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The effectiveness of a Performance Management System in Evaluating the Skills Development of Radiation Therapists in the Western Cape.

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DECLARATION

I, Danielle Patricia Conrad (nee Lackay), declare that the contents of this thesis represent my own unaided work, and that the thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

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ABSTRACT

Evaluating the development of skills of radiation therapists (RTTs) forms an essential part of ensuring professional competence, accuracy and safe delivery of radiotherapy treatment. A performance management system (PMS) aims at evaluating the performance and development of employees by recognising excellent performance and identifying unsatisfactory performance through highlighting areas where improvement is needed. With this study, the aim was to explore the effectiveness of a PMS in evaluating the development of RTTs in terms of their skill in a government department in South Africa.

A descriptive, qualitative research approach was employed and data was collected through questionnaires and semi-structured interviews. The population size was 32 RTTs. Participants were selected through convenience sampling. Nineteen (19) RTTs responded to the questionnaires and participated in the interviews.

The findings of this study highlighted the following shortcomings in the way the PMS is conducted at this specific institution, namely: 1.) the PMS is ineffective in evaluating the development of skills of RTTs; 2.) the current PMS does not contribute to the professional development of RTTs; 3.) the system fails to identify areas where improvement of skills is needed and 4.) the PMS does not assist in improving performance of RTTs.

It was concluded that the PMS at this study site seems to be inadequately applied and there seems to be a failure to evaluate the development of skills of radiation therapists. It is recommended that the system needs to be amended to include processes that contribute to an effective evaluation of RTTs' development and performance.

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ABBREVIATIONS AND ACRONYMS

Acronyms/Abbreviations	Written in full
CEU	Continuing Education Units
CPD	Continuous Professional Development
DPSA	Department of Public Service and Administration
GAFs	Generic Assessment Factors
HPCSA	Health Professional Council of South Africa
KRA	Key Result Area
PDP	Personal Development Plan
PHIT	Population Health and Implementation Training
PIP	Performance Improvement Plan
PMS	Performance Management System
POPI Act	Protection of Personal Information Act
RTT	Radiation therapist
SMS	Senior Management Service
SPMS	Staff Performance Management System

GLOSSARY

Terms/Concepts	Definition/Explanation
Continuous professional development	Refers to the improvement of professional practice through continuous training and education (HPCSA, 2017:4). In the context of this study, it is the improvement of skills of radiation therapists.
Good performance	Refers to meeting most or all requirements of the job and achieving the predetermined goals. In the context of this study, good performance refers to being deemed fully effective or highly effective in reaching the goals that were set out at the start of the performance management cycle.
Key Result Area	The areas of responsibility of a staff member that form part of their job description (Armstrong, 2006:50)
Manager	A person who is experienced in finance, budget plans, labour regulations and has technical knowledge (Fetzer, 2005:1449). In the context of this study it is someone responsible for implementing the performance management system.
Performance evaluations	The feedback process between a manager and staff to communicate whether key objectives have been achieved (Lizarondo et al., 2014: 573)
Poor performance	Refers to not meeting the requirements of the job and not achieving the predetermined goals.
Radiation therapist	Radiographer treating cancer patients with radiotherapy according to a prescription (Halkett et al., 2007:76)
Radiographer	A professional who takes X-rays and does other forms of medical imaging.
Radiotherapy	The treatment of patients diagnosed with cancer with high doses of ionizing radiation (Dobbs et al., 1999:1).
Technical competency	The skill that is relevant to a specific specialty or profession (Lin et al., 2009:3).
360° appraisal	The employee review process that involves views and opinions of different colleagues to achieve constructive feedback (Roa, 2015:251).
Treatment volume	Treatment area that the radiation oncologist delineates for radiotherapy treatment (Symonds et al., 2012:149).

CHAPTER ONE
INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

The purpose of this study was to explore the effectiveness of a performance management system in evaluating the development of skills of radiation therapists (RTTs). The researcher has identified this topic in recognition of the fact that in recent decades, the discipline of radiation therapy and the scope of practice of radiation therapists, and thus the required skill level, have expanded in multiple aspects. For example, the undergraduate curriculum at the proposed study site now includes information technology (IT), communication, management, ethics and informed consent in patient care alongside the more traditional competencies of the RTT of radiotherapy treatment planning and setup, radiotherapy physics and protection and patient care. It has been further noted that, increasingly, performance management is part of the workplace ethos and the question arises as to the ongoing need of the integration of workplace performance and the requisite skills development of the RTT.

The primary role of an RTT is to accurately plan and treat cancer patients as per the prescribed dose of radiation requested by the oncologist (Chamunyonga et al., 2014:1). In earlier years, authors in this field noted that to ensure safe and accurate radiotherapy treatment, RTTs had to be skilled in working with complex radiotherapy planning software systems and advanced radiotherapy treatment machines (Engel-Hills, 2007:125). Apart from their technical skill, RTTs should also be skilled to work as part of a team; display good communication skills; be able to problem solve; be knowledgeable about radiation protection; be professional and be committed to continuous professional development (CPD) (IAEA, 2005:2). Recent literature indicates that the rapid advancements in radiotherapy require RTTs to develop a broader set of skills to remain competent in their field of work (Chamunyonga et al., 2020:214)

Nxumalo (2018:141) notes that the management of employee performance forms an integral part of building a stronger health system and in a field such as radiotherapy marked by rapid advancements in technology and techniques, it is important to continuously evaluate the skills development of RTTs to ensure professional competence. It is important that RTTs are committed to any system that fosters a culture of accuracy and safety in their field of work (Chamunyonga et al., 2014:1).

A performance management system (PMS) evaluates the performance of staff and identifies good and poor performance through conducting regular feedback sessions between the manager and employee, and provides support to employees who are lacking in certain areas

of their developments (Lawler, 2003:1). Ishizaka & Pereira (2016:2) note that with performance evaluation, the focus should be on assessing the skill and training development needs of the employee.

1.2 Background and rationale

Radiotherapy plays a very important role in the treatment of cancer. Fifty percent (50%) of all cancer patients will require radiotherapy at some stage during their treatment, and radiotherapy accounts for 40% of cancer survival (Basker et al., 2012:193; Bishr et al., 2018:493). The incidence of cancer is increasing rapidly worldwide. In 2020 there was a 9% increase from 18 million cases in 2018 to 19.3 million new cancer cases worldwide, with the African content showing a cancer incidence of 1,109 million new cases per year (Sung et al., 2020:209).

Over the years, radiotherapy techniques and technology have advanced and continue to evolve with constant improvement in treatment planning software, imaging techniques and treatment machines to fight this burden of disease. This constant change in new techniques and technology requires RTTs to stay current with their knowledge and skill to ensure safe and accurate radiotherapy practice (Basker et al., 2012:193; Eddy et al., 2015:361; Coffey et al., 2018:19).

The need for health professionals to maintain registered competency is a statutory requirement in South Africa where The Health Professions Act of 1974 (Act No.56) (Republic of South Africa, 1974) details the need for health professionals to keep up their professional competence of practice by means of CPD to ensure public safety and the appropriate service to community health care and to be registered with the relevant board of the Health Professions Council of South Africa (HPCSA, 2017: 2). The Health Professions Council of South Africa (HPCSA) (2017:2) regulates that: "CPD assists health professionals to update and develop the knowledge, skills and ethical attitudes that underpin competence practice". To ensure CPD, the HPCSA requires that radiographers accumulate a minimum of 30 Continuing Education Units (CEUs) over a 12-month period of which 5 CEUs should be for ethics, human rights and health law (HPCSA, 2017:10). Eddy et al. (2015:361) agree that CPD is important to ensure that qualified and registered RTTs remain on par with technical advances in radiotherapy (Eddy et al., 2015:361).

Thus, it can be seen that the RTT has a statutory duty of maintaining professional competence alongside the integral responsibility of day-to-day workplace performance and competence. The site of the research study is a government radiation oncology department in the Western Cape Province of South Africa. The Department of Health in this province has implemented a PMS known as the Staff Performance Management System (SPMS) that is designed to monitor, evaluate and document the overall performance of staff in a designated performance cycle (e.g. quarterly) as mandated by the Public Service Regulations (Department of Public Service and Administration, 2001:34). It is required that at the start of each performance cycle, a performance agreement is signed between the RTTs and manager where the performance agreement consists of an individual performance plan and a development plan (Department of Public Service and Administration, 2001:34). It is further recommended that each department is responsible for developing their own SPMS template based on the SPMS policy. At the study site the head of department is responsible for developing the performance agreement according to the job requirements of the employee, with the managers responsible for the implementation of the SPMS, which should include the performance agreement outlining the individual performance plan and the goals going forward. Having signed the performance agreement, it is the responsibility of the RTTs to ensure that the goals, set at the start of the performance cycle, are achieved. Ongoing regular reviews should be conducted by the manager to monitor the performance of the employee.

1.3 Research problem

It has been acknowledged that a PMS is aimed at promoting and improving the performance of employees and should contribute to skills development of employees by following the different steps when implementing a PMS, such as goal setting, regular feedback sessions, coaching, rating and rewards (Aguinis, 2013:234).

According to current practice and the application of the PMS at the study site, it seems that the identification of RTTs' skills development needs is not being addressed specifically in a structured training programme within the PMS process. As outlined previously, the signed performance agreements between the manager and RTT do include goals to be achieved, however skills development towards those goals does not seem to be explicitly addressed. The researcher is of the opinion that it is essential to address RTT skills development needs within an effective and structured skills development programme as an integral step within the PMS process. This will further ensure the employee fulfils the requirements of their job as well as achieve the goals of the organisation. In order to achieve the above-mentioned, the parameters and purpose of the PMS should be understood and applied consistently with the

inclusion of self-development opportunities for RTT staff by all RTT managers to ensure the system reaches its full potential. Thus, in reaching full potential, the PMS could be more effective in the promotion and improvement of employee performance with the inclusion of an ongoing staff skills development programme.

1.4 Aim of the study

The aim of this study was to explore the effectiveness of the current PMS in addressing the development needs of RTTs and to assess the implementation process of the PMS in a public health facility in the Western Cape, South Africa.

1.5 Research question

The main question that this study aimed to answer was:

How does the existing PMS in the Western Cape Department of Health evaluate and address skills development needs of RTTs?

The following questions ensured a focused approach to answer the broad, main research question:

Sub-Questions:

1. Is the PMS effectively implemented to ensure continuous evaluation of development needs of RTTs?
2. Which methods are applied to evaluate the competencies and skills of RTTs?
3. How is the PMS applied to provide feedback regarding good or poor performance to RTTs?

1.6 Research objectives

These objectives provided a road map to achieve the overall aim of the study which is to explore the effectiveness of the current PMS to address the skills development needs of RTTs:

1. To assess the effective implementation of the PMS.
2. To assess how the current PMS is being applied to evaluate the skills and competency levels of RTTs.
3. To evaluate the role of the PMS in performance improvement of RTTs.

1.7 Significance of the study

The findings of this study could contribute to the continuous skills development of RTTs in a radiotherapy department by aiming to provide guidelines on how to evaluate the skills and competencies of RTTs within the framework of the current PMS.

The study could also assist in evaluating the overall performance of an employee but more specifically, effectively evaluate the skills development needs of RTTs and provide sufficient support to ensure continuous improvement of skills.

The findings of this study could be of value to all radiotherapy departments within the government or private sector and the findings of this study could be used to complement the current PMS processes.

1.8 Overview of the thesis

An overview of the thesis is provided below:

Chapter Two – Review of the literature pertaining to performance management

The next chapter provides an overview of the literature related to performance management in health settings. The review provides a general definition and understanding of performance management, the aim of a PMS and the implementation of a PMS specifically in health care settings. It also describes the different processes in a PMS and how to manage performance that does not meet the prescribed standards. The chapter concludes with a conceptual framework developed to guide the research design and methodology as elaborated in Chapter Three.

Chapter Three – Research methodology

In this chapter the research design and methodology used to achieve the study's objectives are explained, following the data management plan. A qualitative study approach was applied and the applicability of this approach to this study is explained. The target population, sampling and data collection methods and analyses are discussed, following the research data management plan. Ethical issues and the positionality of the researcher are discussed.

Chapter Four – Findings and interpretations

This chapter presents the findings of the analysed data. The questionnaire data analysis was done using descriptive statistics and the NCSS 2021 Statistical Software programme as well as the Fisher's exact test. The interview data was analysed through thematic analyses.

Chapter Five – Conclusions and recommendations

This chapter concludes the thesis by relating the study findings to the research objectives. Recommendations for current practice are provided and further studies are proposed.

CHAPTER TWO
A REVIEW OF THE LITERATURE PERTAINING TO
PERFORMANCE MANAGEMENT

2.1 Introduction

This chapter provides an overview of the literature related to performance management. It includes an introduction to performance management and provides an overview of the global perspective of performance management systems (PMSs). The PMS in public healthcare in the Western Cape, South Africa, is also discussed. This is followed by reviewing the various performance management processes and cycles. The chapter includes a conceptual framework and outline of the concepts of a performance management system.

A summary of the concepts referred to in this review concludes this chapter and serves as justification for the methodology discussed in the next chapter.

The literature review was conducted through different research databases and by using the following keywords: performance management, performance evaluations, peer appraisals, performance measures, performance rewards.

2.2 A brief history of performance management in healthcare

According to McIntyre et al. (2001:9), the concept of performance measurement is not a new one, as the first attempt at measuring performance was recorded as far back as 1754 when diagnostic groups in a hospital in Pennsylvania kept records and tabulated patient outcomes in an attempt to measure staff performance. In the 1900s, a surgeon by the name of Ernest, A. Codman, who supported systematic health care performance assessment, proposed that the hospital track each patient for a period of time to determine whether the treatment they received was effective (McIntyre et al., 2001:9). Performance measurement became a term more frequently used in the 1950s in the United States (McInture et al., 2001:11). According to Qureshi et al. (2010:1856-1857), the phrase 'Performance Management' was first used by Beer and Ruh in 1976 and the term was formally acknowledged in the mid-1980s as a distinctive approach when quality management programmes gave value to management tools such as performance appraisals, with the aim of achieving performance goals (Ramulumisi et al., 2015:517-518).

Over the last two decades, historical and economic factors contributed largely to the change in performance management where the approach shifted from who to fire, who to keep, who to reward; to how to develop individuals to enhance their performance (Cappelli et al., 2016:4). Taylor (2013:21) agrees that performance management has changed significantly over the last 20 years, moving away from a system that regarded the stand-alone performance appraisals as the only way of managing performance, to a system that integrates performance appraisals in a continuous cycle of monitoring, developing and coaching employees with the aim of improving performance and reaching organisational goals (Taylor, 2013:21).

In South Africa, the Department of Public Service and Administration (DPSA) has been developing policies since 2001 with the aim of implementing a PMS within the public service (Van Dijk et al., 2003:464). It was the responsibility of the Senior Management Service (SMS) Directorate in the DPSA to develop the performance management framework applicable to SMS from salary level 13 and higher. The DPSA developed the performance management work for the rest of the department in 2001 (Van Dijk et al., 2003:464). The PMS, also known as the Staff Performance Management System (SPMS), was implemented with effect from 1 April 2003 in the Department of Health (DPSA, 2003).

Many authors (Aguinis, 2013a:2; den Hartog et al., 2004:556; DeNisi et al., 2017:421) indicate that the role of a PMS is to ensure overall effective management of staff performance by monitoring their progress against the predetermined goals agreed upon between the supervisor and employee. An organisation that has a good quality PMS will reap the rewards of employees delivering performance of a high standard (Ramulumisi et al., 2015:521).

The SPMS used by the Western Cape Department of Health was implemented to improve efficiency and effectiveness within the organisation; to align the staff development plans with the strategic goals of the department; to recognize inadequate performance as well as outstanding performance; and to lessen the administrative load on supervisors whilst ensuring transparency and administrative justice (DPSA, 2003).

2.3 Towards a common definition of 'performance' in performance management

'If you can't define performance, you can't measure it' (Armstrong, 2015:51). Performance is defined by Roa (2015:19) as a person or group of people achieving the predetermined goals, tasks, or projects of the organisation within a specific time frame. Armstrong (2006:7) views performance as employees performing in a way that supports the principles of organisations.

McConnell et al. (2011:186) are of the opinion that performance consists of action(s) of employees that are measurable and observable. Rotundo & Rotman (2002:5) agree, stating that performance can be defined by focusing on the way an individual acts or behaves rather than focusing on the results of the individual's conduct. Sonnentag (2002:5) has a different view, noting that performance is the process of evaluation rather than the action itself. Aguinis (2013:88) argues that the definition of performance should only include the behaviour of the employee and not the outcome of their work.

Murphy (1989:185) and Sonnentag (2002:5) note that the concept of performance speaks to both behaviour and results, with behaviour referring to the tasks the individual has to perform that are in alignment with the goals of the organisation, and the results referring to the consequences of the individual's behaviour. Brumbach (1988:387) agrees that performance is about behaviour and outcomes; with behaviours stemming from the performer which changes performance from thoughts to action. Campbell et al. (1993:40) state that performance is what you were hired to do and what you should be doing well.

According to Sonnentag (2002:7), an individual's performance varies over time as learning takes place. Therefore, when an individual spends an increasing amount of time in a specific job, the performance of the individual will improve until a plateau is reached (Sonnentag, 2002:7). Murphy (1989:10) presented a dynamic model of performance that outlined the systematic changes that occur over a period. These stages are:

- *The transition stage*
  This stage refers to when an individual starts a new job or when significant changes occur in their current job. Transition occurs as the individual has to acquire new skills. Cognitive ability plays a major role during this stage as the individual has to acquire new knowledge and make sound decisions to perform their duty (Murphy, 1989:10).

- *The maintenance stage*
  During this stage, individuals have mastered the skill and knowledge required to perform their job. Job performance is now influenced by personality and motivation rather than individual differences in cognitive ability. Individuals are able to deliver the job without great mental effort (Murphy, 1989:10).

- *Progression through stage*
  The length of time as well as the frequency of transition stages depends on the individual and the nature of the job. For jobs where the required tasks are relatively straightforward, the progression through stages will be short while with other jobs, such

as certain management positions for example, change occurs frequently, which places the individual in a permanent state of transition (Murphy, 1989:190-191).

Performance within a PMS is when the manager is aware of how well a staff member is performing their duties at all times (Roa, 2015:2). Institutions have come to realize the importance of measuring and monitoring performance, as achieving their long-term goals depends hugely on how well staff reach their short-term goals (Stříteská et al., 2016:44). Den Hartog et al. (2004:2) agree that organisations have become more aware of the important role that evaluating and developing staff performance play in the success and survival of an organisation.

2.4 Elements of performance management

Performance management is defined by Roa (2015:1) as doing everything that is needed to ensure continuous performance improvement of employees in relation to their role, team and organisation, with the aim of achieving the short- and long-term goals of the organisation. Lee et al. (2021:382) agree stating that performance management is an ongoing process that includes activities in the organisation that are focused on either maintaining and/or improving the performance of the employee to be able to reach the goals of the organisation. Ferreira et al. (2006:264) view performance management as all the processes, systems and networks within an organisation that contributes to the achievement of key objectives and goals generated by management. With performance management, the aim is to define and monitor the performance of employees whilst working towards reaching the goals of the organisation (den Hartog et al., 2004:556). The performance of employees is evaluated through determining goals and performance standards, providing feedback regarding employee performance, assessing training and development needs, and providing rewards based on performance (Nxumalo et al., 2018:142). With performance management, a lot of emphasis is placed on achieving organisational goals, although Stříteská et al. (2016:44) state that performance management should be a tool used "…to stimulate continuous improvement" rather than use it only to evaluate the achievement of organisational goals. According to Lawler (2003:1), the role of a performance management system is to evaluate staff performance and to assist staff with skills development (Lawler, 2003:1). Amstrong (2006:1) notes that performance management can be described as a systematic process that is aimed at improving the overall performance of an organisation by focusing on performance development of individuals and teams within the organisation (Armstrong, 2006:1).

