by the dominance of the male sex within the Natcos team (Klein, 2016).

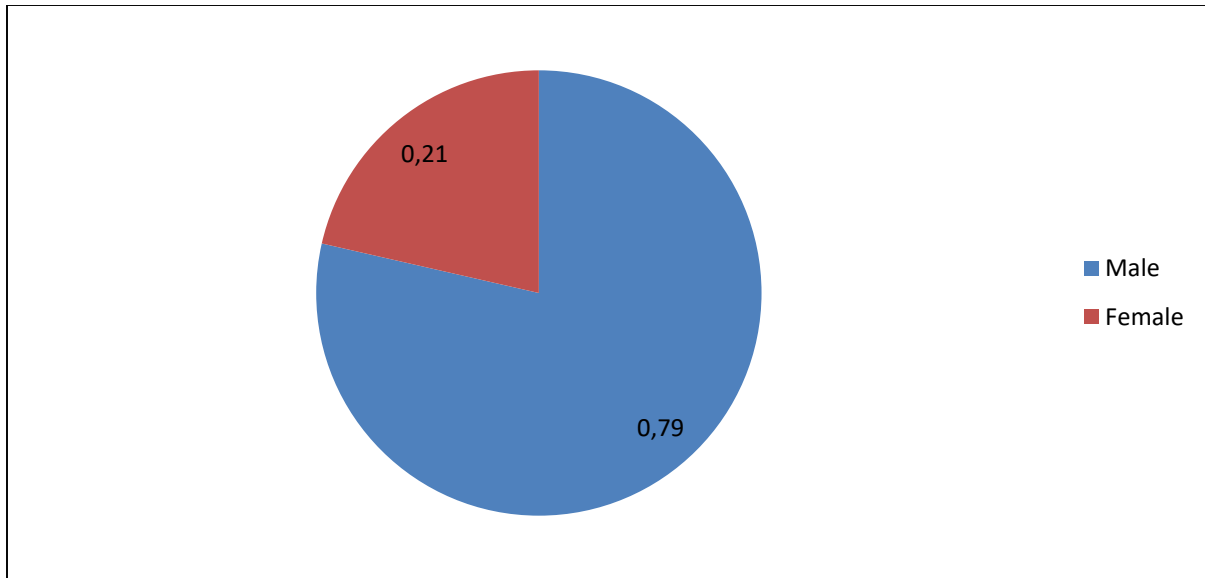


Figure 4.2: NNT demographic - sex

The NNT demographic per department is indicated below in Figure 4.3. The Operations department makes up 48% of the NNT and is hence the largest department. The Security department is the second largest department making up 14% of the NNT. The Maintenance, SHE and Projects departments make up respectively 12%, 10%, and 7% of the NNT. The Administration and Oil Movements departments are the smallest departments within the NNT.

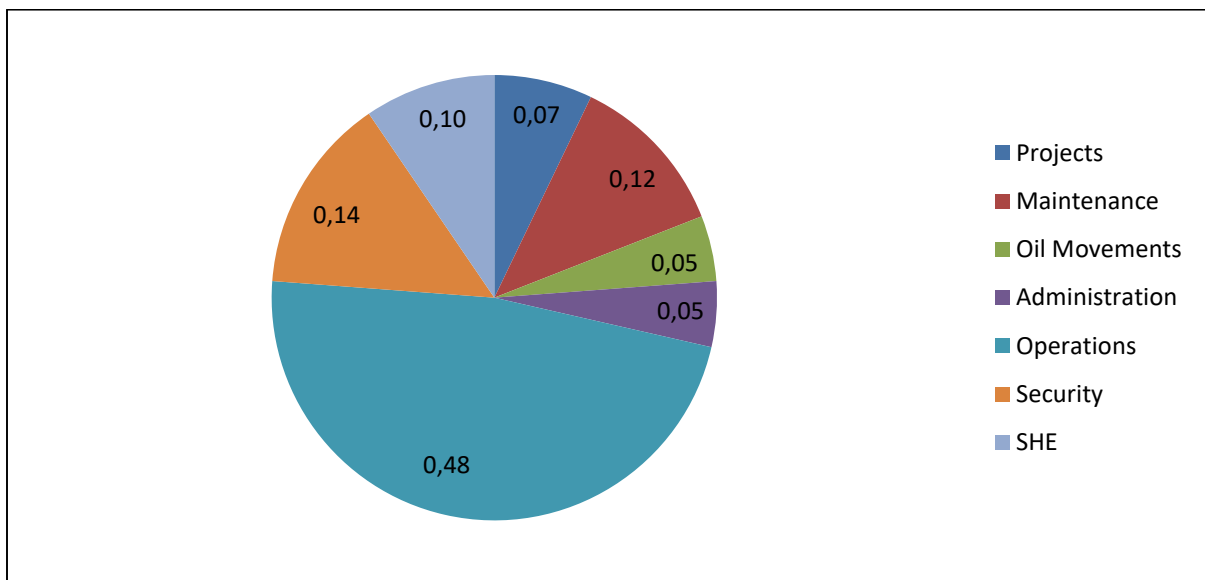


Figure 4.3: NNT demographic - departments

The NNT demographic per age group as indicated by figure 4.4 shows that 52% of the NNT are between the ages of 30 and 39, 19% are between the ages of 20 and 29, 17% are between the ages of 40 and 49. The remainder of the NNT are between the ages of 50 and 59 and 40 and 49. This indicates a mix of experience from the older employees and a hunger for experience from the younger employees.

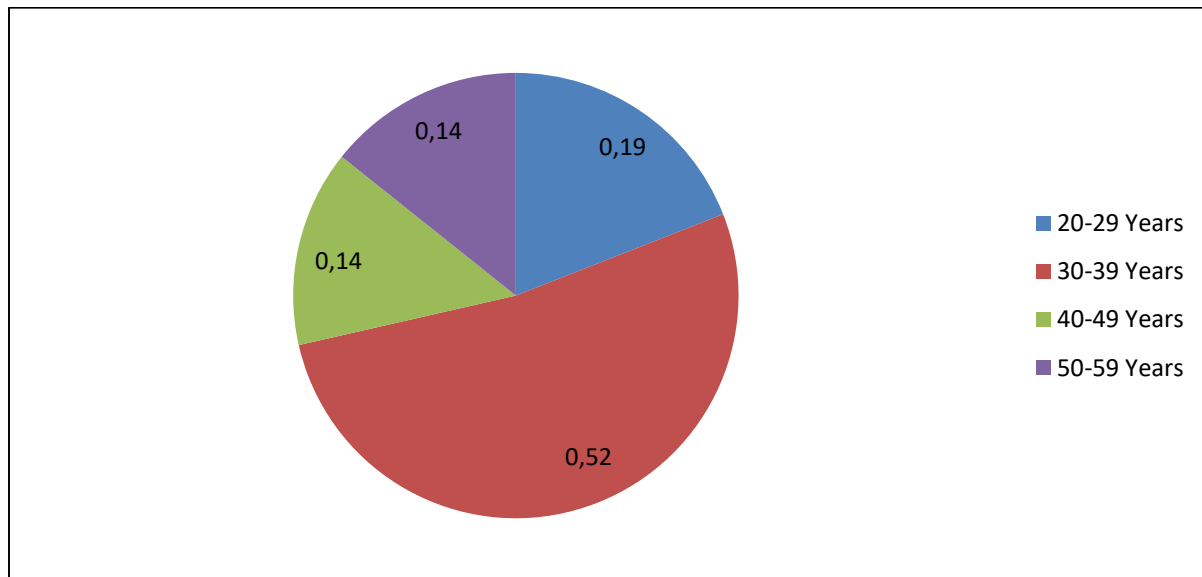


Figure 4.4: NNT demographic – age groups

The Operations department amounts for 48% of the NNT. The NNT members are mostly over the age of thirty (81%).

4.2.2 The NMT Demographics

The NMT demographic per race is indicated in Figure 4.5. The NMT constitutes of 60 % Indian managers and the remaining are White managers. This demographic is not in line with the demographics of the population located in the vicinity of the Durban South region of KwaZulu Natal (Anon, 2011). This also indicates the lack of diversity in the NMT.

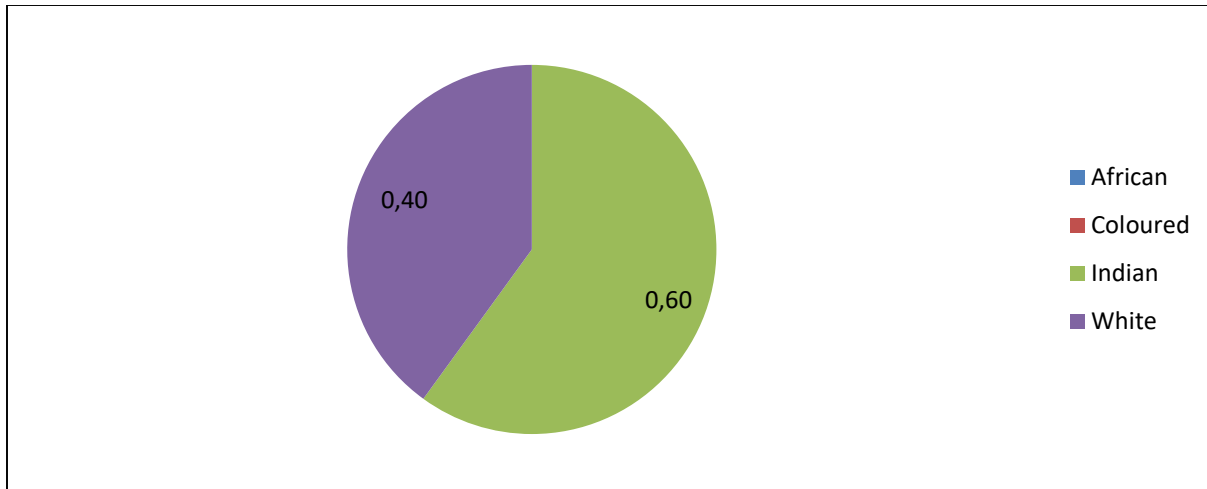


Figure 4.5 NMT demographic - race

The NMT constitutes of only male managers. The lack of female managers is apparent and does not correspond with the demographics of the region although the petrochemical industry has been considered a male dominated industry (Klein, 2016). The NMT demographic per department is indicated in Figure 4.6. The NMT constitutes of managers in the Operations, Maintenance, Security, SHE and Oil Movements departments.

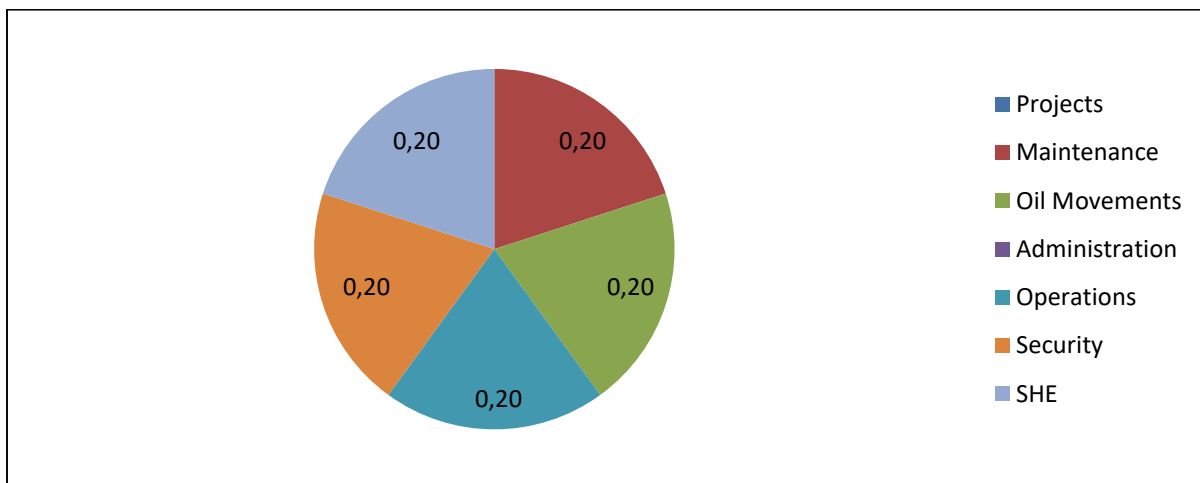


Figure 4.6 NMT – departments

The NMT demographic per age group is indicated in Figure 4.7. The NMT constitutes of 60 % of the managers within the 50 and 59 age category and the remaining managers are within the 40 and 49 age category.

