Exploring how ownership models of radiological services affect operational practices in South African private hospitals

JT Mabina

orcid.org/0009-0003-7101-9331

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Supervisor: Dr HA Saurombe

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DECLARATION

I, Joseph Thabiso Mabina, hereby declare that the mini-dissertation submitted to North-West University (NWU) in partial fulfilment of the requirements for the Master of Business Administration (MBA) degree is my own original work. It has been text-edited in accordance with professional communication standards and has not been previously submitted to any other institution for evaluation.

All sources used or quoted have been acknowledged by means of complete references. This mini-dissertation has been conducted in accordance with the approved ethical clearance protocol and adheres to the university's policies on academic integrity and research ethics.

DEDICATION

This work is dedicated, with everlasting love, to the memory of my late sister, Makhala Khatlako, and her late daughter, Kelebogile Khatlako.

When I first started my university journey in 2006, uncertain about how I would afford to continue, my sister Makhala would send me R80 each month from her daughter's South African Social Security Agency (SASSA) grant. It may seem like a small amount today, but at that time, it made the difference between whether I could travel to university or not. Her sacrifice carried me forward, even as we lived in a shack in a squatter camp, with little more than hope. She passed on before I could complete my undergraduate studies, and my heart will always ache that she never got to witness how far her support helped me come.

To my niece, who left this world too soon and joined her mother, I am grateful you had the chance to see me grow, to live in the house I managed to buy for our family in the suburbs, and to be laid to rest with dignity, even though your mother could not be. You will always remain part of my story, my drive, and my heart.

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To my sister Matsolo, words cannot express the depth of my gratitude. From supporting me during my Postgraduate Diploma to walking with me through this MBA journey and many other aspects of my life, you have been my anchor and constant.

Finally, to my eldest niece, I recognise that our relationship has suffered since the loss of Kelebogile, and I acknowledge how my grief has changed me and created distance between us. I am sorry. I hope that one day you will find it in your heart to forgive me, and that we can mend what has been broken.

This dedication is a tribute to all of you. Your sacrifices, love, and even your absence have shaped me. This achievement is not mine alone; it is yours as well.

PREFACE

Ownership of radiology services in South African private hospitals varies significantly across the country. Increasing awareness of how the ownership of healthcare organisations impacts operational efficiency, the quality of care provided and patient access to care could help these service providers mitigate the disparity of healthcare delivery. The study investigated the influence of ownership models on the delivery of radiological services between hospital-owned and radiologist-owned practices. This study evolved from the researchers' experience in the healthcare services environment, with a focus on strategic decision-making, resource deployment, and clinical autonomy.

Within radiology services, ownership structures play a significant role in the provision of service delivery models and patient interaction. A particular study pointed out that private facilities consistently deliver services that are perceived as more professional and responsive due to shorter waiting times, which represents an inherent advantage traced back to the capital-driven nature of private operations (Govender *et al*., 2021:2). This has the potential to enhance patient satisfaction, but at the expense of equitable access, particularly for low-income individuals who are unable to afford such services (Maboreke *et al*., 2019:3). In practice, private hospitals have used modern diagnostic technologies more extensively, reflecting a capital-intensive model where high-end imaging capabilities are the focus to satisfy the requirements of paying clients (Kabongo *et al*., 2015:2).

While private hospitals address regulation, patient needs, and competition in the marketplace, the ownership models in private hospitals will be paramount in directing the short- and long-term operations of radiology services (Wang & Wang, 2020:882). Based on organisational ownership and control theory, health services integration, and diagnostic imaging service flow, the study situates its findings in the South African private-hospital ecology. The aim is to describe not only what is, but also provide actionable insights hospital administrators, radiology practice leaders, and policymakers can draw on to align operational practices with clinical quality, cost-effectiveness, and system integration.

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Special thanks goes to the private radiology departments across South Africa, which very generously made this study possible by providing access, operational insights, and valuable perspectives. Due to their willingness to share information, we were able to compare different ownership models in South Africa's private healthcare sector. I am further thankful to my MBA syndicate group, *PenPals*, for their friendship, cooperation, and encouragement during the difficult phases of my MBA.

On a personal level, I am extremely grateful to my partner, Boitumelo Shabalala, and my sister, Matsolo Khatlako, who have supported me financially and emotionally throughout this challenging and expensive journey. I would also like to thank my dear friend Lani Mahole, whom I met on the very first day of the MBA in 2024 and with whom I have shared daily encouragement ever since. He has become my firm foundation, my strength, confidant, and primary support when studying. I am especially appreciative of my day-one motivators, such as Jabulani Ndlovu, the Hospital Manager at Netcare Ferncrest, who consistently encouraged me to pursue my MBA, and my friend Tshepiso Mokoena, who courageously chose to pursue an MSc in Biostatistics full-time. I learnt that I could achieve it.

Finally, I would like to thank my family, friends, and loved ones, your patience, encouragement, and belief in me have been the foundation of this achievement. To my children, whose presence inspires me every day, this work is dedicated to you.

ABSTRACT

Radiology plays a critical role in diagnostic pathways within private hospitals in South Africa, yet limited empirical research has examined how ownership models influence operational practices in this sector. This study examined the differences between radiologist-owned practices and hospital-owned radiology departments, focusing on how each model affects workflow efficiency, decision-making autonomy, resource utilisation, quality assurance, and patient outcomes. A qualitative research design was employed, using semi-structured interviews with twelve participants representing clinical, administrative, and managerial roles across two ownership models. Data were analysed thematically, guided by Resource-Based View (RBV), Institutional Theory, and Contingency Theory.

Findings revealed distinct operational performance patterns shaped by ownership transparencies. Radiologist-owned practices demonstrate agility, rapid decision implementation, and personalised patient care driven by clinician authority. However, these strengths come with limitations in capital investment, workforce resilience, and formalised compliance systems. Hospital-owned radiology departments offer stability, advanced digital integration, structured governance, and accreditation readiness; however, they often experience slower responsiveness and reduced frontline operational autonomy due to bureaucratic processes.

The study concluded that no ownership model is universally superior; instead, each is optimal under specific environmental demands. Radiologist-owned agility suits are suitable for lower-volume and semi-rural contexts, while hospital-owned standardisation supports high-volume, regulated environments. Practical recommendations are proposed for radiology leaders, investors, and policymakers, emphasising hybrid strategies that combine clinical agility with organisational system support, particularly in preparation for the National Health Insurance (NHI) transformation in South Africa. The research contributes new operational insights to the limited literature on radiology ownership models and underscores the need for strategic alignment between ownership, organisational capabilities, and service context.

Keywords: Radiology Operations, Ownership Models, Workflow Efficiency, Autonomy, Quality Assurance, Private Hospitals, National Health Insurance (NHI), South Africa.

OPSOMMING

Radiologie vervul ’n kritieke rol in diagnostiese roetes binne privaat hospitale in Suid-Afrika, maar beperkte empiriese navorsing het ondersoek hoe eienaarskapsmodelle bedryfspraktyke in hierdie sektor beïnvloed. Hierdie studie het die verskille tussen radioloog-besit praktyke en hospitaal-besit radiologie-afdelings ondersoek, met spesifieke fokus op hoe elke model werkvloeidoeltreffendheid, besluitnemingsoutonomie, hulpbronbenutting, gehalteversekering en pasiënte-uitkomste beïnvloed. ’n Kwalitatiewe navorsingsontwerp is gebruik, met semi-gestruktureerde onderhoude gevoer met twaalf deelnemers wat kliniese, administratiewe en bestuursrolle oor beide eienaarskapsmodelle verteenwoordig het. Data is tematies ontleed, gegrond op die Hulpbron-gebaseerde Beskouing (RBV), Institusionele Teorie en Kontingensieteorie.

Bevindings toon duidelike bedryfsprestasiepatrone wat gevorm word deur eienaarskapstransparansies. Radioloog-besit praktyke toon ratsheid, vinnige besluitimplementering en gepersonaliseerde pasiëntesorg wat deur klinikusgesag gedryf word. Hierdie sterkpunte word egter gebalanseer deur beperkings in kapitaalbelegging, werksmagweerstand en geformaliseerde nakomingsisteme. Hospitaal-besit radiologie-afdelings bied stabiliteit, gevorderde digitale integrasie, gestruktureerde bestuur en akkreditasiegereedheid; tog ervaar hulle dikwels stadiger reaksievermoë en beperkte operasionele outonomie op die voorgrond as gevolg van burokratiese prosesse.

Die studie het tot die gevolgtrekking gekom dat geen eienaarskapsmodel universeel superieur is nie; eerder is elke model optimaal onder spesifieke omgewingsvereistes. Radioloog-besit ratsheid is geskik vir laer-volume en semi-plattelandse kontekste, terwyl hospitaal-besit standaardisering hoë-volume, streng gereguleerde omgewings ondersteun. Praktiese aanbevelings word voorgestel vir radiologieleiers, beleggers en beleidmakers, met klem op hibriedstrategieë wat kliniese ratsheid kombineer met organisatoriese stelselondersteuning, veral ter voorbereiding van die Nasionale Gesondheidsversekering (NGV) transformasie in Suid-Afrika. Hierdie navorsing dra nuwe bedryfsinsigte by tot die beperkte literatuur oor radiologie-eienaarskapsmodelle en beklemtoon die behoefte aan strategiese belyning tussen eienaarskap, organisatoriese vermoëns en dienscontext.

Sleutelwoorde: Radiologiebedrywighede, Eienaarskapsmodelle, Werkvloeidoeltreffendheid, Outonomie, Gehalteversekering, Privaat Hospitale, Nasionale Gesondheidsversekering (NGV), Suid-Afrika.

LIST OF ABBREVIATIONS

Abbreviation	Full Term
BEE	Broad-Based Black Economic Empowerment
CT	Computed Tomography
DR	Digital Radiography
EMR	Electronic Medical Record
HIS	Hospital Information System
HO	Hospital-Owned (Radiology Practice)
HPCSA	Health Professions Council of South Africa
HR	Human Resources
ISO	International Organization for Standardization
IT	Information Technology
KPI	Key Performance Indicator
MRI	Magnetic Resonance Imaging
NHI	National Health Insurance
NWU	North-West University
PACS	Picture Archiving and Communication System
POPIA	Protection of Personal Information Act
QA	Quality Assurance
QC	Quality Control
RBV	Resource-Based View

RIS	Radiology Information System
RO	Radiologist-Owned (Radiology Practice)
ROI	Return on Investment
RSSA	Radiological Society of South Africa
SAHPRA	South African Health Products Regulatory Authority
SOP	Standard Operating Procedure
TAT	Turnaround Time
US	Ultrasound
WHO	World Health Organisation

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CHAPTER 1: SCOPE OF THE STUDY

1.1 Introduction

This chapter presents the background and perspective on the ownership of radiology services in the private healthcare sector of South Africa, underscoring the operational relevance of the various forms of ownership structures. It proceeds to identify the research objectives, the research problem and the primary purpose of the study, which considers the impact of these ownership models on influencing critical operating practices in private hospitals in this context. The limitations and delimitations of the study are clearly defined to guide its bounds and scope. Lastly, the chapter outlines the research structure and concludes with a summary of its contributions to the research scope.

1.2 Background to the Study

The complex interconnectivity between models of ownership of radiology services and operational behaviour in South African private hospitals opens a multidimensional view for healthcare stakeholders. The socio-economic realities of various segments of South Africa compound the complexity of healthcare service delivery. Individuals from rural areas experience low accessibility to health services, including the lack of local healthcare facilities and access to qualified healthcare providers, thereby creating doubts and challenges in terms of whether the private and public sectors are contributing to alleviate these constraints (Poulter *et al*., 2023:2; Herbst *et al*., 2020:3). As the country seeks universal health coverage through the National Health Insurance (NHI), the increasing dependence on private health services shows how the uneven distribution of care across ownership models is creating inequities in access and financing of care (Wilkinson *et al*., 2022:2; Mahomed *et al*., 2023:92).