Taylor (2013:14) states that to achieve organisational goals, emphasis should be placed on team performance development as well as individual performance development. Ferreira et

al. (2009:264) agree that performance management is a holistic approach that focuses on the performance of the team and the individual while monitoring and controlling the performance of the organisation "through analysis, planning, measurement, control, rewarding, and broadly managing performance…"

It is important to note that performance management is based on the principle of agreement rather than command. Armstrong (2006:1) mentions that an agreement should be reached regarding goals and competency requirements in order to improve the performance of the individual, team and organisation. When determining the goals the employee has to achieve, it is important to be aware of the individual's ability to achieve these goals (Latham, 1990:55-56). As mentioned earlier, the individual might have reached their performance limit which can result in a performance plateau or decline in performance, and it is therefore important to be cognisant of the various factors when setting goals.

An effective PMS clearly defines the expectations the organisation has of the employee at the start of the performance management cycle (Roa, 2015:2). A discussion should take place between the manager and staff where goals are determined and agreed upon; this agreement is followed up by regular feedback sessions where the manager evaluates their progress (Armstrong, 2006:1).

Part of performance management is to provide coaching to staff in areas where it is needed, and having regular feedback sessions regarding performance while evaluating the achievement of pre-determined goals (Dorsey et al., 2017). Ramulumisi et al. (2015:519) mention that performance management consists of performance planning, coaching on a day-to-day basis, and performance evaluation.

Tseng et al. (2018:1) note that performance management should focus more on the manager-employee relationship and less on the formal processes and suggest a leadership process framework be integrated that highlights the role of managers as leaders who implement performance management processes through their influence on the individuals, teams and organization (Tseng et al., 2018:2). Duff (2011: 204) suggests three different leadership styles that should be introduced at different stages of the performance management processes to ensure an effective PMS, namely transactional leadership, transformational leadership, and servant leadership. Transactional leadership is a task-oriented leadership style where managers monitor problematic performance areas and offer assistance to encourage improvement; transformational leadership is a person-centered approach to leadership and involves trust in the leader to guide and support the individual to have vision and set goals;

and servant leadership is focused on providing feedback that will aid in the development of the individual (Duff, 2011:215).

Performance management has both administrative and developmental purposes (Dorsey et al., 2017:14):

Administrative purposes:
- Assisting with compensation selection (e.g. performance bonus, salary increase),
- Identifying individuals for job promotions,
- Identifying poor performance and holding individuals accountable to improve performance,
- Providing documentation in legal disputes, and
- Providing information for adverse impact analyses (Dorsey et al., 2017:14).

Developmental purposes:
- Identifying areas where training and development are needed,
- Offering career guidance,
- Improving communication between staff and supervisors,
- Providing staff with regular feedback sessions, and
- Enhancing staff participation and encouraging staff to take responsibility to reach their goals (Dorsey et al., 2017:14).

The advantages of performance management are:
- Sharing a collective vision of the aim and values of the organisation,
- Knowing what should be delivered and how to deliver it,
- Defining high performance and explaining how to achieve it,
- Increasing motivation and commitment through continuous feedback regarding performance, and
- Allowing self-assessment of performance and encouraging conversations regarding performance improvement (Taylor, 2013:15).

In view of these above definitions, the researcher notes that performance management in the context of the proposed study could be viewed as a process of continuous evaluation of staff performance in relation to the departmental goals and the individual's professional development goals. The evaluation of the individual's professional development, especially in terms of goal setting and skill development, is particularly important in the field of radiotherapy where techniques are constantly evolving.

2.5 Implementing a performance management system

The effective implementation of a PMS will be beneficial to an organisation as it will result in a better understanding amongst employees regarding what is expected of them when performing their job, improved communication between the supervisors and subordinates, and less employee misconduct (Aguinis, 2011:505; Mone & London, 2010:226). Mone & London (2010:227) and Ramulumnisi et al. (2015:52) agree that a PMS that is effectively implemented helps to create and sustain high levels of employee engagement, which leads to higher levels of performance (Ramulumisi et al., 2015:520).

The following management factors are important when implementing a PMS:
- Determining organisational and individual aims and objectives,
- Identify training and development needs of staff,
- Setting performance indicators, and
- Conducting appraisals to monitor performance of staff (Mwita, 2000:26).

According to Sole (2009:7), the successful implementation and utilisation of a PMS in the public sector is determined by internal and external factors. Internal factors refer to leadership and management commitment; internal resources (e.g. Human Resource Management); a performance-oriented culture; employee involvement and maturity of the PMS (Sole, 2009:7). External factors refer to citizens and elected officials, labour unions and legal requirements (Sole, 2009:7). Successful implementation of a PMS relies greatly on a leader who is committed and skilled with a willingness to be invested in their managerial role within the PMS (Sanger, 2008:70).

A PMS that is not correctly implemented will result in a process that is time-consuming, difficult to carry out, unsuccessful and will result in a lack of interest from staff (Dorsey et al., 2017:7-9). Poor implementation could mean that the focus of the organisation is mainly on implementing rules and processes that do not necessarily support effective communication, appropriate training or support from managers (Dorsey et al., 2017:9). When a PMS is not implemented correctly, the organisation is at risk of a dissatisfied workforce that does not perform to its capacity (Van der Bank et al., 2008).

According to Aguinis (2013a:189) the PMS implementation process should include the following:

1. A communication plan that is widely distributed throughout the organisation that explains what the PMS entails and how it will benefit the employee;
2. An appeal process that allows the employee to voice any concerns regarding unfair ratings, or a disagreement regarding performance feedback;
3. Training for the individuals who will be rating the employees to avoid rating errors.
4. A pilot test to allow for any changes to be made prior to implementation of the system (Aguinis 2013a:189).

According to a study done by De Waal & Counet (2009:367), a possible failure rate of 70% exists when implementing a PMS. This could lead to many organisations turning away from a system that could potentially benefit the organisation. De Waal & Counet (2009:367) further highlighted a few problem factors organisations encountered when implementing a PMS:

1. The implementation process being low on management's priority list.
2. The implementation process taking longer than was initially anticipated which leads to people feeling discouraged.
3. Lack of resources available for implementation.
4. Unclear goals which result in a negative attitude towards the system.
5. Lack of understanding regarding the purpose of the system.
6. Lack of management commitment.
7. Management not given sufficient time to implement PMS.
8. Incorrect management style when implementing the system.
9. Unclear strategy of the organisation.
10. Insufficient training prior to implementation.
11. Poorly defined Key Result Areas or too many Key Result Areas.
12. Resistance from employees towards PMS.
13. The organisation failing to identify the benefits of a PMS (De Waal & Counet, 2009:368).

Incorrect implementation of a PMS will have a negative impact on management of skills and will make it difficult to identify any competency gaps (van Dijk & Thornhill, 2003:465). According to Ayanyinka & Emmanuel (2013:5) the disadvantages when poorly implementing a PMS include:
1. Lack of employee commitment.
2. Lack of upskilling.
3. Conflict between goals of the organisation and goals of the individual.
4. Insufficient performance rating.

5. Poor communication between subordinate and manager (Ayanyinka & Emmanual, 2013:5).

It is therefore of utmost importance that a PMS is implemented in the correct way to achieve its full potential and to enhance the performance of staff. Failure to do so could be detrimental to an organisation.

2.6 The performance management process

The performance management process is described by Armstrong (2006:15) as'...a natural process of management' that consists of the following activities: plan, act, monitor and review, which activities occur in a continuous cycle. Figure 2.1 illustrates the performance management cycle. According to Aguinis et al. (2012:385-392) this is achievable by adhering to the following performance management principles:

- Agreement between job description and organisational goals.
- Providing adequate training to all participants.
- Monitoring performance based on results and behaviour.
- Providing feedback using a strength-based approach.
- Allocating rewards.

Each of these principles are elaborated on below.

2.6.1 Agreement between job description and organisational goals

At the start of the performance cycle the onus is on the manager to ensure that employees are made aware of what their job duties are, what is expected of them and to ensure that the duties are in alignment with the goals of the organisation (Aguinis et al, 2012:385). Armstrong (2006:21) shares this view by stating that a discussion should take place between the employees and the manager before the performance cycle commences where work expectations are clearly defined. The employee should have a clear understanding of what is expected and how these performance requirements will be achieved, supported and monitored (Armstrong, 2006:21).

2.6.2 Providing adequate training to all participants

Performance management training programs should be introduced prior to implementation of the PMS to ensure commitment to the system and to reduce biases when measuring performance (Aguinis et al, 2013:387). Adequate training of raters and ratees will increase employee knowledge and skill which will result in improved human capital and enhanced

performance (Aguinis, 2012:387). Ramulumisi et al. (2.15:20) further note that managers play a fundamental role in the success of a PMS and properly trained managers are key to ensuring high performance in an organisation. It is the role of the managers to provide mentoring and coaching to staff in areas where upskilling is needed and it is therefore important that managers should be trained on how to coach staff as part of the performance management system (Dorsey et al., 2017:21).

2.6.3 Monitoring performance based on results and behaviour

A PMS can place emphasis on the evaluation of behaviours (i.e. the way in which the work is completed), results (i.e. outcomes achieved) or both (Aguinis & Pierce, 2008:140). Certain types of PMS are based on processes (competencies and skills) and not on results or behaviours (Aguinis & Pierce, 2018:140). According to Armstrong (2006:52), the following three questions have to be answered when monitoring technical competencies of employees:

1. What is expected of employees with regards to each Key Result Area in order to fulfil their duties?

2. What knowledge and skill are required with regards to technical and procedural knowledge to perform the job effectively?

3. How will it be determined if the job was performed effectively?

Each organisation should decide on an approach that is best suited to achieve high performance results. When monitoring performance based on results and behaviours, it is important to take into account whether the employee works independently or as part of a team and whether the employee has control over the results that were achieved. Aguinis et al. (2013:387) suggest that when an employee works independently, the performance should be evaluated on an individual basis as opposed to when the employee works as part of a team, in which case a team evaluation would be better suited. When an employee does not have control over the results, it is better to evaluate the employee based on behaviour and not results (Aguinis et al., 2013:387).

Sonnentag (2002:18) discusses the concept of monitoring performance in relation to technology, and notes that development in technology makes conceptualising and measuring of performance difficult. Monitoring performance based on behaviour is a challenge in a working environment where technology plays a big role in the work processes (Sonnentag, 2002:18). It is becoming more difficult to separate the contributions of individuals and technology to individual performance, and therefore what should be taken into account is how the person applies the technology and to view this as a performance component (Sonnentag,

2002:18). This approach is relevant to radiotherapy where the majority of the work processes are dependent on technology.

2.6.4 Providing feedback using a strength-based approach

Employees prefer receiving feedback regarding areas of strength and weaknesses as well as what they have achieved. This type of feedback assists them in understanding their career goals (Risher, 2012:188). Staff are more accepting of feedback when they believe that the feedback is fair and truthful, that all staff are evaluated by equal standards and that the feedback is based on goal achievements rather than the perception of the supervisor (Dorsey et al., 2017:21). These authors (2017:21) are of the opinion that although people generally accept positive feedback better than negative feedback, staff will be more appreciative of constructive criticism if it is done in a fair manner.

Staff rarely receive positive feedback regarding areas in which they are excelling. During performance appraisals, the focus is mainly on areas where staff are underperforming and what measures need to be implemented to improve performance (Summers & Middleton, 2013:198). These authors (2013:198) argue that the traditional appraisal methods are not necessarily the wrong option if applied in conjunction with positive psychology. It may be more beneficial in a pressurised environment such as radiotherapy and result in strength-based development. Wade and Jones (2014:37) advocate a positive psychology approach whereby supervisors should have a strength-based perspective when discussing performance with staff which means focusing more on the areas where the staff member has excelled as this will create an environment of support. When staff feel supported, they will be open to discuss the areas where improvement is needed (Wade & Jones, 2014:37).

Strength-based development will improve a performance management system as well as have a positive effect on teamwork within a radiotherapy department (Summers & Middleton, 2013:198). A literature review by Summers and Middleton (2013:198) indicated there was not sufficient literature available regarding performance management and developmental plans for RTTs. They postulate that in a specialised field such as radiotherapy, an effective PMS for RTTs is one that includes strength-based development, as well as positive psychology.

von Woerkom and Kroon (2020:1883) explain that 'strength-based performance appraisal focuses on identifying, appreciating, and developing an employee's qualities in line with the company goals' and these types of appraisals motivate staff to improve their performance as they feel supported by their manager. They also note that the identified areas in need of skills

development should become the focus point and should be viewed as an opportunity for improvement (von Woerkom & Kroon, 2020:1884).

Radiotherapy is a pressured environment where RTTs need to have a high level of competency in their clinical ability and skill. For this reason, it is very important that the correct approach is used when evaluating the performance of RTTs that will positively contribute to performance management in radiotherapy (Summers & Middleton, 2013:198). Focusing on the staff's strengths instead of only pointing out their weaknesses could pave the way to performance improvement (von Woer & Kroon, 2020:1884).

There is a great likelihood that managers who apply a strength-based approach when delivering feedback will have greater employee participation and efficiency (Aguinis, 2012:387-388). Relaying feedback in a positive manner is important as this will encourage the staff to better themselves (Stone, 2007:16). Any noticeable improvement should be acknowledged as this will motivate employees and build their self-esteem (Stone, 2007:22). Eddy et al. (2015:363) state that it is challenging for individuals to learn new skills in a working environment and therefore support, assistance and positive feedback are needed to ensure that employees perform to the best of their abilities.

2.6.5 Allocating rewards

Aguinis (2013a:15) states that the rewards or ratings given to the employee should be based on well-founded information to ensure fair scoring. Performance rewards can be non-financial or financial. Non-financial rewards are given in the form of recognition, providing opportunities to succeed, development of skills and career planning (Armstrong, 2015:152). Financial rewards for performance should only be given if it can be proven that a consistent and fair process has been followed when performance was measured (Armstrong, 2015:152). This is a matter of procedural justice when evaluating performance and competency and the following should be ensured:

> 1. the assessment should be based on valid information and informed opinions; 2. the person being assessed should be able to provide information to support the evidence; 3. the person should be informed as to how and why the assessment was done; 4. the person should have the right to appeal the outcome of the assessment (Armstrong, 2015:152).

Stone (2007:12-13) argues that financial incentives are not the only factor that will motivate employees to improve their performance. Employees will be motivated to improve their

performance if they are given projects and training to assist them to develop over and above what is expected of them in their current position.
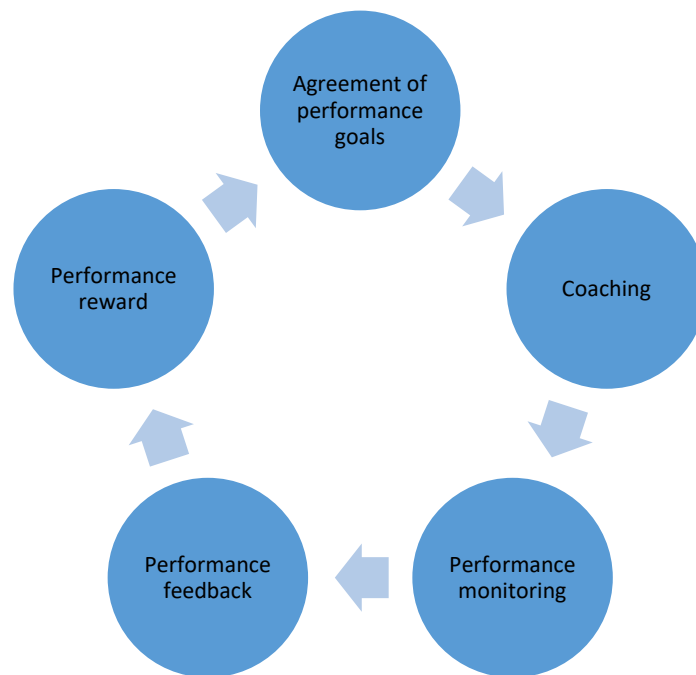
Figure 2.1: An illustration of the performance management cycle
(Adapted from Armstrong, 2006: 17)

2.7 The role of the manager in performance management

The most valuable contribution managers can make to their organisation is to develop themselves as well as assist their subordinates to improve their performance (Allenbaugh, 1983:21). Taylor (2013:24) notes that managers are '…the key protagonists in a Performance Management System'. Ramulumisi et al. (2015:520) describe the PMS as a '...management-intensive process' that requires the attention of management from senior level down to line managers' level with senior management providing support while line managers are involved in daily performance management through engaging with employees on a continuous basis. Managers play a very important role in the PMS as it forms part of their job to motivate, develop and evaluate employees (Taylor, 2013:24). Performance management has moved from being a human resources management function to being the responsibility of the manager and it is expected of managers to implement the system effectively (Hill et al., 2018:416). Gratton et al. (2003:82) state that the human resources management department can develop an advanced PMS but the success of the tool will depend on how well the system is implemented by the managers. Consistency, fairness and skill is what is required of managers to achieve

positive results with the PMS (den Hartog et al., 2004:10). Lee et al. (2020:384) agree that consistency is key to achieve predetermined goals, and it supports the principle of the PMS being an ongoing process.

Managers are responsible for the performance management of their subordinates on a daily basis (Lee et al., 2020:384). At the start of the PMS cycle, it is the responsibility of the manager to assist the employees with determining their goals and to have regular feedback sessions regarding their performance whilst providing coaching where and when needed (Van Waeyenberg et al., 2018:3093). den Hartog et al. (2004:10) assert that a well-designed PMS is only as good as its implementation and execution by the managers. This will influence how staff perceive the PMS. It will also influence how dedicated, committed and motivated staff will be to participate in the performance management process (den Hartog et al., 2004:10). Incompetent managers that do not effectively implement the PMS and fail to set realistic performance goals hinder productivity (Ramulumisi, et al., 2015:520).

For a PMS to work effectively, Van Waeyenberg et al. (2018:3093) argue that a manager should be given enough opportunity to perform the duties associated with the PMS over and above their normal functions. It is the role of the manager to act as a coach to help the employee improve their performance through advising them regarding problem areas in their performance, implementing strategies to help improve their performance, giving them regular feedback regarding their performance and documenting this (Aguinis 2013a:227). Although it is very difficult for a manager to motivate staff members to perform their jobs, the manager should:
1. attempt to create a physical environment in which staff members can self-motivate;
2. ensure that all staff members are treated equally and fairly; and
3. should promote staff rotation within the department (McConell et al., 2011:187).

Performance problems can be the result of lack of motivation or lack of skill and it is the responsibility of the manager to assist and support the staff in both areas (McConell et al., 2011:187). When a possible skill deficiency is observed that negatively impacts performance, it is the role of the manager to offer education and training and to develop an individualised performance improvement plan that will assist the staff member in upskilling (McConell et al., 2011:188). Competency is defined by Stone (2007:25) as '...a skill, ability, area of knowledge, set of experiences, or attitude…' and it is the responsibility of the manager to assess competency skills (Stone, 2007:25).

Managers can fail their subordinates by not clearly defining and communicating performance expectations; not providing sufficient guidance and coaching; and by being guilty of biases, discrimination and poor supervisory practices (Risher, 2003:25). Managers should acknowledge their role in the PMS and realise that their performance is dependent on the performance of the employees whom they supervise (Ramulumisi, et al., 2015:520).

2.8 Managing poor performance

According to Mtwia (2000:21), factors that affects performance are:

- Level of skill, motivation and commitment of individuals.
- Support, guidance and encouragement from management.
- Support from colleagues.
- Availability of organisational facilities.
- Environmental pressures.

When a staff member is underperforming, it is important to ensure that sufficient documentation is available as proof that the person is underperforming (Dorsey et al., 2017:27). It is a common occurrence for underperformers to score satisfactorily in their performance reviews which therefore makes it difficult to prove that they are underperforming (Dorsey et al., 2017:27). When keeping record of staff performance, the manager should give detailed examples of poor performance and provide examples of the feedback that was given to the staff member, including if mentoring and coaching were provided to assist the staff member (Dorsey et al., 2017:27). Poor performance should be discussed as soon as the manager becomes aware of it and not wait until the next quarterly review. Dorsey et al. (2017:27) suggest a Performance Improvement Plan (PIP) be developed that clearly states what is expected of the employee and the timeframe in which this should be achieved.

It is part of the manager's role to create an environment that motivates high performance, and therefore when a staff member is underperforming, both the staff member and manager are accountable for the poor performance (Risher, 2003:25). Risher (2003:25) goes so far as to say that poor performance should not exist if people are managed effectively. Mtwia (2000:22) agrees that bad performance is a reflection on the manager as it is the manager's responsibility to facilitate coaching and hands-on training, and to provide guidance.

