



Investigating the acceptance of a culture of continuous improvement in the public health sector

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REMARKS

The reader is reminded of the following:

The study that has been conducted using the guidelines as prescribed by the NWU Referencing Guide (2015). This was in line with the policy of the Programme in the Potchefstroom School of Business and Governance to use the Harvard Style in all scientific documents.

ABSTRACT

Title: Investigate the acceptance of a culture of continuous improvement in South African public health sector.

Key words: Culture, Continuous Improvement (CI), Total Quality Management, Lean, Six Sigma, Hospital, Health care, public sector

Investigating the acceptance of the culture of continuous improvement at the public health sector have a direct link to the quality of the service that the hospital offers and the customer experience. Continuous improvements also boost the morale of the employees and provides the environment that is conducive to work at.

Chapter 1 provided an introduction and background of the research. On this Chapter the problem statement was described, objectives of the research and the research method that were applied in the current research. The Chapter concluded with a layout of the chapter further chapter divisions for the research that was conducted.

Chapter 2 was set out to review the evidence that exist from the previous studies about the origins of culture, the different types of culture. Continuous improvement is known to be popular within the manufacturing industry and in this review, we looked at the health sector and if they had already adopted the culture.

Chapter 3 explained the aspects research methodology as it was used in the empirical study that was conducted. The Chapter also details the relevance of the methodology to the specific research design. The choice of the participants, measuring tool, how the data was captured and statistically transformed into meaningful information. Chapter 4 focuses on the report and discussion of the results of the empirical study.

Chapter 4 the empirical study results were reported and discussed in terms of the quantitative results. Demographical information was gathered by means of asking biographical questions about the participants. 4 factors were extracted from the data

analysed and 70.7% of the total variance can be explained. The factors were labelled Support, Systems, Empowerment and CI culture.

Chapter 5 provided conclusions regarding this research study's theoretical and empirical objectives. Research limitations were highlighted and discussed. Recommendations were made for the public hospital where the research was conducted as well as for potential future research.

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Chapter 1

1. Introduction

The Department of Health provides leadership and coordination of health services to promote the health of all people in South Africa through an accessible, caring and high-quality health system based on the primary health care (PHC) approach (Fusheini and Eyles, 2016, p2). The department contributes directly to achieving the government's goal for a long and healthy life for all South Africans (Department of Health, 2017).

In line with the vision of the National Development Plan (NDP) (national planning commission, 2011) of ensuring a long and healthy life for all South Africans, the department focuses on sustainably expanding HIV and AIDS and tuberculosis (TB) treatment and prevention, revitalising public healthcare facilities, and ensuring the provision of specialised tertiary hospital services (Department of Health, 2017).

Healthcare in South Africa reflects the country's position as a blend of the First and Third Worlds: some public healthcare facilities in rural areas are very basic indeed, while some private facilities (and medical research) are cutting-edge, placing South Africa firmly at the forefront of medical advances (Landed & Landed, 2017)

Public hospitals and clinics in South Africa are usually reasonably well equipped and staffed but are often very overcrowded with patients, and you need to wait for a long time to be seen (by staff who are usually overworked and sometimes indifferent). You must often pay for treatment (van Niekerk, 2016).

Although the state contributes around 40 percent of all healthcare expenditure, the public health system must serve just over 80 percent of the population (Brand South Africa, 2017). Public health uses around 11 percent of the government's budget, which

is allocated to the nine provinces. The number of funds they receive, and the efficiency of their use varies considerably.

Poorer provinces, such as the Eastern Cape, offer a much lower standard of healthcare than richer provinces like Gauteng and the Western Cape (Brand South Africa, 2017).

The South African public-sector health system is trying to improve its service. It's now split into 42 health regions and 162 health districts, and a new administrative structure is being developed. Since 1994, over 700 clinics have been built or upgraded, almost 2,300 clinics given new equipment and 125 mobile clinics introduced. There are now over 3,500 clinics in the public sector, offering free healthcare to children under six, and to pregnant and breastfeeding women (Landed and Landed, 2017).

1.2. Problem statement

At both hospital and clinic level there are serious concerns over the lack of availability of medicines and consumables required to offer a complete healthcare service. These range from basic medicines and vaccines and basic consumables to those that are more complex (Kabene et al, 2006).

There are often shortages in consumables required for the efficient and safe functioning of facilities and for the treatment of patients. For example, doctors at various hospitals have noted that the shortages in consumables include those required for infection control such as hand-washing supplies (soap, handtowels and hand spray), specialised masks, alcohol swabs and sterile gloves in different sizes. These have serious effects on patient and health care worker safety (Section 27, 2013).

Apart from availability, the quality of consumables has also emerged as a key issue facing healthcare providers. We have been shown examples of sutures that are half the length that they should be, surgical needles that are bent, and have been told by numerous departments that the needles break so easily that it often requires using three or four tries before they are successful (Section 27, 2013).

There are shortages in medicines across facilities from clinics to tertiary hospitals. These include a range of medicines on the essential drug list published by the National Department of Health.

According to the Department of Health essential medicines are intended to be available within the context of functioning health systems at all times in adequate quantities, in the appropriate dosage forms, with assured quality and adequate information, and at a price the individual and the community can afford.

On the 8th of February 2017, the head of Gauteng's health department has been suspended following the Health Ombudsman's findings about the Life Esidimeni deaths and subsequently the MEC Qedani Mahlangu resigns from her position (Tandwa, 2017)

1.3. Objective of the study

1.3.1. Primary objective

- a. To investigate the culture of continuous improvement in the public health sector.

1.3.2. Secondary objective

- a. To investigate management involvement in continuous improvement initiative

- b. To investigate employee involvement in continuous improvement initiative and whether they are empowered to come up with improvement ideas.

1.4. Research methodology

This research, regarding the general and specific objectives, have two sections namely literature review and an empirical study.

1.4.1. Phase one: Literature review

Phase one provides a review of the literature of the specified topic. The purpose of the literature review was to explore all the available information about continuous improvement in general, as well as in the healthcare and specifically in the public healthcare sector in South Africa and abroad in countries that have already implemented continuous improvement and have seen the results.

A comprehensive literature review informed the researcher of the most recent research and identified the gaps at the public health sector in South African, about continuous improvement. The literature review also enabled the researcher to understand the concept of continuous improvement and how most industries have embraced it and its complexity. Continuous improvement is relevant to any industry as per the literature review as any industry from manufacturing to services are able to use it to improve their processes and exceed customers' expectations. With its variety of tools anyone can pull one that will be fit for purpose in their organisation i.e. 5S, identify 8 wastes, TQM, 5 lean principles or six sigma. The literature to be reviewed was determined through a search strategy. The following types of literature were included: textbooks, newspaper articles, government publications and publications from national and international authoritative organisations in healthcare.

Searches were conducted by the following search engines to ensure a high response to various databases: Google Scholar, NWU library database, Emerald. Literature searches were distributed from broad to narrow and the process of elimination of data sources were out-dated literature. The literature review was then formalised into a condensed and organised synthesis for the reader about continuous improvement;

firstly, as concept in general and then it was positioned within South Africa's public sector.

1.4.2. Phase two: Empirical study

Empirical studies are the collection and analysis of primary data based on direct observation or experiences in the 'field' (Betterthesis.dk, 2017)

Key characteristics to look for:

- Specific research questions to be answered
- Definition of the population, behaviour, or phenomena being studied
- Description of the process used to study this population or phenomena, including selection criteria, controls, and testing instruments (such as surveys) (Guides.libraries.psu.edu, 2017)

The empirical study includes the research design, participants, ethics, data gathering, research procedures, and data analysis.

1.5. Research Design

Empirical study has highlighted statistical associations between variables or established the prevalence or incidence of a phenomenon should utilise quantitative methods like cross sectional surveys with an appropriately large sample size. This kind of survey can describe who, what, and where of a phenomenon (and are thus descriptive) but cannot answer the why question. In order to answer the question of why (causation,) an analytical study will be conducted (Betterthesis, 2017).

The purpose of the research design was to ensure that all criteria of a scientific study were met.

1.6. Participants

The target population was the directors, deputy directors and Head of Department at the hospital South Africa and the reason to choose them to be part of the study was because they are responsible for strategy formulation and deployment. Strategy gives direction for the organisation and also it shows if the management is committed to drive the culture of continuous improvement.

The second group would be the sectional manager they are responsible for deployment of the strategy and to pass the message to the staff on the shop floor. The third group would be the shop floor (i.e. Doctors, Nurses, Clerks and general employees) team who are the ones actually working on the continuous improvement projects. They are the ones that must buy-in into this idea in order for it be successful.

The sample size target was 50 participants and this sample was supposed to have been consist of 10 senior managers (Director, deputy director and HOD), 10 would have been middle managers which are sectional managers and 30 would consist of mixed participants ranging from admin personal to the nursing staff.

1.7. Ethics

The questionnaires were accompanied by a cover letter to, each questionnaire had a cover letter as an introduction this was to ensure that the participants understand the purpose of the study.

Their participation was vital for the research study and their participating on a voluntary basis and were made to feel free to answer all the questions as nothing was going to be used against them. The research study was conducted anonymously, and the information was gather confidentially. Data collected was not changed and was collected unbiased in terms of gender, age, race and the position at work.

1.8. Data gathering

The method that was used to gather the data was quantitative study, where questionnaires were designed and sent to the participants to complete. The questionnaires start with the demographic information then proceed to ask about the qualifications and the level at work. Section B is the dependent variable that the study will be answering then followed by the management involvement and the last part is employee engagement.

1.9. Research procedures

To conduct the study at the provincial hospital PRO of the hospital was first contacted who asked for the research proposal together with the covering letter and the ethical clearance from the university to be send. After sending the required documents they sent the provisional approval letter with a tracking number. Provisional approval letter was sent to head office of the department of health in Kwazulu Natal for the final approval by the chairman of the research committee. It is also requiring that the researcher registers at the department of health Kwazulu Natal research website and to upload all the relevant required documents, the website is used to communicate with the researchers about the approval process and to upload the signed approval letter. The signed copy of the approval letter from the research committee was received and then was sent to Hospital A for them to grant access to the study.

The questionnaires were handed over to the PRO of the hospital who distributed them to the relevant participants to complete. Completed copies were handed over back to the PRO who scanned and emailed to the researcher.

At hospital B the researcher used the contacts to assist in data gathering, the researcher went with the printed questionnaires and met with the staff who then completed the questionnaires and handed them back to the researcher. Hospital C, questionnaire was sent to a contact person who distributed it the participants and after completing they scanned and sent back.

1.10. Data analysis

Questionnaires were hand delivered to the hospital and the participants will complete them. An excel spread sheet was created as follow on the right side top to bottom are the respondents and rows from left to right were answers. This makes it easy to copy and paste on SPSS, the researcher created the scale for which it will be easy to use SPSS statistical tool to analyse the data. The dependent variable uses the scale of: No = 1 and Yes = 2, the ranking questions were as follows: Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4 and strongly agree = 5. The regression analysis was used to investigate the relationship between the management team and the employees' engagement into the continuous improvement initiative at the hospital. Regression analysis is a statistical technique that is used to relate two or more variables (Chen et al, 2007). The objective is to build a regression model or an equation that can be used to describe a dependent variable based on a unit change in the independent variables. When more than one independent variables are considered in the study it is known as multiple regression analysis. This is the main regression technique used in the current study.

1.11. Multiple Linear Regression technique

Linear regression analysis is the most widely used of all statistical techniques: it is the study of linear, additive relationships between variables. Let Y denote the "dependent" variable whose values you wish to predict, and let $X_1, \dots, X_k$ denote the "independent" variables from which you wish to predict it, with the value of variable X_i in period t (or in row t of the data set) denoted by X_{it} (People.duke.edu, 2017). Then the equation for computing the predicted value of Y_t is:

$$\hat{Y}_t = b_0 + b_1 X_{1t} + b_2 X_{2t} + \dots + b_k X_{kt}$$

1.12. Reliability test

Reliability refers to the extent to which a scale produces consistent results if repeated measurements are made. Coefficient alpha is the most commonly used measure to judge the internal reliability of factors or constructs. The coefficient alpha generally

varies from 1 to 0 and a value of 0.60 or above is normally regarded as satisfactory for internal reliability. The reliability tests show that all the construct are above this cut-off point. The level of coefficient alpha is not too low to warrant omitting them from further analysis (H. Chen et al, 2007).

1.13. Limitations to the study

There was an unexpected process of obtaining authority to conduct the study and this process was a bit long. When the actual study was conducted the sample size was small due to some of the staff being placed in other hospitals and clinics across the district, this was due to the recent floods that had hit. The floods had damaged some parts of the hospital and they were undergoing renovations and running with limited staff.

Delays in getting the Head of Departments to authorise their staff to participate in the study as most of them were busy in the meetings most of the time.

1.14. Chapter Division

The mini-dissertation will be divided in the following chapters:

Chapter One had already discussed and provided an introduction to the research as well as an outline of the research methodology. In this Chapter the researcher stated the research problem and presented the appropriate research design. The research methods were outlined followed by strategies to encourage trustworthiness and the ethical considerations to adhere to.

In **Chapter Two** a literature review was conducted to provide an in-depth critical and analytical synthesis of all the available literature, nationally and internationally regarding continuous improvement. Continuous improvement as concept is described and then aligned within the realities of South African public healthcare.

Chapter Three addresses the objectives of the study. It further details the research methodology that was utilised, the participant characteristics and the data analysis process that was applied.