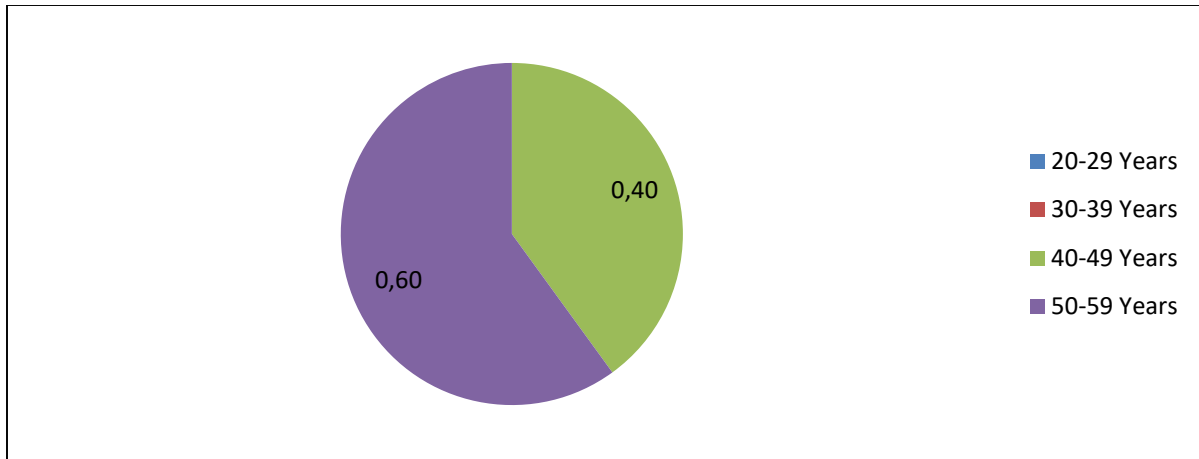


Figure 4.7 NMT demographic - age

The administration and projects departments do not have managers (Vacancies not filled).

The NMT members are all above the age of forty.

4.3 Survey Analysis and Discussion

4.3.1 The Natcos Team Development Stage and Team Attributes

According to Tuckman's model (Robbins, Judge, Odendaal and Roodt, 2009), there are four stages of team development, namely:

- Forming
- Storming
- Norming
- Performing

In order to determine the stage of development in terms of Tuckman's model, the team traits were aligned and compared to the stage which best fit the survey outcomes. Eight questions in the survey covered the team development phase.

The NNT Development Stage

Figure 4.8 illustrates the NNT feedback as per the survey results. The NNT perception that the team members actively look for new ways to improve the way they do things is 74%. The NNT perception that the team members make a serious effort to figure out problems is 71%. The NNT perception that they can discuss within the team what works and what doesn't is 66%. The NNT perception that the team members are encouraged to share ideas is 64%. The NNT perception that they can trust the other team members to do their jobs well is 62%. The NNT perception the team members opinions are valued by the rest of the team is 55%. The NNT perception that the team members get into arguments and conflicts during discussions is 47%, whilst 43% of the NNT believe that the other team members enjoy their work.

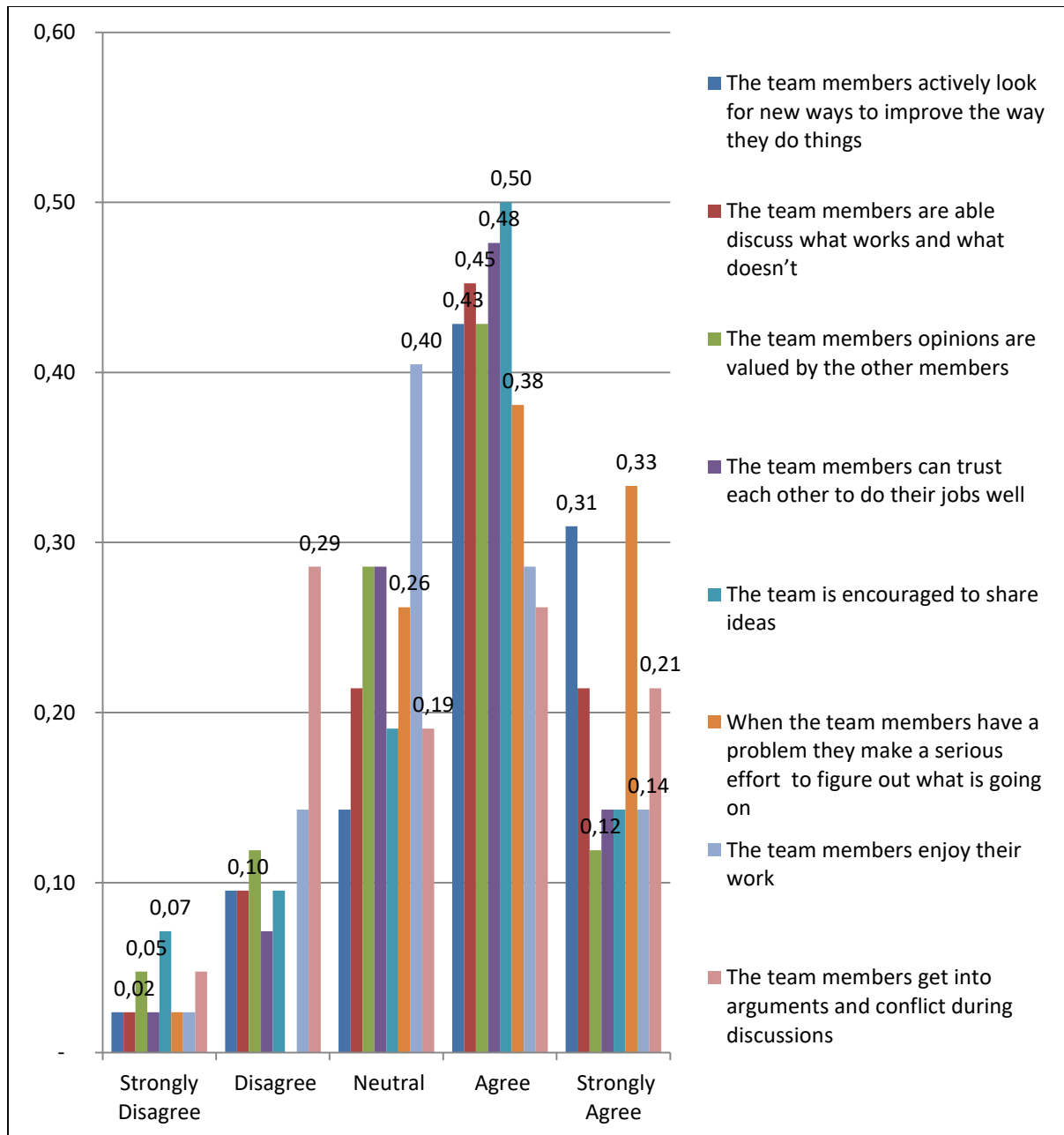


Figure 4.8: NNT development stage

The NMT Development Stage

Figure 4.9 illustrates the NMT feedback as per the survey results. The NMT perception that the team members actively look for new ways to improve the way they do things is 100%. The NMT perception that they can discuss within the team what works and what doesn't is 80%.

The NMT perception that the team values their opinions and that the team members make a serious effort to figure out problems is 60%.

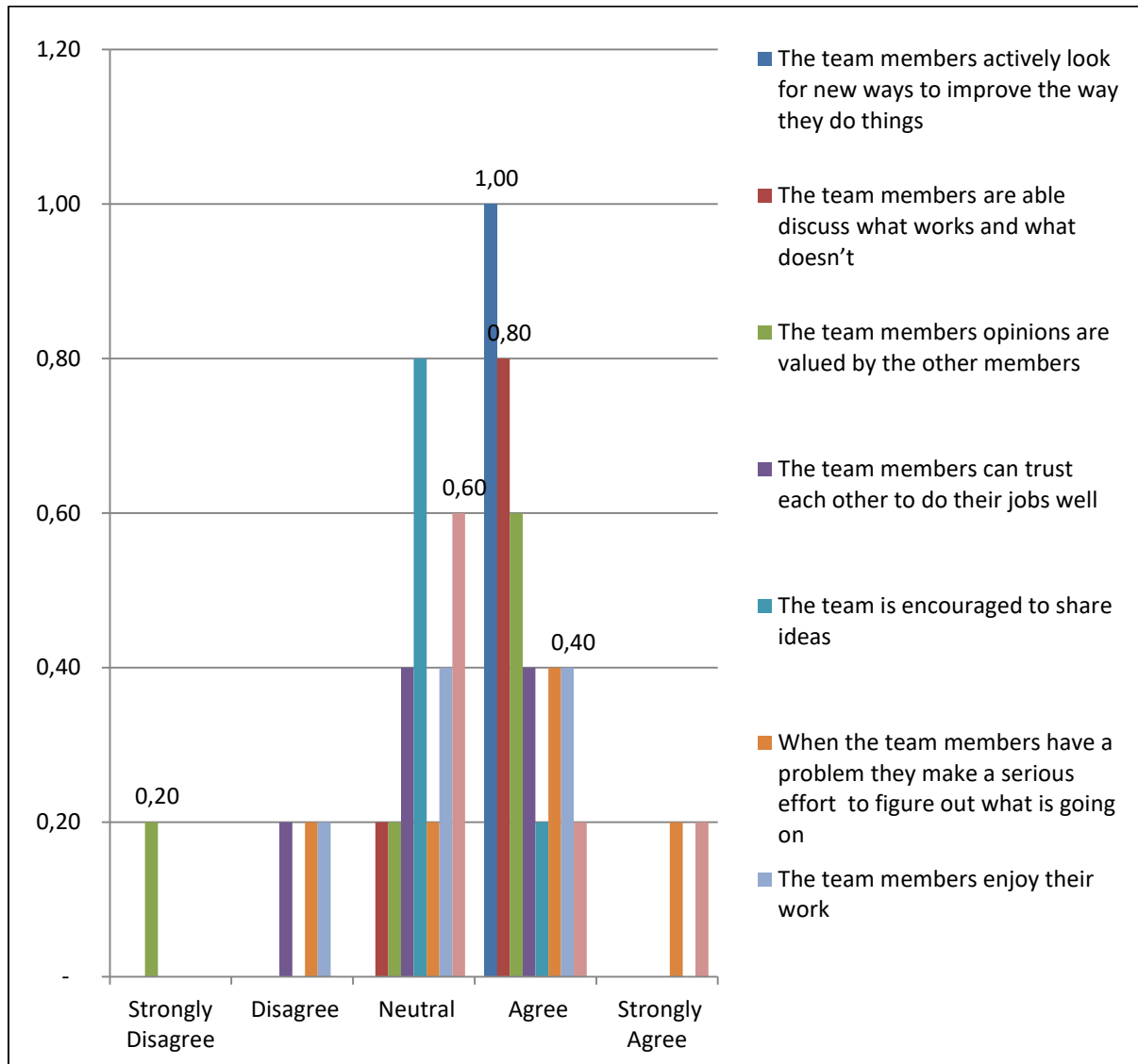


Figure 4.9: NMT development stage

The NMT perception that:

- the team members get into conflict and arguments during discussions
- they can trust the other team members to do their jobs well
- the team members enjoy their work,

is 40%.