When a staff member is performing poorly, attention should be given to the circumstances under which the poor performance was delivered (Mtwia, 2000:22). A key reason for poor performance could be that staff do not understand what is expected of them or they are unaware of the skills and knowledge required to perform their job, or their capabilities are not

being appropriately assessed (Risher, 2003:25). Senior management can also contribute to unsatisfactory performance by failing to emphasize the importance of exceeding satisfactory performance, which this will filter down to lower-level managers (Risher, 2003:26).

Managing underperformance should be viewed as a positive process that allows managers the opportunity to assist employees in overcoming performance problems based on continuous feedback throughout the year (Taylor, 2013:20). Managing underperformance can be accomplished by the following five steps: identify and agree what the problem is; determine the reason(s) for the underperformance; determine and agree on a plan; resource the plan; monitor progress and provide feedback (Taylor, 2013:20). Armstrong (2006:133) agrees with these five steps and explains them as follows:

1. *Identifying and agreeing what the problem is*

Feedback can be given by managers or it can be built into the job. The latter is achievable when an employee is aware of what the targets are that have to be met and how their goals will be measured. Feedback can then be received automatically or employees should be able to access it without difficulty. This will enable them to measure their own performance and decide on the measures to improve their performance (Armstrong, 2006:133).

2. Determining the reason(s) for underperformance:

A culture of no blame should be fostered by the manager when determining the reason for the shortfall in an employee's performance. It is important to establish whether the reason(s) for the underperformance is due to external factors outside of the employee's job which is not within the control of the manager or individual. The reason for underperformance could be that the employee did not:
- receive sufficient support from their manager,
- completely understand what was expected of them,
- have the ability to deliver,
- have the skill to deliver, or
- want to do what was expected (Armstrong, 2006:133).

3. Determine and agree on a plan

The actions agreed upon to improve performance can include a change in attitude; the manager providing more support; expectations being more clearly defined, and improved skills development (Armstrong, 2006:133).

4. Resource the plan

The applicable training, coaching and facilities should be provided for the plan to be executed (Armstrong, 2006:133).

5. Monitor progress and provide feedback

It is the responsibility of the manager as well as the individual to monitor progress, and the manager needs to give feedback and to decide if further intervention is needed (Armstrong, 2006:133). Employees performing poorly may not have an understanding of why they are not delivering the results expected of them, how they have violated policies and procedures, or how their poor performance is negatively impacting the rest of the team (Hill et al., 2018:417). It is the responsibility of the manager to initiate performance management and disciplinary procedures when an employee delivers unsatisfactory work or displays unacceptable conduct, and it is therefore important that managers are equipped with the necessary knowledge, skill and competence to ensure fairness and consistency when managing poor performance (Hill et al., 2018:471).The incompetence of managers in dealing with poor performance can be attributed to lack of or poor training in performance management, which increases stress levels when managers are forced to deal with underperformance (Hill et al., 2018:471; Miltner et al., 2015: 253; Nehles et al., 2006: 259).

2.9 Performance evaluation

Evaluating the performance of staff forms an integral part of improving the quality of work delivered (Shaout & Yousi, 20014:966). Performance outputs are measurable through various performance appraisal systems depending on the nature of the work within an organisation (Shaout & Yousi, 2014:966). Armstrong (2006:63) notes that criteria should be followed when measuring performance. According to Armstrong (2006:63), performance measures should:
- align with the strategic goals of the organisation, that are of value to the organisation and that will support the organisation,
- align with the roles and objectives of the employee,
- concentrate on inputs, results and behaviours that are well defined and for which evidence can be provided,
- include feedback sessions with actions taken accordingly, and
- be extensive and inclusive of all key performance areas.

Performance appraisals are seen as the starting point of a PMS and should be done with the aim of improving the individual's performance in alignment with the strategic goals of the organisation (Aguinis et al., 2011:421). Nxumal et al. (2018:141-142) agree that the

performance appraisal is an essential part of the PMS as it motivates staff to improve the quality of work they deliver. It assists managers in determining the status of the employees' performance and identifies areas of weakness where training and development are needed (Nxumal et al., 2018:141-142).

PMS and performance appraisals are related but not the same. This is explained by DeNisi & Murphy (2017:421) as performance management being an ongoing process of performance evaluation throughout the year, whereas performance appraisals are a formal process of reporting on an employee's strengths and weaknesses by the supervisor at specific times during the year. Dorsey et al. (2017:7) agree with this, stating that performance management is when an individual's goals are aligned with the organisation's, and the achievement of these is evaluated over a period of time. Performance appraisals consist of the past performances being evaluated by rating the individual's performance in relation to what was expected (Dorsey et al., 2017:7).

There are different ways of conducting these appraisals and various ways of delivering feedback. Feedback can be delivered by the supervisor only or could include comments from peers (Aguinis et al., 2012:391). Providing feedback to staff when doing the performance evaluations can be a difficult task for managers as they might fear negative reactions from staff (Dorsey et al., 2017:21). Many managers do not always work closely with staff and in such instances cannot provide accurate feedback on the performance of staff (Dorsey et al., 2017:21). This is why it is important to rely on different sources to give feedback regarding staff's performance. These sources include:

Managers
According to Rotundo & Rotman (2002:3) managers rating employees' performance based on their work is the most common way of evaluating performance. When reviewing performance, the manager should have accumulated performance information regarding the employee's performance and should manage any unsatisfactory performance (DPSA, 2001:23). In organisations where managers work closely with employees, performance evaluation becomes an easy task; however in instances where managers do not work closely with employees on a day-to-day basis, it will be difficult for them to do accurate true evaluations (Aguinis, 2013:146). The issue of bias also plays a role when the manager is the only source of evaluation. High ratings might be given to an employee who assists the manager in career advancement and low ratings might be given to the employee who strives to achieve the strategic goals of the organisation (Aguinis, 2013:146).

Self-appraisal

Self-appraisal is another method of conducting appraisals. Roa (2015:11) describes self-appraisal as the process where employees conduct self-evaluation of their competencies, failures and achievements. Self-appraisal encourages self-development as the employees identify their own strengths and areas where improvement is needed (Roa, 2015:11). Self-assessment creates an opportunity for the employees to reflect and gain insight into their performance which can lead to improved performance by setting new goals and working toward self-development (Kromrei, 2015:60). The DPSA (2001:23) views self-appraisals as a formal review process where self-rating should be supported by a portfolio of evidence that will be reviewed at the end of the performance management cycle.

Aguinis (2013:148) cautions that self-appraisals should not be used in isolation for any administrative decision making as this form of appraisal tends to be more lenient and biased when looking at administrative purposes as opposed to appraisals done by other sources. There are different ways of improving the quality of self-appraisals such as:

- using a comparative measurement system for staff to evaluate themselves, for example making use of words such as 'below average', 'average,' and 'above average" as opposed to using words such as 'poor' or 'excellent,'
- creating opportunities for staff to practice the skill of self-rating,
- reassuring staff who the performance information will remain confidential, and
- emphasising the importance of having future development plans (Aguinis, 2013:148).

Peer appraisals

Another form of performance appraisal is that conducted by peers. Peer performance appraisals are not always conducted as part of the staff evaluation process and staff performance is frequently rated according to the manager's perspective which could be seen as subjective. Peer performance appraisals could play a vital role in performance management and should form part of the performance management system as a method to identify areas where upskilling and coaching are needed (Aguinis, 2013a:2). De Nisi et al. (2006:255) share this viewpoint, stating that performance appraisals conducted by peers should form part of a performance management system, as this will assist the supervisor in assessing the skill and competency of the individual when conducting a performance review. Peer evaluations should not be used as the only source of performance information but should form part of other sources of information as it is noted that peer appraisals have certain weaknesses. For example, friendship bias may exist in the workplace where employees might feel that friends will rate each other highly irrespective of how they actually perform, or those who are not

friends will receive lower ratings and therefore the performance evaluations will not be taken seriously and will not assist with improving performance (Aguinis, 2013:147).

When an employee receives peer appraisals or 360° feedback, the feedback is received from those who work closely together or observe the work of the employee, and should include the supervisor, peers, subordinates and the employee themselves (Rotundo & Rotman, 2002:21). When applying this form of performance measurement, it should be decided whether the feedback from multiple raters will be used for developmental or evaluative purposes. It could pose a problem should promotions or performance bonuses be based on the ratings of peers, self or subordinates as the feedback could be biased and might therefore not be a true reflection of the employee's work performance (Rotundo & Rotman, 2002:21).

360° appraisals include feedback from the manager as well as peers and is valued as a more objective method of providing feedback as opposed to the traditional way of receiving feedback from the manager only (Roa, 2015:251). This appraisal system helps identify managerial biases and fosters a culture of teamwork and ongoing learning as the employee is more accepting of feedback from different sources (Roa, 2015:251).

It is proposed that team members evaluating each other's individual performance may be an effective tool to use as they interact and work closely with their colleagues on a daily basis (Erez et al., 2002:932). Any feedback given should always be constructive, with the aim of improving skill and competence. Feedback received will only be an effective development tool if applied in a way to improve skill and performance (Aguinis, 2013a:16).

2.10 Performance evaluations in allied health services

Radiotherapy is one of the health professions that fall under allied health services. Lizaronod et al. (2014:1) conducted a systematic review of the literature on performance evaluation in allied health services. This study found that performance management is an effective tool when feedback regarding staff performance is given objectively with the aim of substantiating their skills and practice or to highlight poor skills practice, and to implement measures to improve clinical performance. This study further mentions that a fundamental element of performance evaluation is assessing staff according to a specific clinical area (Lizaronod et al., 2014:1).

When looking at performance management in radiology, You-Ling Shuy et al. (2014:456) concur that evaluating staff performance should be focused on one clinical area. By applying

this approach, highlighting problem areas where upskilling might be needed is made easier. This could prove to be a challenge in a radiotherapy department where staff tend to be rostered through different clinical areas on a three- or six-monthly rotational basis.

A competency framework was developed for senior allied health professionals in Western Australia in rural and remote areas (Lin et al., 2009:1-11). This framework was a competency tool developed to evaluate generic, professional and technical competencies of allied health professionals working in rural and remote areas (Line et al., 2009:3). The authors (2009:3) state that the framework was developed in alignment with the PMS to determine areas of 'professional proficiency and weakness' of staff. The project report indicates that the use of a competency framework within a PMS improves the clinical management of staff and provides a framework for senior allied health professionals to plan their personal/professional development and needs (Lin et al., 2009:8-9). It also indicates that such a competency framework increases competency of allied health professionals, assists in identifying training needs and contributes to continuous professional development (CPD) (Lin et al., 2009:9).

Becker et al. (2015:1) conducted a study on implementing a radiation therapy performance appraisal framework as a tool to evaluate skills development of RTTs. The study suggests that a framework should clearly outline the expectations for practice and should include a feedback session. This study concluded that such a framework would be beneficial to an environment such as radiotherapy where change in practice and techniques are constant as a result of the evolving radiation therapy technology and research. This framework was deemed to assist staff in maintaining their level of competence and enabled staff to maintain their professional development (Becker et al., 2015:7).

The application of the above-mentioned approaches could support a PMS in evaluating the development needs of RTTs to ensure CPD.

2.11 Mentoring and coaching within the performance management system

The PMS is designed to improve the performance of the individual through coaching and regular feedback sessions (Armstrong 2006:17). Armstrong (2006:21) notes that performance is managed through '...coaching, guiding, appraising, motivating and rewarding colleagues'. As noted in 2.7, the PMS consists of frequent feedback sessions between the manager and employee throughout the duration of the performance cycle. This creates an opportunity for mentoring and coaching as employees are made aware of their strengths and weaknesses, and developmental activities can be suggested to improve performance and competence

(Aguinis, et al., 2011:504). Dorsey et al. (2017:17) note that it is important to create a culture of mentoring and coaching within the PMS as this will improve performance.

Mentoring is described in literature as a process where the mentor shares experience and skill with the mentee with the aim of improving performance and enhancing professional development and growth by focusing on long-term mentor assistance (Manzi et al., 2017:6; Abiddin, 2006:110). Abiddin (2006:107) notes that mentoring is the most effective way of sharing skills and knowledge, and it motivates staff to be co-operative in an organisation. The role of the mentor is to assist the mentee in development by providing resources and creating opportunities that will enhance performance, set goals, evaluate progress and provide feedback (Abiddin, 2006:108). Mentoring is going above and beyond coaching by not only training the employee to perform their job, but by sharing knowledge and experience to help the employees improve their performance (Stone, 2007:158). Mentoring is thus a tool that can be used to effectively manage performance (Stone, 2007:184).

Coaching however is more focused on immediate improvement of performance and therefore the focus on assisting the employee is over a shorter period of time (Abiddin, 2006:110). Coaching is defined by Stone (2007:2) as a positive process, done in person; Allenbaugh (1983:23) notes that coaching is done to develop the employee's job knowledge and skill through analysing their developmental needs and providing training accordingly. Through proper coaching, employees will be motivated to improve their performance and deliver high quality work (Stone, 2007:12). Proper coaching informs employees what is expected of them, making sure they know how to perform their jobs, and praising them for jobs well done (Stone, 2007:12). Figure 2.2 illustrates the different steps in the coaching process.

Aguinis (2103a:227) explains that coaching is done by the manager on a daily basis to help the employee improve their performance by identifying areas where training is needed. Through coaching the manager determines why the employee is underperforming and if the reasons are due to a lack of skill and knowledge, or reasons that are not within the control of the manager, for example, personal problems. Defining the cause of performance problems is important as this determines the measures to be put in place to support the employee to improve their performance (Aguinis 2013a:230).

Coaching should form part of the appraisal process by giving constructive feedback regarding the employee's performance, and praise should be given to the employee if improvement has been noted in certain areas (Allenbaugh, 1983:23; Stone, 2007:17). Amstrong (2006:22) holds that coaching should not only be done during a formal feedback session but should be an

ongoing day to day process where the supervisor steps in when areas are identified in which coaching is required. Allenbaugh (1983:23) notes that a manager should be skilled, have good knowledge and a positive attitude for coaching to be effective. Coaching helps employees realise their full potential (Stone, 2007;13).

Aguinis (2013a:230) argues that coaching can deliver positive results within a PMS if the manager ensures that a developmental plan is created with objectives; performance is documented; regular feedback is given to the employee; performance problems are identified; and assistance is provided to help employees enhance their performance (Aguinis, 2013a:230).

Even though the definitions for mentoring and coaching are different, mentoring forms part of coaching as both processes aim to improve skill, development and performance, and both contribute to staff members' personal development and job satisfaction (Kutilek et al., 2001:7; Stone, 2007:3). A study by Manzi et al. (2017:14-15) focused on interventions that would bridge the gap between theoretical knowledge learning and quality clinical practice in health care at five Population Health and Implementation Training sub-Saharan African project countries. They concluded that integrating mentoring and coaching as part of the management supervision process improved clinical practice.

Figure 2.2 gives an illustration of the different stages of the coaching process.

Figure 2.2: The coaching process
(Adapted from Aguinis, 2013a:234)

2.12 Staff Performance Management System in The Department of Health, Western Cape

The Public Service Regulations were amended in 2001 and required that government departments develop a PMS to '...manage performance in a consultative, supportive and non-discriminatory manner' (DPSA, 2001:7).

The purpose of a PMS is to develop staff through coaching and regular feedback sessions; to identify poor performance and to recognise excellent performance (DPSA, 2001:7). The system has a framework that aligns the departmental goals with the strategic goals of the province and that links the departmental performance to the performance of the individual (DPSA, 2001:9).

The public service Staff Performance Management System (SPMS) has undergone several reviews over the years, with the most recent review being in 2018. The changes were implemented in line with the Determination and Directive on the Performance Management and Development System issued under DPSA Circular 5 of 2017 (DPSA, 2018:1-9).

2.12.1 Performance Agreement

Within the above SPMS, a performance agreement is signed between the supervisor and employee on or before 31 May of each financial year. The performance agreement consists of the employee's job title, the salary grade, a detailed description of the employee's key result areas (KRAs) and competency requirements (DPSA, 2018:3). It will also include a work plan that includes the outputs, activities and resource requirements and a personal development plan (PDP). The PDP should identify any competency or developmental needs in terms of what is required to perform the job (DPSA, 2018:3) Employees must decide on Generic Assessment Factors (GAFs) that are most applicable to their work. The GAFs will be used to assist with areas of development and should be included in the PDP (DPSA, 2018:3).

2.12.2 Key Result Areas

With the latest amendment in 2018, Key Results Areas (KRAs) were implemented to measure performance against (DPSA, 2018:3). KRAs indicate the core functions of responsibility of an employee and are divided into different activities (DPSA, 2018:3). Each KRA is assigned a weighting depending on its importance in relation to the job of the employee, and the total of KRA weightings should amount to 100%.

2.12.3 Generic Assessment Factors (GAFS)

GAFs were introduced in 2018 as part of the SPMS. Their role is to identify the competency requirements of employees whilst considering their knowledge, skills and attributes (DPSA 2018:3). There are 15 GAFs of which the employees can choose the most relevant ones that are in alignment with their area of work (DPSA, 2018:3).

2.12.4 Performance monitoring, review and assessment

It is expected of supervisors to monitor the work of employees and to provide continuous support with formal sessions that are arranged to adjust goals, provide guidance and feedback, and to provide remedial action should it be needed (DPSA, 2018:4). It is required that supervisors meet with employees mid-yearly during the performance cycle to review their performance. During the final appraisal meeting the supervisor will evaluate to what extent the objectives/outputs were achieved in relation to the goals that were set; how well the employee displayed the capabilities needed to perform the job; give ratings; give input on career development; and give recognition or suggest remedial action should it be required. The ratings given during this assessment will be strongly based on the evidence submitted during the previous reviews (DPSA 2018:4).

2.12.5 4-point rating scale

A 4-point rating scale is used to evaluate employees ranked between salary levels 1-12. A rating of 1 indicates that the employee's performance is not effective and does not meet the expected standard for their job. Their total percentage score will be less than or equal to 66% (DPSA, 2018:4). Receiving a rating of 2 indicates that the employee is partially effective, and will receive a scoring between 66%-99% (DPSA, 2018:4). When a rating of 3 is given, it indicates that the employee has been deemed fully effective and will receive a scoring of 100% (DPSA, 2018:4). Only employees who receive a rating of 4 will be considered for a reward. This indicates that the employee is highly effective and will be scored between 120%-133% (DPSA, 1018:4).

2.12.6 Performance moderation

Executive authorities should appoint a departmental moderation committee, that is a higher level of management than the supervisor, that will moderate the annual performance assessments to eliminate unfairness and ensure consistency (DPSA, 2018:5-6). Should the committee identify any discrepancies, it should be dealt with in a fair manner. The committee may recommend increasing or decreasing ratings and this should be communicated to the manager and employee in writing (DPSA, 2018:6).

2.12.7 Performance rewards

It is the responsibility of the executive authorities to determine suitable performance incentives to reward employees as contemplated in regulation 73(1) of the Public Service Regulations. Unsatisfactory performance should be dealt with by the supervisor using a developmental approach. The supervisor must comply with the procedural requirements of PSCBC Resolution 10 of 1999 and Resolution 1 of 2013, the 'Incapacity Code' which stipulate that the employer should give reason why they are of the opinion that the employee is underperforming; meet with the employee to discuss the underperformance; and compile a formal programme of counselling and instruction to assist the employee with reaching the required standards of their job (DPSA, 2018:6).

2.13 Employee perceptions of the performance management system

A PMS can only be effective when employees perceive the system as fair and accurate in terms of how results are distributed, which processes are followed to achieve the results, and how communication processes are followed (Sharma et al., 2015:228). When employees are negative towards organisational systems such as a PMS, it can negatively impact the organisation as well as the individual's performance and could create an unhealthy working environment (Jain & Gautam, 2016:235).

A study conducted in a public organisation in India investigated staff perceptions regarding the PMS implemented. It concluded that although staff had a positive attitude toward the PMS, the majority of the participants reported that the system did not assist them in career development (Jain & Gautum, 2016: 244).

Locally, Tyokwe & Naicker (2021) conducted a study regarding the impact a PMS had on employees' performance in a public hospital in Cape Town, South Africa, and found that participants viewed the PMS as an unfair system and felt that the system failed to improve efficiency due to factors such as absence of skills development programmes, insufficient training of employees, and lack of motivation. The participants of the study consisted of senior administrative officers, administration officers, senior administrative clerks and general assistants.