Recent data shows that the growth in private healthcare service provision in South Africa has been remarkable. Such a rise is being driven, above all, by patients who can afford private care, creating a higher demand for high-quality, timely medical services. Evidence suggests that people in low-income groups are increasingly using private healthcare services, driven by a perceived improvement in quality and shorter waiting times, despite

the associated monetary burden (Govender *et al*., 2021:2; M'bouaffou *et al*., 2022:2). Notably, this change underscores not just the operational efficiencies of private ownership but also the disparity in access to healthcare.

Ownership models are significant to operational approaches. In particular, as private hospitals operate with an emphasis on efficiency and profitability, a cost-saving strategy aimed at addressing market-led issues may have a negative correlation with the quality of care (Gaffney *et al*., 2023:325; Singh *et al*., 2025). For example, the divergence of these types of objectives can be seen in the practice of radiology, where access to innovative technology and specialised personnel may vary substantially due to ownership (Xü *et al*., 2022:3). However, for certain conditions, it has been noted that the provision of care by private institutions is less comprehensive than in the public sector, and this appears to be essentially the case in South Africa (Droti *et al*., 2019; Montagu & Chakraborty, 2021:2).

Fundamentally, it is important to understand how ownership models of radiology services influence organisational practices in South African private hospitals. This study will draw attention to operational challenges associated with different forms of ownership and inform policy discussions aimed at achieving equitable healthcare delivery. By focusing on ownership effects on resource distribution, service accessibility, and patient care outcomes, this research seeks to add to the body of knowledge in the healthcare landscape in South Africa, and to facilitate further efforts to deliver health reform that will be sustainable and effective in the private health sector.

1.3 Problem Statement

Globally, the structure of healthcare ownership is a fundamental determinant of operational behaviour. In many developed nations, the shift from independent, physician-led practices toward corporatised, hospital-integrated models have raised critical questions about its impact on clinical autonomy, operational agility, and the quality of patient care (Turner & Wright, 2021). This trend is particularly pronounced in capital-intensive, technology-driven fields like radiology, where ownership dictates not only investment in infrastructure but also the daily workflows, decision-making hierarchies, and governance protocols that shape service delivery (Nguyen et al., 2021). While

international literature explores these dynamics, it often does so within well-resourced, stable regulatory environments, offering limited insight into contexts marked by deep-seated socio-economic and structural inequalities.

In Sub-Saharan Africa, and South Africa specifically, the issue of ownership is further complicated by a historically entrenched dual healthcare system. The country's private health sector, serving approximately 16% of the population, operates in stark contrast to the overburdened public sector (Kanji & Noorbhai, 2021). Within this private sphere, radiology services are delivered through two dominant and operationally distinct ownership models: independent, radiologist-owned practices and corporate, hospital-owned departments. This duality, while a reality of the South African healthcare landscape, presents an under-explored area of operational divergence.

The researcher's professional experience in the South African health sector has revealed a critical, yet un-investigated, point of departure between these two models. Anecdotal evidence and preliminary observation suggest that operational practices, the day-to-day decisions that determine workflow efficiency, resource allocation, and responsiveness. are not uniform. In radiologist-owned practices, operational choices appear to be driven by clinical leadership, fostering an environment of professional autonomy, rapid decision-making, and personalised patient management. Conversely, in hospital-owned departments, these same practices seem to be heavily influenced by institutional financial targets, standardised corporate protocols, and centralised administrative control, which, while ensuring stability and compliance, may slow responsiveness and reduce the clinical voice in non-clinical matters.

This study was therefore motivated by a clear and specific problem: The absence of empirical evidence to confirm, explain, and compare how these two distinct ownership models systematically influence operational practices within South Africa's private radiology sector**.** While the literature hints at these differences globally, and local case examples (such as the acquisition of Dr Verster & Partners by Mediclinic) illustrate the trend, no South Africa-specific study has empirically investigated the core question: What are the definitive differences in operational practices between radiologist-owned and hospital-owned radiology services?

The preliminary findings of this research, detailed in subsequent chapters, have begun to answer this question, revealing that the problem manifests in key operational domains:

- **Workflow Efficiency:** Radiologist-owned practices demonstrate high agility and rapid turnaround times but struggle with scalability and system integration, while hospital-owned departments benefit from standardised, digitally enabled workflows that can be slow and rigid, especially in urgent or novel situations.

- **Decision-Making Autonomy:** Radiologist-owned models foster a decentralised, empowered culture where frontline staff can implement changes quickly, whereas hospital-owned models feature centralised, hierarchical decision-making that ensures consistency but often at the cost of local responsiveness and clinician ownership.

- **Quality Assurance and Innovation:** Quality in radiologist-owned practices is driven by internal trust and clinician-led, informal innovation but lacks formal documentation and audit trails. In contrast, hospital-owned departments excel in formal, compliance-driven quality systems but face significant bureaucratic inertia that stifles rapid innovation.

This lack of comparative, context-specific knowledge leaves radiology heads, hospital managers, and policymakers without a clear, evidence-based understanding of the strategic and operational trade-offs inherent in each model. As South Africa navigates the transition toward a National Health Insurance (NHI) system, understanding how different ownership structures drive or hinder operational performance is not merely an academic exercise, it is pivotal for effective policymaking, sustainable resource allocation, and for designing resilient, patient-responsive radiology services for the future. This study seeks to fill this gap by providing the first systematic, comparative analysis of how ownership models shape the operational reality of private radiology in South Africa.

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1.4 Research Questions

A research question is a pivotal precondition, a first step in the research process. An informed research question guides how a study will proceed and directs the design and the methodology employed. According to Sabil *et al*. (2023:2), defining the research question requires researchers to specify a particular problem or topic that the literature review will address, thereby determining the research area. The question formulation guides all aspects of the research design, such as data collection methods and analysis techniques (Irshad *et al*., 2021:669, Doody & Bailey, 2016:20).

1.4.1 Primary Research Question

How do ownership models (radiologist-owned vs. private hospital-owned) influence the operational practices in radiology services in South Africa?

1.4.2 Secondary Research Questions

(i) How different is the workflow efficiency, decision making autonomy, quality assurance, innovation, patient management in the radiologist-owned practices from that of the hospital-owned practices?

(ii) What is the cause of the differences in radiologist-owned practices versus the hospital-owned practices and how do this impact on operational flexibility and patient care?

(iii) What operational challenges does each model face?

(iv) What is the implication of the differences in findings for policy and practice within South Africa's private health service system?

1.5 Research Objectives

Clearly defined objectives increase clarity and align the methodology of the study with its intended outcomes (Doody & Bailey, 2016:21). Scholars argue that specific, measurable, achievable, relevant, and time-bound (SMART) objectives should be stated to enhance the effectiveness of the research (Doody & Bailey, 2016:21).

1.5.1 Primary Objective

To explore how ownership models affect/influence operational practices in the radiology services in South Africa

1.5.2 Secondary Objectives

(i) To examine the differences in the workflow efficiency, decision making autonomy, quality assurance, innovation, patient management between the radiologist-owned and the hospital-owned practices

(ii) To assess the cause of the differences in radiologist-owned practices and the hospital-owned practices and how these impact on operational flexibility and patient care

(iii) To recommend implications of the differences in radiologist-owned practices and the hospital-owned practices for policy and practice within South Africa's private health service system

1.6 Significance of the Study

The study offers both theoretical and practical insights into the roles of social elements in healthcare administration, as well as an examination of South Africa's complex healthcare system. Studying ownership models and their impact on operations in the developing healthcare sector clarifies broader healthcare phenomena and provides policy-relevant insights for informed managerial decision-making.

1.6.1 Theoretical Contribution

From a theoretical perspective, this research would complement the literature on ownership models and healthcare management in several aspects. First, it will address an important gap in understanding the distinct shapes assumed by ownership logics at work in private healthcare. Previous research has shown that the use of health interventions also depends on contextual factors (Magadzire et al., 2017:3). Through a

narrow inclusion of the radiology sector, the study seeks to improve understanding of how organisational ownership types, such as privatisation partnerships, influence the delivery of diagnostic services and operational efficiency. This may, in turn, underpin a more comparative approach between the private and public healthcare sectors, concordant with research stressing inequalities in resource distribution across South Africa's juxtaposed health system (Bhana *et al*., 2023:2; Osei-Yeboah *et al*., 2021).

1.6.2 Practical Contribution

From a pragmatic perspective, this study aims to generate valuable insights for stakeholders in health service delivery, including health managers, policymakers, and care providers. Given the mounting healthcare demand resulting from population expansion and a high disease burden, there is a need to assess the effect of ownership on service efficiency (Bhana *et al*., 2023:2). Finally, the study will provide information on several specific operational procedures, including standardisation based on ownership type and the speed with which work is managed, as well as the available resources. This is further pertinent, given that the NHI model, which aims to address increased access and equity in healthcare, is being viewed from a new perspective that emphasises systemic inequities (Chellan & Sibiya, 2020:937; Osei-Yeboah *et al*., 2021:4).

1.7 Delimitation of the Study

This study is limited to locum tenets in private radiology practices in South Africa's urban and peri-urban contexts. Attention is paid to the differences between radiologist-owned and non-radiologist-owned hospital-based providers of radiology services, with an analysis of how ownership forms affect the operations and strategic management of these healthcare facilities. It focuses on the differences in the workflow efficiency, decision making autonomy, quality assurance, innovation, patient management between the radiologist-owned and the hospital-owned practices and their causes.

The research excludes:

- Departments of Radiology of the Public Health Services.
- Radiology practices out of South Africa.

- Non-hospital-based health services (pathology, general/private practice).

The geographically sample focus area is limited to the urban and peri-urban areas in South Africa, where most of the private radiology services are concentrated, and where significant differences in operational capacity between ownership models can be observed. The results of the study will not be applicable or generalisable to rural and public service radiology programs secondary to differences in infrastructure, economy and regulation. This will be followed by a cross-sectional and qualitative research design, which will focus on evaluating changes over time in operational outputs and strategic redirection.

1.8 Definition of Key Terms

Understanding the key concepts central to this study is crucial for interpreting its findings within the correct context. The following definitions are based on existing literature in health services management, organisational, and radiology practice.

- Radiologist-owned private practice

A radiologist-owned practice is one in which a group of radiologists runs and owns the practice, or an equity interest is retained by some of its partners, allowing them to have complete control over strategic direction, financial operations, and clinical matters. This type of ownership supports professional independence and patient-centred care (compared with institutional focus) (Radiology Business, 2012). The Radiological Society of South Africa (RSSA) in South Africa considers radiologist-owned practices to be bona fide independent practices that can exist as sole practitioners, partnerships and incorporated entities, if ownership is solely by radiologists (Radiological Society of South Africa, 2018). Such structures enable clinical governance and financial decision-making based more on professional rather than exclusively commercial rationales (Dutton, 2014).

- Private Hospital-owned radiology practice

A private hospital radiology practice is a radiology service owned and operated within the jurisdiction of a private hospital or hospital group. Give this notion, the hospital entity assumes responsibility for the radiology group’s financial and strategic services, with the

radiologists essentially working as independent contractors, rather than shareholders (AuntMinnie, 2022). The Competition Commission's Health Market Inquiry (2019) observes that most radiology services in South Africa are hospital based, and vertical integration between hospitals and diagnostic suites tend to concentrate power at the decision-making centres while compromising autonomy. This form of ownership favours institutional goals as operational strategies are geared to comply with broader hospital-level performance indicators (Ali, 2021).

- Strategic decision-making

Strategic planning is 'the formal consideration of an organisation's future course' and involves the identification of long-term goals, the allocation of resources to achieve those goals, and its plans to adapt, manage survival, success or failure (Institute of Directors, 2023). With regard to strategic decisions in the health care sector, South Africa also considers formal data and experience knowledge, introducing adaptability and context-related judgment (Ali, 2021). Strategic decisions in radiology may include introducing a new service offering, acquiring next–generation imaging equipment, or forming a partnership with the healthcare sector. South Africa also considers formal data and experiential knowledge, introducing adaptability and context-relatedness in hospital networks to remain competitive (Spider Strategies, 2024).