Chapter Four is a description of the realisation of the data collection and analysis, report of the research results and literature integration. The researcher concludes with health workers' acceptance of the culture of continuous improvement and confirms the research results either within the literature or reporting results as new and not found in literature.

Chapter Five concludes the research and provides the recommendations based on the data analysis and also taking into consideration the limitations. The research is evaluated in terms of the central theoretical statement, research objectives and the realisation of the research methods. After that, final conclusion statements are formulated, recommendations are provided and will also be directed to the research committee of the Kwazulu Natal department of health and hospital A.

1.15. Chapter summary

Investigating the acceptance of the culture of continuous improvement at the public health sector have a direct link to the quality of the service that the hospital offers and the customer experience. Continuous improvements also boost the morale of the employees and provides the environment that is conducive to work at.

This chapter provided an introduction and background of the study. This Chapter described the problem statement, objectives of the research and the research method that were applied in the current research. The Chapter concluded with a layout of the chapter further chapter divisions for the research that was conducted.

Chapter 2 provides a literature study with regard to the culture of continuous improvement in different industries including healthcare industry and mostly it was in the international sphere where they are ahead of South African sector.

Chapter 2

2. Literature review

2.1. Introduction

In this chapter the researcher has conducted a literature review of the continuous improvement in the healthcare sector both in South Africa and abroad. This was to explore how the healthcare industry have embraced continuous improvement and sustained it. The researcher also looked at the components of CI which firstly deals with culture as cultures drives everything that an organisation stands for. From values, vision and translates to the shop floor and how they do things.

There some organisational challenges that include organisational readiness, embedding a culture of continuous improvement, effective leadership, the availability of resources and clear communication strategies. This are some of the keys challenges that we will look at in this study. In any organisation when a new strategy is introduced there will always be some politics amongst the manager and this affects the implementation of that particular strategy, the same will be looked at in the health care as well (Warren et al., 2016).

Healthcare professional associations and unions delineate the boundaries between occupations and circumscribe changes in practices and work design to a much greater extent than applies to workers on an assembly line. Doctors are generally responsible for decisions to admit patients, initiate diagnostic tests and treatment procedures, and patient discharge. They operate within their obligations to their own professional associations, as well as hospital capacity constraints. For instance, in Australia, medical consultants in public hospitals might have dual income sources, i.e. also from private practice. Nurses also have their own professional registration boards, and a relatively powerful union. Clinical staff are highly trained professionals who perform complex work treating and caring for patients, in specialised units in hospitals which are, themselves, complex organisations. The concerns of clinical staff tend to be focused on the unit they work in, rather than with the wider organisation or mission. Many clinical staff have only a limited understanding of what happens in other areas of the hospital. Moreover, these institutional boundaries are overlain by traditional occupational work roles and professional demarcations between clinical staff. These institutional and occupational demarcations complicate and constrain efforts to improve patient flows between the different functional units of the hospital (Stanton et al., 2014).

The translation of key concepts such as ‘who is the customer?’ and ‘what constitutes value?’ may become contested in hospitals. Unlike manufacturing environments, where profit is the KPI, healthcare professionals bring a complex set of values in relation to patient care, professional ethics, as well as professional and organisational KPIs and personal motivations (The institute for healthcare excellence, 2017).

In hospitals, there are often significant tensions between skilled professionals such as doctors, who are mindful of patient care and safety, and senior hospital management who tend to focus on hospital budgets and efficiency. Hence, the various occupational groups may have different interpretations of ‘quality improvement’, including what is ‘best for the patient’. While key organisational stakeholders may share such notions as ‘the patient’s journey’, they remain contested in practice. These issues may contribute to the frequent reports of clinical resistance to managerial-led change (Stanton et al., 2014).

2.2. Origins of continuous improvement in health care

Continuous quality improvement emerged from the industrial as an effective package of theory and practical tools to reduce errors in the production process. Although widely praised in business circles, it is far less widely adopted. As applied to health care, it has been similarly praised but has also spread slowly (Marjoua and Bozic, 2012, p 2).

Its most exemplary practitioners, who have achieved notable successes, emphasize that it is most effective when used as an integral part of a scientific approach to improve clinical practice. Very few data document the effectiveness of continuous quality improvement, however, and even exemplary practitioners have had difficulty in disseminating its benefits uniformly throughout their institutions (Marjoua and Bozic, 2012, p 2).

One of the potential strengths of continuous improvement is the ability to motivate good performers to excel and an emphasis on generating new methods for achieving improvement. One of its limitations is that it is too narrow focus on administrative (as opposed to clinical) aspects of care and a lack of attention to problems of overuse or underuse. Future experience may yield increased effectiveness. The current experience in both health care and other sectors of the economy suggests that its impact will be useful but may be limited. Market place competition is the engine driving many changes in health care. Market advocates believe that providing more information about quality to the public will induce health plans, hospitals, and physicians to compete by improving the quality of their care in the expectations of increasing market share. Sceptics point out that no health care market currently competes on the basis of improving quality and there is little theoretical basis in economics to predict that this change will occur (McClellan, 2017).

2.3. The need to improve health care quality

2.3.1. Quality can be defined and measured

The term health services refer to a wide array of services that affect health, including those for physical and mental illnesses. It includes services aimed at preventing disease and promoting health and well-being as well as acute, long-term, rehabilitative, and palliative care. Furthermore, the definition applies to many types of health care practitioners (e.g., physicians, nurses, various other health care professionals) and to all settings of care (from hospitals and nursing homes to physicians' offices, community sites, and even private homes) (Chassin and Galvin, 1998, p1001).

There is a concern regarding the quality of care that individual health plans and clinicians deliver to individuals in specific episodes of care. Another concern, should be directed to the quality of care across the entire system. In particular, we must ask whether all parts of the population have access to needed and appropriate services and whether their health status is improving. The phrase desired health outcomes refer to health outcomes that patients desire and highlights the crucial link between how care is provided and its effects on health, as well as the need to ensure that patients and their families are well informed about alternative health care interventions and their expected outcomes (Brook, McGlynn and Shekele, 2000, p282)

The definition emphasizes that high quality care increases the likelihood of beneficial outcomes. It reminds us that quality is not identical to positive outcomes. Poor outcomes occur despite the best possible health care because disease often defeats our best efforts. Conversely, patients may do well despite poor quality care because humans are resilient. Assessing quality thus requires attention to both processes and outcomes of care. Current professional knowledge emphasizes that health care professionals must stay abreast of the dynamic knowledge base in their professions and use that knowledge appropriately. No matter how good our understanding or measures of quality are today, we must always be prepared to revise them as new knowledge is generated about what works and what does not in health care to produce

positive outcomes for patients. Although the knowledge and practices of individual clinicians are important for high-quality care, today we realise that no health care professional can deliver high quality alone. Increasingly, health care professionals practice within groups and systems of care. The functioning of those systems in preventing and minimising errors and the harm such errors may cause, coordinating care among settings and various practitioners, and ensuring that relevant and accurate health care information is available when needed are critical factors in ensuring high-quality care (Chassin and Galvin, 1998, p1002).

There are few people who have had more impact on the science and practical application process management than Dr. William Edwards Deming. His impact on the automotive industry is legendary, and many other industries have tried with varying degrees of success to implement his principles as well. For years Dr. John Haugom, have followed and admired those that have tried to bring his quality improvement processes to healthcare. He strongly believed that healthcare has much to gain by successfully implementing key Deming principles (Womack, Jones and Roos, n.d.).

Let's share five principles that Dr John Haugom believed that they can make the biggest difference in health care process improvement.

1. Quality improvement is the science of process management.

When Deming and others developed their approach to modern quality improvement starting about 75 years ago, they were basically developing a way for modern organizations to deal with the complex challenges that were confronting them. The approach they developed to improvement was remarkably simple, yet extraordinarily powerful. It's centred on the fact that quality improvement is really about process management. These quality improvement concepts and techniques have been used to transform almost every major industry in the world with dramatic results. The last holdouts, the last passions of resistance, are primarily healthcare, higher education, and government. Now, it's happening to healthcare. If we focus on the processes of care one at a time, we can fundamentally change the game and deal with the challenges facing healthcare. Now, this may seem like a tall order, but Pareto's

principle tells us that there are probably 20% of those processes that will get us 80% of the impact. So, the challenge of every organization is to identify that 20%, roll up their sleeves, and begin the important work of addressing those challenges (Health Catalyst, 2017).

2. If you cannot measure it...You cannot improve it.

Deming clearly understood the importance of data. Meaningful quality improvement must be data-driven. This is particularly true in healthcare. You're basically dead in the water if you try to work with healthcare providers and you don't have good data, everybody recognizes that.

Deming said, "In God we trust...and all others must bring data." I've had physicians during my career tell me pretty much the same thing, only they're not quite so polite (Hunter, 2015).

They basically say, "Dr. Haughom, John, get lost. Bring the data. And then we'll decide whether or not we believe it." So, data is critical if we're going to have a meaningful impact in healthcare.

3. Managed care means managing the processes of care, not managing physicians and nurses.

An important application or clarification of a Deming principle was put forward by Brent James. Managing care means managing the processes of care. It does not mean managing physicians and nurses. One of the big mistakes made in the 90's with the "managed care" movement was naively thinking that managing care meant telling physicians and nurses what to do. The reality is that one must engage clinicians in the process because they understand the care delivery process and they are best equipped to figure out how to improve the process of care over time (Toussaint, 2016).

4. The right data in the right format at the right time in the right hands.

If clinicians are going to manage care, they definitely need data. They need the right data delivered in the right format at the right time and in the right place. And the data has to be delivered into the right hands—the clinicians involved in operating and improving any given process of care (Coursehero.com, n.d.).

5. Engaging the “smart cogs” of healthcare.

If quality improvement is going to work in healthcare, if we are going to realise value, it means we have to engage clinicians. To use Deming’s term, clinicians are healthcare’s so-called “smart cogs.” They are the frontline workers who understand and own the processes of care.

Applying these key Deming principles to healthcare process improvement can help every healthcare organization show the workforce why change is necessary, what they need to understand in order to participate in meaningful change, and what success will ultimately look like (Hagstrom, 2017).

2.2. Culture

The customs, traditions, attitudes, values, norms, ideas and symbols govern human behaviour pattern. The members of society not only endorse them but also mould their behaviour accordingly. They are the members of the society because of the traditions and customs which are common, and which are passed down from generation to generation through the process of socialisation (Straub et al., 2002: 2).

These common patterns designate culture and it is in terms of culture that we are able to understand the specific behaviour pattern of human beings in their social relations. Cultural ideas emerge from shared social life (YourArticleLibrary.com: The Next Generation Library, 2017)

1.15.1. Anthropological Origins of “Culture”

What exactly is culture? Unfortunately, a fixed, universal understanding does not exist; there is little consensus within, let alone, across disciplines. Often “culture” is applied

so broadly, merely as “social pattern,” that it means very little. Highly specific, idiosyncratic definitions also abound where the term is used in various contexts in support of any agenda. When “culture” first appeared in the Oxford English Dictionary around 1430 it meant “cultivation” or “tending the soil,” based on the Latin culture. Into the 19th century “culture” was associated with the phrase “high culture,” meaning the cultivation or “refinement of mind, taste, and manners.” This generally held to the mid-20th century when its meaning shifted toward its present American Heritage English Dictionary definition: “The totality of socially transmitted behaviour patterns, arts, beliefs, institutions, and all other products of human work and thought.” Culture is either taught by the fore parents or at workplace one gets to see how things are done and emulate the team that has been there for longer and this is how it get passed on from generations to generations. With time culture adopts to the new way of doing things i.e. the use of smartphones and social media (Tharp, n.d.).

1.15.2. Understanding Culture

While the complexities of the culture concept were being debated in the mid-20th century, surveys of its different definitions yielded a few common threads that are helpful in organizational research. Most simply, culture involves three basic human activities: what people think, what people do, and what people make. Further, several common properties arise: culture is shared, learned, transmitted cross-generationally, symbolic, adaptive, and integrated. To speak of culture as being shared narrows the field of relevant activity to that which is common and social. A particular action is not cultural if it is unique to one or relatively insignificant number of individuals. Also, culture is learned (actively or passively) and is transmitted cross-generationally through formal or informal social interaction—we are not born with the understanding that stealing is wrong or that “diamonds show you care” (Glover, Friedman and van Driel, 2016).

One of the primary characteristics of human life, over animal life, is that we assign symbolic meaning to ideas, behaviour, and objects, as well as have language and speech. We say that humans have culture while animals do not.

This is largely due to their inability to ascribe arbitrary symbolic meaning to their world—a chimpanzee could not designate his banana to signify honesty, for example. Culture is also adaptive in that it can and does change in response to various influences and conditions. No culture is truly static— many aspects of American culture are radically different in the wake of the Internet, the dot-com bubble, and global terrorism. And finally, culture is integrated in the sense that it permeates society and becomes part of the social machinery.

Culture is the ever-present, ethereal medium in which members live and through which they act (Tharp, n.d.).

1.16. Different types of culture

1.16.1. Dominant culture

The dominant culture in a society refers to the established language, religion, behaviour, values, rituals, and social customs. These traits are often the norm for the society as a whole. The dominant culture is usually but not always in the majority and achieves its dominance by controlling social institutions such as communication, educational institutions, artistic expression, law, political process, and business. The concept is generally used in academic discourse in fields such as sociology, anthropology and cultural studies. In a multicultural society, various cultures are celebrated and respected equally. Dominant culture can be promoted with deliberation and by the suppression of other cultures or Subculture (Definitions.net, 2017).