A study by Javu (2012:44) evaluated the PMS of the Eastern Cape Department of Health and found that most participants were of the opinion that the PMS did not contribute to their professional development and failed to recognise and reward good performance. A study conducted at the Department of Health in Kwazulu-Natal regarding employee's perceptions of

the PMS indicated that employees perceived the PMS as an unfair system which was an important factor contributing to employees not being satisfied with the results of the performance appraisals (Khuzwayo, 2017:82). The participants of this study were Finance Head Office employees in the Department of Health in Kwazulu-Natal.

These studies indicate that employees viewed the PMS as failing to contribute to their professional development; that it did not have a reward component that motivated good performance; that staff were not trained effectively to apply the PMS; and that it was not a fair system.

When looking at the perception of employees outside a health facility (Dorsey et al., 2017:9) staff have the following perceptions of the PMS:

- the PMS does not motivate them to improve their performance as it does not offer rewards when staff deliver performance of a high standard;
- the system does not effectively manage staff who perform poorly;
- managers are of the opinion that the PMS takes up a great amount of their time which is more of a burden and stops them from doing their actual work;
- executive managers regard the ratings given to staff as not a true reflection of their performance, which therefore makes it difficult to decide on the correct decisions to improve overall performance (Dorsey et al., 2017:9);
- studies have shown that less than a third of employees believe their organisations' performance management systems assist in improving their performance (Hackman & Tetteh-Bator, 2021:36).

2.14 Conceptual framework

The role of a PMS in terms of skills development of RTTs formed the background against which the literature review was conducted. A conceptual framework is proposed that is informed by the literature review and performance management models presented by authors such as Armstrong (2006) and Aguinis (2013a). These models propose the factors that influence skills development of RTTs within a PMS. From the background (literature review) four main elements within the PMS were identified that influence the development of skills of RTTs namely: implementation of the PMS; goal setting; mentoring and coaching; and performance evaluation. During the implementation phase it is important that training is provided from the human resource department to ensure correct implementation of the system which will results in effective skills evaluation of RTTs. During goal setting the RTTs' skills development needs should be linked to the operational needs of the specific job. During mentoring and coaching the managers should provide the necessary mentoring and coaching to RTTs within the context of their identified skills development needs. During the

performance evaluation phase, the managers should evaluate the extent to which the skills development needs of RTTs were addressed to ensure optimal performance outcomes.

Figure 2.3 illustrates this framework that was used to guide the research design and methodology in Chapter 3. The flow chart was designed by the researcher to show the process used for the research design and methodology outlined in chapter 3 after noting the concepts used by Amstrong (2006) and Aguinis et al. (2013) respectively in figures 2.1 & 2.2.

Implementation		Goal setting		Mentoring & Coaching		Performance evaluation
HRM involvement		Clear goals		Managerial competencies		Performance appraisals
Internal training		Challenging goals		Identification of upskilling needs		Constructive feedback Performance rating
Top management commitment		Regular feedback		Employee motivation		Career development Rewards

Figure 2.3: Conceptual framework

2.15 Chapter summary

This chapter consists of a theoretical overview of performance management systems. Various topics were looked at such as the definition of performance management, the implementation of a PMS, the different processes involved in a PMS, as well as the role of mentoring and coaching in assisting employees with skills development. Most authors agree that implementing a PMS successfully will result in high performance delivery. Failure to do so will have a negative impact on an organisation. Literature indicates that the main goal of a PMS is to ensure that the goals of an organisation are achieved. The goals set out for the individual should be in alignment with the goals of the organisation. Some authors view a PMS as a tool that should be used to enhance continuous improvement of employees and should not only be used to reach organisational goals. Mentoring and coaching have been identified as two of the key elements that play a role in developing and evaluating skills of employees within the PMS.

The next chapter looks into the methodology used for the purpose of this study as aligned with its objectives.

CHAPTER 3

A RESEARCH METHODOLOGY FOR STUDYING THE EVALUATION OF SKILLS DEVELOPMENT OF RADIATION THERAPISTS

3.1 Introduction

This chapter provides an overview of the research design and the methodology adopted for this study. It further describes the sampling strategy, the data collection instrument, the data collection process and the data analysis methods. The validity and reliability of the data are also discussed and ethical considerations are explained. The research process was guided by the research data management plan (see Annexure A).

The purpose of this study was to evaluate the effectiveness of the performance management system (PMS) in assessing the development of skills of radiation therapists (RTTs). The study was guided by the following sub-questions:

1. Is the PMS effectively implemented to ensure continuous evaluation of development needs of RTTs?
2. Which methods area applied to evaluate the competencies and skills of RTTs?
3. How is the PMS applied to identify good or poor performance?

3.2 Research design

The research design refers to an extensive plan that is aimed at answering the research question or testing the hypotheses through data collection, instrument development and sampling (Bhattacherjee 2012:35). Each research study has a research approach that is dependent on the selected research paradigm.

A research paradigm is defined as a set of assumptions about the social world that are interlinked and which create a philosophical and conceptual framework for the study of that world (Ponterotto, 2005:127). Various paradigms exist and are influenced by ontology (the nature of reality), epistemology (the nature of knowledge), and methodology (the nature of research) (Bunnis & Kelly, 2010:360). The chosen paradigm determines the context of the study and guides the researcher in selecting the instruments, participants and methods used in the study (Ponterotto, 2005:127).

For this study, the interpretive paradigm was selected. Interpretivism is characterised by a subjective epistemology which predicts various interpretations of reality as opposed to trying

to find a comprehensive truth; and, by gathering in-depth accounts of how a particular phenomenon is being understood by the individuals who have experienced it (Bunnis & Kelly, 2010:360). By applying the interpretive approach, the researcher gained a comprehensive understanding regarding the perspective of the participants and what their realities, experiences and interpretations were of the SPMS in relation to skills development of RTTs.

Within the interpretivist paradigm, the researcher-participant dialogue generates knowledge as relevant insights are developed naturally (Bunnis & Kelly, 2010:363). By adopting this paradigm, the researcher aimed to construct the experiences, thoughts and opinion of the participants into knowledge through interpretation and reflection of the data collected. This paradigm tends to foster mutual recognition between the researcher and the participants (Weaver & Olson, 2005:461).

3.3 Research approach

An overall qualitative approach was selected for the purpose of this study. Hancock et al. (2007:7) explain that a qualitative study is focused on social aspects and attempts to find answers to questions about why people behave in a certain manner; how people develop opinions and attitudes; and how circumstances affect people. Kothari (2004:3) notes that qualitative research is concerned with determining how people feel and think regarding a specific subject. Merriam (2002:5) and Braun & Clark (2013:3) state that qualitative research is descriptive in nature and can use words and pictures instead of numbers to illustrate what knowledge the researcher has gained about the phenomenon (Merriam, 2002:5).

The study was conducted in two parts with the first part being a questionnaire which was used to inform and guide the questions needed for the semi-structured interviews that followed. Thus, the questionnaires were used in this qualitative study mainly as a tool to obtain information from the participants and to elicit a frequency of responses regarding their views on different aspects of the PMS. These responses were used to inform the questions asked during the interviews. See the formulated questions used in the semi-structured interviews in Appendix E1.

The descriptive nature of a qualitative research study enabled the researcher to listen to the experiences of the participants through the words they spoke and to understand the meaning behind their experiences, thoughts and opinions. This research approach was chosen as the researcher aimed to obtain insight into the different experiences and realities of the RTTs towards the current PMS used at the study site from the Department of Health, Western Cape.

With a qualitative research study, the researcher becomes the primary research instrument that collects and analyses the data (Merriam, 2002:5). The researcher, as the research instrument, was able to gain a better understanding of what participants were voicing by observing the verbal as well as the non-verbal communication and could verify the accuracy of interpretation with them.

3.4 Population and sampling

The population in a research study refers to the individuals, groups or events that form the study object (Welman et al., 2005:52). The population of this study were RTTs in a radiation oncology department in the Western Cape, South Africa. The population size consisted of 32 RTTs. The management structure at the study site consisted of an Assistant Director and four managers who are the role players responsible for implementing and managing the PMS.

Participants included in the study were permanently employed RTTs which included managers who are responsible for implementing the PMS and staff whose performance are evaluated within the PMS. Participants excluded from the study were RTTs employed on a contract basis, community service RTTs and radiotherapy students. The reason for their exclusion was that the PMS only applies to permanently employed staff.

There are two government institutions in the Western Cape, South Africa where this study could have been conducted. Only one of these department were included in this study due to ease of access for the researcher to this study site. This study site has the larger population size of RTTs. A further aspect to be considered is that the DoH Western Cape expects each department to develop their own SPMS template as described in section 1.2, thus by including the second institution in the sample, it is not certain as to whether it may have been advantageous to do so or not. Ideally, the number of the sample would have been slightly augmented and perhaps the data from the second site may have enriched the thematic content analysis; or, alternatively, it may have proved to be more of the same; or provided some outlier points from a different workplace prompting further discussion points. Again, the second site would be a convenient sample with part easy access if the second site encourages research studies of this particular topic.

Samples can be categorized as probability samples or non-probability samples. With probability samples, all components have a known probability of being part of the sample whereas with non-probability samples, the researcher is unable to determine this probability

(Kothari, 2004:15). For this study, convenience sampling was selected, which is defined as non-probability sampling (Welman et al., 2005:56). This allowed the researcher to select research participants from a population that was readily available (Bhattacherjee, 2012:65,69; Kothari, 2004:15). An advantage of non-probability sampling is that the technique is convenient, easy to implement and less expensive to conduct (Welman et al., 2005:57). A disadvantage of this technique is that it could be prone to bias due to the easy accessibility of the sample (Welman et al., 2005:69).

3.5 Research instruments

A research instrument is a tool that is used to collect, structure and analyse data in relation to the research study (Wilkinson, 2000:41). The survey research method was used for the purpose of the study, which consisted of two research instruments namely, questionnaires and interviews. With this research method, the researcher was able to collect data that was focused on the attitudes, views and opinions of the participants (Wilkinson, 2000:41). In qualitative research, data is mainly collected via three sources namely observations, interviews and group discussions (Merriam, 2002:12). Interviews were the primary source of data collection for this study and were used in conjunction with questionnaires. Adams and Cox (2008:17) note that questionnaires that are followed up by interviews enable the researcher to completely explore the phenomenon of interest which, in this study, was to evaluate the effectiveness of a PMS in skills development of RTTs.

3.5.1 Questionnaires

Prior to conducting the interviews, the researcher developed a questionnaire that was handed out to participants. Rowley (2014:4) comments that questionnaires are generally used to determine the rate of occurrence of people's opinions, attitudes, behaviours and processes. With questionnaires, the researcher is able to receive feedback from the respondents from their point of view (Kuter & Yilmaz, 2001:1).

An in-depth understanding of the attitudes, values and perceptions of the respondents can be demonstrated when questionnaires are used in qualitative research in combination with other qualitative methods such as interviews, and thus assists the researcher in gaining a more comprehensive understanding of social processes (McGuirk & O'Neill, 2016:3). Questionnaires enable the researcher to establish patterns or themes while with follow-up interviews, the researcher is able to gain a more in-depth understanding of the participants' feelings, thoughts and opinions through the use of open-ended questions (Harris & Brown, 2010:1). Adamson et al. (2004:139) hold that well-developed and validated questionnaires

produce data that can be of great value to health service research when used in conjunction with qualitative interviews.

The questionnaire was developed with questions formulated to produce data that could answer the research questions. The questions were primarily developed from an extensive literature review focussing on the performance management system and skills development needs of RTTs (e.g. Aguinis, 2013a; Armstrong, 2015; Becker et al., 2015: Chamunyonga & Bridge, 2014: Couto et al., 2022; DeNisi & Murphy, 2017). The questionnaire consisted of a set of structured questions, meaning that participants had to select their answers from predetermined responses (Bhattacherjee, 2012:74). When formulating the questions, the researcher ensured that the questions were clear, easy to understand and had one concept per question. Kothari (2004:101) notes that the questions should relate to the research questions, should be worded in a way that is easy to understand, and should follow a sequence where relatively difficult questions should be asked towards the end of the questionnaire.

The questionnaire consisted of 11 questions (see Annexure D) and participants were requested to respond to statements made based on the Likert sale. With the Likert scale, participants indicated to which level they agreed/disagreed with the statement (Joshi, et al., 2015:397; Welman et al*.,* 2005:157). According to Adams and Cox (2008:21), the Likert scale is most used to measure opinions or attitudes in a research study. Joshi et al. (20015:398) note that the Likert scale is a beneficial research instrument when the researcher's intention is "to capture feelings, actions and pragmatic opinion of the participants' regarding the studied phenomenon". The combined responses gave the researcher an indication of the attitude of the participants towards the issue under study (Joshi et al., 2015:396).

Prior to handing out the questionnaires, two participants with different years of experience were asked to complete the questionnaire for pilot testing purposes. This was done to test readability and ease of completion of the questionnaire. These two participants used for piloting the questionnaire were credible sources to evaluate the questionnaire based on their different years of experience as a junior and senior RTT as well as their exposure to the PMS over a period of time of more than 10 years. After this piloting the two participants did not participate in the later implementation of the completed questionnaire and interview process. The questionnaires were used to inform the next phase of the research study, which was semi-structured interviews.

3.5.2 Interviews

Conducting an interview is an interpersonal meeting where information is obtained through verbal and/or written communication in an indirect manner (Fontanella et al, 2006:812). Interviews can be structured, unstructured or semi-structured. With structured interviews, the interviewer follows a predetermined list of questions that are posed to every interviewee in the same way, using the same words and in the same order (Doody & Noonan, 2013:30). With unstructured interviews the researcher is guided by themes rather than questions and therefore does not have predetermined questions but rather formulates the questions as the interview progresses (Doody & Noonan, 2013:30). With semi-structured interviews the interviewer has predetermined questions, but the researcher is allowed to ask for clarification and may ask additional questions as new concepts develop. Different issues can be discussed as the interview progresses (Doody & Noonan, 2013:31).

Semi-structured interviews were conducted for this study to elicit participants' views on the effectiveness of the SPMS in evaluating the development of skills. The semi-structured interview approach was chosen for this study as the researcher could approach the interview with flexibility, allowing for different concepts to emerge by posing open-ended questions to the participants (see Appendix E1) and then asking for clarification to avoid misinterpretation. The participants were encouraged to be open and to discuss their thoughts further with the researcher.

Adams et al. (2008:22) hold that semi-structured interviews create an environment for the participants to openly give their opinions and allow the researcher to see it 'from the perspective of those experiencing it' (Vaismoradi et al. 2013:398). The participants speaking openly about what they feel produces rich data when conducting semi-structured interviews which assists the researcher in conducting themes from the data collected (Harvey-Jordan & Long, 2001:2019).

The interviews provided triangulation of the data obtained from the questionnaires. Triangulation is the combination of two or more data sources, investigators, methodologic approaches or theoretical perspectives (Thurmond, 2001:253). Triangulation is explained by Klein & Olbrecht (2011:342) as applying more than one method to achieve a comprehensive list of results and findings that would not have been achievable if only one of these methods were applied. Triangulation of data also assists the researcher in evaluating the research findings and identifying any weakness or intrinsic biases that may occur when applying qualitative research tools (Adams & Cox, 2008:25). Triangulation increases the validity and strength of study as well as decreases the researcher's biases (Thurmond, 2001:253).

3.6 Data collection process

Prior to data collection, permission was requested from the Head of Department at the site where the study was to be conducted. Thereafter, permission was requested from the Research Ethics Committee at the study site. Final approval to conduct the study was granted from the above committee after ethics approval was gained from the study institution on 17 February 2023, with approval number CPUT/HWS-REC2022/H and was renewed on 18 February 2023. There are two tertiary institutions in the Western Cape and to protect the integrity and confidentiality of the study site, the proof of permission from the study site was not included in this study.

Data collection commenced with the distribution of the questionnaires. The questionnaires were handed out to the participants in hard copy format. Participants completed the questionnaires at their place of work at a suitable time that did not impact clinical services or the daily workflow of the department. Participants were requested to return the documents to an allocated collection point in the department in an access-controlled area. The access-controlled area was only accessible to employees and was operated with an employee identification card that had to be scanned at the door to gain access into the area. Thirty two (32) questionnaires were handed out of which 19 were returned. All 19 questionnaires were completed correctly. Data was collected over a two-week period between the 15th of March and the 31st of March 2022. Annexure H indicates the participants' questionnaire and interview participation as well as their years of experience.

The interviews were conducted two weeks after the participants completed and handed in the questionnaires. Only participants who volunteered to complete the questionnaires were asked to participate in the interviews. The same participants were used for both the questionnaires and interviews as this gave the researcher a better understanding regarding the key concepts that were identified. It also gave the participants a chance to provide a deeper response to the questions that they were not able to do during the questionnaires due to the limitations posed by the questionnaires.

The results from the questionnaires (Annexure D) informed the questions of the interviews (Annexure E1). Scheduling the interviews proved to be a challenge as the researcher had to be mindful of the operational requirements of the department. Staffing challenges, machine breakdowns and the heavy workload at the study site made it difficult for participants to avail themselves for the interviews. The interviews were conducted over a period of two weeks as per the availability of participants. All interviews were conducted in a quiet room that was away

from the clinical area. This created a space where participants could feel comfortable to speak freely. The location was in an access-controlled area with only employees having access to the area. The interviews were audio-recorded by using a Olympus Digital Voice recorder, model DS-50. All interviews were completed within two weeks.

3.7 Data analysis

In qualitative research, data is analysed by describing and summarising the words collected through interviews or observations (Lacey & Luff, 2009:6) whereas quantitative research data is analysed and illustrated using graphs, charts or cross tabulation (Lacey & Luff, 2009:5). In this study a combination of quantitative and qualitative analysis was used.

3.7.1 Questionnaires

The questionnaire data was collected and captured by the researcher. A statistician analysed the data by using the NCSS 2021 Statistical Software programme (https://www.ncss.com/software/ncss/). The responses were coded to numerical values to calculate correlations between responses. Frequency tables with graphs were used to display the data. The participants' responses for each question were counted to determine the highest frequency of occurrence and were presented in percentage form. The 'strongly agree' and 'agree' responses for each question were grouped together as 'YES' and the 'strongly disagree' and 'disagree' responses were grouped as 'NO' for ease of interpretation.

A second layer of analysis was done by using the Fisher's exact probabilities test. This test was conducted to verify the data and results collated from the first analysis. Fisher's exact test was the chosen method due to the small sample size of the study. According to Warner (2013:281), the Fisher's exact test is the alternative to the 2 x 2 Chi-square test in instances where small sample sizes are used.

3.7.2 Interviews

All interviews were audio recorded by the researcher and transcribed by a professional transcriber. Widodo (2014:102) notes that qualitative data should be captured, coded and transcribed using a standard coding protocol and transcription methodology. The transcriber was a Cape Peninsula University of Technology (CPUT) preferred service provider and was chosen from the institution's vendor list. The transcriber signed a non-disclosure agreement upon being appointed and therefore the transcriber did not sign a confidentiality agreement for this study. Each interview was approximately 20-30 minutes in total. Thematic analysis was used to analyse the data collected through the interviews. Braun and Clark (2006:79) note that

thematic analysis identifies and analyses trends within the data and interprets different components of the study under investigation. Vaismoradi (2013:400) mentions that thematic analysis applies systematic coding to categorize information from a pattern of words spoken during the interview and formulates consequent themes.

The transcripts were analysed systematically through repeated reading to gain an in-depth understanding of each interviewee's perspective and to identify concepts or interpretations, similarities and difference of opinions. This process was repeated until the researcher was satisfied that no new concepts could be identified. Keywords or sentences related to the most significant aspects of the research topic were highlighted in colour and coded. Relevant data were collated under each code. Potential themes were created from the various codes. The themes were reviewed by creating a mind-map to verify whether all coded extracts were identified under the correct themes. When re-evaluating the themes, the researcher noted that some of the themes did not have sufficient data to support them, and thus themes with similar concepts were combined. New codes emerged when the researcher re-read the data, some of which could fit into the existing themes and this is illustrated in Annexure E2.