- Operational practices

Operational routines are considered the institutionalised processes and daily procedures that facilitate the efficient and effective delivery of services (Investopedia, 2023). In the healthcare area, these may include, but are not limited to, workflow management, scheduling, staffing, and equipment maintenance. Evidence in South Africa suggests that health facility decision-making is driven by formal, structured information systems informed by 'tacit' experiential knowledge (Ali, 2021). In the realm of radiology, operational procedures dictate quality assurance checks, turnaround times, billing, and service reliability (Indeed, 2024).

- Ownership model

The ownership model is the legal and economic framework that specifies who owns an organisation, how surplus gains are appropriated, and how governance decisions are made (ScienceDirect, 2023). Ownership is supposed to affect the responsibility, accountability, decision making framework and incentive alignment (Ownership Associates, 2022). In the private healthcare market in South Africa, the recent Health Market Inquiry (Competition Commission of South Africa, 2019) found that ownership models for radiology service delivery significantly influence competition, patient referral patterns, and operational flexibility.

1.9 Theoretical Underpinnings of the Study

One of the most critical aspects of a research study is constructing its 'theory base,' as this provides the linkage between the study and prior knowledge, clarifying what the researcher is looking for and whether the variables being examined actually exhibit a relationship (Grant & Osanloo, 2014:13). It also ensures that the research adds value to academic knowledge by connecting evidence to larger theoretical ideas (Anfara & Mertz, 2014). Given this notion, using multiple theories extends the ability to work with an understanding of how various ownership models in radiology are intertwined with institutional norms and resource endowments, as well as the environmental contingencies that influence operational performance, including efficiency, decision-making, and innovation.

This study will be guided by three theories that serve as an organised framework for understanding the relationships in this research.

First, the Resource-Based View (RBV) , developed by Barney (1991), posits that organisations achieve and sustain competitive advantage by strategically deploying their valuable, rare, inimitable, and non-substitutable resources. In the context of this study, RBV provides a lens to examine how ownership models shape access to and control over key resources, such as advanced technology (e.g., MRI, PACS), specialised human capital (radiologists and radiographers), and organisational culture. This framework is particularly useful for explaining differences in operational efficiency and innovation capacity, as radiologist-owned practices may leverage agility and tacit knowledge, while hospital-owned departments may capitalise on economies of scale and infrastructure.

Second, Institutional Theory, as articulated by DiMaggio and Powell (1983), explains how organisations are shaped by external pressures, regulatory, normative, and cultural, that lead to isomorphism (homogenisation) within a field. This theory is essential for understanding how external forces, such as HPCSA regulations, accreditation standards, and the impending National Health Insurance (NHI) reforms, influence operational practices and decision-making within radiology services. It helps explain why hospital-owned departments may prioritise formal compliance and standardisation, while radiologist-owned practices may exhibit greater variance in response to institutional pressures.

Third, Contingency Theory, developed by Lawrence and Lorsch (1967), suggests that there is no single best way to organise or manage; rather, organisational effectiveness depends on the alignment between internal structures and external environmental demands. This theory is critical for understanding why different ownership models may be optimally suited to different contexts. For instance, the agility of radiologist-owned practices may be better suited to dynamic, low-volume, or specialised environments, while the structured stability of hospital-owned departments may be more effective in high-volume, regulated settings. This lens directly informs the analysis of operational flexibility, responsiveness, and the capacity for innovation under varying conditions.

Taken together, these three theories provide a multidimensional conceptual framework for this study. They allow for a robust investigation of how ownership structures shape not only system operations and decision-making, but also innovation, resource allocation, quality assurance, and adaptability within South Africa's complex private health industry. These theories will be elaborated further in Chapter 2, where they will be integrated with the literature to form the analytical backbone of this research.

1.10 Preliminary Literature Review

Healthcare is a complex adaptive system that lies at the intersection of ownership structure, governance, and operational practices, driving both organisational performance and patient outcomes (Mintzberg, 2017). In this complex environment, radiology departments are one of the cornerstones and sources of revenue for private hospitals in both diagnostic and treatment terms. Nevertheless, the ownership structure of these services (i.e., owned by radiologists, hospitals, or corporates) can greatly impact the efficiency/inefficiency, resource allocation, and strategic direction possessed by these units (Barney, 1991; Competition Commission of South Africa, 2019).

This preliminary review aims to summarise relevant elements and academic discussions of ownership models and practices in healthcare, with a focus on radiology within the South African private hospital context. It provides a global picture, but also recognises local factors such as control by regulation, professional autonomy and dual organisation of the healthcare sector. The chapter concludes with the identification of theoretical deficiencies that motivate this study, laying out the intellectual background for an in-depth review of literature that is developed in Chapter 2.

1.10.1 Ownership Models in Healthcare Service

Healthcare ownership structures reflect how power, centre of control, decision-making authority, and financial risk are allocated among those having an interest in the system (Reinhardt, 2019). The first two are described in the literature as professional (clinician-owned) and institutional (hospital or corporate-owned) models. When physicians own professional entities, they co-own the financial and operational control, creating clinical autonomy that has been shown to be associated with higher patient satisfaction (Scott, 2013). In contrast, corporate ownership internalises service delivery within the hospital's organisational (corporate) structure with better resource coordination but less clinical autonomy (Dafny, 2014:199).

Research from developed nations suggests that ownership influences operational desires. Physician-owned entities, for example, exist in a culture that places primacy on quality-based decision-making and patient-focused care, while corporate ownership privileges efficiency and profit maximisation (Cutler, 2022). These findings are not necessarily applicable in developing countries, like South Africa, with their distinctive mix of social-economic, institutional and political forces militating against the ideal (Cutler, 2022).

In the private sector, radiology practices are predominantly hospital-based but have varied ownership models (Competition Commission of South Africa, 2019). It is already established that vertical integration between hospitals and radiology services has led to efficiencies, and possible market distortions have been exposed during the Health Market Inquiry. Issues of referral incentives, increased costs and access to advanced imaging technology have dogged ownership integration. Such dynamics highlight the importance

of investigating how ownership influences operations, particularly in an environment characterised by significant inequality and emerging regulation (Mahlathi & Dlamini, 2017:3).

1.10.2 Operational Practices and Healthcare Efficiency

Operational practices encompass the day-to-day procedures, decision protocols, and workflows that healthcare facilities utilise to ensure the delivery of high-quality and timely health services (Slack & Brandon-Jones, 2022). In the context of this study, operational practices serve as the primary dependent variable, the phenomenon being investigated and explained by the independent variable, which is the ownership model (radiologist-owned vs. hospital-owned).

To systematically compare operational practices across ownership models, this study adopts a multidimensional conceptualisation. Operational practices are understood to comprise several interrelated domains, each with specific, measurable indicators derived from the literature and aligned with the study's research questions.

- The first domain is workflow efficiency, which concerns the management of patient and information flow through the radiology department. This domain is measured by indicators such as turnaround time for image reporting, patient capacity and throughput, and equipment utilisation and uptime (Slack & Brandon-Jones, 2022; Rivers & Glover, 2008).
- The second domain is decision-making protocols, which refers to the processes and hierarchies governing operational choices. Key measures here include the speed of decision implementation, the level of staff autonomy in daily tasks, and the existence of formal escalation procedures (Porter & Teisberg, 2006).
- The third domain is quality assurance, encompassing the mechanisms in place to ensure diagnostic accuracy, safety, and consistency. This is assessed through indicators such as the existence of formal quality assurance protocols, the frequency of incident reporting and audits, and adherence to professional and regulatory standards, including those of the Health Professions Council of South Africa (HPCSA).
- The fourth domain is innovation and technology adoption, which captures the capacity and processes for adopting new technologies or improving clinical protocols. This domain is measured by the speed of adopting new imaging technology, the flexibility to modify

clinical protocols, and the sources of innovation, whether clinician-led or system-driven (Porter & Teisberg, 2006).

- The fifth domain is patient management, which involves the systems and practices governing patient interaction and care pathways. Indicators here include scheduling flexibility, patient communication and follow-up processes, and responsiveness to patient feedback (Slack & Brandon-Jones, 2022).

Internationally, research suggests that radiology services embedded within hospital systems may exhibit more bureaucratically cumbersome workflows due to centralised decision-making, while independent, radiologist-owned systems may benefit from greater flexibility and adaptability (Slack & Brandon-Jones, 2022). However, centralisation can offer advantages in terms of standardisation, risk management, and regulatory compliance, particularly when robust governance mechanisms are in place (Porter & Teisberg, 2006).

In the South African context, operational processes are further complicated by systemic resource allocation inequalities and persistent staff retention challenges. Private hospitals, despite generally having access to modern technology, face pressures including manpower shortages, cost-containment imperatives, and reliance on imported medical technologies (Porter & Teisberg, 2006). Consequently, radiology services embody inherent tensions, such as efficiency versus

clinical thoroughness, innovation versus cost containment, and professional autonomy versus institutional accountability.

It is therefore instructive to systematically explore how different ownership models shape these operational domains and their associated measures. By doing so, this study aims to generate evidence that can help hospitals, radiology practices, and policymakers understand how ownership structures influence sustainable performance, service quality, and patient care within South Africa's competitive private healthcare market.

Alignment with Research Instruments

The five operational domains identified above directly informed the development of the semi-structured interview schedule presented in Annexure A.

Questions pertaining to workflow efficiency are in Section 2 of the interview schedule, which probes how imaging requests are managed, the challenges faced in maintaining efficiency, and how ownership influences turnaround time.

Decision-making protocols are explored in Section 3, which investigates who holds decision-making authority regarding staffing and equipment, the extent of radiologist autonomy, and how ownership structure affects the speed and effectiveness of decision-making.

Quality assurance is addressed in Section 7, which examines the quality monitoring practices in place and how ownership models affect service quality and patient outcomes.

Innovation and technology adoption are captured through questions in Section 4, which probes investment in new technology and equipment, as well as in Section 7, which explores how ownership influences innovation and service development.

Finally, **Patient management** is examined throughout Section 7, with specific attention to patient care, and in Section 8, where participants are invited to reflect comparatively on the strengths and weaknesses of their ownership model in relation to patient experience.

This explicit mapping ensures that the research instruments are directly aligned with the conceptualisation of the dependent variable, thereby enhancing the validity, consistency, and rigour of the study.

1.10.3 Radiology Practice in the South African Context

Radiology in South Africa occupies a distinctive position within the healthcare value chain. It is both a specialised clinical service and a strategic business unit. The Radiological Society of South Africa (RSSA, 2018) defines private radiology practice as the professional provision of diagnostic imaging services by qualified radiologists, regulated under the Health Professions Council of South Africa (HPCSA).

The dichotomy between radiologist-owned and hospital-owned models has historical and regulatory roots. Independent radiology practices emerged during the 1990s as part of professional liberalisation, while the rise of hospital-owned units reflected broader corporate consolidation trends (Competition Commission of South Africa, 2019). Radiologist-owned entities typically prioritise professional autonomy, ethical decision-making, and investment in specialised modalities such as interventional radiology. Hospital-owned departments, on the other hand, are organised according to the hospital's strategic priorities (e.g., fiscal sustainability and operational effectiveness) rather than professional autonomy.

Recent studies suggest that radiologists in hospital-owned settings frequently encounter managerial constraints that impact diagnostic turnaround and innovation (Schoeman, 2023). In addition, disparities in access to high-cost imaging technologies such as Magnetic Resonance Imaging (MRI) and Positron Emission Tomography-Computed Tomography (PET-CT) persist and can be associated with ownership type and hospital network affiliation. Thus, studies examining ownership models in this manner contribute to a broader understanding of how governance structures affect service delivery and, hence, patient outcomes.