The NMT perception that the team members are encouraged to share ideas is 20%.

Table 4.1 shows the comparative group statistics for the NNT and NMT. As can be seen there is no significant differences in the mean for the team development phase as shown by the combined line in the table 4.1 and the rest of the team attributes listed accordingly. This is further accentuated by the results shown in table 4.2.

Group Statistics					
	Job Category	N	Mean	Std. Deviation	Std. Error Mean
Combined	Non Management	42	28.9762	5.28453	.81542
	Management	5	27.8000	3.34664	1.49666
Communication	Non Management	42	7.1667	1.93702	.29889
	Management	5	6.4000	1.67332	.74833
Clear goals and objectives	Non Management	42	7.6667	1.67720	.25880
	Management	5	7.4000	.89443	.40000
Resources	Non Management	42	7.7381	1.93881	.29917
	Management	5	8.0000	1.22474	.54772
Roles and responsibilities	Non Management	42	11.2619	1.98850	.30683
	Management	5	11.4000	1.94936	.87178
Organisational Change	Non Management	42	17.1905	2.74296	.42325
	Management	5	16.6000	.89443	.40000
Leadership motivation and support	Non Management	42	7.6190	1.88644	.29108
	Management	5	7.2000	1.64317	.73485
Team culture	Non Management	42	14.7619	3.13757	.48414
	Management	5	13.4000	1.67332	.74833
Performance assessment	Non Management	42	7.6667	1.90847	.29448
	Management	5	6.2000	.83666	.37417

Table 4.1: Group statistics for the Natcos team

Table 4.2 shows the independent sample tests for the Natcos team. From the table it can be seen that the results obtained survey show that there is very little difference between the responses from the NMT and NNT. The only response whereby there is a difference in the response between the 2 teams is the performance assessment team attribute where the significant difference is 0.011 (which is less than 0.05). Thus it can be concluded that the NMT and NNT are in the same team development phase and have identical team attributes.

Independent Samples Test											
		Levene's Test for Equality of Variances			t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
Combined	Equal variances assumed	1.348	.252	.484	45	.631	1.17619	2.43257	-3.72326	6.07564	
	Equal variances not assumed			.690	6.670	.513	1.17619	1.70438	-2.89483	5.24721	
	Equal variances assumed	.201	.656	.846	45	.402	.76667	.90598	-1.05807	2.59141	
Communication	Equal variances not assumed			.951	5.365	.382	.76667	.80581	-1.26310	2.79643	
	Equal variances assumed	1.070	.307	.347	45	.730	.26667	.76781	-1.27978	1.81311	
	Equal variances not assumed			.560	7.914	.591	.26667	.47642	-.83403	1.36737	
Resources	Equal variances assumed	1.519	.224	-.293	45	.770	-.26190	.89239	-2.05927	1.53546	
	Equal variances not assumed			-.420	6.685	.688	-.26190	.62410	-1.75190	1.22809	
	Equal variances assumed	.001	.973	-.147	45	.884	-.13810	.93910	-2.02953	1.75334	
Roles and responsibilities	Equal variances not assumed			-.149	5.045	.887	-.13810	.92420	-2.50749	2.23130	
	Equal variances assumed	2.877	.097	.474	45	.638	.59048	1.24504	-1.91717	3.09812	
	Equal variances not assumed			1.014	16.013	.326	.59048	.58236	-.64398	1.82494	
Organisational Change	Equal variances assumed	.362	.550	.475	45	.637	.41905	.88282	-1.35905	2.19715	
	Equal variances not assumed			.530	5.341	.617	.41905	.79040	-1.57434	2.41244	
	Equal variances assumed	1.851	.180	.948	45	.348	1.36190	1.43636	-1.53107	4.25488	
Team culture	Equal variances not assumed			1.528	7.914	.165	1.36190	.89129	-.69730	3.42111	
	Equal variances assumed	2.401	.128	1.686	45	.099	1.46667	.86985	-.28530	3.21864	
	Equal variances not assumed			3.080	10.112	.011	1.46667	.47615	.40732	2.52601	

Table 4.2: Independent samples test for the Natcos team

Table 4.3 shows the statistics for the Natcos team development phase. The means for the 8 questions relating to team development are shown. The means range from values of 3.34 to 3.96. 3 out of the 8 questions are close the agreeable mean of 4. In order to determine the stage of development in terms of Tuckman's model, the team traits were aligned and compared to the stage which best fit the survey outcomes.

The typical features of the norming phase are listed below (Matveev, 2016):

- Establishment of values and norms
- Openness with group
- Group cohesion
- Willingness to experiment
- Sensitivity to the opinions and feelings of others
- Emphasis on individual rather than group performance

The typical features of the storming phase are listed below (Matveev, 2016):

- Alliance, group formation and polarisation
- Sharp fluctuations in relationships
- Respect for certain members, but bitterness towards others
- An awareness of one's own shortcomings, but a focus on symptoms rather than the real problem
- Ulterior motives

As can be seen from the table below, the team correlates with both the storming and norming phases. The Natcos team is therefore in the storming phase of its group development.

• Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
The team members actively look for new ways to improve the way they do things	47	1	5	3.91	.974
The team members are able to discuss what works and what doesn't	47	1	5	3.74	.943
The team members' opinions are valued by the other members	47	1	5	3.43	1.037
The team members can trust each other to do their jobs well	47	1	5	3.60	.901
The team is encouraged to share ideas	47	1	5	3.51	1.040
When the team members have a problem they make a serious effort to figure out what is going on	47	1	5	3.96	.932
The team members enjoy their work	47	1	5	3.36	.965
The team members get into arguments and conflict during discussions	47	1	5	3.34	1.203
Valid N (listwise)	47				

Table 4.3: Descriptive statistics: Natcos team development phase

4.3.2 The Natcos Team Attributes

The following are team attributes that were analysed:

- Communication
- Clear goals and objectives
- Availability of resources
- Roles and objectives
- Organisational change
- Leadership motivation and support
- Culture

- Performance assessment

4.3.2.1 The Natcos Team Attribute - Communication

Figure 4.10 illustrates the NNT's team attribute relating to communication. The NNT members perception that there is effective communication at all levels at Natcos is 55%. The NNT members perception that there is frequent and good communication at all levels in the team is 61%.

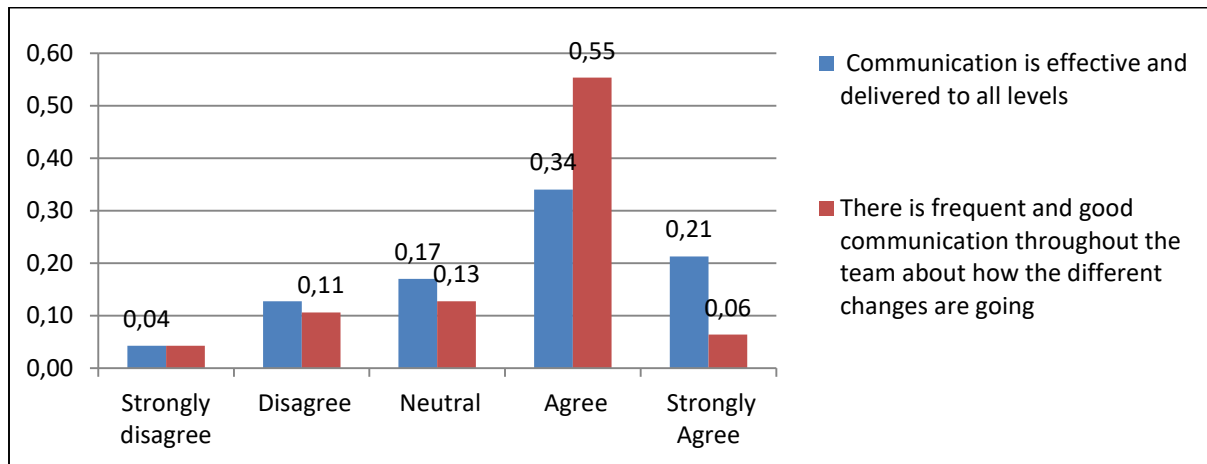


Figure 4.10: NNT attributes - communication

Figure 4.18 illustrates the NMT's team attribute relating to communication. The NMT members perception that there is effective communication at all levels as well as frequent and good communication through-out the team is 40%.

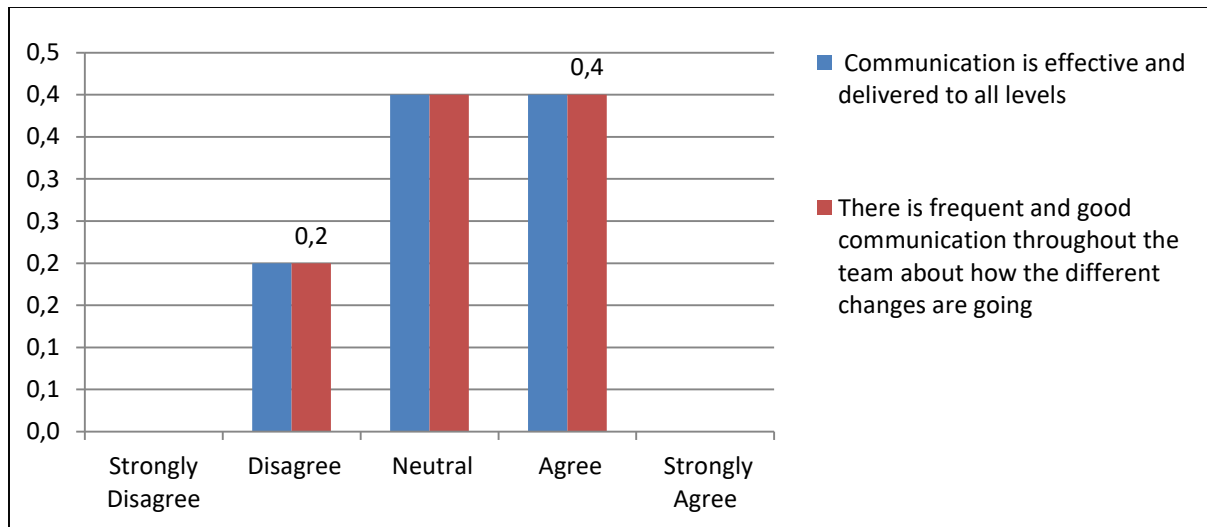


Figure 4.11: NMT attributes – communication

Table 4.4 shows the statistics for the communication team attribute. The mean is less than the value of 4 (agreement) for both the questions. The Natcos team perception regarding communication is that there is a lack of communication in the organisation. This lack of communication has a direct impact on the effectiveness and efficiencies of the team. This also could lead to misalignment with the organisational objectives and goals (Hill and Bartol, 2016).

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Communication is effective and delivered to all levels	47	1	5	3.57	1.118
There is frequent and good communication throughout the team about how the different changes are going	47	1	5	3.51	.953
Valid N (listwise)	47				

Table 4.4: Descriptive statistics: Natcos team attribute - communication

4.3.2.2 The Natcos Team Attribute – Clear Goals and Objectives

Figure 4.11 illustrates the NNT's team attribute relating to clear team goals and objectives.