3.8 Overview of the research design

Having discussed the research design, the selection of participants, and the collection and analyses of data, a schematic illustration of the research design is shown in **Figure 3.1.**
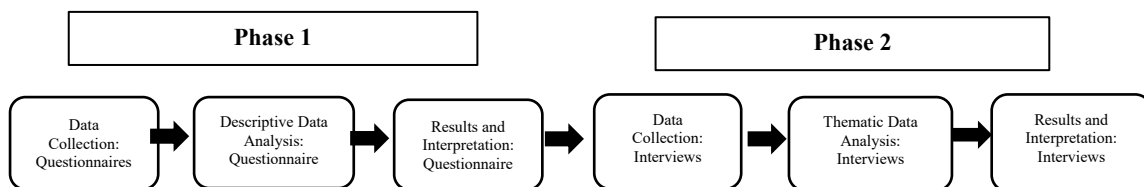
Figure 3.1: A schematic illustration of the research design
The above diagram illustrates the research design from phase 1 to phase 2 and the methods of data collection, analysis and production of results.

3.9 Validity and reliability

The quality of a research study can be assessed in terms of its validity and reliability. Validity refers to the integrity and methods applied to give an accurate account of the findings presented in the data, while reliability refers to the consistency of the measurement (Noble & Smith, 2015:34).

Bhattacherjee (2012:37) notes that a good research design should include internal and external validity. Internal validity evaluates whether the dependent variable being tested is trustworthy and not influenced by independent variables (Bhattacherjee, 2012:36). External validity refers to how well the findings of the study have transferability to other situations within the population or other settings (Bhattacherjee, 2012:36).

With quantitative research, validity and reliability of the research findings are determined through statistical methods, while with qualitative research, validity and reliability are achieved by adopting strategies to ensure that the findings of the study are trustworthy, and have rigour and quality (Golafshani, 2003:597; Merriam & Tisdell, 2015:238; Noble & Smith, 2015:34). Noble & Smith (2015:34-35) suggest various strategies to ensure validity and reliability in qualitative research, namely:

- Being aware of personal biases that might have influenced the results
- Accurate record keeping
- Including verbatim responses
- Illustrating clear thought processes
- Triangulation of data

To enhance the reliability of the study, the researcher gave an outline of how participants were selected how the data was collected and analysed, how themes were formulated and how the link was created between the data and the results. The researcher ensured that the questions in the questionnaires and interviews were not formulated to affirm any preconceptions the researcher might have had. The researcher used quotations from the data when presenting the results to increase the trustworthiness of the research. Elo & Kyngäs (2008:112) explain that this increases reliability of the data and illustrates to the reader how themes emerged from the data (Elo & Kyngäs, 2008:112).

Triangulation of the data was done which increases reliability of the study. The questions asked in the semi-structured interviews were informed by the data obtained from the questionnaires to ensure triangulation. The researcher audio recorded the interviews and had them transcribed by an independent professional transcriber. The recording and transcribing of data assisted in increasing the credibility of the study as Coleman (2022:2042) states that audio recordings that have been transcribed verbatim are labelled 'rich' data as they provide a more conclusive picture of the research study.

To further increase validity of the study, the researcher was mindful of pointing out and investigating all data that might differ from the overall conclusion of the study. By seeking out

contradictory data, the researcher ensured the data used was not restricted to that which only strengthened the argument (Coleman, 2022:2042). Merriam and Tisdell (2015:248) agree that purposefully looking for data that contradicts the findings of the study '...helps increase confidence in the initial, principal explanation you generated'.

To ensure dependability of the data analysed from the interviews, one of the researcher's supervisors reviewed the texts from the interviews and made their own interpretation and analysis. This was to evaluate the accuracy and dependability of the data presented and to evaluate if the findings and interpretations were supported by the data collected.

3.9.1 Validity of the questionnaire

There are four tests to verify the validity of a questionnaire namely: face validity, content validity, construct validity and criterion validity, of which the mandatory tests recommended are construct validity and criterion validity (Taherdoost, 2016:34).

3.9.1.1 Face validity

Face validity evaluates the presentation and relevance of the instrument by how it appears to the person taking the test (Oluwatayo, 2012:392). Face validity is however seen as 'arguably the weakest form of validity' and is therefore not recommended as a way of testing validity of the research instrument (Taherdoost, 2016:29). For this study, face validity was achieved by developing a questionnaire that consisted of an error-free appearance and by using a presentable layout and font.

3.9.1.2 Content validity

Content validity evaluates whether the survey instrument has included all the components that are essential to the study whilst excluding items that are not essential to the construct being measured (Taherdoost, 2016:30). To ensure content validity, the researcher conducted an extensive literature review, had experts in the same research field pilot and review the survey, namely RTTs and supervisors, and had structured the questions to cover all aspects of the studied construct.

3.9.1.3 Construct validity

Construct validity refers to the extent to which the research instrument is assessing the construct adequately (Bhattacherjee, 2012:37; Taherdoors, 2016:31). The researcher aimed to achieve construct validity by developing the questionnaire to ensure only relevant questions relevant to the study are included to measure the known indicators.

3.9.1.4 Criterion validity

Criterion validity, also known as concrete validity, is described by Taherdoost (2016:32) as 'the extent to which a measure is related to an outcome'. When a test can predict performance or behaviour, one can say the test has criterion validity (Taherdoost, 2016:32). To ensure criterion validity, the researcher aimed to ensure that the concerned criterion is relevant, that it is free from bias, that it is reliable and that the information identified by the criterion is available (Kothari, 2004:74

3.9.2 Reliability of the questionnaire

Pilot testing of the questionnaires was done to ensure reliability of the instrument. Two respondents verified whether the questions were clearly worded and easy to understand. Their feedback was taken into consideration before the questionnaires were distributed to the participants. One participant was a junior RTT with less than 10 years of experience while the other participant was a senior with more than 10 years of experience. These two respondents were not included as participants in the study.

3.9.3 Researcher's positionality

Jacobson & Mustafa (2019:11) note that in qualitative research, determining one's social position creates awareness of personal assumptions and biases and increases the accuracy and credibility of the study. Merriam (2002:5) states that biases of the researcher should be identified and monitored to determine how they might influence the collection and analyses of data. Sutton & Austin (2014:437) are of the view that being completely objective is not achievable, as researchers cannot completely distance themselves from their own backgrounds and interests. Researchers should therefore rather be honest about their predispositions and allow the readers to draw their own conclusions regarding the findings of the study (Sutton & Austin, 2014:437).

The researcher is an RTT and a colleague of the participants and was employed at the study site. The researcher's knowledge of the context ensured a high level of trust in the interviews. The researcher remained aware of their biases and made extensive field notes throughout the research process, as illustrated in Appendix I, in an attempt to close off their own experiences and to guard against personal views and opinions that might influence the research process. For example, in the formulation of the questionnaire which was primarily informed from literature, where although the researcher could recognise aspects from their own experience of the PMS, the questionnaire used literature as the primary source of questionnaire questions and the subsequent piloting of the questionnaire. The researcher spent an extensive amount

of time analysing the data to ensure that the findings of the study adequately reflect the views and opinions of the participants.

3.10   Ethical considerations

Permission was granted from the Head of Department where the study was conducted. Thereafter permission was granted from the Research Ethics committee at the study site. The Faculty Research Ethics Committee at the higher education institution granted permission for the study to be conducted (FREC approval reference number: CPUT-HWS/REC 2022/H03).

The ethical guidelines regarding informed consent, anonymity and confidentiality were adhered to. The purpose of the study was explained to the participants and a consent form was given to those who wished to participate in the study (see Annexure F). Participants were assured that confidentiality and anonymity would be maintained by anonymising the questionnaires and ensuring that the protection of all participants' personal information was in compliance with the Protection of Personal Information (POPI) Act of 2013 (Act No. 4) (Republic of South Africa, 2013). Personal information of all participants was kept confidential, and data collected in hard copy form were stored in a secure, locked location with only the researcher having access to it. Anonymised datasets were stored online on a secure cloud-based platform. Data stored offline was saved on an external hard drive and was password protected.

Participants were informed that they had the option to withdraw from the study at any point. The consent form also explained that the participants would not be at risk of any physical or emotional harm. No unethical strategies such as coercion were performed. The participants were given sufficient time (two weeks) to decide whether they would want to participate in the study. No promises of reward were made to obtain information from the participants. Participants were informed of where, at the study site, they could collect the questionnaires. The allocated points were accessible to all. Participants were requested to place the completed questionnaires in a secure section at the study site that was access-controlled.

A second consent form (see Annexure G) was handed out to all participants before conducting the interviews requesting their consent to audio-record and transcribe the interviews. Participants were assured that anonymity and confidentiality would be maintained by using pseudonyms during the interviews, and ensuring that the data collected from the interviews were stored online on a secure cloud-based platform. Participants were also informed that the transcriber had no vested interest in the study site or the participants. The researcher ensured

that the dates and times scheduled for the interviews did not impact on service delivery or the workflow of the department.

3.11   Chapter summary

The aim of the study was to evaluate how effectively the PMS assesses skills development of RTTs. This chapter outlined the research methodology and research design applied to answer the research sub-questions. The process for selecting participants and the data collection instruments were discussed. The analysis of the data was explained, and the validity and reliability of the results were outlined. Ethical considerations that were followed were explained. The following chapter discusses the findings of the results.

CHAPTER 4

FINDINGS AND DICUSSIONS

4.1 Introduction

This chapter presents the findings of the research regarding the effectiveness of the performance management system (PMS) in evaluating the development of skills of radiation therapists (RTTs). During phase 1 of the study, data was analysed through descriptive analysis and the Fisher's exact test was done to determine if a relationship existed between any two questions in the questionnaire. During phase 2, codes were created from the transcribed verbal data, from which themes and sub-themes emerged.

4.2 Phase one: descriptive statistics

The set of graphs illustrated in figures 4.1 to 4.11 were created using frequency tables. The participants' responses for each question were counted to determine the highest frequency of occurrence and were presented in percentage form. The 'strongly agree' and 'agree' responses for each question were grouped together as 'YES' and the 'strongly disagree' and 'disagree' responses were grouped as 'NO' for ease of interpretation.

The findings of phase one of the study addressed the following study objectives:

1. to assess the effective implementation process of the PMS;

2. to assess how the current PMS is being applied to evaluate the skills and competency levels of RTTs;

3. to evaluate the role of the PMS in performance improvement of RTTs.

4.2.1 Study objective 1: Effective implementation of the PMS

The following four questions as illustrated in figures 4.1 to 4.4 were analysed to address objective 1:

Participants were asked whether they were satisfied with the implementation of the PMS. Figure 4.1 indicates that 84% of participants were dissatisfied with the way in which the PMS was implemented.
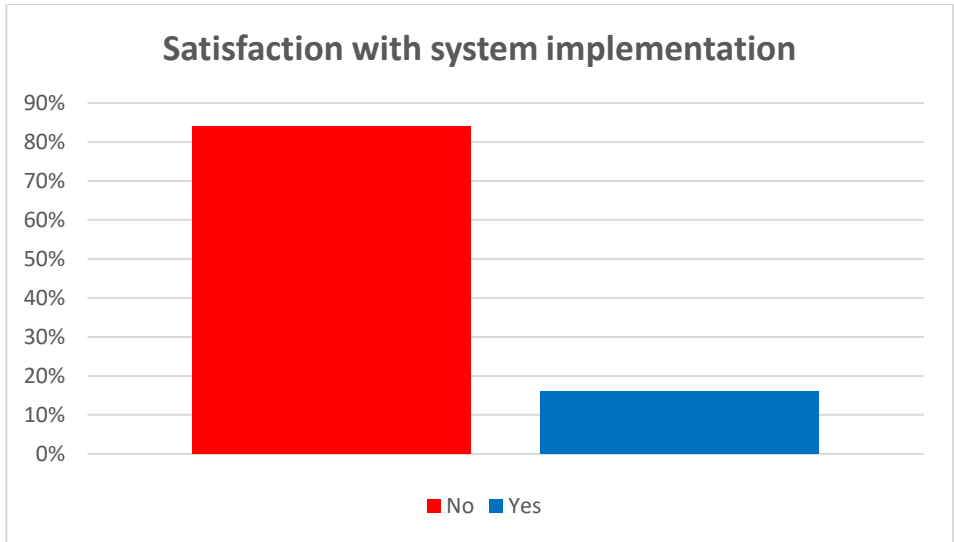
Figure 4.1: Participants' satisfaction with PMS implementation

According to Ayanyinka & Emmanuel (2013:5) a poorly implemented PMS could lead to difficulty in setting the goals of the individual and aligning them with the goals of the organization. The setting of goals at the start of the performance cycle forms an important part of the implementation process of the PMS.

The next question related to the setting of these individual goals. Participants were asked whether their individual goals for the year were mutually decided on between the manager and the employee at the start of the performance management cycle. Figure 4.2 indicates that 68% of participants agreed that goals were identified and mutually decided on between the employee and the manager at the start of the performance cycle.
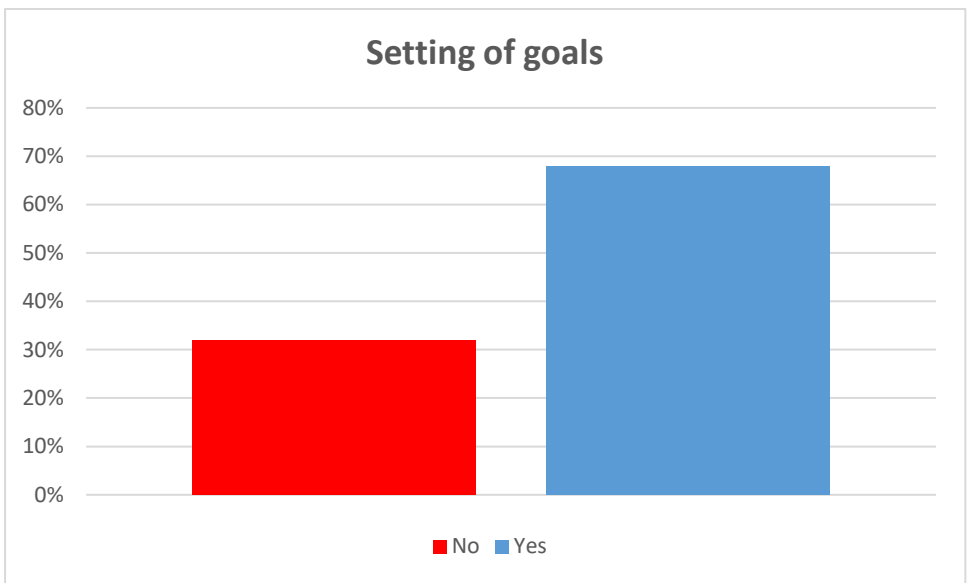
Figure 4.2: Setting of goals

den Hartog et al. (2004:556) state that setting of individual goals at the start of the performance cycle is important as the employee's performance will be measured against these pre-determined goals.

Monitoring staff performance and giving feedback to staff regarding their performance is another key factor when implementing a PMS. Participants were asked whether formal feedback was given to them when performance evaluations were done. Figure 4.3 indicates that 53% disagreed that formal feedback was given during performance evaluation sessions.
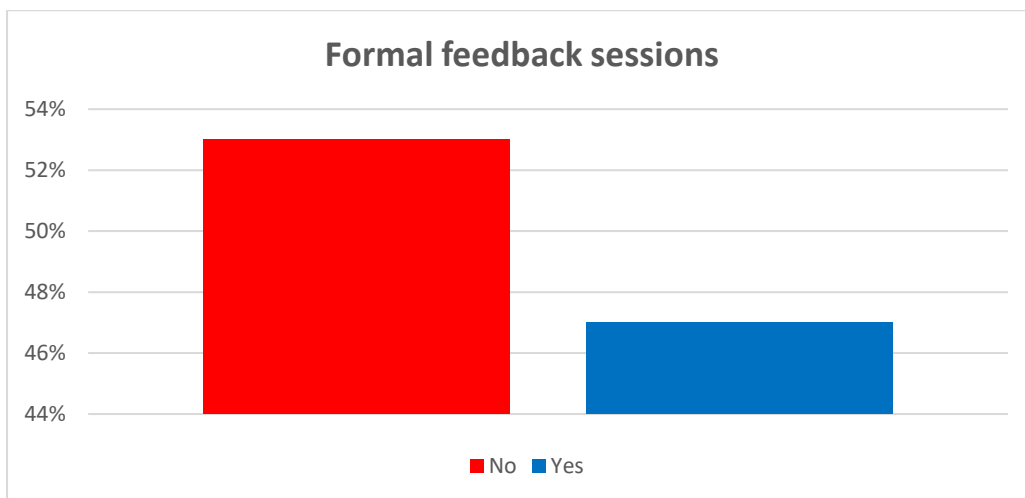
Figure 4.3: Formal feedback sessions

Formal feedback sessions form an essential part of the implementation of a PMS as it creates an opportunity to evaluate the progress of the employee, to highlight problem areas and to provide the employee with a performance rating (Armstrong, 2006:19).

Another question based on feedback sessions was whether managers remained impartial when assessing and giving feedback regarding the staff member's performance. As seen in figure 4.4, 89% indicated that managers do remain impartial during performance evaluations.
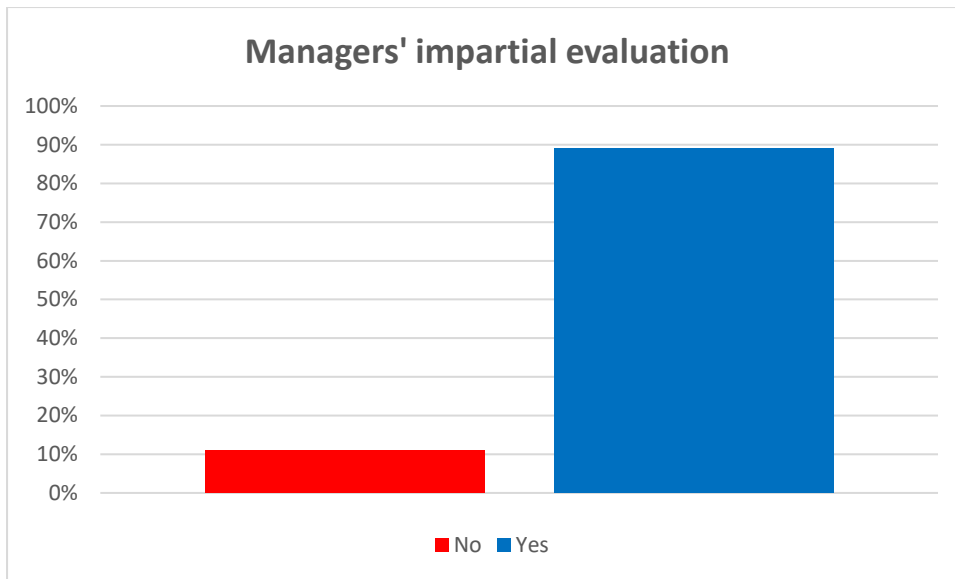
Figure 4.4: Impartial assessment by managers

Managers should guard against favouritism and bias when evaluating staff performance as employees might have the perception that the outcomes of performance evaluations are based on the relationship employees have with their managers and not on the quality of their work (Lee et al., 202:386).

4.2.2 Study objective 2: Evaluation of skills and competency levels
The following three questions as illustrated in figures 4.5 to 4.7 were analysed to address objective 2:

Participants were asked whether the PMS assists in identifying areas where there is lack of technical skill. In figure 4.5, most of the participants (68%) indicated that the PMS does not assist in identifying areas where technical skill is lacking.
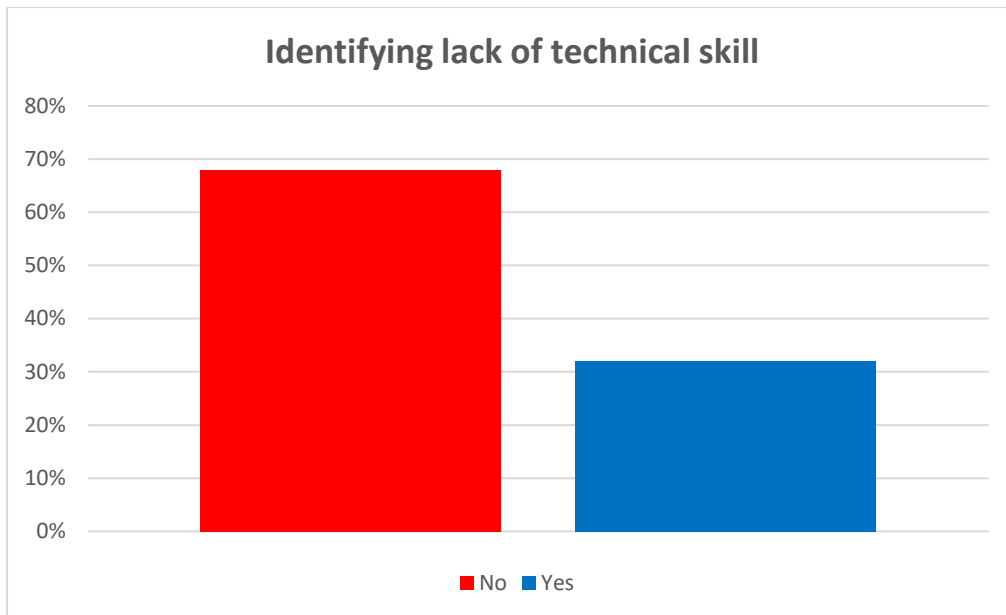
Figure 4.5: Identifying lack of technical skill

The role of a PMS is to identify the development needs of the individual (Aguinis et al., 2011:504). Technology evolution and new therapeutic modalities and techniques in radiotherapy may cause essential competencies to be outdated quickly (Couto et al., 2022:180-181). It is therefore important that the PMS assists in identifying areas where technical skill is lacking.