1.16.2. Subculture

Subcultures are those groups that have values and norms that are distinct from those held by the majority. While small societies tend to be culturally uniform, large industrial societies are culturally diverse and involve numerous subcultures. **Subcultures** are values and norms distinct from those of the majority and are held by a group within a wider society. In the United States, subcultures might include hippies, Goths, fans of hip hop or heavy metal and even bikers - the examples are endless. One area of particular interest has to do with deviant subcultures (Moffitt, 2015).

1.16.3. Folk culture

Folk culture involves creative hobby activities that are based on folk traditions; heritage culture; intangible cultural heritage; study, preservation and recording of national and local cultural traditions; public culture events; activities of societies; courses and supplemental training (Kul.ee, 2016).

1.16.4. High culture

High culture can be defined as a subculture that is shared by the upper class of the society. In other words, this includes the elites of the society.

High culture consists of specific consumption patterns, lifestyle, literature, beliefs and attitudes, leisure activities that set the elites apart from the mass society. For instance, those of the high culture enjoy particular forms of art that the general public do not. Appreciating Renaissance art, going to the opera are some such examples (Differencebetween.com, 2016). High culture is seen as something set apart from everyday life, something special to be treated with respect and reverence, involving things of lasting value and part of a heritage which is worth preserving. High culture products are often found in special places, like art galleries, museums, concert halls and theatres (Sparknotes.com, 2017).

1.17. Global culture

Global culture refers to the way **globalisation** has overtaken national and local cultures, with cultural products and ways of life in different countries of the world becoming one with respect to the products that they consume be it food, clothes or television. The same cultural and consumer products are now sold across the world, inspired by media advertising and a shared mass culture spread through a media-generated culture industry, and the world has become one where people can easily emulate what they see on television or on social media even though they are far away from the actual happenings. For example, television programmes such as *Big Brother* and *WhoWants to be a Millionaire?* are being sold to countries and people there are adopting to such lifestyle.

Globally Companies like McDonald's, Coca Cola, Vodaphone, Starbucks, Nescafé, Sony and Nike are now symbols that are recognized across the world, along with the consumer lifestyles and culture associated with them (Ferraro, 2010, p 4).

Global culture refers to the way cultures in different countries of the world have become more alike, sharing increasingly similar consumer products and ways of life. This has arisen as globalization has undermined national and local cultures. **Globalization** is the growing interdependence of societies across the world, with the spread of the same culture, consumer goods and economic interests across the globe (Ferraro, 2010, p10).

1.18. Organisational culture

Culture have deep roots in the anthropological literature dating back many decades. A number of best-selling management books have been proven be influential in instilling the notion that “organisational culture” was a crucial variable in the management of organisational performance. Over the last decade there has been keen interest in organisational culture and that interest has grown and have received extensive studies across many different industry settings including some work on healthcare organisations (Ferlie, Montgomery and Reff Pedersen, 2016, p93-95).

1.18.1. Cultural attributes as organisational variables

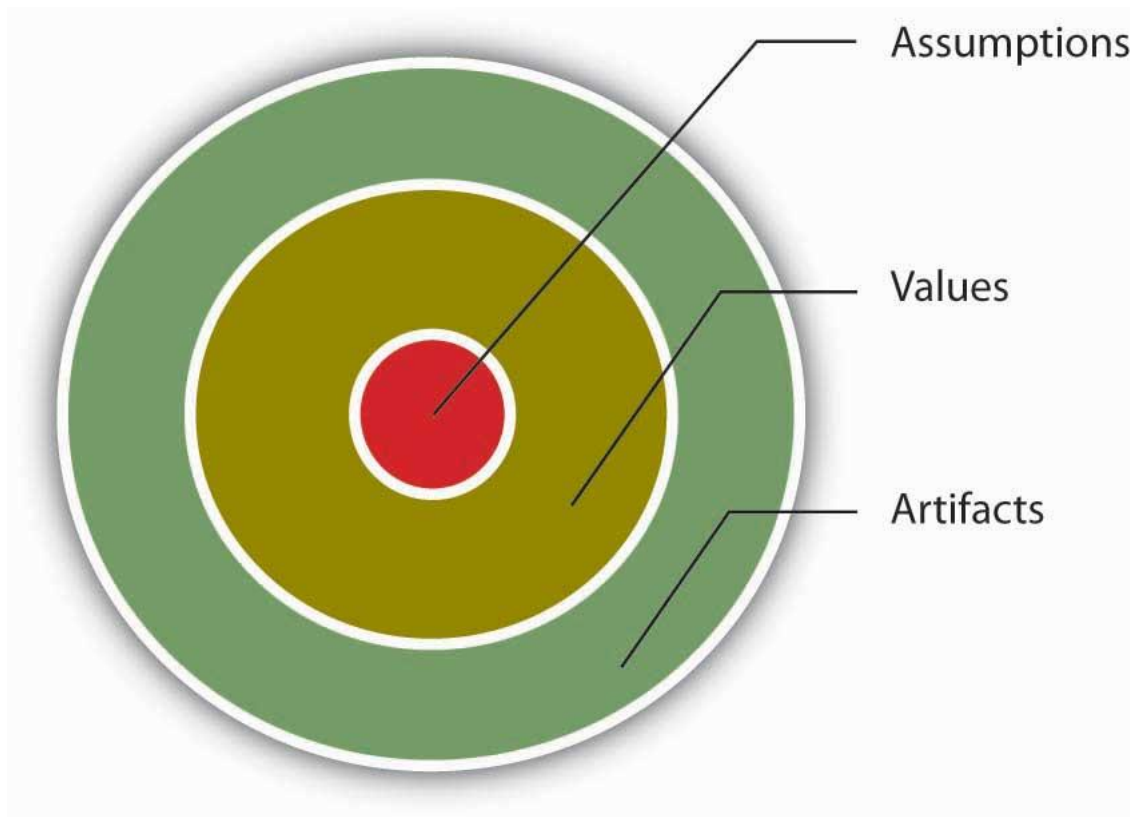
Those who conceive of culture as an organisational variable agrees that, organisational culture emerges from what is shared amongst the colleagues in an organisation, including shared beliefs, attitudes, values, and norms of behaviour. Organisational culture is reflected by a common way of doing things at the organisation, it can be in the way that employees communicate to each other, and how they start the day and the way in which they respond to a situation. This lead to the notion of “the way things are done here” as well as the way things are understood, judged, and valued. When attempting to untangle there are various elements of organisational culture, several levels can be identified.

The most basic levels are the underlying assumptions that represent the unconscious and “taken for granted” beliefs that structure the thinking and behaviour of an individual. These assumptions then give rise to organisational values that operate at a more conscious level and represent the standards and goals to which individuals attribute intrinsic worth (Mannion, Davies and Marshall, 2005, p102).

In most cases culture can be visible by means of concrete manifestations of artefacts. These might include, for example, the ceremonies, traditions and the incentive structures peculiar to an organisation. In the health care fraternity, such differentiation of cultural levels is both important and helpful. Some examples in health care of these different cultural levels are: Assumptions, Values and Artefacts. Assuming that organizational culture is determined by societal/ national culture and through it by religion which influence it, the model of basic underlying assumptions of organisational culture can be created. (Mazur, 2015).

At the deepest level, below our awareness, lie basic assumptions. These assumptions are taken for granted and reflect beliefs about human nature and reality. At the second level, values exist. Values are shared principles, standards, and goals. Finally, at the surface, we have artefacts, or visible, tangible aspects of organizational culture. For example, in an organization, a basic assumption employees and managers share might be that happy employees benefit their organizations. This might be translated into values such as egalitarianism, high-quality relationships, and having fun. The artefacts reflecting such values might be an executive “open door” policy, an office layout that includes open spaces and gathering areas equipped with pool tables, and frequent company picnics (Open.lib.umn.edu, 2017).

Figure 1: Three Levels of Organizational Culture.



Johnson 2017, said nonetheless, some of the aspects of organisational culture on which there is at least some measure of agreement are described as follows:

Attitudes to innovation and risk taking: Open culture, promoting the participation of all team members in the creative process, is favourable to the activity and initiative of employees, while culture based on strong control is definitely not conducive to creativity and innovation. Cultures aimed at developing innovation and creating suitable conditions for doing so are characterised by dynamism, flexibility, fast adaptation to changing conditions, and non-stereotypical solutions (Szczepańska-Woszczyna, 2014, p31).

Degree of central direction: the extent to which objectives and performance expectations are set centrally rather than being devolved. **Patterns of communication:** the degree to which communication, instruction and reporting are restricted to formal hierarchies of authority (compared with informal channels). **Outcome or process orientation:** the extent to which control and reward mechanisms are focused on tasks compared with the end product/service. **Internal or**

external focus: the extent to which attention is directed at external stakeholders, especially customers and the wider community, compared with an emphasis on internal organisational issues. **Uniformity or diversity:** the attitudes and expectations within the organisation that is either value consistency or encourage diversity. **People orientation:** relates to the attitude towards, support for, and valuations of, the organisation's human resources. **Team orientation:** organisation should encourage and reward individualism and internal structures should be designed to foster and value close teamwork. **Aggressiveness/competitiveness:** this dimension captures the prominent attitudes in the organisation towards other external players in the same arena. To the extent that organisational attitude focuses on dominating rather than coexisting, cooperating, or even learning from other similar organisations. **Attitudes to change:** the extent in which the organisation focuses on internal stability rather than dynamic concerns such as increasing size, scope or competitiveness. These aspects are not hard to see, and they are central to the debate about the future directions of health services, public or private (Ting-Toomey, 1999, p39-45).

Integrated: For Integrated culture to occur within the organisation there should be consensus on the basic beliefs and appropriateness of behaviours. Although often assumed, such integration may exist only in broad aggregate or may be more wishful thinking than practically realised (Howard-Grenville, Bertels and Boren, 2015).

Differentiated: This perspective focuses on the lack of consensus between interpretations, experiences and assignments of meaning in organisations (Richter and Koch, 2004).

Fragmented: the sense of belonging to and identification with the organisation is usually very weak. The individualists constitute the organisations, and their commitment is given first to individual members and task work. The negative side is that there is a lack of cooperation (Tlu.ee, 2012). Employees are expected to be "free agents," distinct individuals with highly developed specific skills who function in an almost autonomous manner with regard to their work (Montgomery Jr, 2006).

1.19. Functions of Culture

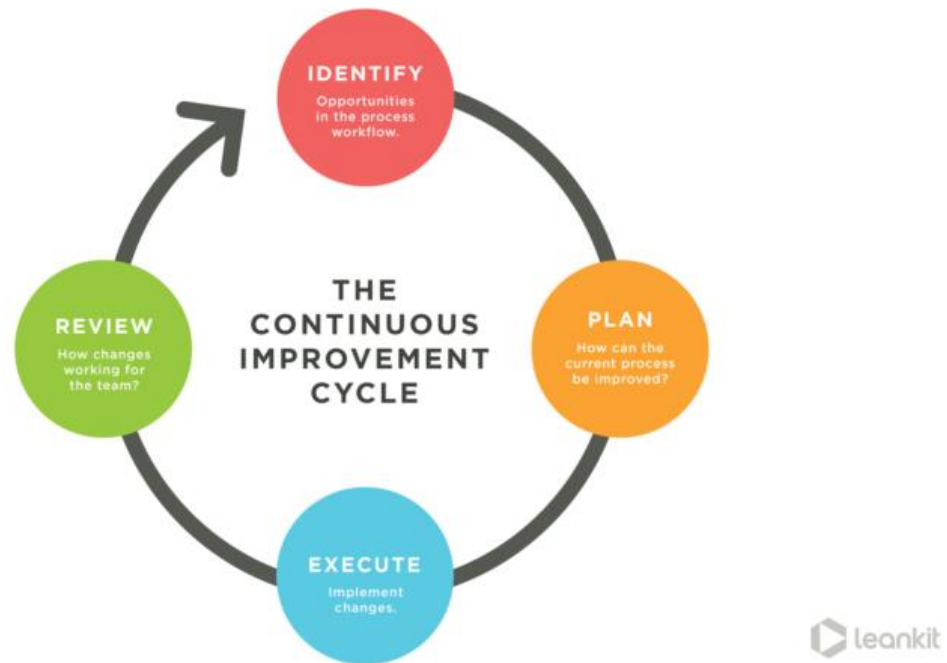
Among all groups of people, we find widely shared beliefs, norms, values and preferences. Since culture seems to be universal human phenomenon, it occurs naturally to wonder whether culture corresponds to any universal human needs. This curiosity raises the question of the functions of culture. Social scientists have discussed various functions of culture. Culture has certain functions for both individual and society (Agriinfo.in, 2017).

1.19.1. Managing culture

The wholesale and simultaneous change on all the many different aspects of organisational culture is unfeasible and probably not even desirable. Any strategy for cultural change should be selective, aiming to balance between continuity and renewal, identifying those cultural aspects to keep and reinforce, and those which need to be reworked. Cultural changes cannot easily be filtered from the top down by simple exhortation. For a successful strategic implementation the organisation need to take into account the needs, fears, and motivations of staff at all levels. Furthermore, any attempt to influence key cultural dimensions needs to be part of a much wider assemblage of mutually reinforcing improvement activities. The organisational culture cannot be tackled alone, there are other aspects of the organisation such as structures, finances, line of controls and accountability, strategy formulation or resource management initiatives that needs to be taken into account (Davies et al).

2.7. Continuous improvement

Continuous improvement is a method for identifying opportunities for streamlining work and reducing waste. The practice was formalised by the popularity of Lean / Agile / Kaizen in manufacturing and business, and it is now being used by thousands of companies all over the world to identify savings opportunities. Many of these ideologies can be combined for excellent results. For example, Kaizen and Kanban can go hand-in-hand to facilitate continuous improvement (LeanKit, 2017).