The NNT members perception that they are able to act on the team objectives is 61%, whilst 55% of the NNT members perceive that the work expectations are clear.

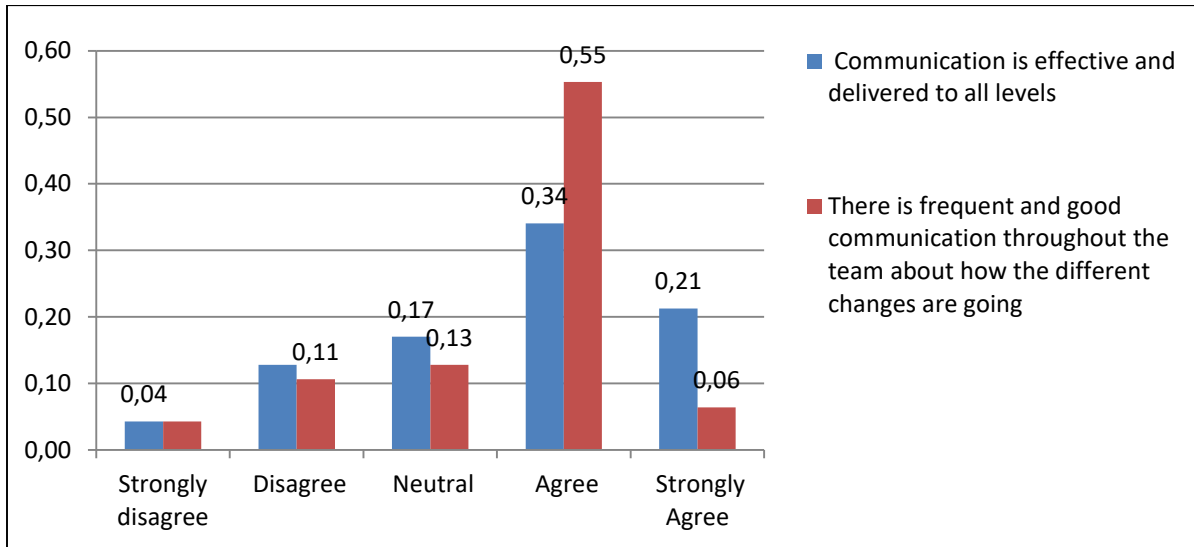


Figure 4.12: NNT attributes – clear goals and objectives

Figure 4.19 the NMT's team attribute relating to clear team goals and objectives. The NMT members perception that the team members are able to act on team objectives and that work expectations are clear is 60%.

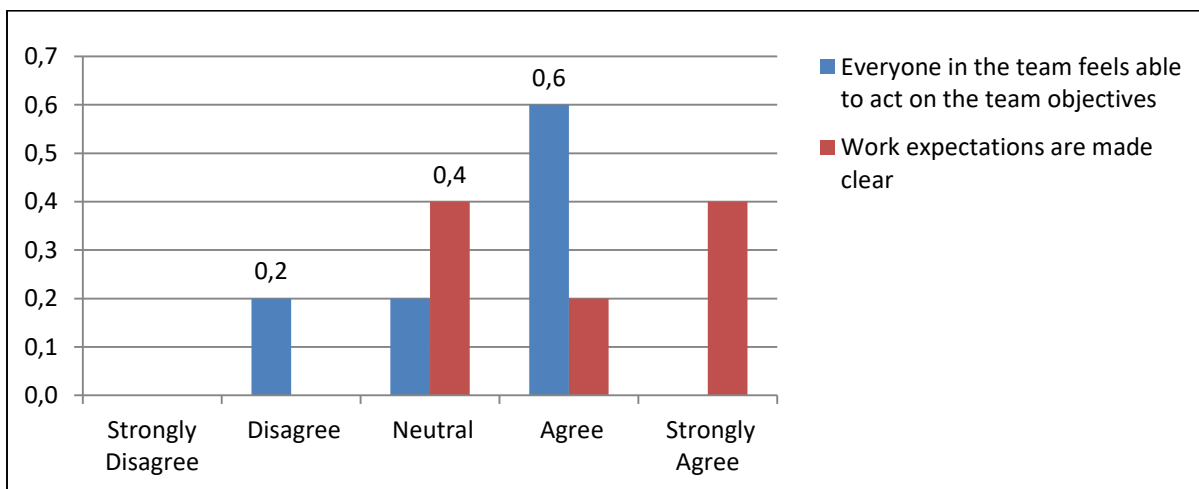


Figure 4.13: NMT attributes – clear goals and objectives

Table 4.5 shows the statistics for the clear goals and objectives team attribute. The mean is close to the value of 4 (agreement) for both the questions. The Natcos team have clear work

expectations and the goals are such that they are clear and the team is able to act on these goals. This also indicates that there is alignment with the organisations objectives and goals and Natcos's objectives and goals (Evers and Berdrow, 2016).

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Everyone in the team feels able to act on the team objectives	47	1	5	3.70	.907
Work expectations are made clear	47	1	5	3.94	.942
Valid N (listwise)	47				

Table 4.5: Descriptive statistics: Natcos team attribute - clear goals and objectives

4.3.2.3 The Natcos Team Attribute – Resources

Figure 4.12 illustrates the NNT's team attribute relating to resource availability. The NNT members perception they have enough information to execute their work is 68%, whilst 61% of the NNT members perceive they have the necessary tools to effectively and efficiently do their work.

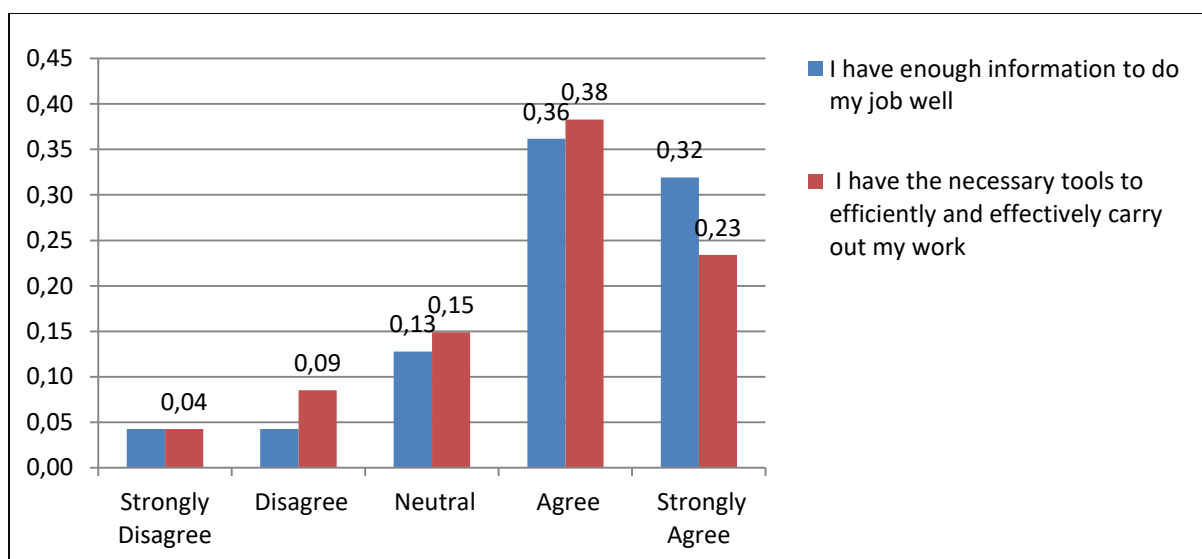


Figure 4.14: NNT attributes – resources

Figure 4.20 the NMT's team attribute relating to resource availability. The NMT members perception that the team members feel they have enough information and necessary tools to effectively and efficiently to their work is 80%.

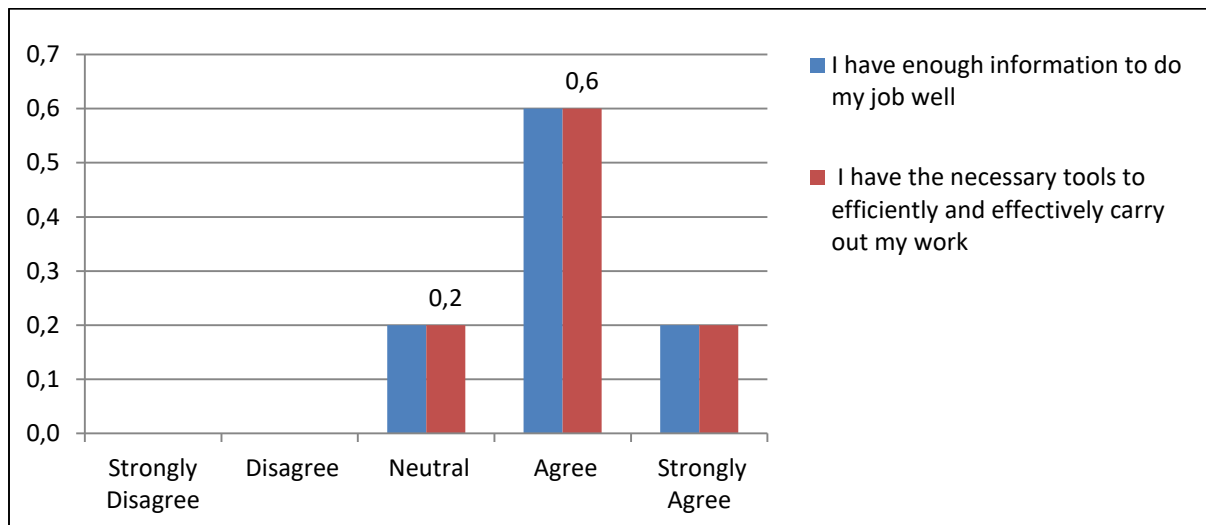


Figure 4.15: NMT attributes – resources

Table 4.6 shows the statistics for the resources team attribute. The mean is close to the value of 4 (agreement) for both the questions. The Natcos team have resources to execute the objectives and goals of the organisation. In support of this; there is adequate information for the team on how to do their job as well as the necessary equipment to execute Natcos's objectives and goals (Thompson, Buch and Kurvaas, 2017).

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I have enough information to do my job well	47	1	5	3.98	1.032
I have the necessary tools to efficiently and effectively carry out my work	47	1	5	3.79	1.062
Valid N (listwise)	47				

Table 4.6: Descriptive statistics: Natcos team attribute - resources

4.3.2.4 The Natcos Team Attribute – Roles and Responsibilities

Figure 4.13 illustrates the NNT's team attribute relating to roles and responsibilities. The NNT members perceive that they have a clear understanding of their roles is 60, whilst 45% of the NNT members perceive that the job and their responsibilities are stressful. The NNT members perception that they are held accountable for the decisions they make is 75%.