A question regarding evaluating skills and competencies of employees was whether peer appraisals form part of the performance evaluations. As seen in figure 4.6, the majority of participants, 89% disagreed that peer appraisals form part of the performance evaluations.
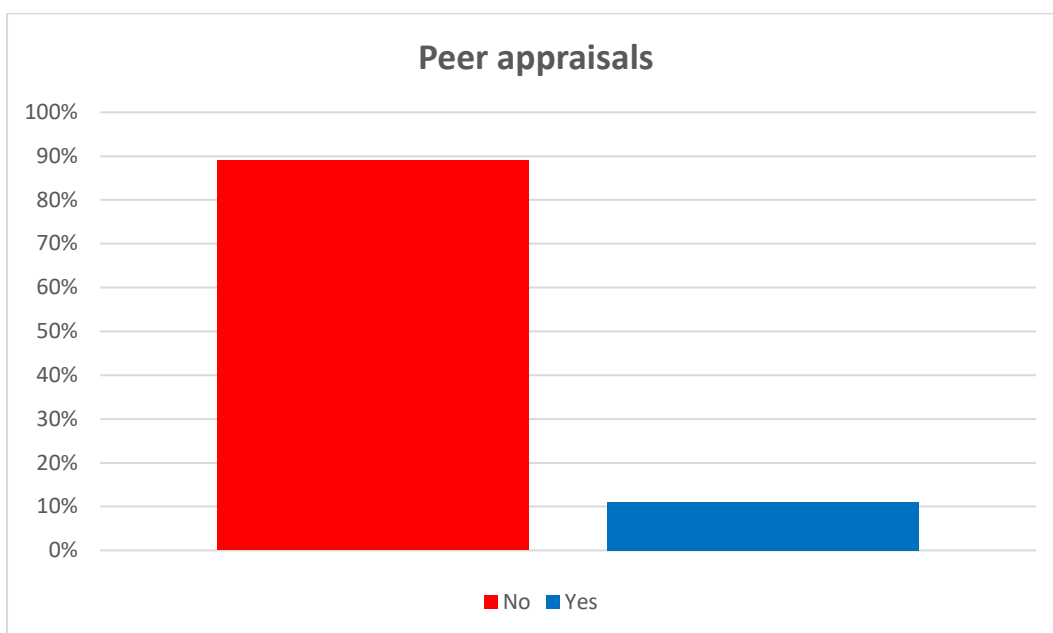
Figure: 4.6 Peer appraisals

In the literature, it is suggested that peer appraisals form part of the performance evaluation as it assists the managers in assessing the skill and competency of the employee through receiving feedback from those who have worked closely with the employee (Aguinis et al., 2913b:505; De Nisi et al., 2006:255).

The participants were asked if their performance was evaluated based on the clinical area in which they were working at the time of their performance assessment. In figure 4.7, it is noted that 89% of participants indicated that their performance was assessed based on the clinical area they were working in at the time of their performance evaluation session.
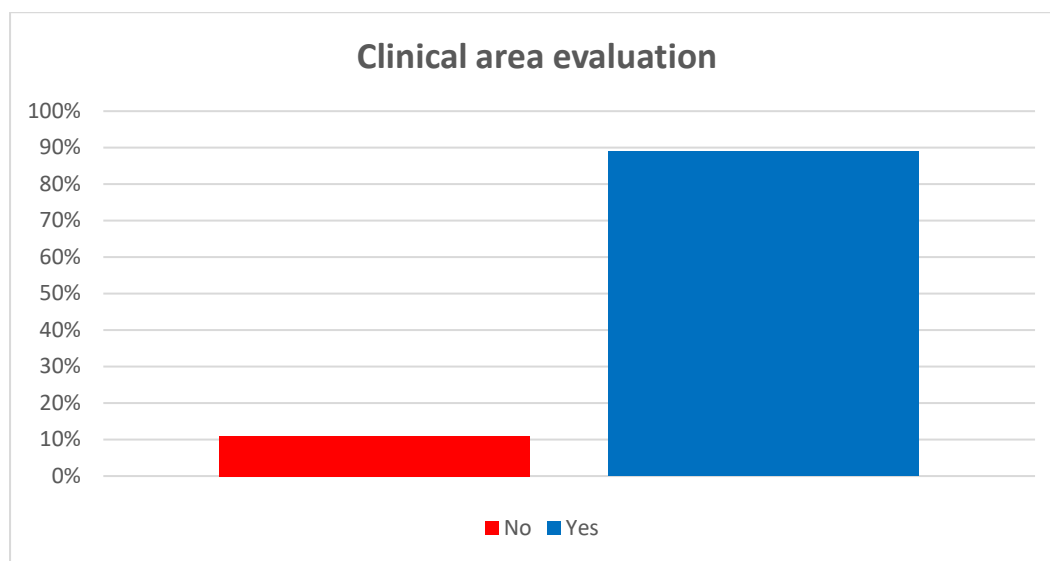
Figure 4.7: Clinical area evaluation

It is important that the employee is assessed against the correct Key Result Areas (KRAs) stipulated for the specific clinical area as this will determine whether they are competent and skilled in that specific area and will assist in identifying areas where skills development is needed.

4.2.3 Study objective 3: Performance improvement
The following four questions as illustrated in figures 4.8 to 4.11 were analysed to address objective 3:

Participants were asked whether the PMS improved the overall performance of staff and whether the PMS motivated employees to work toward improving their performance.

Figure 4.8 indicates that 79% of the participants did not think the PMS improves the overall performance of staff; and Figure 4.9 indicates that 84% of participants are of the view that the PMS does not encourage staff to work towards improving their performance.
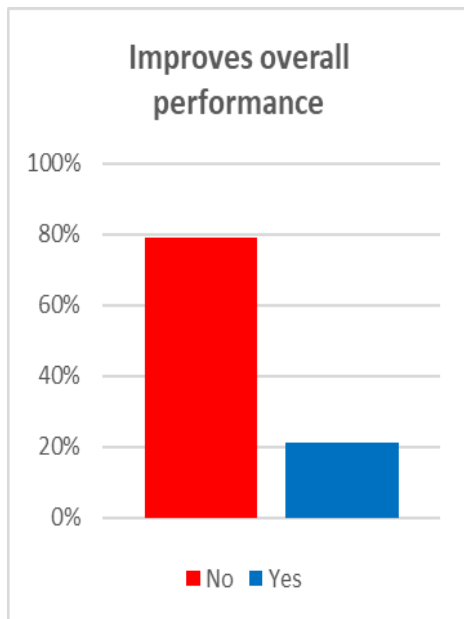
Fig 4.8: Improves performance   **Fig 4.9: Encourages performance**
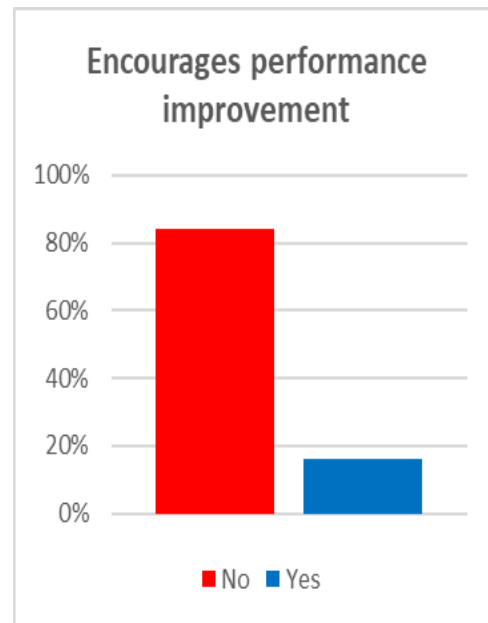
Literature indicates that the aim of a PMS is to enhance the overall performance of staff by developing the individual's capabilities and competence (Armstrong, 2006:3; Hackman & Tetteh-Bator, 2021:36; Aguinis, 2013:5). A PMS should encourage staff to improve their performance as the system is developed to empower, motivate and reward employees to produce high quality work (Armstrong, 2006:3).

The next question was whether the PMS assists staff in their professional development. Figure 4.10 shows that 74% disagreed that the PMS assists with professional development.
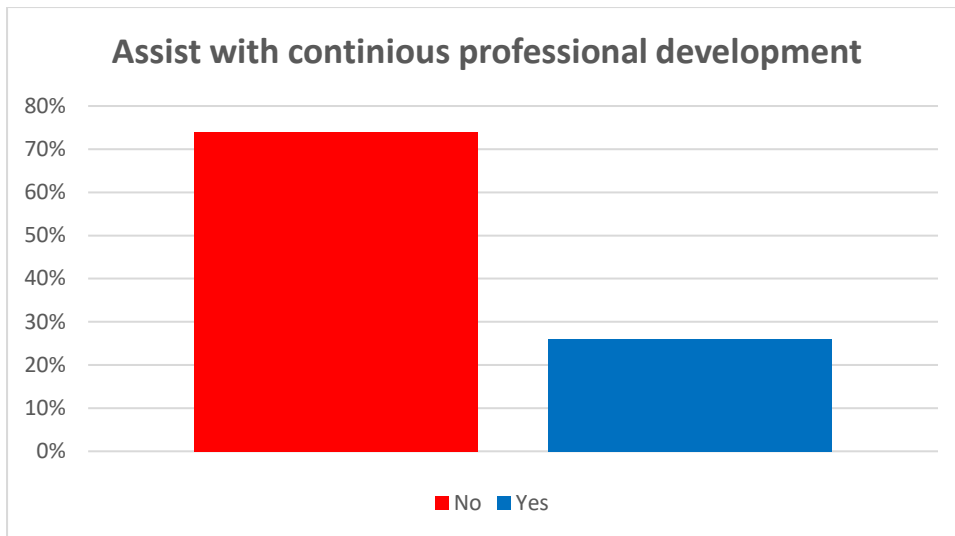
Figure 4.10: Assists with continuous professional development

According to Aguinis et al. (2013b:505) and Ishizaka & Pereira (2016:2), a PMS should create an environment of continuous development and learning to ensure constant assessment and improvement of knowledge and skill (Aguinis et al., 2013b:505; Ishizaka & Pereira, 2016:2).

Mentoring and coaching forms part of skills development and performance improvement. Participants were therefore asked whether mentoring and coaching forms part of the SPMS. As illustrated in figure 4.11, 84% of participants indicated that mentoring and coaching do not form part of the SPMS.
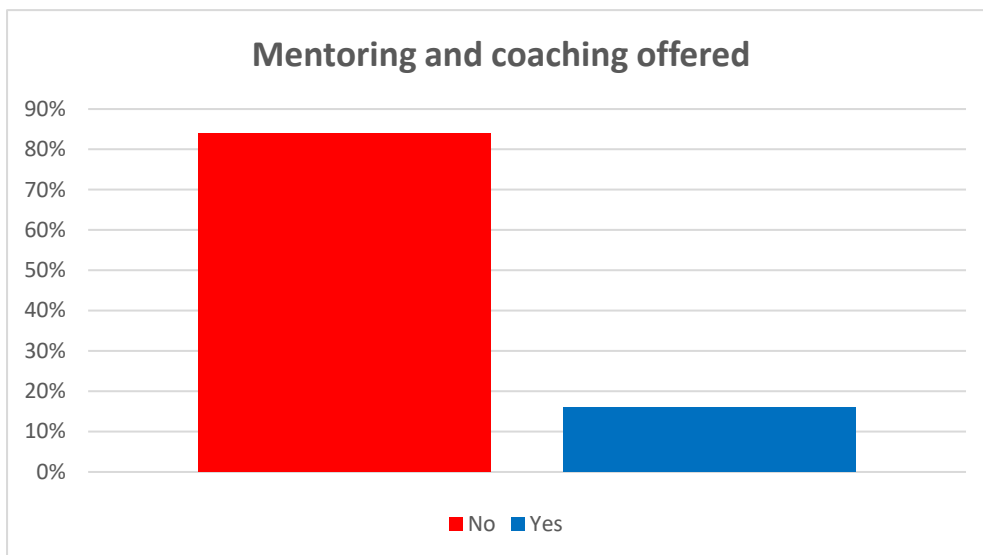
Figure 4.11: Mentoring and coaching offered

Mentoring and coaching are continuous processes aimed at improving skill and performance and should form part of the PMS to identify strengths and weaknesses (Abiddin, 2006:107).

4.3 Phase one: Fisher's exact test and Pearson's Ch-Square test

The Fisher's exact test and the Pearson's Chi-Square test were performed to test whether an association existed between any two questions in the questionnaire. It was recommended that the results of the Fisher's exact test be used due to the small sample size of the study. The Fisher's exact test indicated that no associations existed between any of the questions.

However, as seen in figure 4.12, the Chi-Square test indicated that there was an association between questions 8 and 10. There is a statistically significant association between mentoring and coaching and performance improvement. This means a relationship existed between mentoring and coaching, and encouraging performance improvement meaning mentoring and coaching can influence performance improvement.

Tests for Row-Column Independence (Q8 Mentoring and coaching offered by Q10 Performance improvement encouraged)							
H0: "Q8 Mentoring and coaching offered" and "Q10 Performance improvement encouraged" are independent.							
H1: "Q8 Mentoring and coaching offered" and "Q10 Performance improvement encouraged" are associated (not independent).							
		Chi-Square		Prob	Reject H0		
Test	Type	Value	DF	Level	at α = 0.01?		
Pearson's Chi-Square†	2-Sided	6.935	1	0.009	Yes		
Fisher's Exact	2-Sided			0.051	No		
† WARNING: At least one cell had an expected value less than 5.							

Figure 4.12: Chi-Square test indicating association between questions 8 and 10

Another association was found by the Chi-Square test between question 6 and 11, as seen in figure 4.13. There is a statistically significant association between formal feedback given and continuous professional development. This indicates that providing formal feedback can influence continuous professional development.

Tests for Row-Column Independence (Q6 Formal feedback provided by Q11 Assist with professional development)							
H0: "Q6 Formal feedback provided" and "Q11 Assist with professional development" are independent.							
H1: "Q6 Formal feedback provided" and "Q11 Assist with professional development" are associated (not independent).							
		Chi-Square		Prob	Reject H0		
Test	Type	Value	DF	Level	at α = 0.01?		
Pearson's Chi-Square†	2-Sided	7,54	1	0,006	Yes		
Fisher's Exact	2-Sided			0,011	No		
† WARNING: At least one cell had an expected value less than 5.							

Figure 4.13: Chi-Square test indicating association between questions 6 and 11

4.4 Phase two: thematic analysis of interviews

The questions asked during phase one of the study (i.e. the completion of the questionnaire by participants) were informed by the literature review conducted. This literature review covered international and national studies (e.g. evaluation of DoH policies and frameworks) of a similar nature and thus was used to formulate the objective concepts posed in the

questionnaire. The questions posed to the same participants during phase two were informed by the frequency in responses to the items posed in the questionnaire during phase one of the study. Semi-structured interviews were conducted for the second phase of the study to confirm the results of the questionnaires, therefore triangulating the results of the two phases. The collective high frequency responses found from the Likert scale informed the interview questions (Annexure E1). Thus, triangulating the initial responses of the participants where their responses were further explored and "unpacked" in the interview process.

The data collected from the interviews are presented in a narrative form. In figure 4.14, the main themes and sub-themes are illustrated in the diagram below, and are explained thereafter. As outlined in chapter 3, section 3.7.2, the data was collated and themes were created from the different codes that were identified from the interviews by process of pattern identification which led to further thematic analysis.

Theme 1: Management's Role	Theme 2: Staff morale	Theme 3: Professional Development	Theme 4: Performance Rewards
Poor implementation	Negative attitude towards SPMS	Lack of professional development	Performance rating
Lack of training	Peer evaluations	Mentoring & coaching	Rewarding system
Lack of clinical involvement		Staff rotation	
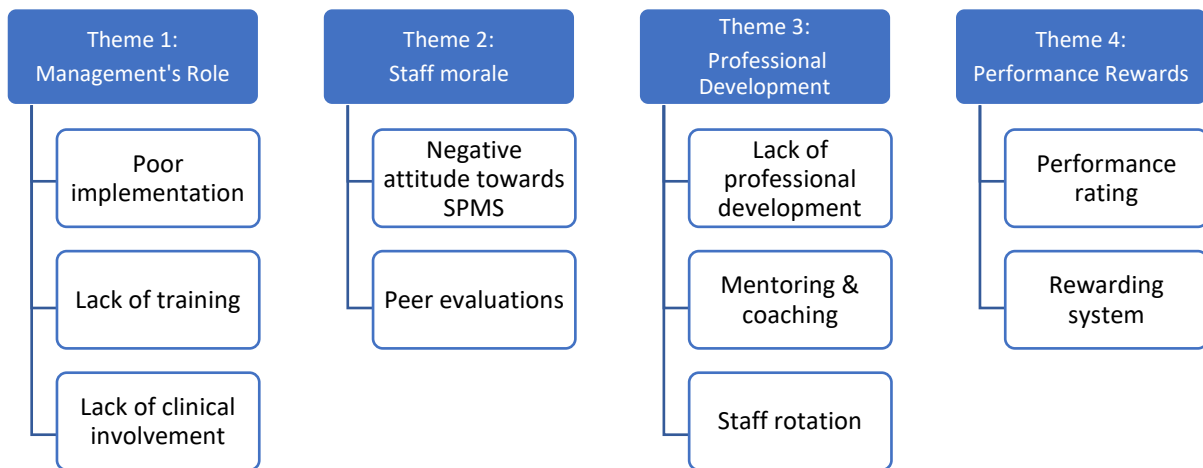
Figure 4.14: Main and sub-themes of interviews

4.4.1 Management's role

This theme covers the importance of the manager's role to ensure efficient management of performance, as managers are responsible for implementing the PMS.

4.4.1.1 Poor implementation

This sub-theme highlights how managers implemented the PMS. One of the main factors when implementing a PMS is to determine goals at the start of the performance cycle (Mwita, 2000:26). It was mentioned that no goals for the year are discussed or determined when they meet with their manager at the start of the performance cycle. The manager provides them with the different Key Result Areas (KRAs) that are set out in their performance plan. They

read through the KRAs and no discussion takes place regarding any future goals or how to improve their performance (P5, 17/05/22).

This was echoed by another participant who stated that:

> *There is no performance plan set out in the beginning of each cycle for each individual. I am not working towards anything for the entire year (P6,18/05/22).*

Even if staff do decide on goals that they would like to achieve when the performance cycle commences, the goals are not achievable as the department does not assist staff in achieving these goals.

> *… we just kind of go with the everyday and we set those goals, we're kind of setting ourselves up for failure because opportunities are not really presented to us… (P4,17/05/22).*

These study responses contradict the findings in literature that indicate that part of successfully implementing a PMS is the setting of goals that align the individual goals with the goals of the organization, which forms part of the manager's role (Armstrong 2006:1).

4.4.1.2 Lack of training

It was highlighted by managers that no formal training was provided to managers on how to effectively implement the PMS. The only formal training received was when the system was implemented in 2001 (P3,17/05/22). The system underwent changes in the years to follow but '...you don't get refreshers, like every other couple of years … (P3,17/05/22).