Picture 1: The continuous improvement cycle

Continuous improvement (CI) is a philosophy that Deming described simply as consisting of “Improvement initiatives that increase successes and reduce failures”. Another definition of CI is “a company-wide process of focused and continuous incremental innovation”. Yet others view CI as either as an offshoot of existing quality initiatives like total quality management (TQM) or as a completely new approach to enhancing creativity and achieving competitive excellence in today’s market. Total quality can be achieved by constantly pursuing CI. through the involvement of people from all organizational levels. We define CI more generally as a culture of sustained improvement targeting the elimination of waste in all systems and processes of an organization. It involves everyone working together to make improvements without necessarily making huge capital investments. CI can occur through evolutionary improvement, in which case improvements are incremental, or through radical changes that take place as a result of an innovative idea or new technology. Often, major improvements take place over time as a result of numerous incremental improvements (Bhuiyan and Baghel, 2017).

2.7.1. Continuous improvement methodologies

2.7.1.1. Lean manufacturing

Henry Ford systemised lean manufacturing during the early nineteenth century when he established the concept of mass production in his factories. The Japanese adopted lean manufacturing and improved it. This methodology is a systematic approach to identifying and eliminating waste through CI by following the product at the pull of the customer in pursuit of perfection (Lean-manufacturing-junction.com, n.d.).

A Lean Culture (also known as Lean Management) is the foundation of Lean process improvement. When a Lean Culture exists, improvement is exponentially more likely to be sustained and an environment for continuous improvement is created. It is a combination of defining customer value, aligning around a common purpose, striving for perfection while at the same time respecting and developing employees (Gosixsigma.com, 2017).

2.7.1.2. Methodologies and tools.

Lean principles are fundamentally customer value driven, which makes them appropriate for many manufacturing and distribution situations.

Five basic principles of lean manufacturing are generally acknowledged:

- (1) *Understanding customer value*. Only what the customers perceive as value is important.
- (2) *Value stream analysis*. Having understood the value for the customers, the next step is to analyse the business processes to determine which ones actually add value. If an action does not add value, it should be modified or eliminated from the process.
- (3) *Flow*. Focus on organising a continuous flow through the production or supply chain rather than moving commodities in large batches.

(4) *Pull*. Demand chain management prevents from producing commodities to stock, i.e. customer demand pulls finished products through the system. No work is carried out unless the result of it is required downstream.

(5) *Strive for Perfection*. The elimination of non-value-adding elements (waste) is a process of continuous improvement. “There is no end to reducing time, cost, space, mistakes, and effort” (Andersson, Eriksson and Torstensson, 2006).

2.7.2. Six sigma

Six sigma is a business process that allows companies to drastically improve their bottom line by designing and monitoring everyday business activities in ways that minimise waste and resources while increasing customer satisfaction by some of its proponents. It could also be described as an improvement programme for reducing variation, which focuses on continuous and breakthrough improvements. Improvement projects are driven in a wide range of areas and at different levels of complexity, in order to reduce variation. The main purpose of reducing process variation on a product or a service is to satisfy customers. The goal of six sigma is that only 3.4 of a million customers should be unsatisfied (Andersson, Eriksson and Torstensson, 2006).

2.7.3. Total Quality Management (TQM)

TQM describes a management approach to long-term success through customer satisfaction. In a TQM effort, all members of an organization participate in improving processes, products, services, and the culture in which they work (Asq.org, 2017).

Total Quality Management have 8 principles:

1. Customer-focused

The customer ultimately determines the level of quality. No matter what an organization does to foster quality improvement—training employees, integrating

quality into the design process, upgrading computers or software, or buying new measuring tools—the customer determines whether the efforts were worthwhile (Total Quality Management, 2008).

2. Total employee involvement

All employees participate in working toward common goals. Total employee commitment can only be obtained after fear has been driven from the workplace, when empowerment has occurred, and management has provided the proper environment. High-performance work systems integrate continuous improvement efforts with normal business operations. Self-managed work teams are one form of empowerment (Khurram, 2017).

3. Process-centered

A fundamental part of TQM is a focus on process thinking. A process is a series of steps that take inputs from suppliers (internal or external) and transforms them into outputs that are delivered to customers (again, either internal or external). The steps required to carry out the process are defined, and performance measures are continuously monitored in order to detect unexpected variation (Brighthub Project Management, 2010).

4. Integrated system

Although an organization may consist of many different functional specialties often organized into vertically structured departments, it is the horizontal processes interconnecting these functions that are the focus of TQM.

- Micro-processes add up to larger processes, and all processes aggregate into the business processes required for defining and implementing strategy. Everyone must understand the vision, mission, and guiding principles as well as the quality policies, objectives, and critical processes of the organization. Business performance must be monitored and communicated continuously.
- An integrated business system may be modeled after the [Baldrige National Quality Program](#) criteria and/or incorporate the [ISO 9000 standards](#).

Every organization has a unique work culture, and it is virtually impossible to achieve excellence in its products and services unless a good quality culture has been fostered.

Thus, an integrated system connects business improvement elements in an attempt to continually improve and exceed the expectations of customers, employees, and other stakeholder (Quality-assurance-solutions.com, 2016).

5. Strategic and systematic approach

A critical part of the management of quality is the strategic and systematic approach to achieving an organization's vision, mission, and goals. This process, called strategic planning or strategic management, includes the formulation of a strategic plan that integrates quality as a core component (ToolsHero, n.d.).

6. Continual improvement

A major thrust of TQM is continual process improvement. Continual improvement drives an organization to be both analytical and creative in finding ways to become more competitive and more effective at meeting stakeholder expectations (Lotich, 2016).

7. Fact-based decision making

In order to know how well an organization is performing, data on performance measures are necessary. TQM requires that an organization continually collect and analyse data in order to improve decision making accuracy, achieve consensus, and allow prediction based on past history (Stainow, 2011).

8. Communications

During times of organizational change, as well as part of day-to-day operation, effective communications plays a large part in maintaining morale and in motivating employees at all levels. Communications involve strategies, method, and timeliness (Asq.org, 2017)

9. Chapter summary

Chapter 2 was set to review the evidence that exist from previous studies about the origins of culture, the different types of culture. Continuous improvement is known to be popular within the manufacturing industry and in this review we looked at the health sector and if they had already adopted the culture.

Chapter 3 follows with details and explanation of the empirical study.

Chapter 3

3.1. Research methodology

3.1.1. Introduction

In Chapter 3, the research methodology is thoroughly described. As explained in Chapter 1, the study focuses on the public health sector and it was conducted in 2 different provinces Kwazulu Natal hospital A and Gauteng hospital B and C. The study was to explore hospital's acceptance of the culture of continuous improvement. With continuous improvement all the stake holders must be involved, senior management provide the strategic direction and middle management are accountable for implementation whereas staff on the shop floor are actually the ones responsible to carry out the implementation. In addition, the current Chapter clarifies the research approach, the sample type and method utilised, the technique used for data collection and the process applied for data analysis.

3.2. Research approach

3.2.1. Preliminary Arrangements

Provisional permission was granted by hospital A management in Kwazulu Natal to conduct the study. The provisional permission together with the research proposal was sent to the KZN provincial research committee for final clearance and approval. The chairman of the committee approved the study and then the approval was sent back to hospital A to allow the researcher to conduct the study using their employees, see Appendix. PRO of the hospital was given the printed copies of the questionnaires and she distributed them to the participants and after completion she scanned and e-mailed to the researcher.

For Gauteng time as not on the researcher's side so he used the contacts that he have at the hospitals to able to conduct the study which the employees were happy to participate. The researcher visited the hospitals and hand out the questionnaires to staff at different departments and different levels of employment.

3.2.2. Ethical Aspects

Participants were guaranteed confidentiality and privacy as a part of ethical considerations. Each questionnaire was accompanied by a cover letter explaining the purpose and that the study is conducted for school purposes only. The questionnaires were designed in a way that it does not require them to fill in their names and this made it completely anonymous.

3.3. Research design

The purpose of the research design was to ensure that all criteria of a scientific study were met.

In descriptive studies, it is customary to define a *study population* and then make observations on a sample taken from it. Study populations may be defined by geographic location, age, sex, with additional definitions of attributes and variables such as occupation, religion and ethnic group (Banerjee & Chaudhury, 2010)

A quantitative research was appropriate as the researcher wanted to comprehend public health employee's understanding of the culture of continuous improvement at workplace and to investigate if such culture exist. As was mentioned in Chapter 1 (see 1.1) there is ambivalence in literature regarding the meaning of culture, Total Quality Management and continuous improvement. Therefore, the best point of departure for a relative unknown phenomenon; would be an in-depth exploration and description of that phenomenon and the collection of the data by means of employees completing the questionnaires. Finally, this research followed deductive approach (van Wyk, n.d.) as the researcher only focused on the employees at the public health sector across 3 different hospitals in 2 provinces Gauteng and Kwazulu Natal.

3.4. Participants

In selecting a population for study, the research question or purpose of the study will suggest a suitable definition of the population to be studied, in terms of locate and restriction to a particular age group, sex or occupation.

Sampling can be defined as the process through which individuals or sampling units are selected from the sample frame. The sampling strategy needs to be specified in advance, given that the sampling method may affect the sample size estimation (Martínez-Mesa et al., 2016). The sample ranges from senior managers to the general workers at the hospital.

The study was conducted in 3 hospitals so that during the analysis of the results the researcher can compare the culture between 3 different hospitals as it will give an indicative of the existence of the culture regardless of the location of the hospital. As culture of an organisation is something that they belief in, this lead to the participants being identified from senior management to the clerk in the admin office. This will give a very good study as the senior management formulate the strategy and it gets implemented by the employees on the shop floor. These criteria entailed a willingness to participate voluntarily with fluency in business English and being employed at the hospital.

3.5. Data gathering

Mbokani 2009 define data as information obtained in a course of a study. In this study data was collected by sending questionnaires to the participants and also by visiting the hospital and let the employees complete the questionnaire while the researcher waits. The purpose of the study was to investigate the acceptance of a culture of continuous improvement in South African public health sector.

3.5.1 The data collection instrument

The literature reviewed indicated that culture of continuous improvement should come from the top to bottom and that they should be buy-in from all the employees for it to be successful and sustainable.

The structured questionnaires consist of 4 sections:

- Section 1. Questions related to demographic information
- Section 2. Questions related to if there is any existence of the culture of continuous improvement within the hospital
- Section 3. Questions related to management team involvement
- Section 4. Questions related to the employee involvement

The responses of the participants gave the data enough to be able to draw some conclusions and recommendations.

3.5.2. Data capturing and feedback

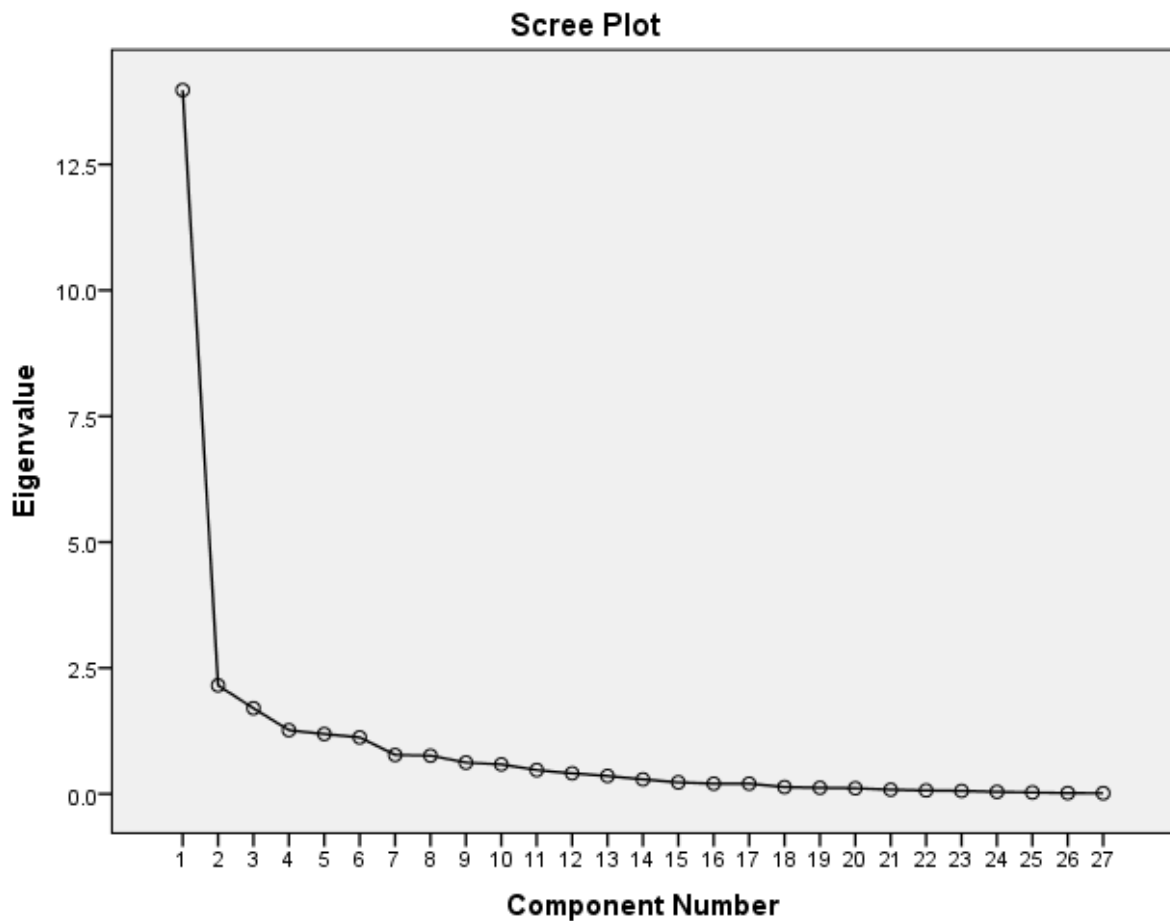
Data that is relevant and accurate forms the basis of quality research (van Niekerk, 2016:29). After the completion of the questionnaires the data was captured in MS excel spread sheet to make it easier to transferee to statistical analysis tool. This makes it easier when exporting the data to the statistical analysis tool. After the completing the study and it has been given thumbs up from the school, it will be shared with KZN research committee.