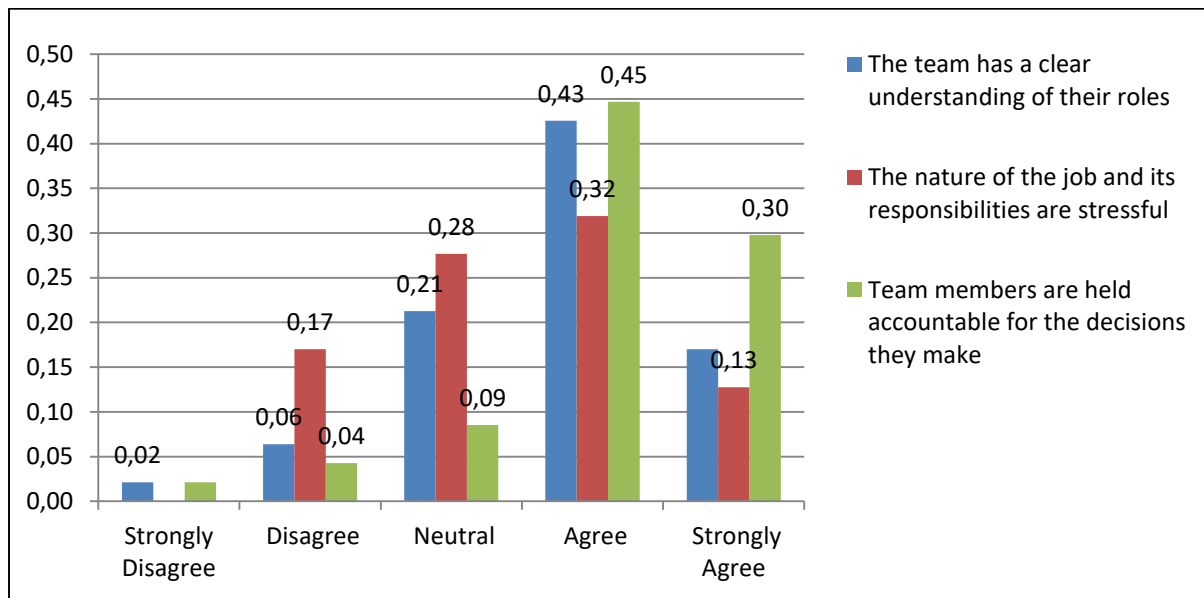


Figure 4.16: NNT attributes – roles and responsibilities

Figure 4.21 the NMT's team attribute relating to roles and responsibilities. The NMT members perception that they have a clear understanding of their roles and the stresses related to their responsibilities is 80 %, whilst 100% of the NMT members perceive that they are held accountable for the decisions they make.

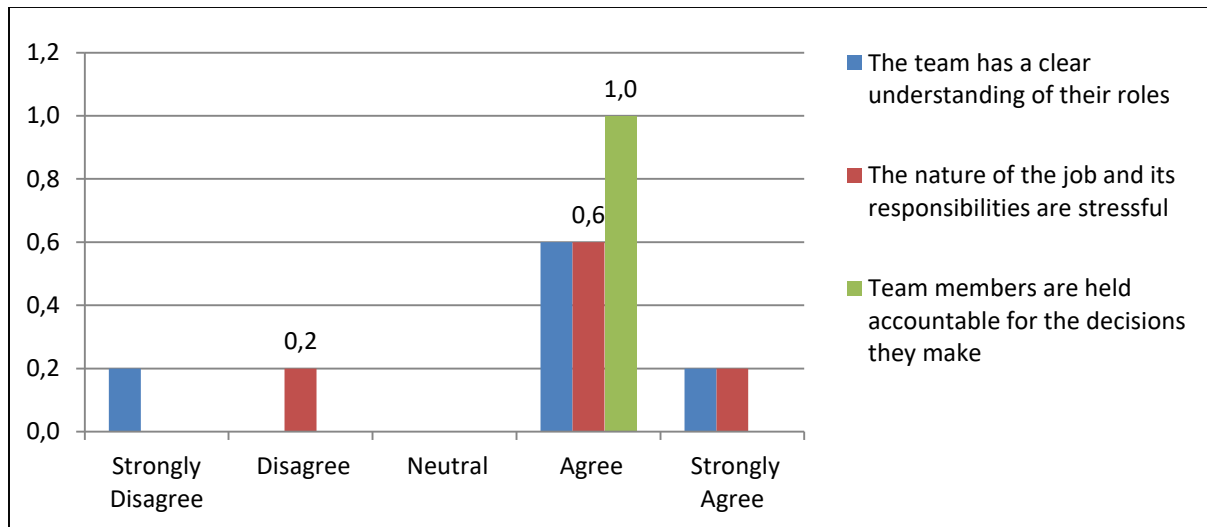


Figure 4.17: NMT attributes – roles and responsibilities

Table 4.7 shows the statistics for the roles and responsibilities team attribute. The mean is close to the value of 4 (agreement) for 2 out of the 3 questions. The Natcos team members have a clear understanding of their roles and are also held accountable for the decisions they make. Due to the nature of the job, the team members experience stress. This could result in poor effectiveness due to mistakes being made whilst performing tasks and making decisions as a result of the stress experienced. At this level, if there are mistakes, the consequences are dire (Gopee and Galloway, 2017).

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Team members are held accountable for the decisions they make	47	1	5	4.06	.870
The nature of the job and its responsibilities are stressful	47	2	5	3.49	.975
The team has a clear understanding of their roles	47	1	5	3.72	.994
Valid N (listwise)	47				

Table 4.7: Descriptive statistics: Natcos team attribute – roles and responsibilities

4.3.2.5 The Natcos Team Attribute – Organisational Changes

Figure 4.14 illustrates the NNT's team attribute relating to organisational change as follows:

- The NNT members perception that they are personally committed to the changes happening within the company is 76%
- The NNT members perception that the team allow setbacks and problems to stop change efforts is 46%
- The NNT members perception that a change is permanent once implemented is 43%
- The NNT members perception that changes take too long to be implemented is 38%
- The NNT members perception that the team members take time to reflect how a change was implemented is 43%

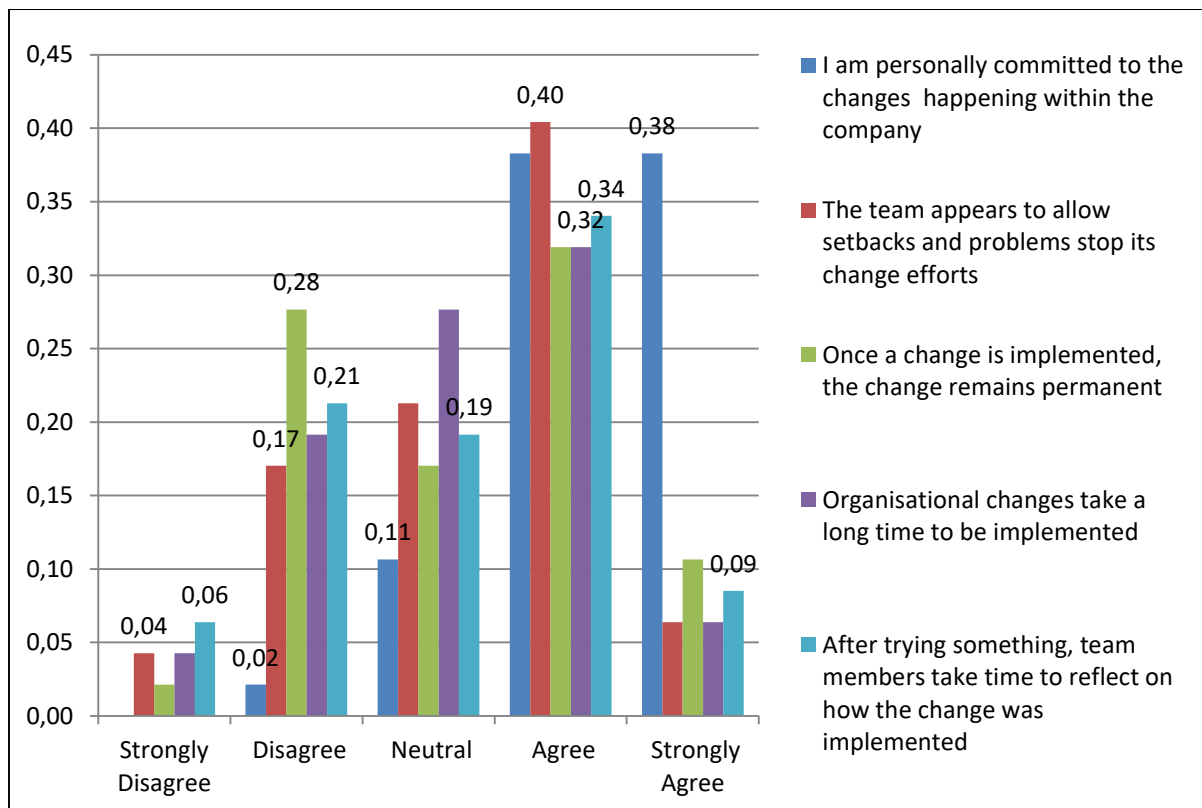


Figure 4.18: NNT attributes – organisational change

Figure 4.22 the NMT's team attribute relating to organisational change is as follows:

- The NMT members perception that they are personally committed to the changes happening within the company is 80%
- The NMT members perception that the team allow setbacks and problems to stop change efforts is 0%

- The NMT members perception that change is permanent once implemented is 40%
- The NMT members perception that changes take too long to be implemented is 40%
- The NMT members perception that the team members take time to reflect how the change was implemented is 20%

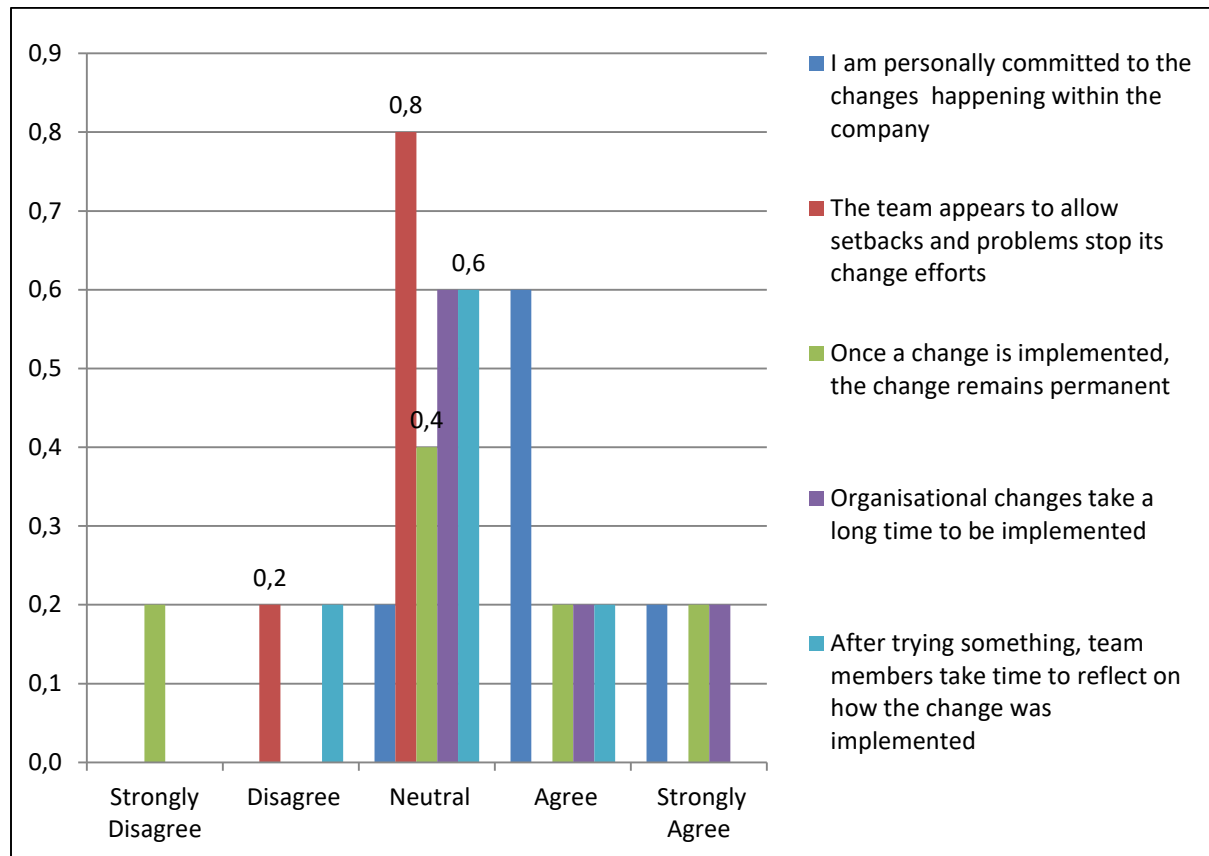


Figure 4.19: NMT attributes – organisational change

Table 4.8 shows the statistics for the organisational change team attribute. The mean is less than the value of 4 (agreement) for 4 out of the 5 questions. The Natcos team members are committed to the organisational changes. However any setback or problem experienced by the team prevents the execution of the change. Organisational change is not consistently applied and therefore the change is not permanent. This does lead to confusion amongst the team members as to “what to do” and “what not to do” (Orridge, 2017).