1.10.4 Governance, Regulation and Institutional Pressures

The healthcare system in South Africa is characterised by a labyrinth of regulations to ensure quality, equity and professional accountability. Clinical governance, professional practice, and service licensing are co-regulated by the Health Professions Act (Act 56 of 1974), the National Health Act (Act 61 of 2003), and norms and standards upheld by the HPCSA. These institutional environments exert both coercive and normative pressures on providers, as per the expectations of institutional theory (Scott, 2013; DiMaggio & Powell, 1983:150).

There are also institutional drivers, such as the requirements of radiation safety or ethical billing, which limit the variety in ownership models. However, they also restrict managerial novelty and the extent of differentiated operating strategies. The private hospital sector, led by large groups (Netcare, Life Healthcare and Mediclinic), places its own institutional pressure through internal governance systems and metrics for growing income in the sector (Van der Merwe & Grobler, 2019). This intersection of professional, corporate and regulatory expectations highlights the tension between autonomy and conformity which continues to define radiological practices in South Africa.

1.11 Research Methodology

Research methodology is the theoretical and systematic analysis of the methods, including the philosophical assumptions of a research process utilised in a particular field of study, and how these apply to the collection and analysis of data (Kumar, 2019). Research design is the overarching plan that links a study's philosophical worldview, research approach, and particular

methods to address the research problem in such a way that ensures credibility and consistency (Creswell & Creswell, 2018). In addition, it describes a rationale for choosing quantitative, qualitative or mixed methods and internal consistency in the relation of objectives, questions and approaches (Saundry et al., 2021).

Furthermore, as Kumar (2019) explains, the research methodology is the procedural structure within which research is carried out, describing how certain methods are relevant in specific forms of enquiry. It is more than a depiction of methodology, because the common thread throughout the description makes clear not just what was done and how, but also why this course of action was taken (Kumar, 2019). This study employed a qualitative research methodology with a comparative case study design to investigate how ownership models influence operational practices in South African private radiology services. The following sections outline the philosophical foundations, research approach, design, and specific methods employed.

1.11.1 Research Paradigm

This study is situated within the pragmatic paradigm. Pragmatism focuses on what works in practice and applies research to reality, employing multiple methods to produce plausible, naturalistic answers (Creswell & Creswell, 2018; Morgan, 2007). Pragmatism acknowledges that no single philosophy or method can fully capture the richness of organisational phenomena, including the ownership models of radiology services. Instead, it values approaches that can effectively address the research question and generate actionable insights for both theory and practice.

The pragmatic paradigm was regarded as particularly relevant for this study, which is concerned with operational practices in South African private hospitals, a context where diverse institutional, financial, and regulatory pressures intersect. Pragmatism facilitates the synthesis of multiple perspectives, combining participants' subjective experiences with objective institutional frameworks. This flexibility aligns with the study's multi-theoretical foundation, which draws upon the Resource-Based View (Barney, 1991), Institutional Theory (Scott, 2017), and Contingency Theory (Donaldson, 2001). These theories draw attention to different yet complementary aspects of organisational performance, and pragmatism provides the philosophical space to integrate them coherently.

Pragmatism thus supports the study's qualitative, multiple-case design by enabling the researcher to consistently combine semi-structured interviews, document analysis, and contextual observations. This approach ensures the research remains grounded in the real experiences of

radiology professionals and managers, while still producing findings that are both theoretically informed and practically relevant.

1.11.2 Research Approach

This study employed a qualitative research approach to address the research questions and objectives. Qualitative research is an inquiry process that involves distinct methodological traditions, exploring a social or human problem with the intent to generate complex descriptions and better understand the phenomenon of interest within its natural context (Creswell & Creswell, 2018). Unlike quantitative research, which seeks to measure and test relationships between variables, qualitative inquiry focuses on depth, context, and understanding, as opposed to prediction or generalisation (Silverman, 2020). It is a flexible approach for exploring complex realities in which human experience, meaning, and social interaction are central to understanding the phenomenon being studied (Denzin & Lincoln, 2018).

According to Kumar (2019), qualitative research deals with the why and how of human behaviour; it concentrates on the process as opposed to the outcomes. It facilitates a researcher's knowledge of the 'reality' of people's lives, institutional cultures, and organisational practices as they are lived out in actual contexts. As Patton (2015) states, qualitative work can capture the richness, diversity and complexity of human experience through detailed descriptions and interpretative analyses. This renders it especially appropriate for research that wishes to understand meaning rather than quantify frequency.

A qualitative approach is appropriate for this study due to its emphasis on:

- Lived experience: Strategic and operational practices are context-specific and best explored through subjective interpretation (Denzin & Lincoln, 2018).
- Contextual depth: It facilitates detailed exploration over broad generalisations, making it ideal for examining differences between ownership models (Merriam & Tisdell, 2016).
- Relevance to South Africa: Given the dual health system, qualitative methods allow for the flexibility and contextual adaptability needed to navigate complex institutional environments (Patton, 2002).

1.11.3 Research Design

This study employs a comparative case study design to examine how ownership models influence operational practices in radiology services within South African private hospitals. A comparative

case study design is particularly appropriate when the research seeks to understand similarities, differences, and patterns across two or more cases that represent different contextual or structural conditions (Yin, 2018). A multiple-case design enables systematic comparison between radiologist-owned and hospital-owned radiology practices, thereby emphasising both similarities and differences across ownership models. This comparative approach is well-suited for investigating complex operational phenomena in real-world healthcare settings (Yin, 2018).

The design supports:

- In-depth exploration of operational workflows, leadership styles, and flexibility in decision-making.
- Comparative insights into strategic and clinical autonomy across ownership models.
- Contextual understanding of how organisational policies, institutional pressures, and patient dynamics shape operations (Creswell & Poth, 2018).
- By aligning with the study's theoretical framework, this design ensures that findings are not only descriptive but also analytically robust, yielding insights that are both practical and theoretically informed.

1.11.4 Units of Analysis

In qualitative studies, the unit of analysis is defined as the basic building block or entity that is analysed, described and interpreted to provide answers to research questions (Creswell & Creswell, 2018). It is the 'what' or 'who' around which data are gathered, patterns detected, and meaning made. In contrast to quantitative works that frequently define the unit of analysis statistically, qualitative research views the unit of analysis as an interpretive construction that arises from context, relationships, and meaning making (Miles et al., 2014).

In this study, the two ownership models under investigation serve as the primary units of analysis:

- Radiologist-owned radiology practices, where clinically led, independent entities control both operations and strategy.
- Hospital-owned radiology departments, which are integrated into larger corporate hospital groups and operate within formalised institutional hierarchies.

Within these units, the experiences and views of key actors, such as radiologists, practice managers, hospital administrators, and frontline staff,

are treated as sub-units of analysis. This corresponds to the reasoning in an embedded multi-case study design, where each case allows for a rich, context-bound understanding of complex organisational phenomena (Yin, 2018). A selected number of practices from each ownership model will be explored to identify operational and strategic distinctions relevant to health service delivery.

1.11.5 Sampling Strategy

This study employed a purposive, non-probability sampling strategy to identify participants with direct, experiential knowledge of operational practices within radiology services operating under different ownership models in the South African private health sector. Purposive sampling is well-suited to qualitative research that seeks to generate rich, nuanced data, rather than statistically generalisable findings (Creswell & Poth, 2016). Because the study focuses on ownership structures and their relationship to operational practices, the sampling strategy targeted respondents who possess authoritative knowledge regarding decision-making, resource allocation, workflow management, and institutional constraints.

The primary inclusion criteria for participants were:

- A minimum of two years' experience in their current role, ensuring familiarity with organisational practices and historical context.
- Direct involvement in operational or strategic decision-making within their radiology practice or department.
- Representation across the two primary ownership models examined in the study: radiologist-owned and hospital-owned practices.

Participants included:

- Radiologists (both employed and partners/owners) able to discuss clinical workflow, autonomy, and operational agility.
- Practice managers overseeing administration, budget, and staff.
- Hospital administrators responsible for the integration of radiology services into larger hospital systems.
- Frontline administrative personnel to provide context on scheduling, patient flow, and billing processes.

Participants were identified through professional networks, referrals from industry contacts, and publicly available institutional directories. Following ethics approval, formal email invitations were sent, including participant information sheets outlining the purpose of the study and reassuring prospective participants of its voluntary nature and confidentiality. Snowball sampling was also utilised, as initial informants referred others with relevant experience (Patton, 2015).

The goal was not statistical representativeness, but rather data saturation, the point at which new participants' input no longer yields new themes or insights (Guest, Bunce & Johnson, 2006). During iterative data analysis and ongoing sampling, the researcher ensured inclusion of perspectives from across ownership types, geographic contexts, and levels of operational responsibility.

1.11.6 Data Collection Methods

This study used semi-structured interviews and document analysis to collect qualitative data. These approaches are suitable for case study research as they allow a detailed understanding of how different ownership models influence operational practices in radiology (Yin, 2018).

Semi-structured interviews served as the primary data collection method, providing flexibility to probe responses more deeply while ensuring consistency among participants (Saunders et al., 2019). Interviews were conducted with radiologists, practice managers, hospital administrators, and frontline staff from both ownership models. Each interview lasted between 45 and 90 minutes, was conducted in person, by telephone, or by secure videoconference, was audio-recorded with permission, and was transcribed verbatim.

The interviews explored:

- Decision-making autonomy and workflows.
- Operational challenges and opportunities.
- Perceptions of quality, innovation, and patient management.

An interview schedule was developed, aligned with the research questions and informed by existing literature (Patton, 2015). Participants received the schedule in advance to ensure clarity and readiness.

Document analysis of operational policies, quality assurance protocols, and relevant organisational reports provided organisational context and corroborated or contrasted interview accounts (Bowen, 2009). While limited, site-based observation captured workflow patterns, staff

interactions, and resource use during visits, enriching the interpretation of interview data (Creswell & Poth, 2018).

The use of triangulation across these methods enhanced the credibility and dependability of the findings (Lincoln & Guba, 1985).

1.11.7 Data Analysis

This study employed thematic analysis to interpret qualitative data from interviews, document analysis, and observational field notes. Thematic analysis is especially useful for identifying patterns and meanings within contextually rich data and is well known for its flexibility and rigour (Braun & Clarke, 2006).

The analysis followed Braun and Clarke's (2006) six-phase framework:

- Familiarisation with the data: Transcripts were read through several times to gain familiarity and preliminary understanding.
- Generating initial codes: Codes were generated inductively to reflect key issues and repeating patterns in the language of the responses.
- Searching for themes: Codes were grouped into analytic categories, creating themes that represent patterns across the data.
- Reviewing themes: Themes were reviewed and refined through an iterative process, ensuring they accurately represented the data.
- Defining and naming themes: Each theme was clearly defined and named to capture its essence.
- Producing the report: Findings were written up, using verbatim quotations to illustrate and support interpretations.

A hybrid approach supported this structured process: inductive coding allowed themes to emerge from the data, while deductive coding was guided by the study's theoretical framework, namely the Resource-Based View (Barney, 1991), Institutional Theory (Scott, 2017), and Contingency Theory (Donaldson, 2001).

NVivo software was employed to code and organise data, enabling structured comparisons across and within cases (Bazeley & Jackson, 2013). Data from each case were analysed separately to identify within-case patterns, followed by a cross-case synthesis to compare and contrast findings across the two ownership models.

1.11.8 Ethical Considerations

The ethical principles of research involving human beings were fully respected during this study, including safeguarding participants' dignity, rights, and well-being (Wiles, 2013). Ethical approval was granted by the North-West University Economic and Management Sciences Research Ethics Committee (NWU-EMS-REC) on 12 August 2025, with ethics number NWU-25-4. The research was deemed to be of low to minimal risk and approved as a single postgraduate research project.