3.6. Statistical analysis

SPSS statistical programme was used to conduct analysis of the data. To determine the significance of the finding descriptive statistics to describe and compare the mean and standard deviation of the results. Mean was to the central tendency of the results and standard deviation sigma distance of the individual score from the mean. To determine the validity of the variables exploratory factor analysis was used. The factor analysis group's similar variables into dimensions. This process is also called identifying latent variables. Since factor analysis is an explorative analysis it does not distinguish between independent and dependent variables. Factor Analysis reduces the information in a model by reducing the dimensions of the observations (Statistics Solutions, 2017).

The simple principle components analysis was used to determine the number of factors, to do this both Scree plot and Eigen values were evaluated.

Graph: Scree plot and Eigen values



From the above graph one can clearly see that there are 6 component that can be used for the study. Based on the graph above the researcher decided to use 4 components for the purpose of this study as it can be clearly seen that they have a high Eigen value of greater than 1.25. The Oblimin rotation was conducted in order to identify the factor loadings of the items on both questionnaires.

Table 1: Eigen value

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	13.977	51.767	51.767	13.977	51.767	51.767	8.510
2	2.155	7.983	59.749	2.155	7.983	59.749	6.961
3	1.702	6.303	66.052	1.702	6.303	66.052	7.401
4	1.265	4.685	70.738	1.265	4.685	70.738	8.474
5	1.190	4.408	75.146	1.190	4.408	75.146	1.881
6	1.123	4.157	79.303	1.123	4.157	79.303	5.253

Extraction Method: Principal Component Analysis.

Cronbach alpha co-efficient were used to assess the reliability of the constructs that are measured in this study. “**Reliability**” is how well a test measures what it should. Cronbach’s alpha tests to see if multiple-question Likert scale surveys are reliable (Statistics How To, 2017).

Table 2: components correlation matrix

Component	1	2	3	4	5	6
1	1.000	-0.322	0.419	0.427	0.044	0.314
2	-0.322	1.000	-0.248	-0.362	-0.161	-0.204
3	0.419	-0.248	1.000	0.379	0.153	0.270
4	0.427	-0.362	0.379	1.000	0.064	0.355
5	0.044	-0.161	0.153	0.064	1.000	-0.017
6	0.314	-0.204	0.270	0.355	-0.017	1.000

Rotation Method: Oblimin with Kaiser Normalisation.

The table above tells a story of how all the 6 components correlate to each other. The next step was to group the like variables and give them a heading, this will be explained further in Chapter 4. The relationship between the components in some cases is positive and on others negative. Negative relationship occurs when a decrease in the measurement of one variable leads to an increase in the other variable (Boikanyo, 2012: 46).

T-test and ANOVA were used to determine differences between the groups in the sample. The groups were analysed per age, race, and level of employment, qualifications and regions. The effect size is the main finding of a quantitative study. While a P value can inform the reader whether an effect exists, the P value will not reveal the size of the effect. In reporting and interpreting studies, both the substantive significance (effect size) and statistical significance (P value) are essential results to be reported (Sullivan and Feinn, 2012). On this study effect size was used to indicate whether the results obtained were practically significant.

3.7. Chapter summary

This chapter explained the aspects research methodology as it was used in the empirical study that was conducted. The Chapter also details the relevance of the methodology to the specific research design.

The choice of the participants, measuring tool, how the data was captured and statistically transformed into meaningful information.

Chapter 4 focuses on the report and discussion of the results of the empirical study.

Chapter 4

4. Introduction

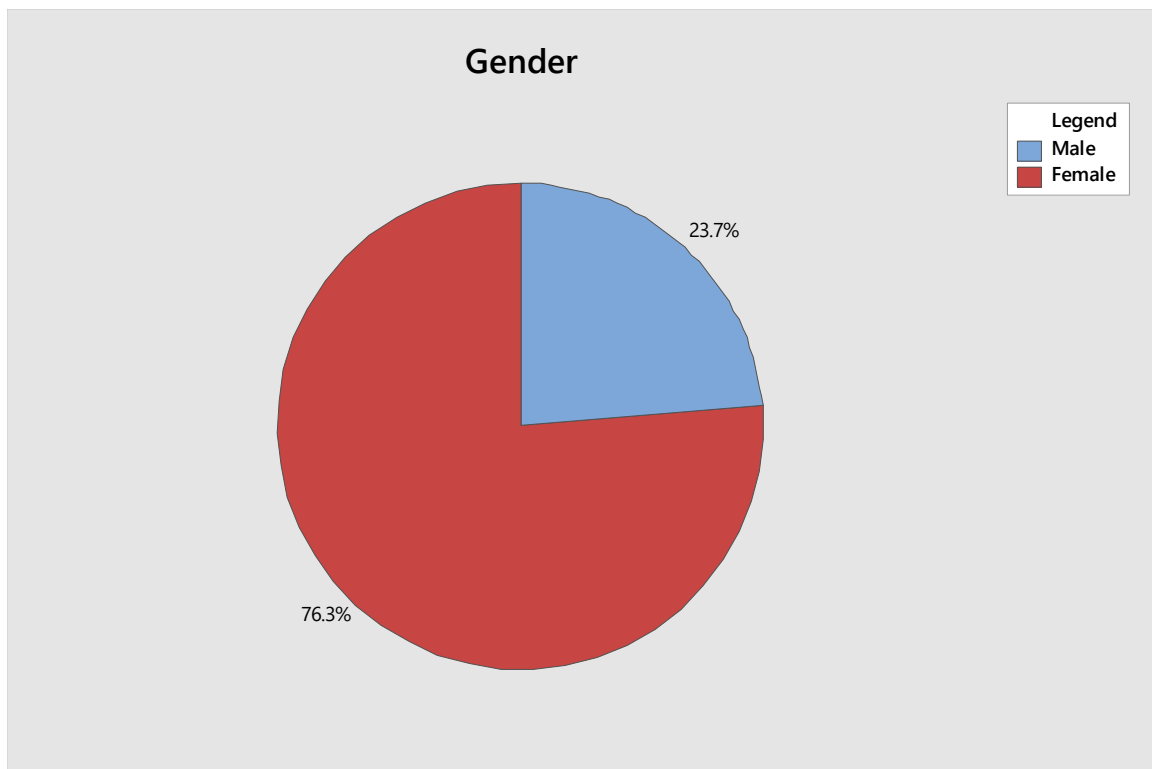
From the previous chapters there was an insightful information about the methodology and the techniques that were used on this empirical research. Chapter 4 focuses on the report and discussion of the results of the empirical study. The sequence that will be followed is we will start with the demographic information discussion, followed by data interpretation from the instrument used and finally hypothesis testing using T-test and ANOVA and reporting.

4.1. Demographic questionnaire

This section presents the information about the sample that has participated in the research. The information is reported by gender, age group, race, qualification and level of employment.

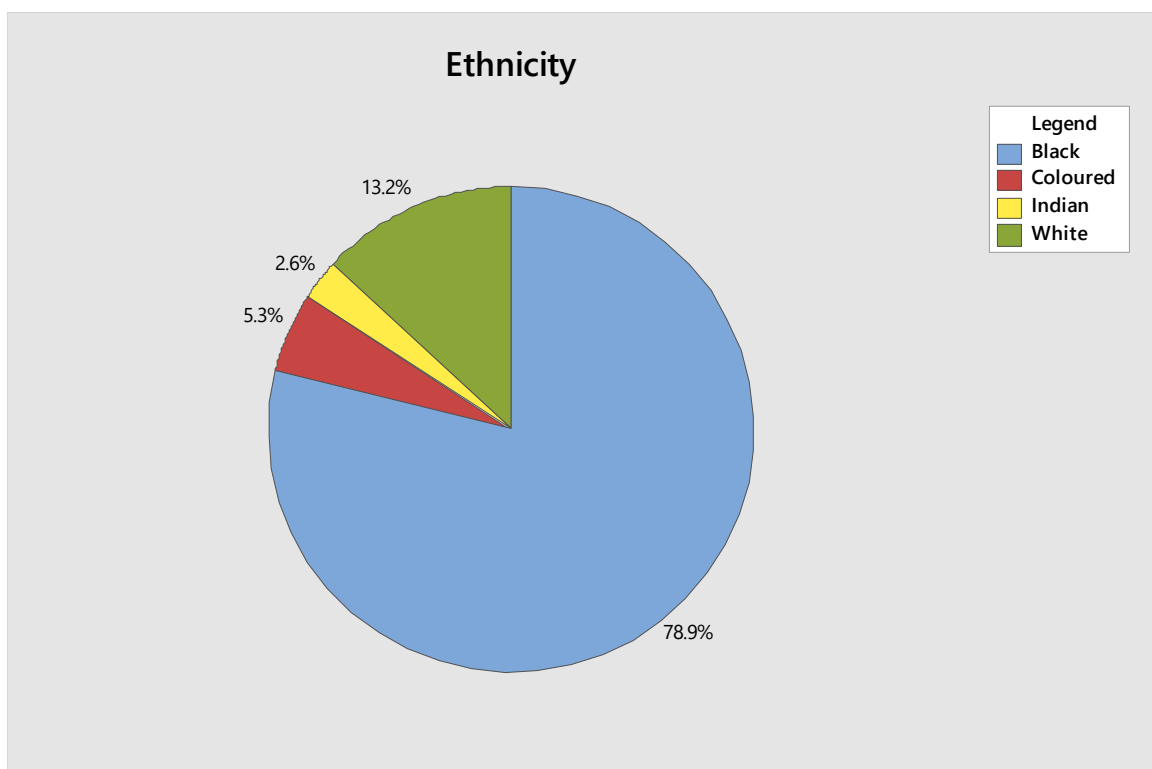
A total of 38 people participated in the research from 3 different hospitals, 10 from Hospital A, 20 from Hospital Band 8 from Hospital C.

Below is the pie chart graph per question on demographic.



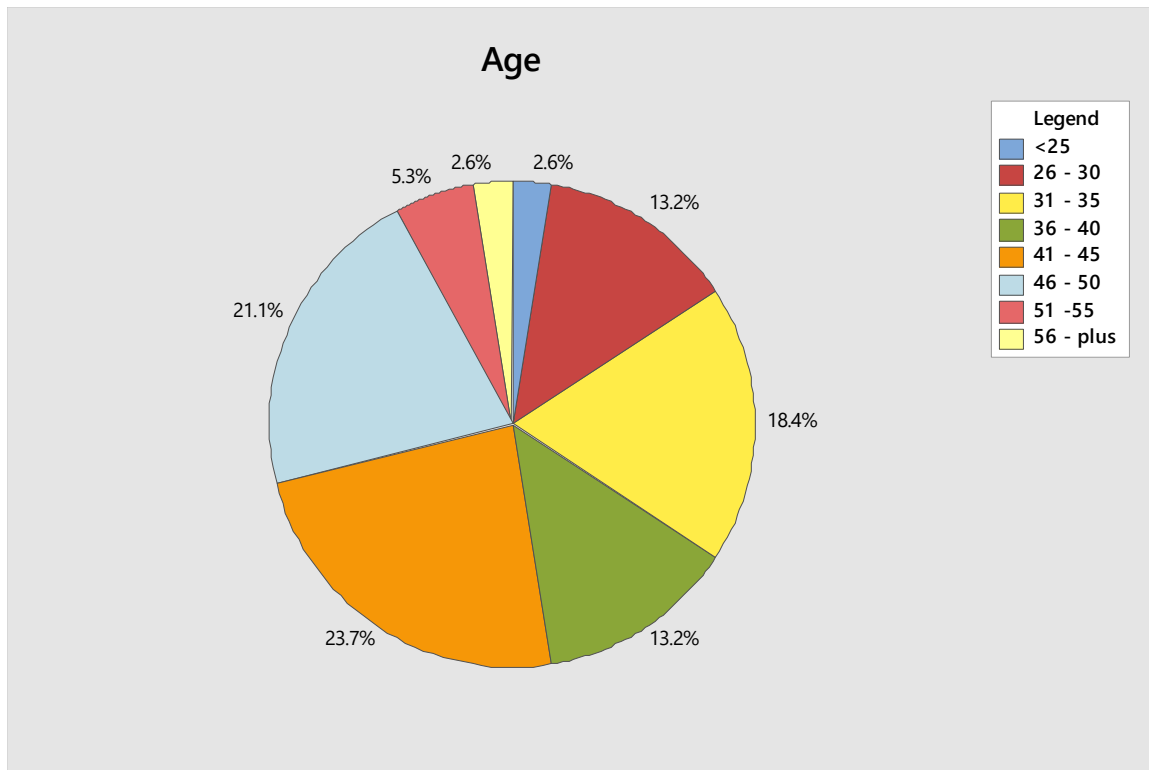
Graph: Gender

76.3% of the participants were female and 23.7% were male.