Organisational change is not implemented timeously and hence when it is implemented; Natcos is lagging within the organisation. The Natcos team do not assess how the change

implementation was executed and hence cannot evaluate if the change was successful or not. Organisational change implementation is critical in order to align with organisational goals and objectives. If change is not accepted at the management level, then change implementation would definitely not occur (Orridge, 2017).

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
I am personally committed to the changes happening within the company	47	2	5	4.23	.758
The team appears to allow setbacks and problems stop its change efforts	47	1	5	3.26	.988
Once a change is implemented, the change remains permanent	47	1	5	3.23	1.127
Organisational changes take a long time to be implemented	47	1	5	3.23	1.005
After trying something, team members take time to reflect on how the change was implemented	47	1	5	3.17	1.090
Valid N (listwise)	47				

Table 4.8: Descriptive statistics: Natcos team attribute – organisational change

4.3.2.6 The Natcos Team Attribute – Leadership Motivation and Support

Figure 4.15 illustrates the NNT's team attribute relating to leadership motivation and support. The NNT members perception that the leadership is availability for consultation on problems is 64%, whilst 57% of the NNT members perceive that the leadership creates an environment conducive for work execution.

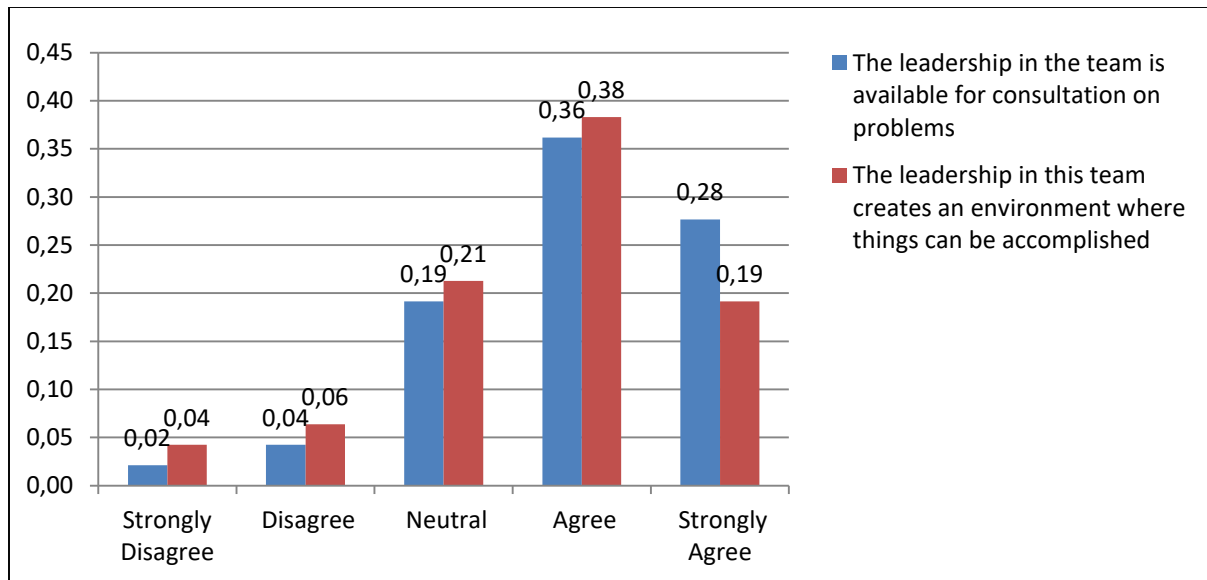


Figure 4.20: NNT attributes – leadership motivation and support

Figure 4.23 illustrates the NMT's team attribute relating to leadership motivation and support. The NMT members perception that the leadership is available for consultation is 80%, whilst 20% of the NMT members perceive that the leadership creates an environment conducive for work execution.

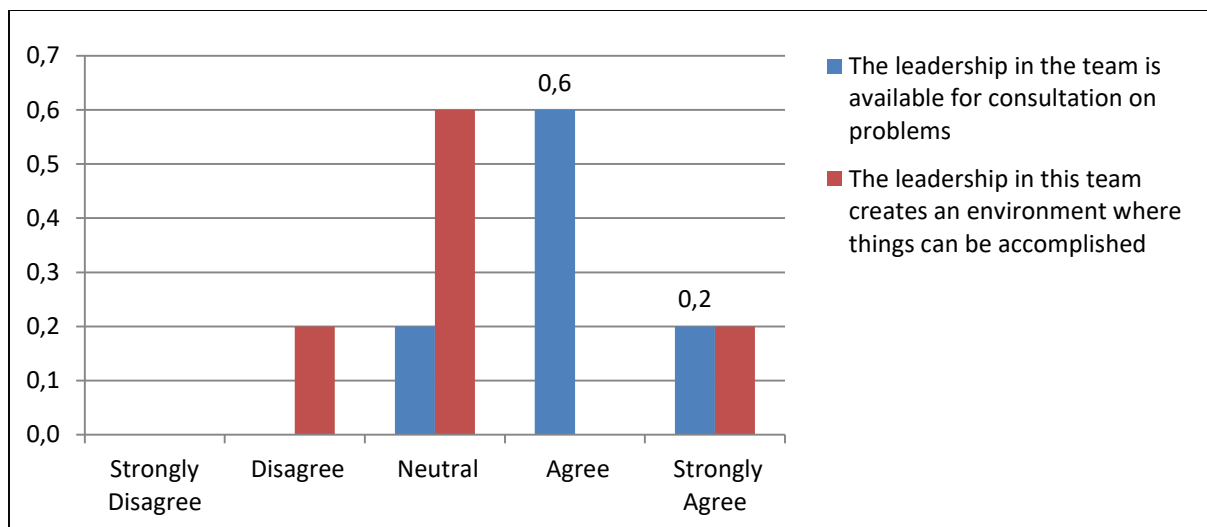


Figure 4.21: NMT attributes – leadership motivation and support

Table 4.9 shows the statistics for the leadership support and motivation team attribute. The mean is close to the value of 4 (agreement) for 1 out of the 2 questions. The Natcos team leaders

are available for consultation with team members in order to clear out objectives and goals. However, the environment in which the team operates is not conducive for achieving their objectives and goals. The team is therefore not motivated to achieve the Natcos objectives and goals (Northouse, 2016).

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
The leadership in the team is available for consultation on problems	47	1	5	3.94	.942
The leadership in this team creates an environment where things can be accomplished	47	1	5	3.64	1.051
Valid N (listwise)	47				

Table 4.9: Descriptive statistics: Natcos team attribute – leadership motivation and support

4.3.2.7 The Natcos Team Attribute – Team Culture

Figure 4.16 illustrates the NNT's team attribute relating to team culture as follows:

- The NNT members perception that the team is flexible is 59%
- The NNT members perception that the team culture supports the business requirement is 58%
- The NNT members perception that the team receive frequent and helpful feedback regarding their performance is 55%
- The NNT members perception that the team openly discuss their errors is 53%

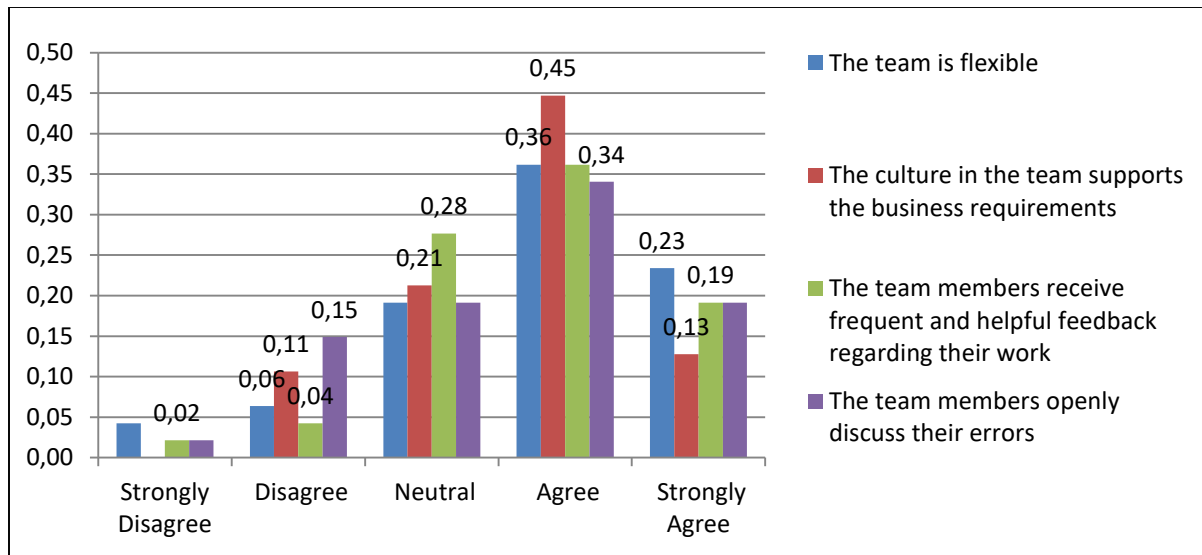


Figure 4.22: NNT attributes – team culture

Figure 4.24 illustrates the NMT's team attribute relating to team culture is as follows:

- The NMT members perception that the team is flexible is 40%
- The NMT members perception that the team culture supports the business requirement is 60%
- The NMT members perception that the team receive frequent and helpful feedback regarding their performance is 80%
- The NMT members perception that the team openly discuss their errors is 20%