All participants provided written informed consent before participating. Every participant was provided with an information sheet including the aims of the study, procedures, possible risks and benefits, confidentiality, and their right to withdraw from the investigation at any time without penalty. Signed consent forms were obtained before interviews, document review, and observation.

Confidentiality was strictly maintained. All data, digital recordings, transcripts, and field notes, were stored in password-protected electronic files accessible only to the primary researcher and supervisor. All names, institutional references, and location details were removed or replaced with pseudonyms in all transcriptions, analytic notes, and reported findings (Orb et al., 2001).

The researcher observed non-maleficence, ensuring that involvement did not expose participants or their institutions to reputational, professional, or psychological harm. Reflexivity was sustained through a reflective journal, recording personal biases, assumptions, and power relations that might affect interactions with participants and the interpretation of data (Finlay, 2002).

Finally, the study adhered to the Declaration of Helsinki, the NWU Research Ethics Policy, and the Protection of Personal Information Act (POPIA) of South Africa. The researcher will submit annual monitoring reports to EMS-REC and a final report upon completion, in accordance with the conditions of approval.

1.11.9 Trustworthiness and Rigour

Trustworthiness and methodological rigour are vital in qualitative research to ensure that the findings are credible, dependable, transferable, and confirmable (Lincoln & Guba, 1985). This study employed multiple strategies to address each aspect of trustworthiness.

Credibility, the truth value of the findings, was achieved through prolonged engagement with participants during interviews to establish rapport and prompt candid dialogue. The researcher employed member checking, sharing preliminary findings and themes with selected participants

to verify interpretations and rectify potential misconceptions (Creswell & Poth, 2018). Data were also triangulated from a variety of sources, semi-structured interviews, document review, and observation, further increasing credibility through multiple lines of evidence (Patton, 2015).

Dependability, ensuring the research process is logical and traceable, was addressed through a detailed audit trail systematically documenting coding frameworks, theme development, and methodological decisions (Nowell et al., 2017). Scheduled meetings with academic supervisors provided opportunities for peer debriefing to scrutinise the analysis and refine interpretations (Lincoln & Guba, 1985).

Transferability, the extent to which findings can be applied to other contexts, was addressed through thick description of the research setting, participant roles, organisational environments, and institutional dynamics. This allows readers to evaluate the relevance and applicability of findings to similar contexts (Geertz, 1973).

Confirmability, ensuring findings are rooted in the data rather than researcher bias, was achieved through a reflexive journal recording assumptions, potential biases, and their influence on data interpretation (Creswell & Poth, 2018). Triangulation and peer review further enhanced confirmability by providing independent validation of the analysis.

These strategies reflect an approach to research that adheres to stringent qualitative guidelines, producing credible, contextually rich, and reliable findings pertaining to the relationship between radiology service ownership models and operational practices in South African private hospitals.

1.11.10 Methodological Limitations

While this study was designed to produce credible, contextually grounded insights, it is important to acknowledge several methodological limitations inherent in the chosen research design and approach.

Firstly, qualitative methods and purposive sampling were used; therefore, the findings cannot be statistically generalised to all radiology practices in South Africa. The study sought analytical generalisation, generating theoretical insights that could be applied to other similar settings, but cannot claim universal applicability (Yin, 2018).

Secondly, access constraints may have affected the diversity and range of cases included. Organisations may have declined participation due to concerns about confidentiality, competitive

sensitivities, or reluctance to reveal internal operational issues. This could introduce selection bias, as the study depended on willing participants who may not fully represent the wider sector.

Thirdly, the study relied on self-report data collected through interviews. Interview data, used in conjunction with document analysis and observation, are subject to recall bias, interpretive framing, and social desirability effects (Patton, 2015). The researcher attempted to mitigate this through probing questions, establishing trust, and triangulation.

Fourthly, due to logistical and time constraints, observational data were limited in duration and scope. Observations may capture typical operational practices but might not reflect exceptional circumstances, long-term trends, or rare but significant disruptions.

Fifthly, although reflexive practices and peer debriefing were employed, researcher bias still poses a potential limitation. The researcher's professional background, prior assumptions, and interpretive lens may subtly influence data collection, coding, and thematic interpretation (Creswell & Poth, 2018).

Finally, while the study focused on operational practices and their relationship to ownership models, it did not systematically investigate patient outcomes or broader systemic factors that may also influence operational environments. Therefore, the findings should be understood within the specific focus and scope outlined.

These limitations are acknowledged to promote transparency, contextualise the study's findings, and highlight areas for potential future research using alternative methods, larger samples, or longitudinal designs.

1.12 Data Collection Methods

This study used semi-structured interviews and document analysis to collect qualitative data. These approaches are suitable for case study research as they allow a detailed understanding of how different ownership models influence strategic and operational practices in radiology (Yin, 2018).

1.12.1 Semi-Structured Interviews

Semi-structured interviews served as the main data collection method, providing flexibility to probe responses more deeply while ensuring consistency among participants (Saunders et al., 2019). The interviews explored.

- Decision-making autonomy
- Operational workflows
- Organisational challenges and opportunities
- Perceptions of quality and innovation Did this take care of patient management? Because it was part of the focus area in the research questions? Ensure consistency.

An interview schedule was developed, aligned with the research questions and informed by existing literature (Patton, 2015). Participants received the schedule in advance to ensure clarity and readiness.

Interview logistics:

- Format - Face-to-face or secure video platforms (MS Teams).
- Duration - Approximately 30 to 45 minutes per interview.
- Recording - Audio-recorded (with consent) and transcribed for thematic analysis.

1.12.1 Document Analysis

To support and triangulate interview data, relevant organisational documents were reviewed, including:

- Operational guidelines from hospitals
- Reports from the Radiological Society of South Africa (RSSA)
- Regulatory documents from the Health Professions Council of South Africa (HPCSA)

These documents provided contextual understanding and assisted in validating interview findings (Bowen, 2009:31).

1.12.3 Pilot Testing

Before data collection, the interview guide was pilot tested with two participants, one from each of the two ownership models. Feedback was used to improve question clarity, structure, and alignment with research objectives (Creswell & Creswell, 2018).

1.12.4 Researcher's Role

The researcher conducted all interviews and analysed the data. Participants were informed about their rights and provided with documentation that included an explanation of the informed consent process. Ethical procedures outlined by the NWU Economic and Management Sciences Research Ethics Committee were strictly followed.

1.13 Data Analysis

Qualitative data from interviews were analysed using thematic analysis for this study. Thematic analysis helps the researcher to identify, code, and cluster emerging patterns or themes related to strategic decision-making, operational practices, and ownership model differences (Braun & Clarke, 2006:79). This approach is particularly appropriate for comparative case studies, providing an opportunity for meaningful cross-case analysis and fits neatly with the pragmatic and interpretivist paradigm. NVivo software facilitated the systematic coding and organisation of data to ensure consistency and transparency throughout the analysis. Further discussion will be given in Chapter 3.

1.14 Population Sampling

The target population of the study comprises radiologists, radiology practice managers, and hospital administrators in the private sector in South Africa. Such stakeholders are the ones directly engaged in the operations and strategic oversight of radiology services, representing a relevant demographic for this study. The Radiological Society of South Africa (RSSA) has estimated that there are between 650 and 700 radiologists, 60% of whom work in the private sector, which translates to an estimated 390 to 420 radiologists per area (RSSA, 2023; Hodes, 2024:903). There are also approximately 200 to 300 radiology practice managers and hospital administrators supervising radiology operations in private organisations, such as Netcare, Life Healthcare, and Mediclinic (RSSA, 2023).

This study concentrated on a particular segment of the population in South Africa, ensuring that only individuals with sufficient experience and decision-making authority in radiologist-owned and hospital-owned practices were included.

1.15 Sampling Strategy and Participant Selection

This This study utilised a stratified purposive sampling strategy to select participants according to their professional roles and ownership context. Stratified purposive sampling involves deliberately selecting participants from predefined subgroups to ensure that diverse perspectives relevant to the research questions are captured (Palinkas et al., 2015). In this study, the two key strata were: (i) ownership model (radiologist-owned versus hospital-owned), and (ii) professional role, including radiologists, radiographers, practice managers, and hospital administrators.

A purposive study design was employed to recruit a targeted sample of approximately 12 participants, with representation evenly distributed across the two ownership models and across key professional roles. This sample size was determined by the principle of data saturation, which is the point at which no new themes, insights, or patterns emerge from additional data collection (Guest et al., 2006). In qualitative research, saturation is the gold standard for determining sample adequacy, and Guest and colleagues (2006) empirically demonstrated that saturation often occurs within the first 12 interviews in relatively homogeneous populations with focused research questions.

The final sample composition was as follows:

Four radiologists, evenly distributed across the two ownership models (two from radiologist-owned practices and two from hospital-owned departments). Radiologists were selected to provide clinical and strategic perspectives on operational practices, including decision-making autonomy, protocol development, quality assurance, and the interface between clinical and administrative functions.

Four radiographers, with two from each ownership model. Radiographers were included to offer frontline clinical perspectives on workflow efficiency, protocol adherence, staffing pressures, equipment utilisation, and the day-to-day realities of patient management and imaging procedures. Their insights are crucial for understanding how operational practices are experienced at the point of care delivery.

Two practice managers, one from each ownership model. Practice managers were selected to provide insights into administrative workflows, resource allocation, compliance management, financial sustainability, and day-to-day operational oversight. Their perspectives bridge the clinical and administrative domains.

Two hospital administrators, both drawn from hospital-owned departments. Hospital administrators were included to provide the institutional and corporate perspective on governance structures, strategic decision-making, policy implementation, and the integration of radiology services within larger hospital systems.

This stratified approach ensured that the sample captured the full range of relevant perspectives within each ownership model. It also enabled meaningful cross-case comparison, as each model was represented by participants occupying analogous roles. This enhances the comparative validity of the findings, as differences observed can be attributed to ownership structure rather than to uneven representation.

The inclusion of radiographers is particularly significant, as they represent the frontline clinical workforce directly responsible for image acquisition and patient interaction. Their perspectives on workflow efficiency, staffing pressures, and the practical implementation of protocols provide a crucial complement to the managerial and strategic viewpoints offered by radiologists, practice managers, and administrators. This multi-level perspective enriches the analysis and ensures that the findings reflect the full complexity of operational practices.

Participants were identified through professional networks, referrals from industry contacts, and publicly available institutional directories. Following ethics approval, formal email invitations were sent, including participant information sheets outlining the purpose of the study and reassuring prospective participants of its voluntary nature and confidentiality. Snowball sampling was also utilised, as initial informants referred others with relevant experience (Patton, 2015).

The sample size of 12 is consistent with established norms in qualitative case study research. Creswell and Poth (2018) note that qualitative samples are typically small because the goal is depth, not breadth. For multi-case studies involving two or more cases, a sample of 10 to 20 participants is often sufficient to achieve saturation and enable rich cross-case analysis (Miles, Huberman & Saldaña, 2014). The final sample of 12 participants, six per ownership model falls well within this recommended range.

Furthermore, the sampling strategy was guided by the study's theoretical framework. The Resource-Based View (Barney, 1991) requires access to participants who can speak to the strategic deployment of resources, which radiologists and managers are uniquely positioned to do. Institutional Theory (Scott, 2017) necessitates understanding how external pressures are experienced and negotiated, a perspective best obtained from those operating within institutional structures. Contingency Theory (Donaldson, 2001) requires insights into how organisations adapt to environmental demands, which is best captured through the lived experiences of frontline and managerial staff. The purposive sampling strategy ensured that participants were selected precisely because they could provide these theoretically relevant insights.

This sampling strategy facilitated a balanced, comparative analysis of ownership models, thereby enhancing data triangulation and ensuring that the findings are grounded in diverse yet complementary perspectives across both models.