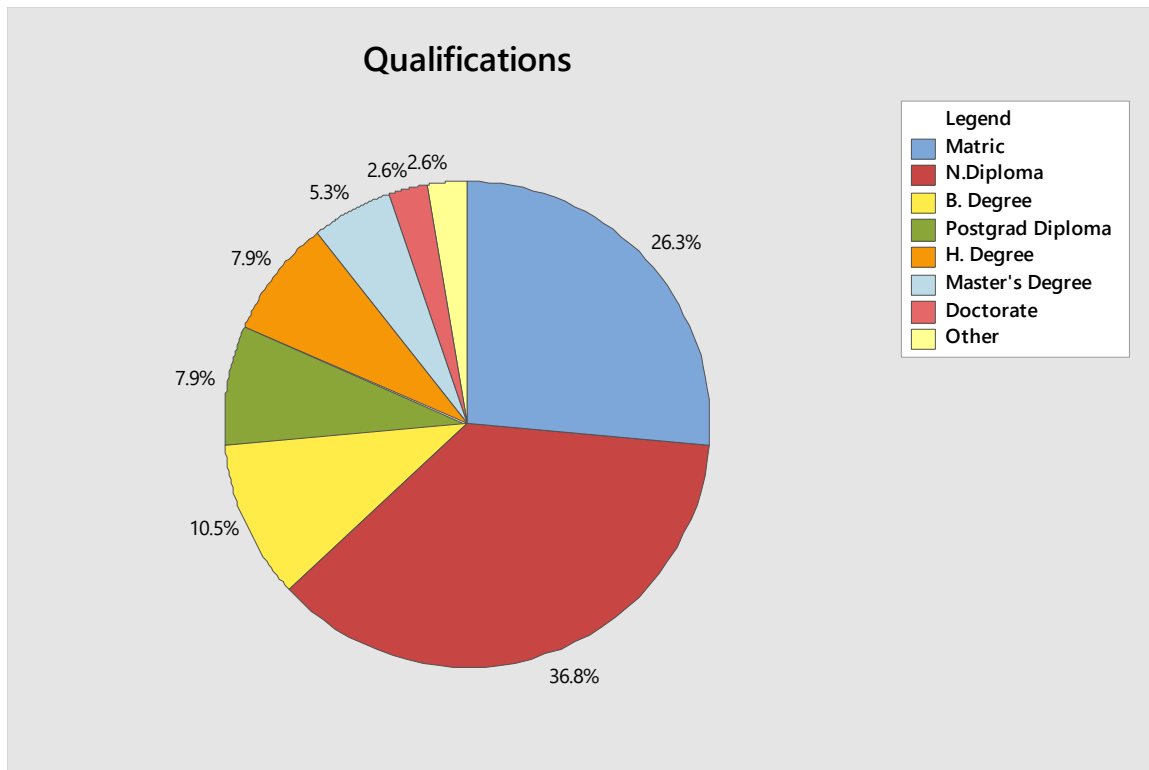
Graph: Ethnicity

78, 9% of the participants were black, 13, 2% white, 5.35 Indians and 2.6% coloured.



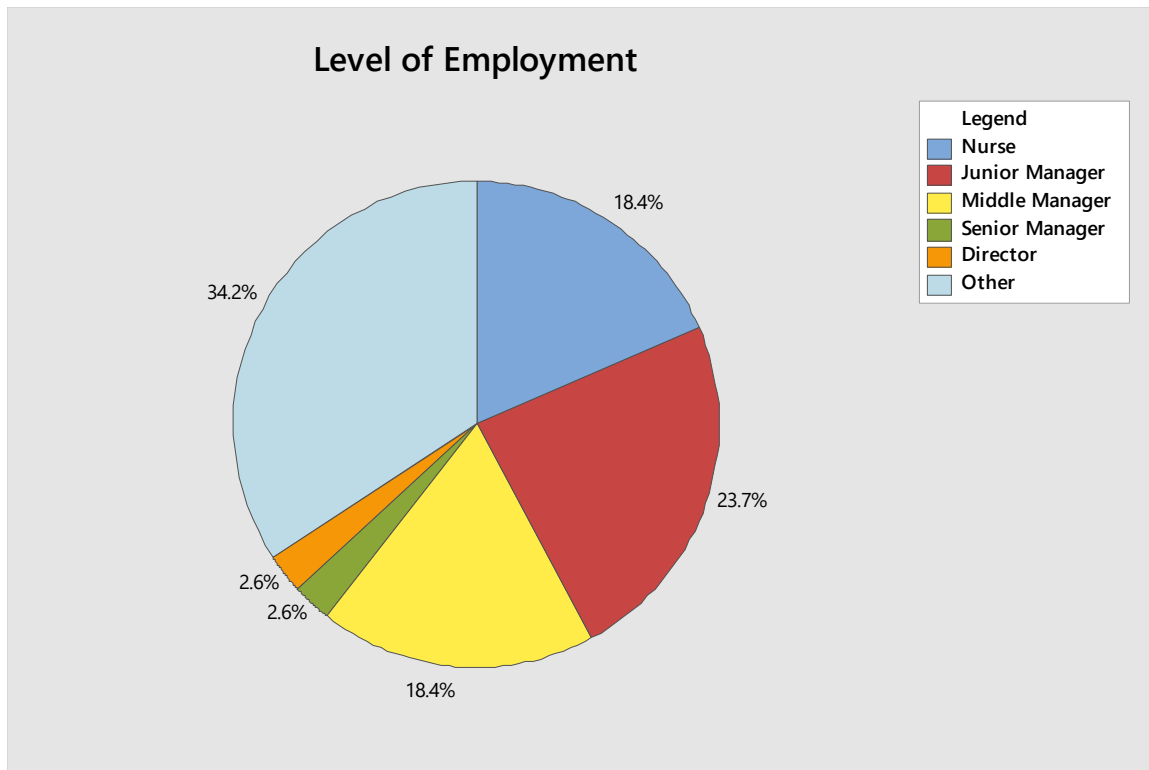
Graph: Age

23.7% of the participants were between the ages 41 -45 years old, 21.1% were between the ages 46 – 50 years old, 18.4% between the ages 31 – 35 years old, 13.2% between the ages 26 – 30 and 36 – 40 years old respectively, 5.3% were between 51 -55 years old and 2.65 <25 years old and 56 plus years old respectively.



Graph: Qualifications

36.8% of the participants had national diploma, 26.3 had matric certificate, 10.5% had Baccalaureate degree, 7.9% had postgraduate diploma and honours degree respectively, 5.3% had master's degree and 2.6% had doctorate and other respectively.



Graph: Level of employment

34.2% of the participants works as other meaning they can either be clerks, data capture, porter, etc. 23.7% works as junior managers, 18.4% works as nurses and middle managers respectively and 2.6% works as senior manager and director respectively.

4.2. Research results

4.2.1. Descriptive statistics

The below table show the descriptive statistics of how the participants responded to each of the question and here it shows that most of the answers were neutral as depicted by MEAN value and the Standard deviation. Descriptive statistics gives an overview to the research and one can quickly identify the GAP as there are few questions that scored below 3. This means that on that particular question the results are the same regardless of which hospital or the qualifications or the level of employment one holds. The mean value for depended variable is 3.5. See the below graph:

Table 3: Results of the dependable variable

	N	Minimum	Maximum	Mean	Std. Deviation
Site	38	1.00	3.00	1.684	0.809

4.2.2. Management team

The below table shows how the participants have responded on the questions that were asking about management involvement. The only question that had an answer below 3 was: I use visual management to identify potential continuous improvement opportunities, with a value of 2.7.

Table 4: results of management team involvement and empowering employees

Question	N	Minimum	Maximum	Mean	Std. Deviation
1. Continuous improvements means that we deliver best quality service to our customers	38	1.00	5.00	3.6842	1.33771
2. Continuous improvement is part of our strategy	38	1.00	5.00	3.5263	1.30977
3. Our organisation has clarity about what we want to accomplish in the short term	38	1.00	5.00	3.3158	1.25430
4. I know the benefits of	38	1.00	5.00	3.6316	1.12517

continuous improvement					
5. Efficiencies have improved since the introduction of continuous improvement	37	1.00	5.00	3.6216	1.11433
6. Performance indicators are used across programs throughout the organisation	37	1.00	5.00	3.5135	1.16956
7. My manager is responsible for setting the overall agenda for data collection and reporting	38	1.00	5.00	3.3684	1.26108
8. Operational staff have the information and skills they need to successfully engage with data for improvement program	38	1.00	5.00	3.3158	1.14148
9. Every start of the shift we have meetings that have set agenda and we share our Key	38	1.00	5.00	3.2105	1.25543

Performance Indicators (KPI)					
10. I am involved in the continuous improvement projects	38	1.00	5.00	3.2105	1.29777
11. I am encouraged to come with improvement ideas	38	1.00	5.00	3.3421	1.16888
12. Management gives recognition to successful improvements	38	1.00	5.00	3.1842	1.22707
13. Continuous improvement successes are celebrated in our organisation	38	1.00	5.00	3.1316	1.27705
14. Graphs are used to indicate our daily performance	38	1.00	5.00	3.2632	1.40817
15. I use visual dashboard to identify potential improvement opportunities	38	1.00	5.00	2.6842	1.41622

4.2.3. Employee Engagement

Below table shows the employee engagement on the continuous improvement culture at workplace. For employees to have a good morale they also need to be involved in the initiatives so that they can take ownership. There are few questions that had a mean value of below 3. The following questions had a mean of below 3:

1. We make time for lean sessions (2.7)
2. I really experience that management engage with the staff on the floor level (2.9)
3. Management employs outside experts for continuous improvement when necessary (2.9)
4. We have daily tracking sessions to review our performance (2.7)

The rest of the questions had a mean value of above 3.0.

Table 5: Results of employee engagement and involvement in continuous improvement

	N	Minimum	Maximum	Mean	Std. Deviation
Site	38	1.00	3.00	1.6842	0.80891
Gender	38	1.00	2.00	1.7632	0.43085
Ethnicity	38	1.00	4.00	1.5000	1.05907
Age	38	1.0	8.0	4.395	1.6852
Qualification	38	1.00	8.00	2.7368	1.84074
Position	38	1.00	6.00	3.5000	2.01011
Culture?	38	1.00	5.00	3.4772	0.97198

1. Continuous improvements means that we deliver best quality service to our customers	38	1.00	5.00	3.6842	1.33771
2. Continuous improvement is part of our strategy	38	1.00	5.00	3.5263	1.30977
3. Our organisation has clarity about what we want to accomplish in the short term	38	1.00	5.00	3.3158	1.25430
4. I know the benefits of continuous improvement	38	1.00	5.00	3.6316	1.12517
5. Efficiencies have improved since the introduction of continuous improvement	37	1.00	5.00	3.6216	1.11433

4.3. Factor analysis

To meet the research objectives, theory that was explored in the previous chapters of the culture of continuous improvement in public health sector will be put to test. Factor analysis was used to investigate the intended scale of the questionnaires. To test the sample adequacy Kaiser-Maier-Olkin (KMO) and Bartlett's test of spherically was used for evaluation.

The KMO is considered valid between the values 0 and 1, small values means that there is little in common between the variables to warrant factor analysis. Values above 0.70 are usually considered to be accepted.

Table 6: KMO and Bartlett's results.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.774
Bartlett's Test of Sphericity	Approx. Chi-Square	881.373
	df	351
	Sig.	0.000

From the table the value of KMO is 0.77 which means the data gathered from the sample is acceptable and the significant is 0. Furthermore other tests were conducted to validate the data and the significant for the analysis. The extraction: Principle component analysis was also conducted and below are the results in the table.

Table 7: Communalities: Principle Component Analysis

	Initial	Extraction
1. Continuous improvements means that we deliver best quality service to our customers	1.000	0.857
2. Continuous improvement is part of our strategy	1.000	0.807
3. Our organisation has clarity about what we want to accomplish in the short term	1.000	0.784
4. I know the benefits of continuous improvement	1.000	0.879
5. Efficiencies have improved since the introduction of continuous improvement	1.000	0.812

6. Performance indicators are used across programs throughout the organisation	1.000	0.737
7. My manager is responsible for setting the overall agenda for data collection and reporting	1.000	0.833
8. Operational staff have the information and skills they need to successfully engage with data for improvement program	1.000	0.739
9. Every start of the shift we have meetings that have set agenda and we share our Key Performance Indicators (KPI)	1.000	0.704
10. I am involved in the continuous improvement projects	1.000	0.842
11. I am encouraged to come with improvement ideas	1.000	0.793
12. Management gives recognition to successful improvements	1.000	0.706
13. Continuous improvement successes are celebrated in our organisation	1.000	0.704
14. Graphs are used to indicate our daily performance	1.000	0.902
15. I use visual dashboard to identify potential improvement opportunities	1.000	0.852
1. I can communicate with management easily about improvements	1.000	0.780

2. Lean is the methodology/ tool that I use to eliminate waste in our process	1.000	0.706
3. We make time for lean sessions	1.000	0.738
4. I really experience that management engage with the staff on the floor level	1.000	0.856
5. I feel that management is trying new ways of constantly improving quality of our services	1.000	0.776
6. The company has offered me training opportunity since joining	1.000	0.844
7. Learnings from the continuous improvements projects are shared with everyone	1.000	0.831
8. We have daily tracking sessions to review our performance	1.000	0.837
9. I am encouraged to come with improvement ideas	1.000	0.803
10. Management employs outside experts for continuous improvement when necessary	1.000	0.758
11. Outside experts are helpful in identifying improvement opportunities	1.000	0.755
12. I know what value we add to our customer	1.000	0.776

Table above, the communality for a given variable can be interpreted as the proportion of variation in that variable explained by the three factors (Sites.stat.psu.edu, 2017).