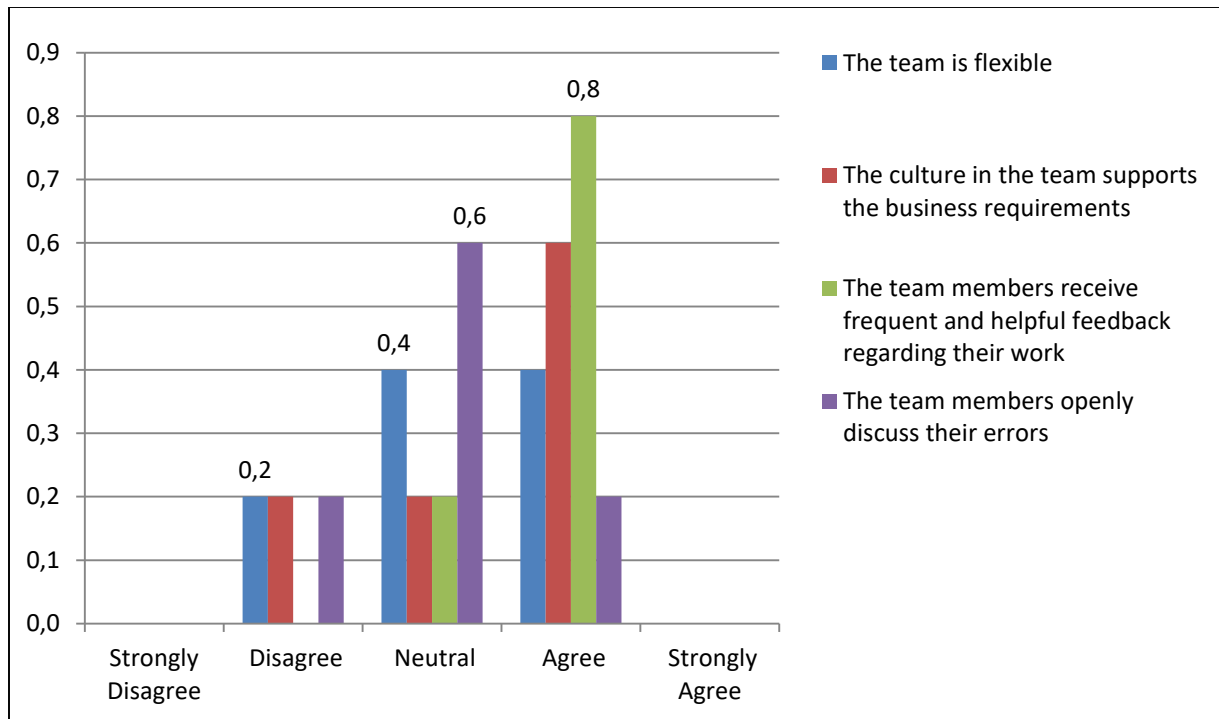


Figure 4.23: NMT attributes – team culture

Table 4.10 shows the statistics for the team culture team attribute. The mean is close to the value of 4 (agreement) for 2 out of the 4 questions. The Natcos team is flexible and support the organisational requirements. The team is given feedback regarding their performance. The team therefore understand their impact and role in the organisations objectives and goals. However, the team do not openly discuss their errors. There is a lack of trust amongst team members. This does impact on the efficiency and effectiveness of the team and hence the efficiency and effectiveness of Natcos (Mohanty and Pattanayak, 2016).

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
The team is flexible	47	1	5	3.70	1.061
The culture in the team supports the business requirements	47	2	5	3.64	.870
The team members receive frequent and helpful feedback regarding their work	47	1	5	3.74	.896
The team members openly discuss their errors	47	1	5	3.53	1.060
Valid N (listwise)	47				

Table 4.10: Descriptive statistics: Natcos team attribute – team culture

4.3.2.7 The Natcos Team Attribute – Performance Assessment

Figure 4.17 illustrates the NNT's team attribute relating to performance assessment. The NNT members perception that the team learns from their mistakes is 68%, whilst 59% of the NNT members perceive that the team regularly take time to reflect on how they work.

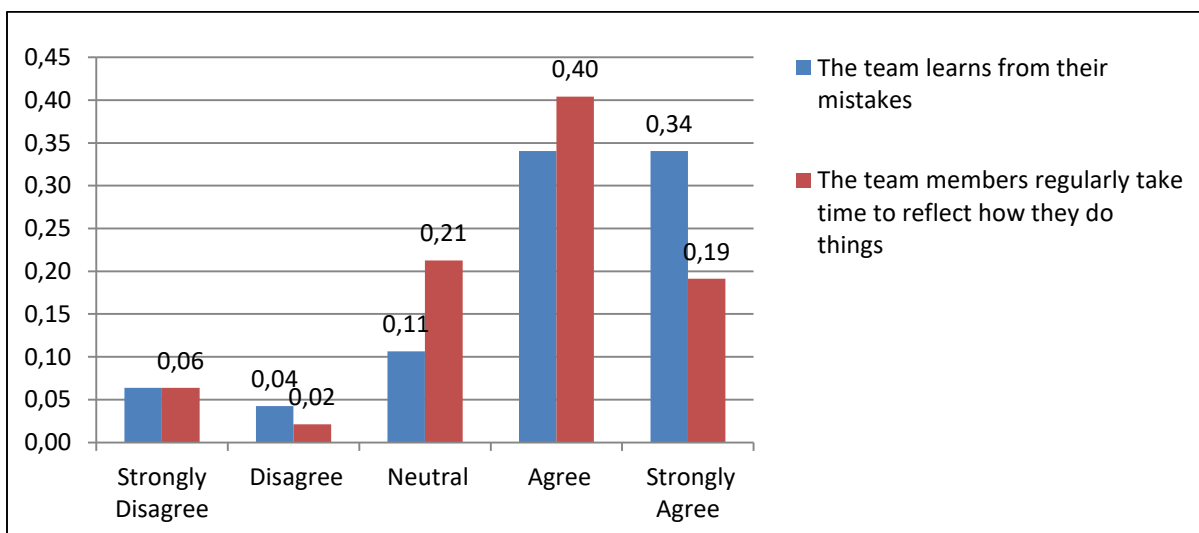


Figure 4.24: NNT attributes – performance assessment

Figure 4.25 illustrates the NMT's team attribute relating to performance assessment. The NMT members perception that the team learns from their mistakes is 0%, whilst 40% of the NMT members perceive that the team regularly take time to reflect on how they work

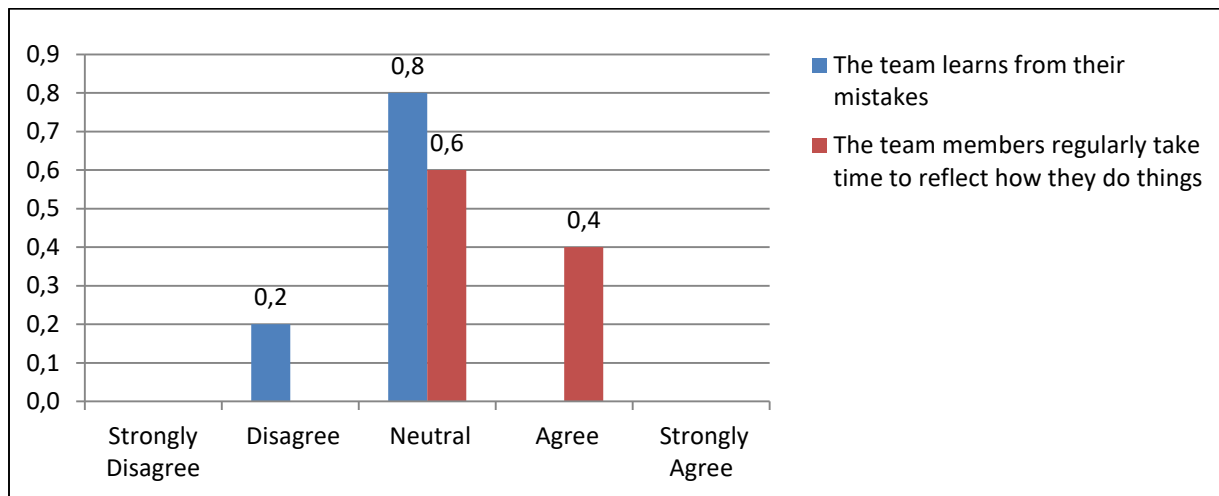


Figure 4.25: NMT attributes – performance assessment

Table 4.11 shows the statistics for the performance assessment team attribute. The mean is close to the value of 4 (agreement) for 1 out of the 2 questions. The Natcos team learns from their mistakes. However, the team do not regularly take the time to reflect on how the team members perform. This indicates that the team performances are not assessed and hence deficiencies are not removed nor are effectiveness and efficiencies improved upon. One of the key requirements for organisational success is monitoring and assessment of performance in order to keep up with the ever changing business environment in order to remove deficiencies and improve effectiveness and efficiencies (Hough, Thompson, Strickland and Gamble, 2011).

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
The team learns from their mistakes	47	1	5	3.83	1.167
The team members regularly take time to reflect how they do things	47	1	5	3.68	1.024
Valid N (listwise)	47				

Table 4.11: Descriptive statistics: Natcos team attribute – performance assessment

4.4 Summary

Chapter four shows the survey results for both the NMT and the NNT independently and combined. These results were broken down into demographics, team development status and teamwork characteristics.

Chapter five concludes with the gap analysis between the literature review and the survey results as well as propositioning of recommendations that improves the functioning of the NNT.

Chapter 5: Conclusions and Recommendations

5.1 Introduction

The petrochemical sector in South Africa is regulated by government. The market for fuel is ever growing and hence product availability and supply at the lowest cost is a key requirement for all petrochemical companies in order to maximise profit and remain sustainable.

Natref is a key contributor to the economy within the petrochemical sector. Natcos is the supply leg for Natref. Hence Natcos has a critical role within the South African economy.

5.2 Study Objectives

The main research questions are aligned with the study objectives discussed in Chapter 1. The NNT and the NMT have been analysed independently to have a view on the perspectives of the managers and the employees that report to them. There have been significant similarities in the responses.

5.2.1 The Natcos Team Status

The survey results have revealed the current team status of the Natcos team. The survey revealed the following the Natcos team is in the storming phase of its team development and in order to be effective and efficient, the team must progress into the performing stage.

This means that the team must move first into the norming stage before it can move into the performing stage.

5.2.2 Gap Analysis

5.2.2.1 The Natcos Teams Development gaps

The Natcos team is in the storming phase as per the data ascertained. The following themes identified are the gaps that need to be closed in order to progress the team into the next phase of team development.

The Natcos team development gaps are as follows:

- The team members feel that their opinions are not valued within the team
- The team members get into arguments and conflicts during discussions
- The team members do not enjoy their work
- The management team members cannot trust each other to do their jobs well
- The management team members are not encouraged to share ideas

The recommendations from the study can therefore be focused on these gaps that will progress the Natcos team into the next phase of its development.

5.2.2.2 The Natcos Teams Attribute Gaps

In order to improve the effectiveness and efficiency of the team, the following team attribute gaps for the Natcos team should be closed:

- Communication
- Roles and responsibilities
- Organisational change
- Leadership motivation and support
- Team culture
- Performance assessment
- Diversity

The recommendations of the study hence can be focused on the bridging of the Natcos team gaps in order to improve the effectiveness and efficiency of the team.

5.3 Conclusion

The study has met the set objectives and the following can be concluded the following:

- The team attributes required for an effective and efficient team has been defined
- The Natcos team is in the storming phase of its team development
- The Natcos team attributes and the required gaps that must be closed in order for the team to become effective and efficient have been determined
- Recommendations have been discussed to assist with the closing of the Natcos team gaps

5.4 Study Recommendations

The study recommendations in line with the objectives set out are as follows:

5.4.1 Team Development Status

Following the outcomes in the gap analysis, the following are recommendations to help the teams move into the performing phase of team development.

The use of discretion is critical when compiling sub groups in order to prevent alliances, the forming of cliques and polarisation. The teams should focus on differences and prevent arguments. Opportunities must be created for the team to compete as a team in order to encourage and promote team building. This will help the team members trust in each other.

The organisations vision must be translated as a common vision to the team members so that the team pulls together in the same direction minimising conflict of interests. The team inputs must be used when making decisions on how things are done. The experience and knowledge of the team members are utilised thus making the team more effective and efficient. This also

sensitises the team members to each other's needs, promoting harmony and creating an environment conducive to working.