It was also voiced that training should have been made available by the Human Resource Department as they are responsible for ensuring successful implementation of the PMS. Sufficient training on how to implement the PMS would have resulted in all managers approaching the system in the same way... 'So that there's uniformity and we all do it the same way' (P2,17/05/2022).

The lack of training also brought about a degree of uncertainty; as it was voiced that managers were unsure whether they approached the performance feedback sessions in the correct way and whether the right questions were asked when evaluating staff members' performance (P1,17/05/22).

It was noted that managers should receive training on how to implement the PMS, especially when changes are made to the system, as this will enable them to understand the system better. It will equip them with the necessary knowledge to encourage staff to actively participate in the system, which will assist staff in their career development (P3,17/05/22).

These findings are not in line with literature that indicates training is needed when implementing a PMS. Aguinis (2013a:189) notes that managers are responsible for the implementation of a PMS, and it is therefore important that sufficient training is provided to managers to ensure effective implementation of the system.

4.4.1.3 Lack of clinical involvement
This sub-theme highlighted that managers were not clinically involved enough to effectively evaluate staff members' performance.

> *I don't feel that management is involved enough in order to give feedback on whether I'm lacking or not (P6,18/05/22).*

For managers to evaluate a staff member's performance, 'they should be working alongside the staff to be able to identify where upskilling is required in terms of skills' (P4,17/05/22).

Performance evaluations are based on what the manager hears about their performance and not what they know about their performance (P4,17/05/22). This was seconded by another participant, who said that a manager's evaluation is merely based on what others say and not what the managers have observed themselves.

> *You (manager) don't work with me. So how can you scale me, my performance, how can you do that if you are not with me while I'm busy with the patient, new patient or with staff or with students It's only going to be on what the next person said, what my colleague says about me or what students say about me that you can rate me on. But so, you will only be able to rate me on other people's information on what I say about myself. But you, personally, as a manager won't have that information about me. So, I can't see how you can rate me (P12,26/05/22).*

It is the responsibility of the manager to identify skills deficiencies and to provide coaching to improve these skills (Aguinis 2013a:227). It is therefore important that the manager should be involved on a clinical level to perform the necessary assessment of staff's clinical skills.

Managers should ensure that skills development needs of RTTs are properly assessed and addressed.

4.4.2 Staff morale

This theme covered the importance of staff's attitude towards the PMS and how the morale of staff can be affected when peers evaluate each other's performance.

4.4.2.1 Negative attitude towards PMS

It was mentioned that there was a general negative attitude towards the PMS which made it difficult for the system to be used to its full potential (P3,17/05/22). The perception was that the SPMS was only there to inform them of what they were expected to do to perform their duties but did not assist in their development or growth as RTTs (P13,11/07/22). This was echoed by another who mentioned that 'I feel it (PMS) develops no skill' *(P6,20/05/22).*

Hill et al. (2018: 416) explain that a negative attitude towards a PMS could result in employees performing poorly which will negatively impact the team and the workplace culture. It is important for an organization to be aware of the perception employees have of the PMS as this will determine the effectiveness of the system and could result in system failure should employees doubt its credibility (Sharma et al., 2015:224).

4.4.2.2 Peer evaluations

This sub-theme is related to the distrust that exists amongst colleagues when evaluating each other's performance.

One participant noted that peer evaluations were done in the past as part of the PMS. However, people became defensive if they were not happy with the feedback they received and this negatively affected teamwork (P11,25/05/22). Another participant noted that:

> *Ja, I think it depends on how it's going to be done because it does not help to do it if you're just part of the new team. And it's only those people evaluating you because then it comes like I like you so I will write something nice or I don't like you so I will be nasty on purpose and find fault where there is actually no fault (P8,18/05/22).*

Someone might not be truthful in their evaluation to avoid offending their colleague.

And my thing on peer review, ja, it can be done but like I said people are not necessarily going to be honest like, no, I don't want to hurt your feelings by saying something because now obviously it's going to – it might be anonymous but I don't see why it should be but anyway everybody's got a different opinion about it. So it all comes down to will people be honest enough and will you understand that this is just about you growing and not about a personal relationship… (P12,26/05/22).

There were participants who viewed peer evaluations as something that could positively contribute to their development if feedback was given in a constructive manner. Peers working closely together can give a more accurate assessment of each other's performance (P5, 17/05/22; P17,03/03/22).

4.4.3 Continuous Professional Development

Most participants expressed the view that the PMS did not assist with their continuous professional development (CPD).

4.4.3.1 PMS role in skills development
One participant voiced that the PMS did not assist in any skills development (P6,20/05/22).

… I also don't think it helps us in any way for our job. There's nothing really that we go on that helps us, that applies to what we do… (P7,18/05/22).

… as a junior RTT with three years of experience, there are places that obviously I still need to grow in, but I don't think the PMS necessarily allows for me to do that. (P13,26/05/22).

There are courses available for employees to improve their professional development. This is done by completing a training needs analysis (TNA) form that is given to the employee at the start of the performance management cycle. The employee indicates which courses they would like to attend. The selected courses should align with the job function of the employee (P11,25/05/22).

The courses that are available do not speak to their job function.

You can be sent on courses that are applicable to that skill for the work that you do. So, we don't do that here. We do computer skills, like Excel, I mean, no... it doesn't

> *help us, it doesn't apply. It's not current and relevant. I mean there is so much new technology, there's so much new things happening and we're not exposed to it because I don't know why, but we're not (P7,18/05/22).*

It was also mentioned that even if participants did select courses, the waiting period to attend such courses was very long and staff often were not afforded the opportunity to attend the selected courses before the performance management cycle was concluded.

These results are not in line with literature, which indicates that one of the main purposes of a PMS is to promote development according to the individual needs of the employee (Cappelli et al., 2016:4; Taylor, 2013:21).

4.4.3.2 Mentoring and coaching

The absence of mentoring and coaching as part of the PMS was a strong discussion point during interviews. It emerged that the constant change in techniques and equipment in radiotherapy warrants the need for mentoring and coaching to form part of the PMS as this will assist RTTs in staying current with their skill, knowledge and competencies:

> *The most senior or experienced in years staff member is still learning and we have new techniques all the time. And so, the mentoring and coaching and peer information sharing or peer learning should continue all the time. It's vital in our profession especially (P2,17/05/22).*

Although a mentoring and coaching system does not currently exist at the study site and does not form part of the PMS, it 'will assist with growth in the department' (P1,17/05/22).

Kutilek et al. (2001:7) note that mentoring and coaching contributes to professional development and should form part of a PMS. As discussed in chapter 2, section 2.11 and 2.12, literature as well as the Department of Health policy regarding a PMS confirm that mentoring and coaching contribute to professional development and should form part of PMS.

4.4.3.3 Staff rotation

Participants expressed the view that regular staff rotation through the different clinical areas in the department would assist RTTs in their continuous professional development. Their technical skill would remain up to date and their knowledge would remain current with the different equipment and techniques. One participant mentioned:

> *I think if you sat down like in the beginning of the year with your line manager and you identify things that you are lacking in terms of skills, that you could either do like maybe be rostered wherever so you can upskill yourself as well (P7,25/05/22).*

A few participants mentioned that they had only been rostered in certain sections of the department and therefore were not fully competent in their technical skill. It was noted that because staff were not allowed to rotate through the department on a frequent basis, it caused 'a constant disparity of skills set' (P4,17/05/22).

It was also mentioned that the radiotherapy planning section is a very specialized section in the department and not a skill that can be taught over a short period of time (P10,20/05/22).

Some staff are labelled as 'floor RTTs', which means that these RTTs are only competent to work on the treatment units and are not skilled to work in the radiotherapy planning section of the department (P4,17/05/22):

> *I also feel that maybe our rotations need to be, I'm not going to say a little bit longer but more frequent. Instead of having because in my opinion we are all RTTs, we all should be able to do what we are doing. But some are now seen as only planners, and some are seen only as floor RTT's. I feel the rotation should go vice versa because some of the people in planning cannot work on the machines. I also feel that everyone should rotate through the department as a whole, not just when you must come in five years' time. I think that is the only way we will all be able to develop our skills as RTTs (P9,20/05/22).*

Skills development can improve within the department if 'more rotations in areas for staff who's uncertain about things' can be implemented (P19,03/06/22).

4.4.4 Rewards

The majority of participants expressed their dissatisfaction with the performance reward system. Individuals are rated and rewarded based on the performance evaluations.

4.4.4.1 Performance rating

Participants expressed their unhappiness regarding the rating system and explained that managers are not allowed to rate an employee a '4' (highly effective) even if the employee

has excelled in their work. Employees can only be rated a '4' if they hand in written evidence to prove that they have done more than what was expected of them.

> *If you want to score above three, you need to submit evidence, unfortunately, even as a staff member, the current system we have, even as your manager, I cannot submit evidence on your behalf, it's for you as the individual to submit the evidence, which then gets scored as our management team, so that we can ensure there's a non-bias scoring that takes place (P1,17/05/22).*

It was further explained that everyone who does not submit evidence is rated a '3' (fully effective) irrespective of how well they perform (P8, 18/05/22). One participant mentioned that writing up evidence is difficult because it is seen as 'praising yourself for the work that you do and not everybody is comfortable with doing that' (P9, 20/05/22).

What employees consider as evidence is most of the time deemed by the managers as something that is 'part of your job' (P18,03/06/22). It is therefore difficult for participants 'to know what is viewed as doing more than what is expected of you' (P14, 27/05/22).

Staff who overperform '...don't always get the recognition for it' and '...it's not always fair to them' (P2,17/05/22).

Writing up evidence, or incidents to be used as evidence, is seen as 'wasting my time' (P10,20/05/22) and the time spent on writing up everything staff members have done in addition to their normal workload could be used to focus on the areas where upskilling is needed (P10,20/05/22). 'Working in a busy department makes it very challenging to find the time to write up every incident as proof that you are performing over and above the duties of your job' (P13,03/06/22).

4.4.4.2 Reward system

Participants were very negative towards the performance reward system. It was explained that an employee is eligible to progress to a higher grade in salary without having to wait the normal 10-year period should they be rated a '4' for four performance cycles. However, employees who have already reached a grade 3 salary level, which is the highest possible grade, will not be eligible for a grade progression as they have reached the maximum salary grade. The only possible monetary reward for these employees is a cash bonus incentive; however, a bonus reward for outstanding performance is usually awarded to employees on lower salary levels (P17,03/06/22).

…you know when people are overachieving and sadly, they don't always get the recognition for it… (P2,17/05/22).

When an employee performs over and above the job expectation '...it's not that they can be compensated in any way for overperforming or doing more than what they are doing' (P17,03/06/22). It was mentioned that such employees do not perform over and above expectation to receive money, they do it because they love what they do (P10, 20/05/22).

4.5 Chapter summary

The significant findings of the study are that employees are not satisfied with the current PMS implementation practice and that the manner in which the PMS has been implemented does not seem to contribute to employees being motivated to improve their skills and is ineffective in motivating employees to improve their respective work performances. The study has shown significant evidence that the PMS does not seem to contribute to the professional development of employees and does not seem to offer sufficient opportunities for employees to improve their development of skills. The findings indicate that employees perceive the performance rating system as ineffective as it is not a true reflection of their performance. The findings also indicate that management should be more involved on a clinical level to provide a true performance evaluation of employees.

The following chapter concludes this thesis by proposing recommendations in terms of the current PMS, discusses the limitations of the study, and proposes future research possibilities.

CHAPTER 5
CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter concludes the thesis by presenting the findings of the study in relation to its objectives and will aim to answer the sub-questions of this study. This chapter also makes recommendations from the findings, discusses the limitations of the study, and identifies areas for future research.

5.2 Key findings and conclusion

The findings of the study are presented according to the various objectives of the study.

5.2.1 Objective one: to assess the effective implementation of the PMS

According to Mtiwa (2000:26) and the Western Cape Department of Health policy framework (DPSA, 2018) the implementation process of a performance management system (PMS) consists of:

1. determining the individual and organisational goals and objectives;
2. identifying training and developmental needs of employees;
3. setting performance indicators; and
4. monitoring of employees' performance through appraisals.

It is evident from the findings that the implementation process of the PMS did not address these crucial areas. Participants indicated that no individual or organisational goals or objectives were set when the performance management cycle commenced. In the current system, employees were only required to sign their performance plan without any discussion regarding the goals they have to work towards for that year.

These findings also addressed the sub-question: "Is the PMS effectively implemented to ensure continuous evaluation of development needs of RTTs?" The findings indicated that the PMS did not identify individual training and development needs of employees and therefore did not assist in continuous skills development. Participants commented that courses were available at the institution to assist in their developmental needs; however, the available courses did not align with their job function and did not speak to the skills needed as RTTs. The findings of the study also indicate that no training was provided to managers on how to

implement the system. Aguinis (2013a: 189) states that training should be provided to individuals who are responsible for implementing the PMS.

Participants mentioned that appraisals were conducted by their managers, although they did not feel the feedback received assisted them in their development of skills and was not a true reflection of their performance, as the managers were not clinically involved enough to provide a true evaluation of their performance. To evaluate the performance of an employee as part of performance management, the manager should be aware of how well staff members are performing their duties at all times (Roa, 2015:2).

5.2.2 Objective two: to assess how the current PMS is being applied to evaluate the skills and competency levels of RTTs

These findings addressed the sub-question: "Which methods are applied to evaluate the competencies and skills of RTTs?" It is evident from the findings of the study that the PMS did not evaluate skills and competencies of RTTs. Respondents viewed the performance management system as a tool used to inform them of their job description but it did not allow for any development of skills. No skills evaluation was done and therefore no assistance was provided to help an employee improve their development. No assistance in the form of mentoring or coaching was available to help towards improving the skill of the individual. These findings were contradictory to literature which clearly states that the aim of a PMS is to evaluate staff performance and to assist with skills development of the individual (Lawler, 2003:1).

5.2.3 Objective three: to evaluate the role of the PMS in performance improvement of RTTs

These findings addressed the sub-question: "How is the PMS applied to identify good or poor performance?" Based on the findings, it can be concluded that the PMS did not contribute towards improving the performance of individuals or identifying good or poor performance. Individuals were evaluated on their performance based on the evidence they had to provide as proof that they were performing well. If employees did not submit evidence, they were rated a '3', indicating that they scored 100% (fully effective) and were therefore not eligible for any monetary rewards, even if they had excelled in their performance. Participants voiced their unhappiness with the rating and reward system and commented that the PMS did not assist in motivating them or helping them improve their performance.

These findings are not in line with literature that states that a PMS is designed to ensure continuous performance improvement of the employee through assessment of developmental

needs and providing assistance in the form of training to improve performance (Lee et al., 2021:382; Nxumalo et al., 2018:142). There is no indication in literature that employees are required to submit evidence as proof that they have excelled or over-achieved in their job. Literature indicates that it remains the responsibility of the managers with or without the assistance of peer evaluations to evaluate the performance of an employee (Taylor, 2013:24).

5.3 Limitations of the study

Among the challenges and limitations of the study were the researcher's positionality. This was discussed in 3.9.3 but is worth mentioning in the final remarks section. As a colleague of the participants, the challenge for the researcher was remaining objective and free of biases during data collection. To reduce research bias, the researcher consistently applied the research methodologies as described in Chapter Three.

Another limitation was the study size. Although the response rate was good considering the total number of RTTs employed at the study site, the sample size was small due to the study being limited to one study site only. A larger study size derived from more than one organisation would aid in the findings of this study.

The availability of the participants to conduct the interviews posed a challenge due to the absence of employees, machine breakdowns and the workload not allowing participants to be free for the interviews.

5.4 Recommendations

These recommendations are based on the findings of the study:
- Sufficient education should be provided to employees to assist them in understanding the aim and purpose of a PMS, as this will help employees recognize the potential benefits of the system and the development opportunities it can offer if implemented correctly.
- Sufficient training should be provided to managers to equip them with the knowledge to effectively implement the system and to know how to evaluate and rate the performance of employees without relying solely on employees providing evidence to prove they are performing over and above the requirements of their job.
- Employees should decide on the goals they are working towards for the year to ensure continuous improvement of skills and to aid in their career planning and development. A suggestion was made by one participant that having a plan, goal or project set out for the individual at the start of the performance cycle would positively influence the

department and would motivate the employee to work towards something as opposed to feeling that 'we just do the same thing every day' (P6,18/05/22).

- Peer appraisals should form part of the performance evaluation process. This will assist in employees receiving performance feedback from those they have worked closely with and not just from the manager.

- Managers should be more clinically involved to enable them to provide sufficient feedback on the strengths and weaknesses of the employee as well as where they are lacking in terms of their professional development.

- Leadership performance should be integrated into the PMS by: 1.) having managers identify problem areas in the individual's development and providing assistance to improve performance; 2.) managers having a person-centred approach that is focused on guiding the individual to have a vision for their professional development and setting realistic goals; 3.) displaying servant leadership through providing constructive feedback to help with the skills development of the individual.

- Mentoring and coaching should be provided as part of the feedback sessions to improve future performance and to promote individual growth and development.

5.5 Conclusion

The study found that there is a need for RTTs to develop their skill to ensure competence in their work. The PMS is a tool that can evaluate and improve skills development of RTTs if implemented correctly. However, a lack of knowledge exists regarding how to effectively implement a PMS. Additional research is encouraged to validate and further the findings of this study to assist radiotherapy departments on how to implement a PMS that will evaluate and continuously improve the development of skills of RTTs.

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Appendices

Appendix A: Turnitin similarity report

Appendix B: Editing certificate

Appendix C: Data Management Plan

Appendix D: Questionnaire

Appendix E1 & E2: Interview questions and themes and codes from interviews

Appendix F: Consent form for participation

Appendix G: Consent form for audio recordings

Appendix H: Participants' years of experience

Appendix I: Field notes

APPENDIX A: Turnitin similarity report

Final thesis for examination

APPENDIX B: Editing certificate

Ken Barris, PhD

Editing and research writing services

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21-06-2023

To whom it may concern

This is to certify that I have copy-edited the following thesis by Danielle Conrad:

The effect of performance management on skills development of
radiation therapists

Please note that this does not cover content, conceptual organisation or textual changes
made subsequent to the editing process.

Best regards

Ken Barris

KEN BARRIS

APPENDIX C: Data Management Plan

The effect of performance management on skills development of radiation therapists

A Data Management Plan created using Data Management Planning tool (DMP tool)

Creator: Danielle Conrad

Affiliation: Cape Peninsula University of Technology

Template: Cape Peninsula University of Technology

Project abstract:

Evaluating the development of skills of radiation therapists (RTTs) forms an essential part of ensuring professional competence, accuracy and safe delivery of radiotherapy treatment. A performance management system (PMS) aims at evaluating the performance and development of employees by recognizing excellent performance and identifying unsatisfactory performance through highlighting areas where improvement is needed.This study investigated the role of a PMS in evaluating the skills development of radiation therapists in a government department in South Africa. A descriptive, qualitative research approach was employed and data was collected through questionnaires and semi-structured interviews. The population size was 32 RTTs. Participants were selected through convenience sampling. 19 Participants responded to the questionnaires and participated in the interviews. The findings of this study confirmed that the PMS is ineffective in evaluating the development of skills of RTTs. The study further revealed that the current PMS does not contribute to the professional development of RTTs. The system also fails in identifying areas where improvement of skills is needed and does not assist in improving performance. The PMS is inadequately applied and fails to evaluate the development of skills of radiation therapists. The system needs to be amended to include processes that contribute to a true evaluation of RTTs' development and performance.

Last modified: 04-07-2023

The effect of performance management on skills development of radiation therapists - Data Management Plan

DATA COLLECTION

What data will you collect/create?

A qualitative approach was used to conduct this study. Hancock et al (2007:7) explain that a qualitative study is focused on social aspects and attempts to find answers to questions about why people behave in a certain manner; how people develop opinions and attitudes; how circumstances affect people. Kothari (2004:3) notes that qualitative research is concerned with determining how people feel and think regarding a specific subject.

The descriptive nature of a qualitative research study enabled the researcher to listen to the experiences of the participants through the words they spoke and to understand the meaning behind their experiences, thoughts and opinions. This research approach was chosen as the researcher aimed to obtain insight into the different experiences and realities of the RTTs towards the current performance managment system (PMS) in the epartment of Health, Western Cape.