In other words, if we perform multiple regression of “**I know the value I add to our customer**” against the three common factors, we obtain an $R^2 = 0.776$, indicating that about 77.6% of the variation in “I know the value I add to our customer” is explained by the factor model. The results suggest that the factor analysis does the best job of explaining variation of the research that has been conducted. The average value of the communalities of this research is 79.3% which indicates a very strong relationship and the values are close to each other ranging from 0.702 to 0.902. The model explains “**Graphs are used to indicate our daily performance**” best with a value of 90.2% this does not mean other variables are bad.

Table 8: Extraction Method: Pattern Matrix.

	Component			
	Management support	Employee empowerment	CI Culture	Systems
	a=0.918 1	a=0.906 2	a=0.887 3	a=0.91 4
12. Management gives recognition to successful improvements	0.320			
13. Continuous improvement successes are celebrated in our organisation	0.322			
3. We make time for lean sessions	0.462			
5. I feel that management is trying new ways of constantly improving quality of our services	0.464			
2. Lean is the methodology/ tool that I use to eliminate waste in our process	0.493			
10. I am involved in the continuous improvement projects	0.688			
11. I am encouraged to come with improvement ideas	0.796			
12. I know what value we add to our customer		-0.806		
6. The company has offered me training opportunity since joining		-0.704		
7. Learnings from the continuous improvements projects are shared with everyone		-0.644		
1. I can communicate with management easily about improvements		-0.626		
4. I really experience that management engage with the staff on the floor level		-0.572		
10. Management employs outside experts for continuous improvement when necessary		-0.392		
8. Operational staff have the information and skills they need to successfully engage with data			0.468	
6. Performance indicators are used across programs throughout the organisation			0.475	
3. Our organisation has clarity about what we want to accomplish in the short term			0.686	
5. Efficiencies have improved since the introduction of continuous improvement			0.705	
2. Continuous improvement is part of our strategy			0.745	
4. I know the benefits of continuous improvement			0.932	
14. Graphs are used to indicate our daily performance				0.899
11. Outside experts are helpful in identifying improvement opportunities				0.550
15. I use visual dashboard to identify potential improvement opportunities				0.735
9. I am encouraged to come with improvement ideas				0.358
9. Every start of the shift we have meetings that have set agenda and we share our Key Performance Indicators (KPI)				0.426
8. We have daily tracking sessions to review our performance				0.679

The factor pattern matrix contain the coefficients for the linear combination of the variables (P, 2017). The idea of pattern matrix is to reduce the number factors on which the variables under investigation have high loadings.

Pattern matrix does not actually change anything but makes the interpretation of the analysis easier (Chetty and Datt, 2017). Looking at the table above, the most likely questions were grouped together by the statistical analysis tool. As the dimensions of the continuous improvement culture resulted in a factor loading that was not strong and for ease of analysis and interpretation the original dimensions were combined into combined into 4 factors. The factors were named as follows: Support, Empowerment, CI culture and System.

Also using Scree plot (shown in chapter 3 above) 4 factors with a value of above 1.25 can easily be identified, these 4 factors were given headings as follows: Support (13.96) empowerment (2.16), CI culture (1.70) and system (1.27). Above is the table that shows Eigen values, Extraction Sums of Squared Loadings and Rotation Sums of Squared Loadings^a.

Support is characterised by the structure that management had put in place to ensure that the culture of continuous improvement is cultivated throughout the organisation and that it involves all the employees. Successes are celebrated and there is forms to log any issues pertaining the continuous improvement ideas.

Empowerment is characterised by employees being given the resources that they require i.e. skills to carry on with continuous improvement. Management provides the strategy and let the employees execute that particular strategy and management style has been moved from office to the floor where managers interact easily with employees

System is characterised by the daily meetings to review the previous day's performance and to plan the day ahead. And such system can also be sued to escalate reoccurring issues to the management team and also let the management be in touch with the employees on a daily basis.

CI culture is characterised by strategy, defining the voice of the customer (VOC) and striving to exceed customers' expectations. Even if the customer's expectations may change, the culture is flexible to a point that they organisation will easily be able to meet the expectation.

After identifying and labelling the factors, an internal consistency (reliability) of the sub-scale scores were calculated and evaluated by means of Cronbach's Alpha shown on table 7. The factor reliabilities for the support (0.917), empowerment (0.906), CI culture (0.887) and system (0.910) indicates strong reliabilities.

Table 9: Results of the factor reliability for the identified dimensions of continuous improvement

Factor	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Support	0.917	0.917	7
empowerment	0.906	0.907	6
CI culture	0.887	0.886	6
System	0.910	0.911	6

4.4. Correlation analysis

Correlation is another way of assessing the relationship between variables. To be more precise, it measures the extent of correspondence between the ordering of two random variables. There is a large amount of resemblance between regression and correlation but for their methods of interpretation of the relationship (Pages.intnet.mu, n.d.). In this section the researcher tests the relationship between the variables.

Table 10: factors correlations

		Support	Empowerment	Systems	CI Culture
Support	Pearson Correlation	1	.758**	.805**	.731**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	38	38	38	38
Empowerment	Pearson Correlation	.758**	1	.723**	.619**
	Sig. (2-tailed)	0.000		0.000	0.000
	N	38	38	38	38

Systems	Pearson Correlation	.805**	.723**	1	.706**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	38	38	38	38
CI Culture	Pearson Correlation	.731**	.619**	.706**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	38	38	38	38

It is evident from table 8, that the correlation between *Support, Empowerment, CI Culture and System*, is strong statistical and significant, they all have a P value that is lower than 0.01 level (2-tailed test). The Pearson correlation between the factors have a high percentage which attest to the relationship between them. Pearson correlation value ranges from 0.613 between CI Culture and empowerment to 0.805 between support and system.

4.5. Regression

Regression analysis generates an equation to describe the statistical relationship between one or more predictor variables and the response variable (Frost, 2017).

The p-value for each term tests the null hypothesis that the coefficient is equal to zero (no effect). A low p-value (< 0.05) indicates that you can reject the null hypothesis. In other words, a predictor that has a low p-value is likely to be a meaningful addition to your model because changes in the predictor's value are related to changes in the response variable. Conversely, a larger (insignificant) p-value suggests that changes in the predictor are not associated with changes in the response (Frost, 2017).

On this analysis the p-value used was 0.01 and when correlating the factors, support had twice had a value of less than 0.01 against system and CI culture the rest there was no significant difference. Below is the further detailed explanations.

4.5.1. Support

- a. Dependent Variable: Support
- b. Predictors: (Constant), CI Culture, Empowerment, Systems

Table 11: Regression coefficients using Support as a dependent variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.199	0.334		0.596	0.555
	Empowerment	0.290	0.120	0.310	2.409	0.022
	Systems	0.363	0.130	0.400	2.802	0.008
	CI Culture	0.265	0.130	0.256	2.035	0.050

From the table above the p-value of predictors CI culture and empowerment is greater than 0.01, indicating that there is a no significant different on how the participants answered the questions. Systems have a p-value of 0.008 which is less than the level value meaning that there is significant different.

4.5.2. Empowerment

- a. Dependent variable: Empowerment
- b. Predictor: (Constant), CI culture, Support, Systems

Table 12: Regression coefficients using Empowerment as a dependent variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.463	0.435		1.065	0.295
	Systems	0.290	0.182	0.299	1.590	0.121
	CI Culture	0.072	0.181	0.065	0.397	0.694
	Support	0.502	0.209	0.470	2.409	0.022

All the predictors have a p-value of greater than 0.01 level meaning that there is no significant different on how the participants answered the questions in relation to empowerment as shown by table 12.

4.5.3. Systems

- a. Dependent variable: Systems
- b. Predictor variables: (Constant), Support, Empowerment, CI culture

Table 13: Regression coefficients using Systems as a dependent variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.243	0.399		-0.608	0.547
	CI Culture	0.252	0.159	0.221	1.587	0.122
	Support	0.517	0.184	0.469	2.802	0.008
	Empowerment	0.239	0.150	0.231	1.590	0.121

Table 13 shows Support (0.008) as the only predictor with a p-value of less than 0.01 meaning that there is significant difference on how the participants answered the questions and other predictors p-value is greater than 0.01, there is no significant different.

4.5.4. CI culture

- a. Dependent variable: Systems
- b. Predictor variables: (Constant), Support, Empowerment, CI culture

Table 14: Regression coefficients using CI culture as a dependent variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.172	0.367		3.198	0.003
	Support	0.410	0.201	0.425	2.035	0.050
	Empowerment	0.064	0.162	0.071	0.397	0.694
	Systems	0.274	0.173	0.313	1.587	0.122

Table 14 shows all the predictors having p-value of greater than 0.01 meaning that there is no significant difference on how the participants answered the questions.

4.6. T-test and ANOVA

The independent sample t-test is a member of the t-test family, which consists of tests that compare mean value(s) of continuous-level (interval or ratio data), normally distributed data. The independent sample t-test compares two means.

It assumes a model where the variables in the analysis are split into independent and dependent variables. The model assumes that a difference in the mean score of the dependent variable is found because of the influence of the independent variable. Thus, the independent sample t-test is an analysis of dependence (Statistics Solutions, 2017). The researcher used the demographic information to conduct t-test of the study. what was found was that support based on gender had a p-value of 0.020 which is lesser than p-value level of 0.05 meaning that there is significant difference whereas others either be on race, qualifications, level of employment or age were not significant when tested against all the components.

ANOVA is short for Analysis Of Variance. The main purpose of an ANOVA is to test if two or more groups differ from each other significantly in one or more characteristics. For some statisticians the ANOVA doesn't end there – they assume a cause effect relationship and say that one or more independent, controlled variables (the factors) cause the significant difference of one or more characteristics (Statistics Solutions,

2017). The same test as t-test were conducted using ANOVA and the results were similar to the t-test results.

4.6.1. Gender

A T-test was conducted to test males and females response to the study and this was done on this section.

Table 15: ANOVA for Gender

		F	Sig.	t
Support	Equal variances assumed	5.906	0.020	-0.743
	Equal variances not assumed			-1.053
Empowerment	Equal variances assumed	3.392	0.074	-0.721
	Equal variances not assumed			-0.933
Systems	Equal variances assumed	3.896	0.056	-1.453
	Equal variances not assumed			-1.946
CI Culture	Equal variances assumed	3.309	0.077	-0.898
	Equal variances not assumed			-1.181

From the table 15 the p-value for Support is 0.02 which is less than p-value of 0.05 level, meaning that there is significant different on the gender when it come to the support whereas others on other p-value is greater than 0.05 meaning there is no significant difference.

4.6.2. Ethnicity

Table 16: ANOVA for Ethnicity

	Levene Statistic	df1	df2	Sig.
Support	1.320 ^a	2	34	0.280
Empowerment	.332 ^b	2	34	0.720
Systems	1.056 ^c	2	34	0.359
CI Culture	.464 ^d	2	34	0.633

Table 16 shows the p-value of all the components is greater than p-value of 0.05 meaning that there is no significant different on how the employees perceive the culture of continuous improvement at work. They all perceive it the same way regardless of race.

4.6.3. Age

Table 17: Levene's statistics for Age

	Levene Statistic	df1	df2	Sig.
Support	.981 ^a	5	30	0.445
Empowerment	.799 ^b	5	30	0.559
Systems	1.657 ^c	5	30	0.176
CI Culture	.706 ^d	5	30	0.624

Table 17 shows the p-value of all the components is greater than p-value of 0.05 meaning that there is no significant different on how the employees perceive the culture of continuous improvement at work. They all perceive it the same way regardless of age.

4.6.4. Qualifications

Table 18: Levene's test

	Levene Statistic	df1	df2	Sig.
Support	2.112 ^a	5	30	0.091
Empowerment	1.971 ^b	5	30	0.112
Systems	2.904 ^c	5	30	0.030
CI Culture	1.793 ^d	5	30	0.145

Table 18 shows Levene's statistics of systems with a p-value of 0.030 which is less than the p-value level of 0.05. This indicates there is a significant difference between the age groups about the system that is being used for continuous improvement at the hospitals.

4.6.5. Level of Employment

Table 19: Levene's statistics for the level of employment

	Levene Statistic	df1	df2	Sig.
Support	.981 ^a	5	30	0.445
Empowerment	.799 ^b	5	30	0.559
Systems	1.657 ^c	5	30	0.176
CI Culture	.706 ^d	5	30	0.624

Table 19 shows the p-value of all the components is greater than p-value of 0.05 meaning that there is no significant different regardless of the position one held at work of the culture of continuous improvement at work.

4.7. Discussion of results

The main objective of the research was to investigate the acceptance of the culture of continuous improvement in South African public health sector. To achieve the main objective of the research, secondary objectives were determined and analysed through the statistical tools to determine the validity, reliability as well as correlation between the components and the demographic differences amongst employees at different hospitals.

Literature review that was found mostly indicated that overseas countries i.e. United States of America, United Kingdom and Australia had continuous improvement in their public hospitals. Very little was found to be the case in South Africa, Lean summit of 2015 held in Cape Town the CEO of Frere hospital Dr Rolene Wagner in Eastern Cape had turned around the hospital and the service rendered to customers and staff morale. All this she said was done through embracing the culture of continuous improvement. It comes as no surprise when she was for another award for the work she has been doing at Buffalo City's major health facility (Vena, 2016).