1.16 Inclusion and Exclusion Criteria

In qualitative research, inclusion and exclusion criteria define the parameters of the study population for which participants are purposively sampled according to their relevance to the objectives of the research (Creswell & Creswell, 2018). Such inclusion criteria enable the focus, coherence and credibility of a study on who is included and excluded. The rationale for establishing explicit inclusion and exclusion criteria, according to Kumar (2019), is that any lack of conceptual and theoretical grounding further compromises methodological transparency, as well as providing a heuristic to ensure participant selection is consistent with the study’s conceptual and theoretical framework.

Inclusion Criteria:

- At least three years' experience in a relevant clinical or administrative radiology position.
- Active participation in decision-making or operational oversight.
- Employment in radiology departments owned by radiologists or hospitals within the private sector.

Exclusion Criteria:

- Employment in public sector radiology.
- Less than three years' experience.
- Individuals without strategic or managerial duties.

This approach ensured that all participants gained meaningful insights into how ownership models influence the operation of radiology services within South Africa's private health system.

1.17 Ethical Considerations

This study complied with the ethical standards of North-West University's Economic and Management Sciences Research Ethics Committee (NWU-EMS-REC). Ethical approval was obtained prior to data collection (Ref: NWU-00772-25-A-4). Participation was voluntary, and all participants provided written informed consent. Confidentiality and anonymity were preserved by using pseudonyms and removing direct identifiers from transcripts and reports.

All personal information was collected, stored, and processed in compliance with South Africa's Protection of Personal Information Act (POPIA). Audio files, transcripts, and consent forms are stored in encrypted, access-controlled repositories for the retention period specified by NWU policy, after which they will be destroyed after 5 years. Professional confidentiality obligations and ethical rules issued by the Health Professions Council of South Africa (HPCSA) are observed throughout (e.g., lawful bases for disclosure, data minimisation, and patient privacy).

1.18 Limitation of the Study

This study, like all research, has limitations that should be acknowledged. The qualitative nature of the inquiry means that findings are not statistically generalisable to all radiology practices in South Africa, although transferability is achieved through detailed contextual descriptions (Lincoln & Guba, 1985). The study relies on self-report data from participants, which is subject to recall bias and social desirability effects. The researcher's positionality as a practising radiographer adds interpretive insight but also introduces potential bias, which was mitigated through reflexivity and triangulation. Access constraints may have limited the diversity of cases included. A detailed discussion of these limitations, including strategies employed to mitigate them, is presented in Section 3.13.

1.19 Layout of the Chapters

Chapter 1 presented the introduction to the study, the background, problem statement, purpose of the study, and research questions. It contextualises the research within South Africa's private healthcare sector more broadly and emphasises the relevance of ownership models and how these influence operational practices in radiology. The significance, scope, and delimitations, as well as the theoretical framework and definitions of terms, were also addressed in this chapter. This chapter concludes with a description of the research structure and orientation.

Chapter 2 provides an overview of existing literature on ownership, governance, and efficiency in the healthcare industry globally, as well as within South Africa. The study reviewed theories such as Institutional Theory, Resource-Based View and Contingency Theory which were analysed to establish the conceptual framework of the study. In this chapter, empirical evidence was reviewed and scholarly debates and knowledge gaps were synthesised; the importance of the study was then justified. This chapter will present an integrated conceptual framework that guides the inquiry.

Chapter 3 elaborates on the research philosophy, design, approach and methods which guided the study in reaching its objectives. It explained why a qualitative research methodology was employed, defined the unit of analysis, and provided the inclusion and

exclusion criteria for participant selection. The chapter also provided an overview of data collection methods, sampling mechanisms and data analysis techniques. Validity, reliability, trustworthiness and ethical concerns were expanded upon to maximise methodological transparency and academic rigour while limiting bias.

Chapter 4 presents a discussion of the empirical data gathered. The methodology used is a thematic and interpretive analysis, emphasising themes and categories identified from the narratives of participants. Statements and descriptive excerpts from interviews are included to illustrate points based on factual evidence. This chapter contrasts the results of the two private ownership models (radiologist-owned versus hospital-owned radiology practices) based on the theoretical framework discussed in Chapter 2. It offers an analysis that draws on a story unfolding to reflect the extent to which ownership shapes operational decision-making, autonomy, and organisational performance.

Chapter 5 integrates the main findings and relates them to theoretical and empirical knowledge in previous chapters. It explored the research implications and described its theoretical significance, managerial practicability, and policy implications for the private healthcare sector in South Africa. The chapter reviews limitations, provides recommendations for future research, and presents practical suggestions that policymakers, hospital leaders, and professional organisations should consider improving the efficiency and governance of radiological services in South Africa.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of how models of ownership for radiology services have been conceptualised and links this to operational practices in private-owned and hospital environments. It examines the theoretical underpinnings of studies on healthcare ownership in the private sector, with a particular focus on radiology. Organisational

behaviour, health systems governance and institutional economics have all been explored to contribute to a firm grasp of ownership structures and their practical implications. Moreover, it has appraised the literature evaluating operational efficiency, service integration, and healthcare quality in diagnostic services, notably radiology.

This review has clarified specific research objectives and connected them to several theoretical frameworks. Studies from comparable healthcare markets and contexts relevant to South Africa's mixed health system have been prioritised. Policy reports, industry reports, and grey literature have been included where appropriate to support academic sources. The chapter identifies the gaps in the literature that highlight a lack of empirical evidence regarding the relationship between radiology service ownership in the South African private sector and daily operations, especially concerning resource allocation, staff deployment, turnaround times, and service quality.

The provision of radiological services is an important part of modern healthcare systems, supporting early diagnosis, treatment planning and continuous patient management. In South Africa's private hospital sector, the provision of radiological services mainly revolves around two ownership models: radiologist-owned practices and hospital-owned radiology departments (Sithole *et al*., 2023:2). Each model plays a vital role in determining operational efficiency, resource utilisation, and service quality. This chapter, as previously mentioned, presents a structured literature review examining the impact of these two ownership models on operational practices. The review is based on three key theoretical frameworks.

- The Resource-Based View (RBV), which emphasises how resource ownership and control affect performance (Barney, 1991),
- Institutional Theory, which explains how organisational behaviour is shaped by regulatory, normative, and cultural expectations (DiMaggio and Powell, 1983; Scott, 2014),
- Contingency Theory, which asserts that there is no one-size-fits-all approach to organisational effectiveness, structures and processes must fit environmental demands (Donaldson, 2001; Lawrence and Lorsch,1967).

The review is divided into four parts. Firstly, it conceptualises radiological services within the South African private health system. Secondly, it outlines the two main ownership models and their key features. Thirdly, it compares the operational implications of these models across important aspects, including workflow, turnaround times, staffing, and quality assurance. Finally, the chapter synthesises theoretical perspectives to interpret these findings, as highlighted in Table 2.1, the ownership structures that influence operational control concepts within radiology departments.

Table 2.1: Ownership models and operational priorities in private radiology

Dimension	Radiologist-Owned Practice	Hospital-Owned Department
Decision-Making Structure	Decentralised; clinician-led decisions at practice level.	Centralised; decisions routed through corporate or hospital hierarchy.
Resource Access	Limited to private funding or leasing; capital constraints common.	Institutional access to hospital capital budgets and procurement systems.
Workflow Control	Direct and agile; rapid adjustment to clinical demand.	Structured and protocol-driven; governed by hospital policies.
Quality Monitoring	Informal or internal; reliant on peer review and team culture.	Formalised protocols; scheduled audits and compliance tracking.
Financial Autonomy	Full autonomy: owners control revenue and expenditure.	Limited control: finances integrated into hospital systems.
Theoretical Linkage	Contingency Theory (agility in dynamic environments); RBV (tacit knowledge as strategic asset).	Institutional Theory (conformity to external norms); RBV (scale and infrastructure as resources).

Source: Author's own illustration (2025)

2.2 Conceptualising Radiology in South Africa's Private Health Sector

As a fundamental diagnostic discipline, radiology plays a vital role in the operation of contemporary healthcare services. In South Africa's private health sector, radiological services are typically offered either through independently owned practices run by radiologists or hospital-owned departments integrated into private healthcare facilities. Understanding the fundamentals of radiology within this dual system is crucial for grasping how ownership influences service delivery, efficiency, and clinical outcomes. This dual structure shapes how imaging capacity, technology, governance, and access are organised, funded, and experienced by patients and clinicians across radiology. One critical feature that drives all three areas of attention is the realisation that in South Africa, there is a 'dual system' of healthcare and laboratories, encompassing both public and private provision (Conradie *et al*., 2025:33).

This duality creates two separates, privately owned, and hospital-based radiology ecosystems that meet national policy aspirations for universal coverage through the National Health Insurance (NHI) and allied Healthcare Technology Assessment (HTA) processes (Conradie *et al*., 2025:33; Wilkinson *et al*., 2022:3). Simultaneously, sector dynamics, financing mechanisms, investment in imaging capacity, regulatory frameworks, and public-private coordination determine who has access to imaging, when, and how efficiently (Wilkinson *et al*., 2022:3; Govender *et al*., 2021:2). The literature from South Africa and comparable settings also highlights that radiology is not only a service at the clinical coalface, but rather one of several large-system levers impacting on throughput, equity and quality of care (with visible differences between image services with private hospitals and those in the public sector (Hundah *et al*., 2024:2; Boffa *et al*., 2019:817).

2.2.1 The Role of Radiology in Private Health Services

In South Africa, radiology departments are predominantly housed in private hospitals and private non-hospital imaging centres, with a wide array of ownership and governance structures that impact the nature of services rendered, the equipment needed, and the personnel employed. For instance, South African radiology departments shared their experiences in both public and private radiology practices, detailing operational problems,

delivery pressures, and collaborative dynamics within the radiology system during the COVID-19 pandemic in South Africa (Hundah *et al*., 2024:2). This study emphasises the existence of discrete unlinked radiology arms within private hospital contexts or private business entities, which at multiple levels contribute to image production and patient care within an overall heterogeneous system.

Patient access patterns and demand considerations also influence the role of radiology in private settings. In South Africa, sector analyses suggest that private facilities and pathways at the private sector interface interact with public sector needs, but private imaging is often utilised by those households able to pay out-of-pocket or through private health insurance. These dynamics may influence who, and under what circumstances, receives imaging. For example, studies on healthcare-seeking behaviour across the public and private sectors in South Africa's primary care system indicate the NHI reform agenda, which promotes contracting private sector providers into a centralised public healthcare system as a key policy measure to improve access and equity (Govender *et al*., 2021:2; Wilkinson *et al*, 2022:3). Literature on health system reform and public-private interaction in Southern Africa offers a broader perspective on how radiology services in the private sector are situated within the policy and financing context, including general models of public-private partnerships which can also impact radiology delivery (Whyle & Olivier, 2016:1517). The common denominator is that radiology in private healthcare is intertwined with and influenced by the ownership structures, financing methods, and policy objectives that determine access to imaging.

Although a substantial amount of strong South African radiology-specific supporting evidence is sector-neutral or hospital-based, benchmarking work on quality in private hospital radiology indicates that the dimensions of patient satisfaction and quality are as applicable in private radiology as they are in public radiology, and that private hospitals have embraced ways to improve the quality of their imaging services. This aligns with the broader literature on private sector health services, which examines the quality of private hospitals and the impact of accreditation and governance on image quality and patient safety (Fatimah *et al*., 2022:3847). Conversely, research on the acceptability and benefits of new radiology information sharing (electronic health record sharing of radiologic images) draws attention to opportunities for cross-sector data interoperability that could

enhance patient care whilst also exposing issues with data governance and privacy in the radiology workflow (Huang *et al*., 2025:2), an issue that is clearly pertinent if private imaging networks integrate with hospital information systems or reference centers.