Once this has been achieved, the teams will be ready for the performing phase of team development. It is therefore imperative that the leadership focus on these areas to improve the efficiency and effectiveness of the team.

5.4.2 Team Attributes

The team attributes required for effective and efficient teams are missing in the Natcos teams. The recommendations listed below follow from the gap analysis outcomes.

Effective communication is a critical to the performance of the Natcos teams. The communication mediums must be established to ensure that the correct communication is communicated to the teams and that the teams have comprehended the communication content correctly. Focus is required in this particular area, since instructions, goals, objectives etc. have to be communicated to the teams. A communication strategy must be implemented so that communication is effective in the teams. This will clear any misunderstandings regarding instructions, goals, objectives etc. and improve teamwork and collaboration.

Defining roles and responsibilities for the Natcos teams is important so that the teams know their purpose in the organisation and how they fit in the activities required for the execution of the goals and objectives of the business. This allows the team to function interdependently as they understand their roles within the team as well as their team member roles. The job descriptions and performance contract for the team members must align and this must fit into the strategic vision of the organisation.

Organisation change is inevitable in the current global business environment. The organisation must be able to sustain growth and profitability. Therefore change management at Natcos is

critical in order to ensure that the organisational changes have been correctly implanted and sustained. There should be a strategy in place for the implementation of changes so that the team members buy into the change and support as best as they can. Involving the team members in the change making process will only benefit the organisation as their insights will help make the transition smoother.

Leadership motivation and support is essential in creating the energy required in the team to execute the business goals and objectives. The leadership style is important as this will determine how well the team execute their duties. Different organisations require different leadership styles in order to drive the organisation to succeed. The Natcos teams require a leadership style that is more situational. The teams' members are at varying maturity levels and hence require different leadership approaches. This approach will assist in the leader gaining trust in the team members and this will improve the team effectiveness.

The Natcos teams' culture is impacted by the leadership style and behaviour. In order to attain a high performance culture in the organisation the leadership style has to exude the required traits so that an effective, efficient robust culture is developed and sustained. The Natcos leadership must therefore identify, create and sustain a high performance culture.

The Natcos teams' performance must be assessed periodically to understand what works for the teams and what does not work. The period for the assessment can be determined by the leadership and the assessment requirements can be discussed by the team members. The assessments must be seen as an opportunity to move the business forward and not a session where the team members are criticised and made to feel negative. The leadership must ensure that the environment is conducive for positive contributions and set out rules for engaging in the performance assessment.

The management team does lack diversity. There is evidence of polarisation, sub groups forming during the analysis of the results. A diverse team will remove this phenomenon and improve

team collaboration. If the teamwork at the management team level is collaborative, this will automatically filter down to the lower level team members and hence harmonise the culture of Natcos into a high performance culture.

The objectives in this study have been realised and has shown the Natcos team development status, the team attributes and the areas required for improving the team effectiveness and hence the team efficiency.

5.5 Study Limitations

In order to assist future studies in this field, study limitations must be identified. The available literature of academic merit relating the effectiveness of teamwork in the petrochemical industry within KwaZulu Natal is limited. It has therefore been difficult to compare findings with other studies. The study was limited to the crude supply leg of Natref (Natcos) and hence do not represent the entire refinery or petrochemical industry in KwaZulu Natal. Due to the size of the Natcos team, different team members interact more frequently as opposed to a large scale operation in KwaZulu Natal, like Sapref or Engen and hence the teamwork experience maybe different when compared to the Natcos findings.

5.6 Recommendations for Further Research

The recommendations for further research originate from the study recommendations and limitations. This study has attempted to identify the effectiveness of teamwork within the petrochemical industry in KwaZulu Natal. No other studies that have addressed this issue to date. Despite the limitations of the study, the objectives set out where met.

The recommendations for further studies are as follows:

The petrochemical industry in KwaZulu Natal is larger than other parts of South Africa, since there are two refineries in the province. The refineries are situated next to each other and research into the effectiveness of teamwork in the petrochemical industry in KwaZulu Natal would be best suited to Sapref and Engen. Research comparisons can be made into the service delivery experienced by both refinery teams to understand if the geographical location of competitors has an impact on team performance.

Another avenue for research could be staff turnaround at these refineries and its' impact on team effectiveness. Comparisons could be drawn on the diversity in each refinery and its' impact on team effectiveness. A gender based comparison can also be conducted in order to determine the impacts of gender on effectiveness of teamwork.

Team attributes for effective teamwork in the petrochemical industry of KwaZulu Natal can be established with a higher degree of certainty based on findings in these refineries and hence improve the effectiveness and efficiency of teamwork.

5.7 Summary

The objectives outlined in this study have been achieved despite the research limitations that have been highlighted. The study has identified the team development phase that the Natcos team is in as well as the team attributes for an effective team that are required by the Natcos team to become effective and effective. The recommendations of the study have highlighted the areas of teamwork that the Natcos team need to improve upon in order to become an effective co-ordinated unit that will make the business sustainable and profitable.

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Appendix 1: Informed Consent Letter

Informed Consent Letter

**UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP**

Dear Respondent,

MBA Research Project
Researcher: P. Moodley 0832656847
Supervisor: Dr M. Hoque
Research Office: Ms P Ximba 031-2603587

I am **Pathmananthan Moodley**, an MBA student, at the Graduate School of Business and Leadership of the University of KwaZulu Natal. You are invited to participate in a research project entitled: **Effectiveness of teamwork in a petrochemical industry in KwaZulu-Natal, SA.** The aim of this study is to: **Investigate the areas that can be improved upon within the Natcos team in order to ensure that the team is an effectively coordinated unit that will optimise the sum of all the individual talent available.**

Through your participation I hope to understand **the Natcos team attributes.** The results of the focus group are intended to contribute **to the identification of opportunities that will allow the Natcos team to become efficient and effective.**

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey/focus group. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business and Leadership, UKZN.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The survey should take you about **15** minutes to complete. I hope you will take the time to complete this survey.

Sincerely

Investigator's Signature :



Date : 02 December 2016

This page is to be retained by participant

**UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP**

MBA Research Project
Researcher: P. Moodley 0832656847
Supervisor: Dr M. Hoque
Research Office: Ms P Ximba 031-2603587

CONSENT

I.....(full names of participant)
hereby confirm that I understand the contents of this document and the nature of the research
project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT

DATE

.....

This page is to be retained by researcher

Appendix 2: Questionnaire

Questionnaire

**UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS & LEADERSHIP**

MBA Research Project
Researcher: P. Moodley 0832656847
Supervisor: Dr M. Hoque

Research Office: Ms. P Ximba 031-2603587

Effectiveness of teamwork in a petrochemical industry in KwaZulu-Natal, SA

The purpose of this survey is to solicit information from the Natcos personnel regarding the effectiveness of teamwork in a petrochemical industry in KwaZulu-Natal, SA. The information and ratings you provide us will go a long way in helping us identify opportunities that will help improve teamwork at Natcos.

The questionnaire should only take **10-15** minutes to complete. In this questionnaire, you are asked to indicate what is true for you, so there are no “right” or “wrong” answers to any question. Work as rapidly as you can. If you wish to make a comment please write it directly on the booklet itself. Make sure not to skip any questions.

Thank you for participating.

Section A: Demographics of the Participants (Please fill in the required information)					
Sex (Male, Female)					
Race (African/Coloured/Indian/White/Other)					
Position (Role within Natcos)					
Age					
Section B: How do you feel about the following statements? Please tick only one (Strongly disagree, Disagree, Neutral, Agree, Strongly Agree)					
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The team members actively look for new ways to improve the way they do things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team members are able discuss what works and what doesn't	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team members opinions are valued by the other members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team members can trust each other to do their jobs well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team is encouraged to share ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When the team members have a problem they make a serious effort to figure out what is going on	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team members enjoy their work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team members get into arguments and conflict during discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication is effective and delivered to all levels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team has a clear understanding of their roles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Everyone in the team feels able to act on the team objectives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Work expectations are made clear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have enough information to do my job well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the necessary tools to efficiently and effectively carry out my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am personally committed to the changes happening within the company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The nature of the job and its responsibilities are stressful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is frequent and good communication throughout the team about how the different changes are going	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team appears to allow setbacks and problems stop its change efforts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Once a change is implemented, the change remains permanent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organisational changes take a long time to be implemented	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After trying something, team members take time to reflect on how the change was implemented	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team is flexible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The leadership in the team is available for consultation on problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The leadership in this team creates an environment where things can be accomplished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Team members are held accountable for the decisions they make	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The culture in the team supports the business requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team members receive frequent and helpful feedback regarding their work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team members openly discuss their errors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team learns from their mistakes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The team members regularly take time to reflect how they do things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of the Questionnaire

Thank you for taking the time to complete the questionnaire.

Appendix 3: Gatekeepers Pass

P.O. Box 26200
Isipingo Beach, 4115
Telephone: 031-910-0600
Telefax : 031-902-4559



02 December 2016

Graduate School of Business
University of KwaZulu-Natal
Durban
4001

Dear Sirs


GATEKEEPER'S PASS

Mr. Pathmananthan Moodley is studying for his MBA through the Graduate School of Business. His thesis is "Effectiveness of teamwork in a petrochemical industry in KwaZulu-Natal, SA".

He has been given permission to conduct this research and to collect data from the employees.

Please contact me should you have any questions.

Yours faithfully



P. J. Maharaj (00002247)
Senior Manager

Appendix 4: Ethical Clearance



9 January 2017

Mr Pathmananthan Moodley 9505136
Graduate School of Business & Leadership
Westville Campus

Dear Mr Moodley

Protocol reference number: HSS/2132/016M

Project title: Effectiveness of teamwork in a petrochemical industry in KwaZulu-Natal, SA

Full Approval – Expedited Application

In response to your application received 13 December 2016, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Dr Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

cc Supervisor: Dr M Hoque
cc. Academic Leader Research: Dr M Hoque
cc. School Administrator: Ms Zarina Bullyraj

Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)

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Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

Appendix 5: Turnitin Report

Turnitin Originality Report

The Effectiveness of Teamwork in a Petrochemical Industry in KwaZulu Natal, South Africa by Pathmananthan Moodley

From Dissertation for turnitin 2017 (MBA dissertation for turnitin 2017)

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paper text:

Abstract Globalisation has inherently changed the dynamics of the business environment. Organisations are now driven strongly by information and technology, requiring them to be innovative, effective and efficient in order to sustain profit and growth (Jones and George, 2011). Natcos is the crude oil supply point to the Natref crude oil refinery. Due to Natcos being geographically distanced from Natref, it requires that the team be versatile to handle many disciplines. As such this requires good team work amongst the team members to execute the Natcos strategic objectives. The focus of this study is to determine how to improve the efficiency and effectiveness of the Natcos team and hence Natref. A quantitative research approach was adopted with a descriptive research method. The research was conducted within a non-contrived environment using a cross-sectional time horizon. The data collecting method employed was a survey method through the administration of a questionnaire to the Natcos team consisting of 47 participants, the entire population. The study has identified the team development phase that the Natcos team is in as well as the team attributes for an effective team that are required by the Natcos team to become effective and efficient. The recommendations of the study have highlighted the areas of teamwork that the Natcos team need to improve upon in order to become an effective co-ordinated unit that will make the business sustainable and profitable. 1 Chapter 1: Introduction 1.1 Study Background Globalisation has inherently changed the dynamics of the business environment. Organisations are now driven strongly by information and technology, requiring them to be innovative, effective and efficient in order to sustain profit and growth. The current business environment requires teams to be more agile and organic in order to meet the ever-changing requirements and demands (Jones and George, 2011). This study will focus on the effectiveness