The primary objective was to investigate the culture of continuous improvement in public health sector, this was tested by the dependent variable during the study and the measurement was analysed statistically by using descriptive statistic.

The question asked needed a yes or a no answer (1 or 2) and the results shows that out of 38 people 26 (68.4%) said that there is no culture whereas 12 (31.6%) said there is culture of continuous improvement. Based on this it is clear that there is a need for continuous improvement in South African public health sector or it can be that employees do not understand what continuous improvement is. The questionnaires were divided into three sections, demographics, and management team and employee's engagement.

Demographic results show that 76.3% of the participants were female ranging from various age group and different levels of employment. The assumption is that maybe female were more willing to participate on the study than male or that in hospitals most employees are female hence the participants were female.

Section 2 was focusing on management team's involvement and providing strategic direction to the employees in terms of continuous improvement. The Likert scale was used to collect the data and when the average respond of the 15 questions on this section amongst 38 the participants analysed was 3.3 meaning that neither management have continuous improvement as part of the strategy or if it is they are not deploying it.

Visual management should be part of the hospitals main drives as people who visit the hospital should find it easy to navigate and also the performance indicators displayed on the notice boards. This being said the visual management is one of the tools that most organisations use to highlight problems within the operations as the non-performance would be indicated in red and a team must be assign to address it. This is the platform that can be used to come up with / identify potential opportunities for continuous improvement.

Section 3 focuses on employee engagement and involvement, for continuous improvement culture to be sustainable employee involvement plays a key role. Employees are responsible for the implementation of the culture and its sustainability, this improve the employee morale and give them a sense of belonging. The average mean of this section is 3.0 and it was consisting of 12 questions. Employees are somewhat involved in continuous improvement initiative and they seldom celebrate their success.

Testing for reliability and validity so that the researcher can be confident that he/she is presenting a study that is valid and reliable, KMO and Bartlett's test analysis for validity was conducted and Cronbach's Alpha to test reliability both this test came back with a positive result that the study is valid and reliable.

Factor analysis is a way to take a mass of data and shrinking it to a smaller data set that is more manageable and more understandable. It's a way to find hidden patterns, show how those patterns overlap and show what characteristics are seen in multiple patterns. It is also used to create a set of variables for similar items in the set (these sets of variables are called dimensions) (Glen, 2014). Data with similar characteristics were grouped together and Scree plot (chapter 3) showed Eigen value which was used to select the factors that will be used for the purpose of the study. 4 factors were selected based on Eigen value and each was given a heading to makes it easy to do further analysis.

The following headings were used based on the questionnaires that were grouped together: Support meaning support from the management team, System meaning the system that is being used to address continuous improvement e.g. daily morning meetings, empowerment are the employees empowered to makes decisions that are related to continuous improvement and last factor was CI culture.

The factors that were identified answers secondary objectives 1(management involvement) and 2 (employee empowerment), from the analysis there is a gap that still need to be closed by management being more involved and making continuous improvement part of their strategy. From the study a mean value of 3.5 was obtained meaning their continuous improvement is neither nor part of the strategy. Employees are involved through daily meetings and visual management both had a mean of less than 3 meaning that most participants disagree that there is a daily meaning/ forum to discuss process performance at workplace.

4.8. Summary of the chapter

Demographical information was gathered by means of asking biographical questions about the participants. 4 factors were extracted from the data analysed and 70.7% of the total variance can be explained. The factors were labelled Support, Systems, Empowerment and CI culture.

Acceptable Cronbach alpha co-efficient were found, demonstrating that the large portion of the variance is explained by the dimensions (Boikanyo, 2012:74). The general indication of the research shows that there is a positive correlation between the factors.

In chapter 5 conclusions about the research question, the limitations and conclusions for the future and conclusion for the hospitals.

Chapter 5

5.1. Introduction

Chapter 5 sums up the whole study and it provides conclusions that are based on the scientific results obtained in the empirical studies conducted. Conclusions is compared to the primary objective to test if whether it was met or not. Discuss limitations that were encountered during the study. Make recommendations for the future studies and recommendations for the public health sector for the GAP that the study had identified.

5.2. Conclusions

The main objective was to investigate if the culture of continuous improvement is embraced at public health sector and to make recommendations on how they can close the GAP and embrace the culture. From the questions that were asked on this research, the following conclusions can be drawn.

The first specific objective was to investigate the culture of continuous improvement in the public health sector. From the literature review different definitions have been stated about culture and continuous improvement respectively. Culture is defined as “The customs, traditions, attitudes, values, norms, ideas and symbols govern human behaviour pattern”. Continuous improvement was defined as “a method for identifying opportunities for streamlining work and reducing waste”. When the study was conducted it shows that there is some what a culture that exist, but it is not a continuous improvement culture as there is no dedicated meetings for Lean or even daily review meetings.

Opportunities for improvements are not even shared amongst the management and staff. Lean or daily meetings helps to identify wastes or non-performance in the process and by so doing create opportunities to improve and exceed customers' expectations.

When the dependent variable question was asked “Does the organisation embrace continuous improvement culture?” the mean value was 1.3 meaning 68.4% of the participants said that the organisation does not embrace continuous improvement culture. With this being said it means that there is little continuous improvement culture at the public health sector.

- The objective was not met based on the above analysis.

Secondary first objective was to investigate the involvement of management in continuous improvement initiative. For management to be able to be involved in continuous improvement it needs to be part of their strategy and by doing so they will be involved and take ownership. When asked this particular question “Continuous improvement is part of our strategy” the mean value on this question was 3.5 meaning that strategy is neither part of the strategy. Performance indicators question had a mean value of 3.7 and to set the indicators it is management responsibility. The general feeling is neutral, so there is neither nor involvement of the management in the continuous improvement.

Section 2 of the questionnaire was to address management role or involvement in continuous improvement and the average mean value was 3.3. There is little to no involvement from the management team, the lack of management involvement results in poor customer service and process that is not streamlined to eliminate waste.

- Objective was not met based on the above analysis

The third specific objective was to investigate employee involvement in continuous improvement initiative and whether they are empowered to come up with improvement ideas. Employee involvement is defined as Regular participation of employees in (1) deciding how their work is done, (2) making suggestions for improvement, (3) goal setting, (4) planning, and (5) monitoring of their performance. Encouragement to employee involvement is based on the thinking that people involved in a process know it best, and on the observation that involved employees are more motivated to improve their performance (BusinessDictionary.com, 2017).

Section 3 was dealing with the engagement of employees in continuous improvement and after the analysis the average for the mean was found to be 3.06. With this value it means there is either or no involvement of employees in the continuous improvement at workplace. When asked “I use visual dashboard to identify potential improvement opportunities” the mean value was 2.7 meaning that there is no daily meeting. This meeting are very important as they provide direction of the business and the employees are involved and this helps with the buy-in from employees. With little to no involvement of it will be difficult to have a sustainable culture if continuous improvement.

- Objective was not met based on the above analysis.

Very little evidence surfaced from the study that public health sector embraces the culture of continuous improvement especially hospital as this is where the study was conducted. This leads the study to conclude that there is a definite lack of continuous improvement culture in public health sector in South Africa.

5.3. Recommendations

Recommendations pertaining to the 3 hospitals that were used in this study, limitations and the recommendations for the future study on this topic are made on this section.

5.4. Recommendations for the hospitals

Due to the lack of research that has been done on continuous improvement culture is South African public health sector, it is suggested that this topic be further investigated. It is evident that the employees at the hospitals lacks the knowledge of continuous improvement and this needs to be address so that the customer service can be improved and by so doing the snow ball effect will be improved morale of the staff.

Management must have continuous improvement as one of their KPI and report on it on a monthly report, equip the employees and provide resources to implement the culture. Management must act as a support structure for continuous improvement and also ensure that there are systems in place to allow the culture to thrive.

The system that needs to be in place is the daily 15 minutes meeting before the start of the shift, followed by the management meeting which will also address issues that have been raised by the employees. Once a week have continuous improvement meeting that will be solely dedicated to process improvement and improvement opportunities identification. Visual trackers must be current as they tend to highlight hidden or reoccurring problems so if they are not update daily some problems might never be solved. Management must appoint a team that will be responsible to implement the culture and train employees so that they are able to identify waste in their processes and be able to eliminate it.

When the system and support are in place with time hospital can save money that was being lost due to process that was not efficient. They can also reduce the standing time for the patience before they can be admitted to the hospital or before seeing a doctor or before receiving medicine.

5.5. Limitations

The process of approval for the study at public hospital was longer and resulted in not meeting the target sample that the researcher was aiming for. Some employees were not willing to take part in a study as they fear that their identity will be compromised even though they have been assured that the study is completely anonymous. Hospital employees are mostly busy, so it became a challenge to be able to have doctors and nurses to participate on the study as they are the heartbeat of the hospital and their participation in large numbers would have been great.

5.6. Recommendations for future studies

For future study for any topic that has to be done at the public health sector the researcher must well in advance register with the research council so that he/she gets approval in time for the study.

The future study can focus on lean principles, ***Value as defined by customer, Value Stream Mapping, Continuous Flow, Pull or Push and Strive for perfection.*** Not forgetting 5S, ***Sort, Store, Shine, Standardise and Sustain.***

Explore their process if any of identifying waste in the process and how the identified waste is eliminated. There are 8 types of wastes, ***Waiting, Overproduction, Processing, Rework, Motion, Intellect, Inventory and Transportation.*** This topics will indeed show if the culture has been adopted and is in use.

Conduct a similar study as this one at private hospitals and compare the results between private and public health sector.

5.7. Chapter summary

Chapter 5 provided conclusions regarding this research study's theoretical and empirical objectives. Research limitations were highlighted and discussed. Recommendations were made for the public hospital where the research was conducted as well as for potential future research.

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7. APPENDIX

a. Letter of approval from the Kwazulu Natal department of Health research committee



HRKM Ref: 435/17
NHRD Ref: KZ_201710_039

Date: 14 November 2017
Dear Mr FM Molepo
University of the North West

Approval of research

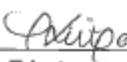
1. The research proposal titled '**Investigating the acceptance of a culture of continuous improvement in public health sector**' was reviewed by the KwaZulu-Natal Department of Health.

The proposal is hereby **approved** for research to be undertaken at King Edward VIII Hospital.

2. You are requested to take note of the following:
 - a. Make the necessary arrangement with the identified facility before commencing with your research project.
 - b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.
3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely


Dr E Lutge

Chairperson, Health Research Committee

Date: 17/11/17

b. Questionnaires

To whom it may concern

My name is Frederick Malatsoa Molepo, I am currently a 3rd year MBA student at the North West University (NWU) Potchefstroom Business School.

I'm busy with my dissertation which is to investigate the acceptance of a culture of continuous improvement in South African public health sector.

Thank you for sparing your precious time to complete this questionnaire, it will take 5 to 10 minutes of your time. It is being distributed to you purely for an academic purpose and explores the culture of continuous improvement in South African public health sector. Your unbiased choices will be highly appreciated and makes a valuable contribution to this research assignment. Your participation in this survey is voluntary and all information gathered will be strictly confidential.

Thanks

Frederick Malatsoa Molepo

Demographic

1.1. Gender

M	F
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1.2. Ethnicity

Black	Coloured	Indian	White
1	2	3	4

1.3. Age

<25	26-30	31-35	36-40	41-45	46-50	51-55	56 plus
1	2	3	4	5	6	8	9

1.4. What is your highest educational qualification?

Matric/ grade 12	National Diploma	Baccalaureate Degree	Postgraduate diploma	Honours degree	Master's degree	Doctorate	Other
1	2	3	4	5	6	7	8

1.5. What is your position in the organisation?

Nurse	Junior manager	Middle manager	Senior manager	Director	Other
1	2	3	4	5	6

12.2.

Does the organisation embrace continuous improvement culture?	Yes	No
---	-----	----

12.3. Management team

	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
1. Continuous improvements means that we deliver best quality service to our customers					
2. Continuous improvement is part of our strategy					
3. Our organisation has clarity about what we want to accomplish in the short term					
4. I know the benefits of continuous improvement					
5. Efficiencies have improved since the introduction of continuous improvement					
6. Performance indicators are used across programs throughout the organisation					
7. My manager is responsible for setting the overall agenda for					

data collection and reporting					
8. Operational staff have the information and skills they need to successfully engage with data for improvement program					
9. Every start of the shift we have meetings that have set agenda and we share our Key Performance Indicators (KPI)					
10.I am involved in the continuous improvement projects					
11.I am encouraged to come with improvement ideas					
12.Management gives recognition to successful improvements					
13.Continuous improvement successes are celebrated in our organisation					
14.Graphs are used to indicate our daily performance					

15. I use visual dashboard to identify potential improvement opportunities					
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12.4. Employee engagement

	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
1. I can communicate with management easily about improvements					
2. Lean is the methodology/ tool that I use to eliminate waste in our process					
3. We make time for lean sessions					
4. I really experience that management engage with the staff on the floor level					
5. I feel that management is trying new ways of constantly improving quality of our services					
6. The company has offered me training					

opportunity since joining					
7. Learnings from the continuous improvements projects are shared with everyone					
8. We have daily tracking sessions to review our performance					
9. I am encouraged to come with improvement ideas					
10. Management employs outside experts for continuous improvement when necessary					
11. Outside experts are helpful in identifying improvement opportunities					
12. I know what value we add to our customer					