2.2.2 The Dual Ownership Framework

The dual ownership model is also evident in radiology's ownership and investment approaches. In South Africa, these structures are primarily driven by private equity or corporate investments. The discourse on private equity in radiology clarifies how patterns of ownership influence operational priorities, cost structures, and physician work arrangements, thereby impacting access, prices, and quality in the provision of private-sector radiology services (Balesh *et al*., 2023:449). These ownership arrangements coexist with hospital-affiliated radiology units at private hospitals, where radiology departments are integrated into hospital governance, accreditation, and financial models. Collectively, these ownership arrangements constitute a dual framework in which private radiology capacity is distributed across independently owned imaging practices and hospital-owned radiology departments within a larger private-sector ecosystem (Hundah *et al*., 2024:3; Balesh *et al*., 2023:449).

Private radiology services in South Africa operate under two primary ownership models. This duality implies that radiology in South Africa can be delivered in either privately-owned facilities (independent imaging centres or private radiology groups) or hospital environments within private hospitals, each with distinct governance, funding streams, and strategic priorities, yet potentially interacting within shared patient care ecosystems.

Radiologists in private practice are often independent corporate entities with which personal or private hospitals have contracted to ensure that imaging is provided within the hospital (Huang *et al*., 2025:3). Their independence makes them clinically responsive but imperils economies of scale. By contrast, hospital-owned radiology departments are part of the organisation and are run by the hospital's management and operations teams. Radiologists may be employed or contracted, but management control lies with the hospital (Balesh *et al*., 2023:449). Every model has distinctive capabilities and limitations that affect workforce efficiency, investment in innovation, and the quality of care as described in Table 2.2 on page 30.

Table 2.2: Comparison between radiologist-owned and hospital-owned radiology models

Domain	Radiologist-owned	Hospital-owned
Clinical autonomy	High - direct radiologist control	Moderate - decisions routed through admin
Technology procurement	Limited - private funding required	Centralised - access to hospital capex
HR and staffing	Managed in-house or informally	Formalised - hospital HR systems
Billing and revenue	Independent billing by radiologists	Pooled within hospital revenue
Integration with IT	Varies by vendor capacity	Standardised hospital-wide PACS/RIS/HIS

Source: Author's own illustration (2025)

2.2.3 Sector Dynamics and Access

The dynamics of the private radiology sector in South Africa are primarily shaped by the reform trajectory, financial agreements, and capacity implications, which determine who can access imaging, to what extent, and how. Having developed the NHI reform agenda, HTA, and the local positioning of UHC, policy actions construct an environment in which the private sector operates and is expected to deliver essential imaging services, standardised in quality and governed. South African policy articles and reviews outline a policymaking architecture that attends to private-sector participation and to the fair assessment of technology, costs, and outcomes to drive policy for service coverage and contracting with private providers. In a study by Wilkinson *et al*. (2023:2), the policy architecture review affirms the importance of the HTA framework for assessing imaging technologies, procedures, and image-based services for inclusion in NHI coverage and for their operation in either privately owned or hospital environments.

Private sector investments in radiology capacity and access are part of the broader context of health reform and equity. A large proportion of health spending and care delivery is in the private sector, and policy discourses stress that the NHI will engage with private facilities as subcontractors to increase access to care while not sacrificing quality;

public-private contracting one framework for mobilizing private radiology resources for national goals when accompanied by well-designed and enforced governance and accountability (Govender *et al*., 2021:2; Wilkinson *et al*., 2022:3). Yet sectoral dynamics raise concerns about fairness and quality, meaning that private services continue to be monitored for their overall impact on service quality and whether access improvements do not undermine the broader needs of the public sector (Boffa *et al*., 2019:817). In the field of public-private engagement models, it is important to consider the incentives, the implementation of regulations, and the governance mechanisms used alongside public-private-partnership (PPP) arrangements in radiology services that drive or hinder access, efficiency, and quality benefits (Whyle & Olivier, 2016:1517).

2.3 Evolution of Radiology Ownership Models

Radiology ownership models have developed alongside changes in health service delivery, technology, and regulatory requirements. Historically, private radiology services were led by radiologist-owned practices, where clinician-entrepreneurs managed both clinical and administrative tasks. However, in the past two decades, there has been a notable shift towards hospital-owned radiology departments, especially within large private hospital networks aiming for vertical integration and cost management (Nguyen *et al*., 2021:2; Sithole *et al*., 2022:1). This section traces the historical evolution of these models, both globally and within South Africa, highlighting the institutional and economic factors that have driven the move from decentralised to integrated ownership.

2.3.1 Global Perspective

Radiology provides an interesting case in point, as a de facto diagnostic and imaging service across health systems worldwide, which has shifted from predominantly physician-owned private practices to more corporatised or hospital-integrated models of service delivery. This broader turn is reflected in the literature on the international corporatisation of healthcare, which traces the processes, impacts, and mediators of private-sector encroachment into hitherto physician-dominated spaces (Turner & Wright, 2021:309). The radiology aspect of this trend is made explicit in discourse about the impact on radiologists' professional autonomy and financial circumstances as ownership changes occur, with senior radiologists sometimes experiencing a financial windfall when

practices are sold to corporations (Turner & Wright, 2021:309). This illustrates a recurring phenomenon: consolidation of ownership, whether under corporate or private equity control, fundamentally changes the practice environment and the incentives for radiologists' career paths (Turner & Wright, 2021:310; Geyman, 2022:235).

In wealthy countries of Europe and North America, such as the US, Australia, and the UK (United Kingdom), radiology has historically operated as a private practice established by radiologists themselves. As equipment costs rose, imaging platforms became digital, and hospital consolidations increased through the years, more consolidation occurred within hospital systems. This development was driven by:

- Capital-intensive infrastructure (e.g. MRI, PACS).
- The pressure to connect radiology to the broader goals of hospitals.
- Regulatory requirements for standardisation and quality control.

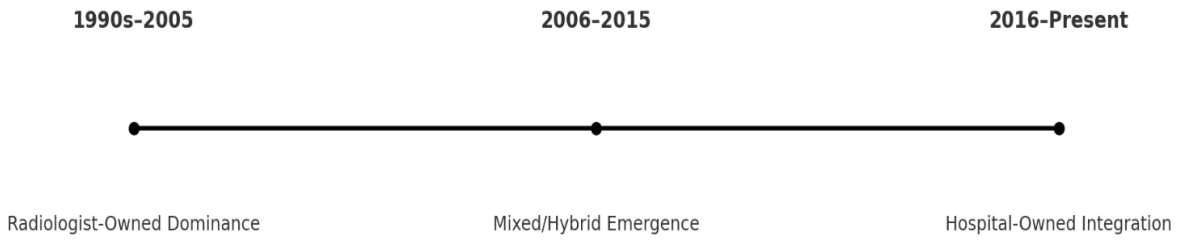
Despite this evolutionary trend, radiologist-owned practices still prosper in niche markets, such as outpatient imaging centres and specialised modalities, including interventional radiology and pediatric imaging (Marini *et al*., 2020:3).

2.3.2 South African Context

In South Africa, the evolution has mirrored global trends but with local particularities. During the 1990s and early 2000s, radiologist-owned practices dominated the private sector, operating on or near hospital premises under rental or service agreements. These practices held power over staffing, protocol formulation, and revenue collection (Kekana & Ngubane, 2025:3). Private hospital groups, such as Mediclinic and Life Healthcare, have, though, become more interested in integrating radiology departments in-house since about the mid-2010s. This entails purchasing or replacing independent radiology providers and integrating their services into the hospital's administrative structure. The strategic justifications include:

- Unified billing and reporting systems.
- Better management of imaging referral pathways.
- Stronger tie-in with hospital-wide information systems.

The 2023 purchase of Eugene Marais Radiology by Life Healthcare Group, one of South Africa's leading private hospital operators, is a good example. Following the integration of this radiology practice, the organisation now functions entirely within the internal imaging division of Life Healthcare, having previously operated independently by a group of radiologists at Life Eugene Marais Hospital. The move has integrated radiology into Life Healthcare's overarching imaging strategy, enabling standardisation, resource sharing, and centralised quality assurance as illustrated in Fig. 2:1. Although the acquisition improves access to infrastructure and operational consistency, it shifts decision-making power away from regional radiologists and towards broader institutional leadership, potentially straining regional clinical autonomy (Life Healthcare, 2023).



Source: Adapted from (RSSA, 2023; Sithole, 2022)

Figure 2.1: Evolution of radiology ownership models in South Africa.

- 1990s to 2005: Dominated by radiologist-owned practices.
- 2006 to 2015: Emergence of mixed/hybrid models.
- 2016 to Present: Increasing hospital ownership and integration.

2.3.3 Implications for Operational Practice

The evidence on governance for quality indicates that radiology services (public, private, hospital-integrated) are best served by standardised quality frameworks, transparent reporting, and governance structures that are accountable across ownership boundaries. A governance-for-quality approach could help align radiology practice across corporate and public hospital settings, facilitating alignment of interpretation standards, reporting processes, patient safety principles, and performance assessment, regardless of ownership (Klein *et al*., 2023:237). However, in a policy context such as South Africa's,

with its mixed-ownership environment, it is imperative to institutionalise cross-entity quality governance to address imaging safety, quality, and timely report delivery across the private and public sectors (Sheaff *et al*., 2019:777; Whyle & Olivier, 2023:1518).

In South Africa, where the market is concentrated and hospital-based imaging services are predominantly privately provided, access to imaging, pricing, investment in medical image production, and capacity for image interpretation are likely to be shaped by private providers' control over decisions governing access and investment. Results from the Health Market Inquiry supported evidence on inefficiencies in the private sector, concurrently resulting in suboptimal utilisation of resources or access inequities when not governed (Solanki *et al*., 2022:3; Erasmus & Theron, 2016:55). Operational leaders must set capacity planning that optimises demand heterogeneity and cross-subsidisation and ensures rapid access to imaging in the public sector; this should include shared targets for capacity, waiting times, referral networks where they can be used across institutions (Erasmus & Theron, 2016:55; Solanki *et al.,* 2022:3; Sheaff *et al*., 2019:777).

2.4 Operational Practices in Radiologist-Owned and Hospital-Owned Radiology Models

Operational practices in radiology include the daily clinical and administrative processes that enable the delivery of imaging services. These encompass patient scheduling and throughput management, workflow coordination across modalities, reporting turnaround times, equipment maintenance, staffing deployment, and adherence to quality assurance (QA) protocols. The structure and efficiency of these processes are heavily shaped by the ownership model of the radiology facility (Sithole *et al*., 2022:3). In South Africa's private health sector, two main ownership models exist: independent radiologist-owned practices and hospital-owned radiology departments, each cultivating a distinct operational culture with significant implications for agility, consistency, and clinical responsiveness (Sithole *et al*., 2022:3). The following sections analyse the operational features of each model and their effects on efficiency and service delivery.

2.4.1 Radiologist-Owned Practices

Radiologist-owned practices have decentralised decision-making and tight clinician supervision. As owners and service providers, radiologists often play a more directly involved role in workflow design, technology deployment, and service provision. This hands-on involvement allows for rapid adjustment to changes in patient load, referring physician preferences, and equipment outages (Jensen *et al*., 2023:2465). Operations in the radiologist-owned setting are generally lean and nimble.

Decisions about scheduling, protocol adjustments, or resource allocation can be made quickly on-site without requiring extensive administrative approval, which often leads to shorter turnaround times for urgent cases and a high degree of service customisation to meet referrer needs (Cameron & Nelson, 2020:1836). Because the radiologists themselves have a vested interest in the practice's success, they often prioritise service efficiency and quality of care; indeed, some studies have noted a positive link between physician ownership and service quality outcomes (Cameron & Nelson, 2020:1836). However, the autonomy and informality that grant these practices agility can also introduce variability. Without the umbrella of a large institution, independent groups must develop their own protocols and management systems, which may vary significantly from one practice to another (Sithole *et al*., 2022:4).

Resource constraints can also be burdensome. A small private practice, for instance, may have to budget for costly new imaging equipment with care and might also lack a deep bench of staff to call on when working extended hours. Still, many radiologist-owned practices are using their autonomy to be inventive and nimble. One of the well-regarded examples is Dr Verster & Partners in the Free State; for many years, run as a private partnership by radiologists, this practice gained a reputation for fast turnaround and local customisation. It was taken over by Mediclinic (a hospital group) in 2024, and it then 'medicalised' its operations in line with the facades of other affordable healthcare providers.