Qualitative data was collected through questionnaires and interviews. The questionnaires was handed out to the participants in hard copy format. This method was chosen to eliminate sampling bias as not all staff have access to a computer or the internet. Data from the interviews was recorded by a voice recording device and transribed in MS Word by a professional transcriber. Data collected in hard copy form was stored in a secure, locked location with only the researcher having access to it. The recorded and transcribed data was de-identified and the datasets stored online in the researcher's personal Google's G-Drive. Data was stored offline on a password protected external hard drive.

How will the data be collected or created?

Data was collected using a self-developed questionnaire and conducting semi-structured, face-to-face interviews.

The questionnaire consists of a set of structured questions determined from literature, and participants selected their answers from predetermined responses (Bhattacherjee, 2012:74). The questionnaire comprised 11 questions and participants responded to statements made based on the Likert sale.

The questionnaires was handed out to the participants in hard copy format by the researcher. This method was chosen to eliminate sampling bias as not all staff have access to a computer or the internet. Participants were requested to return the completed questionnaires to an allocated collection point in the department in an access-controlled area.

Data was analysed using the NCSS 2021 Statistical Software programme https://www.ncss.com/software/ncss/. Frequency tables with graphs display the data. The Fisher's exact probabilities test verified the data and results collated from the first round of analysis. The Fisher's exact test was the chosen method due to the small sample size of the study. According to Warner (2013:281) the Fisher's Exact Test is the alternative to the 2 x 2 Chi-square test in instances where small sample sizes are used.

Data from the semi-structured interviews was collected through face-to-face interviews. Audio data was anonymised and transcribed by a professional transcriber. A code was assigned to each interviewee.Thematic analysis was used to analyse the interview data and responses to open ended questions on the questionnaire.

Data is stored on this online, institutional (CPUT) repository, as well as the researcher's personal Google Drive.

DATA DOCUMENTATION AND METADATA

What documentation and metadata will accompany your dataset?

All interview data will be stored in a .pdf format. The audio data will be stored in MP3 format and will not be available for sharing as it may contain the personal identifiers of the participants. The transcribed data will be stored in .pdf and Ms word formats.

All three data repositories **Figshare** https://cput.figshare.com/ , **MediaTum** http://rdm.cput.ac.za/ and the **Institutional repository** http://digitalknowledge.cput.ac.za/ provide metadata fields to describe each dataset by adding title, author/s, subject categories, default list of keywords including options to add key words manually. There's a space to describe datasets or add abstract. Each dataset in each folder will be described using metadata fileds with each data repository.

ETHICS AND LEGAL COMPLIANCE

How will you manage any ethical issues pertaining to data?

The ethical procedures as required by the Research Committee of the Universtity will be followed. Ethics approval will be obtained from the faculty higher degrees committee.

Participants will be asked to give written consent to participate in the study. Participants will be informed that confidentiality and anonymity would be maintained by anonymising the questionnaires and ensuring that the protection of all participants' personal information will be in compliance with the Protection of Personal Information (POPI) Act of 2013 (Act No. 4). Personal information of all participants will be kept confidential, and data collected in hard copy form will be stored in a secure, locked location with only the researcher having access to it. De-identified datasets will be stored online on a secure cloud-based platform. Data stored offline will be saved on an external hard drive and will be password protected.

A second consent form will be handed out to all participants before conducting the interviews requesting their consent to audio-record and transcribe the interviews. Pseudonyms will be used during the interviews to ensure anonymity and confidentialy are maintained. Data collected from the interviews will stored online on a secure cloud-based platform.

Using Figshare, a private link or reserved Digital Object Identifier (DOI) will be generated for each dataset. The project leader or researcher can create a link (private link, reserved DOI) which will secure each dataset and this will allow sharing at the same time protecting the datasets between project team members. The data for the project will be managed and stored in one of the data respositories (**Figshare** https://cput.figshare.com/, **MediaTum** http://rdm.cput.ac.za/ and the **Institutional repository** http://digitalknowledge.cput.ac.za/)

How will you manage copyright and Intellectual Property Rights (IPR) issues?

The findings of the study will remain the property of the Universtiy. The findings will be published in a peer-reviewed Open Access Journal and will be presented at relevant conferences. There will therefore be no unforeseen copyright and IPR issues.

DATA STORAGE AND BACKUP

How will you store and back up your data during the research?

The data will be stored on the CPUT repository and will include the following:
Figshare https://cput.figshare.com/, **MediaTum** http://rdm.cput.ac.za/ and the **Institutional repository** http://digitalknowledge.cput.ac.za/.
Data will also be stored on an external hard drive, as well as the researcher's personal Google Drive.

How will you manage access and security?

During research process access to datasets will only be given to direct or indirect persons by assigning rights. This includes supervisors as collaborators who will be given rights to read, edit and collaborate through the data repositories (Figshare at https://cput.figshare.com/ or MediaTum at http://rdm.cput.ac.za/). These research data repositories are safe and secured and will allow the team leader to implement rights management in each PROJECT folder for active dataset based on specific groups or individuals.

Using Figshare, a private link or reserved Digital Object Identifier (DOI), the reseacher will create a link which will secure each dataset and this will allow sharing at the same time protecting the datasets between project team members (which includes the researcher, supervisors and statistician).

DATA SELECTION AND PRESERVATION

Explain which data should be retained, shared, and /or preserved?

The data collected via questionnaires and audio recordings will be stored on the CPUT repository (as well as the researcher's personal Google G-Drive. The audio recordings will be anonymized before transcription. Audio data will be not be available for sharing as the participants may be identifiable through the sound of their voices or phrases they might commonly use during conversations. The data will be stored until 2025.

DATA SHARING

How will data be shared?

Data will be shared between collaborators using "MY DATA and PROJECT" on Figshare (https://cput.figshare.com/) or folders and directories within MediaTum (http://rdm.cput.ac.za/) . This will allow the researcher to INVITE participants via email to view or participate in each project folder and each dataset will be protected by either private link or DOI. After publications, data (excluding audio recordings) will be shared upon request and in line with institutional requirements using Open Access Repositories Figshare (https://cput.figshare.com/) and the Institutional Repository (http://digitalknowledge.cput.ac.za/) for public access.

Are any restrictions on data sharing required?

The data from the audio recording will not be shared as participants might be identifiable through the sound of their voices and phrases they might commonly use in conversation. The principal investigator may restrict the sharing of data within CPUT repositories (Figshare, MediaTum and the Institutional repository) by giving rights (view only, read, collaborate, edit) to each participant using one of the data repositories.

RESPONSIBILITIES AND RESOURCES

Who will be responsible for data management?

The prinicpal researcher will be responsible for the data management and will adhere to the guidelines of the university CTS for automated backing-up of data stored in the university's repositories. The university holds ownership of the data. The data management plan will be followed by principal researcher as well as the research supervisors.

What resources will you require to deliver your plan?

Workshops offered by the university will be attended to help deliver the plan. A laptop with MS Word and Excel will be needed as well as in the internet to gain access the different repositories.

To my knowledge, no charges are applicable to registered students for use of the university repositories.

PERSONAL, SENSITIVE AND IDENTIFIABLE HUMAN RESEARCH DATA

Will you be collecting personal information?

No

List all the types of personal/sensitive/identifiable data you will be collecting.

No personal information will be collected.

Conduct a benefit/risk analysis to ensure that the benefit of collecting such data outweighs the risk and then motivate why you need to collect such information.

N/A

Confidentiality, anonymity, and privacy of human participants.

Participants were assured that confidentiality and anonymity would be maintained by anonymising the questionnaires and ensuring that the protection of all participants' personal information were in compliance with the Protection of Personal Information (POPI) Act of 2013 (Act No. 4). A second consent form was handed out to all participants before conducting the interviews requesting their consent to audio-record and transcribe the interviews. Participants were assured that anonymity and confidentiality would be maintained by using pseudonyms during the interviews and ensuring that the data collected from the interviews were stored online on a secure cloud-based platform.

What happens to the information if a participant withdraws from a study?

Should a particpants withdraw from the research, the information pertaining to the particpant will be destroyed. The questionnaire will be shredded and the audio recording will be deleted.

After completion of the research, will the information be used for anything else in the future?

No, the data will be stored no later than 2025.

Will study participants/groups etc. receive feedback before disseminating the results of the research?

The findings of the study will be relayed to particpants in the form of a presentation after completing the thesis.

Outline your informed consent process and details of the data management plan.

The purpose of the study will be explained to the participants and a consent form
will be given to those who wished to participate in the study. Participants will be assured that confidentiality and anonymity will be maintained by anonymising the questionnaires and ensuring that the protection of all participants' personal information are in compliance with the Protection of Personal Information (POPI) Act of 2013 (Act No. 4).
Personal information of all participants will be kept confidential, and data collected in hard copy form will be stored in a secure, locked location with only the researcher having access to it. De-identified datasets will be stored online on a secure cloud-based platform. Data stored offline will be saved on an external hard drive and will be password protected.
Participants will be informed that they have the option to withdraw from the study at any point. The consent form will also explain that the participants will not be at risk of any physical or emotional harm. No unethical strategies such as coercion will be performed. The participants will be given sufficient time (two weeks) to decide whether they would want to participate in the study. No promises of reward will be made to obtain information from the participants.
A second consent form will be handed out to all participants before conducting the interviews requesting their consent to audio-record and transcribe the interviews. Participants will be assured that anonymity and confidentiality will be maintained by using pseudonyms during the interviews and ensuring that the data collected from the interviews will be stored online on a secure cloud-based platform. Participants will also be informed that the transcriber has no vested interest in the study site or the participants.

APPENDIX D: Questionnaire

Questions

1. The goals that are set out at the start of a performance cycle are mutually decided on between the individual staff member and the supervisor.

   ○ Strongly agree

   ○ Agree

   ○ Disagree

   ○ Strongly disagree

2. The performance management system identifies areas where technical skill is lacking.

   ○ Strongly agree

   ○ Agree

   ○ Disagree

   ○ Strongly disagree

3. The performance management system improves the overall performance of staff.

   ○ Strongly agree

   ○ Agree

   ○ Disagree

   ○ Strongly disagree

4. Performance evaluations are done based on a specific clinical area in the department.

   ○ Strongly agree

   ○ Agree

   ○ Disagree

   ○ Strongly disagree

5. Supervisors' evaluation of staff performance is impartial.

○ Strongly agree

○ Agree

○ Disagree

○ Strongly disagree

6. Formal feedback regarding performance is provided to staff by the supervisor.

○ Strongly agree

○ Agree

○ Disagree

○ Strongly disagree

7. Peer appraisals form part of formal feedback sessions.

○ Strongly agree

○ Agree

○ Disagree

○ Strongly disagree

8. Mentoring and coaching are offered with feedback sessions.

○ Strongly agree

○ Agree

○ Disagree

○ Strongly disagree

9. I am satisfied with the manner in which the performance management system is applied in my department.

○ Strongly agree

○ Agree

○ Disagree

○ Strongly disagree

10. The performance management system encourages staff to improve their performance.

○ Strongly agree

○ Agree

○ Disagree

○ Strongly disagree

11. The performance management system assists in your professional development as an RTT.

○ Strongly agree

○ Agree

○ Disagree

○ Strongly disagree

APPENDIX E1: INTERVIEW QUESTIONS

1. Could you describe the level of training you have received with the implementation of the PMS.
2. How does mentoring and coaching form part of the PMS?
3. How are skills and competencies of employees measured within the PMS?
4. How does the PMS contribute towards your skills development?
5. What is your view on peer evaluation forming part of your performance evaluation?

APPENDIX E2: THEMES AND CODES FROM INTERVIEW DATA

Research Question

How does the existing PMS in the Western Cape Department of Health evaluate and address skills development needs of RTTs?

Sub-Questions

Sub-Questions:

1. Is the PMS effectively implemented to ensure continuous evaluation of development needs of RTTs?

2. Which methods are applied to evaluate the competencies and skills of RTTs?

3. How is the PMS applied to provide feedback regarding good or poor performance to RTTs?

Codes

1. Implementation of the Staff Performance Management System (SPMS)
2. Lack of professional development
3. Attitude of staff towards the SPMS
4. Staff rotation within the department
5. Trust/honesty amongst colleagues
6. Lack of managers' support
7. Competency discrepancies
8. Teaching and training
9. Lack of performance recognition

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                    ┌─────────────────────┐
                    │     Categories      │
                    └─────────────────────┘
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Management's role	Upskilling of staff	Staff morale	Lack of training resources

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                    ┌─────────────────────┐
                    │       Themes        │
                    └─────────────────────┘
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Management Issues	Continuous Professional Development	Professionalism amongst colleagues
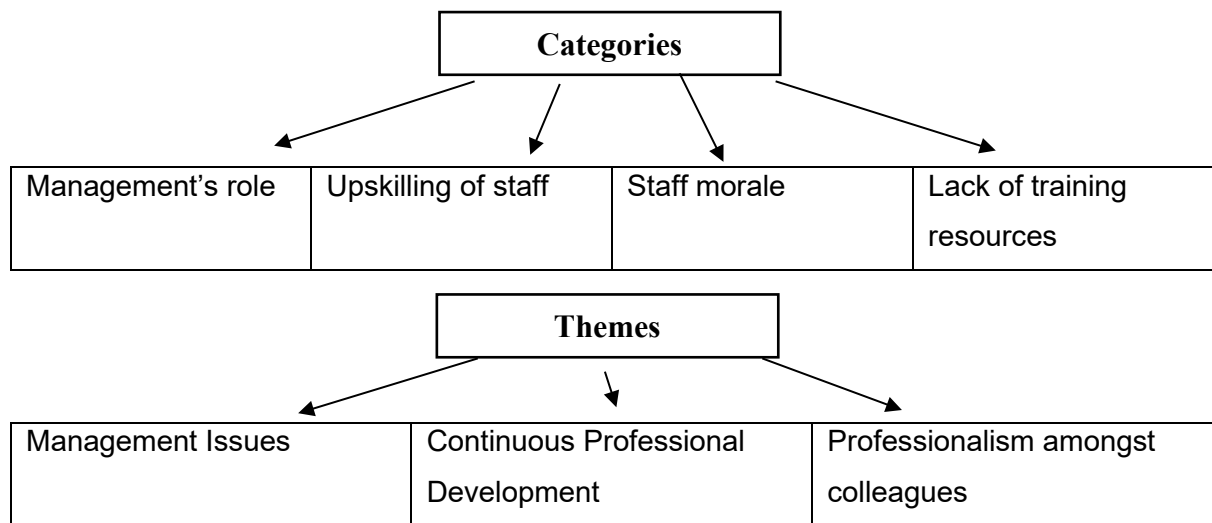
APPENDIX F: CONSENT FORM

Informed Consent Form

Title of Research: The effect of performance management system on skills development of radiation therapists.

Principle Investigator: Danielle Conrad
Contact number: XX
Institution: Cape Peninsula University of Technology

Introduction

You are invited to take part in a research study regarding the effect the Performance Management System has on skills development of radiation therapists in the radiation oncology department at Site A.

Participation in this study is completely voluntary. Should you decide to take part in this study, you must sign this consent form to show that you are willing to be part of this research study.

Purpose of the research

The purpose of this study is to evaluate whether the performance management system helps improve the overall performance of staff and whether the system effectively manages skills development of radiation therapists in the radiation oncology department at Site A.

All radiation therapists who are permanently employed in the radiation oncology department at Site A will be asked to take part in this research study. Staff who are employed on a contract basis will be excluded from the study. The reason for their exclusion is that the performance management system only applies to staff who are permanently employed.

Procedures

You will be asked to complete a questionnaire. At a later stage, you will be asked to participate in a group discussion with other staff members in your department who are also part taking in the study.

Duration of the study

If you agree to take part in this study, a questionnaire will be handed out to you. You will be given three weeks to complete the questionnaire. After analysing the data collected, a date

and time that suits the department will be arranged with your supervisor to have a group discussion. This discussion will take place in your department and will include other staff members who are also part taking in this study. Should Covid-19 lockdown regulations and restrictions not allow for us to meet face-to-face, we will meet via an online platform such as Zoom.

Discomforts and risks

There are no known risks associated with this study.

Potential benefits

People who participate in this study may have a better understanding of the important role the performance management system plays in evaluating staff performance. The result of this research may guide supervisors and staff to apply the performance management system in a way that will ensure continuous improvement of skills development of radiation therapists at both institutions.

Confidentiality

The information collected from this research will be confidential. The questionnaires will remain anonymous. Information obtained in the group discussions will be kept confidential. In the event of any publication or presentation based on the research, no personal information of any participant will be shared.

Compensation for participation

You will not receive any compensation for participating in this research study.

Voluntary participation

Taking part in this study is voluntary. You do not have to participate in this research. Should you decide to participate in the study, you have the right to stop your participation at any time without any penalties or loss of benefits.

Contact information for questions or concerns

If you have any questions, complaints, or concerns regarding this research you can contact the researcher, Danielle Conrad at XX.

Signature and consent to take part in the research

By signing below you acknowledge that the research study has been explained to you; you have had the opportunity to ask questions you may have had about the research, and any

such questions have been answered. You will receive a copy of the form you have signed and dated that you may keep for future reference.

I voluntarily agree to participate in this research study

○ **Yes**

○ **No**

I understand that I will be given a copy of this signed Consent Form

Print Name of Participant: _____
Signature of Participant: _____
Date:

I confirm that the study was explained to the participant and that the participant was given the opportunity to ask questions regarding the study. I confirm that the participant has given consent voluntarily to participate in this study.

Print Name of Researcher: _____
Signature of Researcher: _____
Date:

APPENDIX G - Consent for audio recording and transcription

Thank you for signing the initial consent form and for completing the questionnaire. The purpose of this form is to seek your consent to audio record the focus group interview in order to have it professionally transcribed.

Title of Research

The effect of performance management on skills development of radiation therapists

Principle Investigator: Danielle Conrad

Contact number: XX

Institution: Cape Peninsula University of Technology

By signing this form, you are permitting the researcher to audio record your interview as part of this research.

Participant's Signature: _____ Date: _____

Appendix H – Participants' years of experience

Participant code number	Participation in both questionnaire and interview	Date of interview	Years of experience
P1,17/05/22	YES	17/05/22	>10 years
P2,17/05/22	YES	17/05/22	>10 years
P3,17/05/22	YES	17/05/22	>10 years
P4,17/05/22	YES	17/05/22	>10 years
P5,17/05/22	YES	17/05/22	3-10 years
P6,18/05/22	YES	18/05/22	>10 years
P7,25/05/22	YES	25/05/22	>10 years
P8,18/05/22	YES	18/05/22	< 3 years
P9,20/05/22	YES	20/05/22	>10 years
P10,20/05/22	YES	20/05/22	>10 years
P11,25/05/22	YES	25/05/22	>10 years
P12,26/05/22	YES	25/05/22	>10 years
P13,03/06/22	YES	03/06/22	>10 years
P14,27/05/22	YES	27/05/22	3-10 years
P15,27/05/22	YES	27/05/22	< 3 years
P16,27/05/22	YES	27/05/22	< 3 years
P17,03/06/22	YES	03/06/22	>10 years
P18,03/06/22	YES	03/06/22	>10 years
P19,03/06/22	YES	03/06/22	>10 years

APPENDIX I – Field notes

Interview date 17/05/22

First participant: careful selection of words. Hesitant to answer certain questions. Two-minded about effectiveness of system.

Second interview

HR to take responsibility for poor implementation. ??? Fair. Trying to make the SPMS work for the individual. Speaks freely.

Third interview

- Vast experience c̄ SPMS. Sounds irritated with lack of training. Despondent!? Staff lack of enthusiasm wrt SPMS.

Fourth Interview

Mixed opinions. Not sure if its effective or not. Closed-off body language. Planning rotation is a strong point. skills are one-sided. Clearly states the need for rotation.

Fifth Interview

Firm and clear: SPMS develops no skill!
- Comes across as very negative towards system.
- Suggestions - good I think e.g. to have projects to work towards. ↳ might motivate employees to participate

Interview 6
- Very open & honest. Not afraid to speak their mind.

Interview 7.
- Minimal response. Answers to question very short. Difficult to get participant to elaborate on some things. Very vague in the answers.

Interview 8
- Limited experience c̄ SPMS.
- Unsure of how system works (newly qualified + new to department)

Interview 9
- In two minds about SPMS. Don't want to offend anybody ??? maybe management? Not keen on elaborating too much.

Interview 10
- In depth knowledge of SPMS.
- Very detailed explanation.
- Staff equally responsible to make system work.
- Can't blame management.
- Explain ++++