While the integration aligned the practice with standardised hospital protocols and broader national standards, it also curtailed the local clinical discretion that the radiologist-owners previously enjoyed. This example reflects a broader trend of consolidation, in

which some radiologist-owned groups are being incorporated into hospital networks to achieve greater uniformity and scale (Botha & Maritz, 2022). It highlights the operational trade-offs involved when transitioning from an independent to a hospital-owned radiology service model.

2.4.2 Private Hospital-Owned Practices

Radiology departments controlled by private hospitals operate within a centralised organisational structure and are part of the hospital as a whole. Operational counsel in this model is typically rooted in formal hierarchies and protocols codified by the hospital or health system. Patients scheduling, imaging protocols and quality control procedures are in accordance with hospital workflow and accreditation requirements (Botha & Maritz, 2022). This synergy is beneficial because hospital-based radiology departments already have a support structure in place. For instance, they are likely to be using hospital-wide enterprise PACS, an electronic health record, and standardised, structured quality assurance (QA) programmes and safety checks. The radiologists are usually hospital staff members, and the same applies to radiology personnel (radiographers, nurses, etc.), who may support resource sharing and collaboration among departments.

Generally, patients will experience a more standardised care in these set-ups since the opening times, fee structures and report formats match that of the hospital (Sithole et al, 2024:3). The inpatient setting can thus expand the reliability and breadth of service; for instance, a hospital-owned practice could readily offer 24/7 imaging coverage, if necessary, by drawing on the hospital's larger staff and technical resources. But even with a hospital-ownership system, centralised control may constrain the operating autonomy of the radiology department. Decision-making typically includes a number of levels of administration, which may postpone the making of changes.

The implementation of workflow changes or the introduction of new technologies usually requires approval from hospital management committees and associated budget allocations, thereby delaying responses to urgent needs (Botha & Maritz, 2022). In practice, that implies making room for an emergent after-hours scan or quickly calling in staff, all to meet the demands of an unexpected patient rush, is less facile in a radiologist-owned environment. Specific radiology departments based in hospitals indicate that

even though there is concern about the treatment timeline for more urgent imaging, a formal prioritisation process and/or interdepartmental clearance can delay the processing or scanning of these cases (Sithole *et al*., 2024:3)

Radiologists employed in hospitals often have limited involvement in administrative tasks, as many focus on clinical duties while executives and staff handle the business side. This situation results in a reduced sense of self-determination among radiologists (Sithole *et al*., 2024:3). Despite their busy schedules, hospital-owned practices excel at standardisation and adherence to high-quality, safety protocols. However, this efficiency and uniformity can come at the cost of some agility compared to a private practice model run directly by doctors.

2.4.3 Comparative Summary of Operational Practices

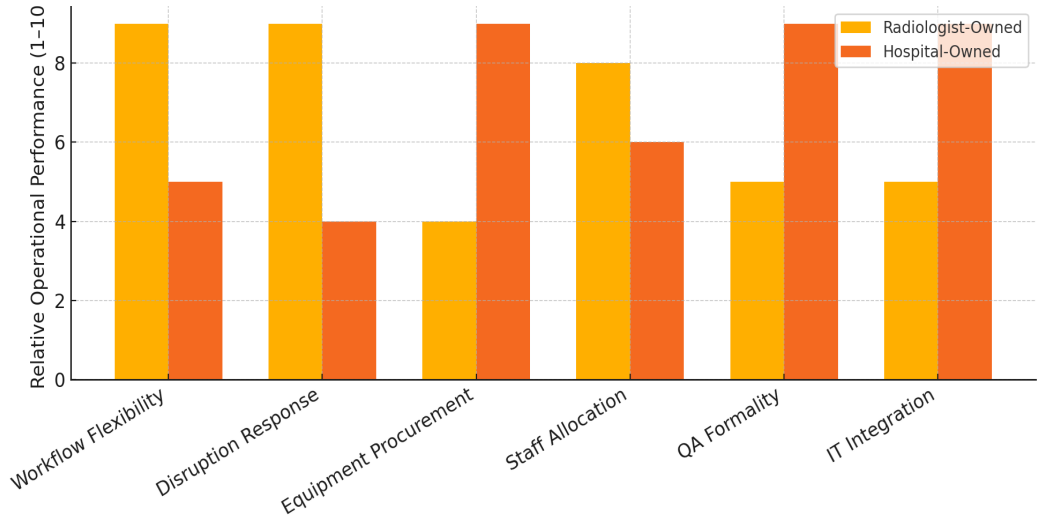
There are differences between radiologist-owned and private hospital-owned radiology models in terms of their operational strengths and weaknesses. A radiologist-run practice has agility and personal service to the fore: lean, owner-led management responding quickly to patients and referrers results in faster turnaround times, as well as innovative workarounds devised close to home. However, this framework can create complexities and constraints with limited resources and variations across independent practices, where protocols have been developed to a lesser degree and support systems may not be as robust as in larger organisations.

A private hospital-owned radiology practice, by contrast, benefits from scale, continuity, and integrated support. Standardised protocols are in place for patients and referring clinicians; all records are centralised, and quality control is strict within these hospital departments. Hospital ownership influence is most noticeable in daily management and in the provision of institution-wide resources. However, this sameness and bureaucratisation can also delay quick responses: if on-the-ground changes are needed in hospital radiology, there is often a slower response from the chaotic image-maker to unexpected or urgent needs; everything must be processed through the authority-control system (Sithole *et al*.2024:3; Botha & Maritz, 2022).

Neither model is inherently ‘superior’ in all respects, but each optimises a different aspect of operations. Radiologist-owned practices emphasise nimbleness and physician independence, while private hospital-affiliated practices stress consistency, integration and scalable quality assurance. Recognition of these trade-offs is imperative, as they illustrate how ownership designs affect the efficiency, quality, and flexibility of radiological service provision. This comparison-type perspective paves the way for prospective analysis of the impact of such models on patients’ outcomes and strategic decisions within radiological departments.

2.4.4 Comparison of Key Operational Domains

Figure 2.3 and Table 2.3 on 39 summarise the operational contrasts between the two models:



Sources: Adapted from Nguyen *et al.* (2023).

Figure 2.2: Relative Operational Performance

Table 2.3: Operational characteristics by ownership model

Domain	Radiologist-Owned	Hospital-Owned
Workflow Design	Locally managed, highly adaptable	Centrally managed, protocol-driven

Response to Disruptions	Rapid, on-site decisions by radiologist-owners	Slower, escalated through the management hierarchy
Equipment Procurement	Dependent on private funding and leasing	Funded through hospital capital expenditure
Staff Allocation	Flexible, shift-based; managed internally	Formal HR rostering; limited flexibility
QA and Protocols	Informal or clinician-led	Standardised, formalised hospital policies
IT Infrastructure	Variable; vendor-dependent	Integrated hospital-wide systems (e.g., PACS/RIS)

Sources: Adapted from (Sithole *et al*., 2022; Nguyen *et al*., 2021)

2.4.5 South African Case Example

In the Free State province, Mediclinic purchased Dr Verster & Partners Radiology during October 2024, owned by Dr Verster, Dr Malherbe and Dr JJ Smit. The practice was remotely managed from Bloemfontein by DR Van Dyk Management, which handled the administration, HR, and compliance for the business. Radiologists reported a high level of perceived autonomy to make decisions, including introducing or modifying niche services and reconfiguring services to serve local needs. When Mediclinic took over, the radiology department was absorbed into the larger organisational structure of the hospital. Although infrastructure, reporting platforms, and protocol standardisation were perceived as having advanced with hospital management, radiologists reported weakened autonomy related to equipment procurement and staffing reshuffling decision-making, as well as the development of services. Approval process now fed through chains of multiple layers of hospital administration, with the potential to slow down workflow changes or service escalation.

The transition illustrates broader consolidation trends within South Africa's private health service sector and underscores the trade-offs between operational flexibility and

institutional support inherent in different ownership models (Dr Unathi Ntja, HOD Radiologist, Welkom Mediclinic, personal communication, 2025).

2.5 Theoretical Framing

Contingency Theory (Donaldson, 2001:8) supports the understanding that radiologist-owned models are better suited for dynamic, variable environments where responsiveness and personalised workflows are essential. Hospital-owned models, by contrast, excel in high-volume, standardised settings where consistency and risk mitigation are emphasised. Institutional Theory (Scott, 2017:854) explains how departments conform to institutional norms, regulatory frameworks, and accreditation requirements, shaping how operational practices are organised and implemented.

Operational practices in radiology are significantly influenced by ownership. Radiologist-owned practices offer flexibility, responsiveness, and strong clinician-referrer relationships, but may lack adequate infrastructure and formalised QA systems. Hospital-owned practices, on the other hand, benefit from integrated systems and resource stability but can face bureaucratic inertia and less clinical discretion. Understanding these dynamics is essential for evaluating how ownership impacts efficiency, quality, and staff engagement in South African private hospitals.

2.6 Strategic Decision-making and Governance Structures

The structure of practice ownership and governance influences the strategic decision-making in radiology by balancing clinical needs with financial and operational limitations. In the context of radiologist-owned practices, ownership also concentrates strategic rights within physician groups, resulting in distinct governance dynamics that may separate strategy setting from implementation, leading to tensions between owners' objectives and the professional management team (Andersen, 2019:459). By contrast, hospital-owned radiology departments usually operate within multi-stakeholder governance systems that emphasise clinician-administrator cooperation, generally under shared governance structures that align patient care quality with organisational aims (Crooks *et al*., 2021:179).

This section examines how governance and decision-making differ between the two main ownership models in South Africa's private healthcare sector, and the subsequent effects on responsiveness, innovation, and organisational alignment.

2.6.1 Governance in Radiologist-Owned Practices

In radiologist-owned private practices, ownership tends to centralise strategic direction among physician owners or a physician-led board, with managerial execution falling to professional managers or clinical leaders. This split, owner-strategic goals versus manager-results implementation, aligns with corporate governance literature that characterises an overarching governance split which shapes strategic decision-making and performance (Andersen, 2019:459). In radiology, strategic direction may be driven by clinical values and market considerations emphasised by owners, while operational performance depends on executive leadership's management of resources, staffing, and service delivery (Andersen, 2019:460).

For example, decisions such as investing in an additional ultrasound unit, adjusting radiographer shifts, or launching a breast imaging sub-speciality can be made within days based on clinical need and patient volume. However, these decisions might lack formal business risk assessments or strategic alignment processes due to limited managerial capacity.

2.6.2 Governance in Hospital-owned Radiology Departments

Formal shared governance models are typically used in hospital-owned radiology departments. They integrate clinicians and administrators to create harmony between the excellence of clinical care and the effectiveness of the organisation. Shared governance practices promote collaborative decision-making, and studies show that involving clinical voices in organisational decisions can shape priorities and outcomes (Crooks *et al*., 2021:179). Within radiology, this would require establishing mechanisms to strategically consult physicians and clinical leaders on policies, equipment investments, and quality initiatives.

Shared governance can support safety and quality objectives within hospital radiology. For instance, studies have shown that including diverse voices in decision-making can enhance decision-making legitimacy and health outcomes (Crooks *et al*., 2021:179). Teaching clinical managers governance competencies can support sound decision-making (Abdelaliem *et al*., 2025:3). Studies highlight the danger of intentional blind spots in boards and the need to monitor patient safety and quality metrics alongside financial considerations (Mazutis *et al*., 2022:3).

This centralisation can aid in integrating departments, forecasting long-term budgets, and ensuring consistent compliance with corporate or national health policies. However, it can also reduce responsiveness to local clinical needs. Radiologists may only act in advisory roles, with limited authority over major decisions impacting their practice environment.

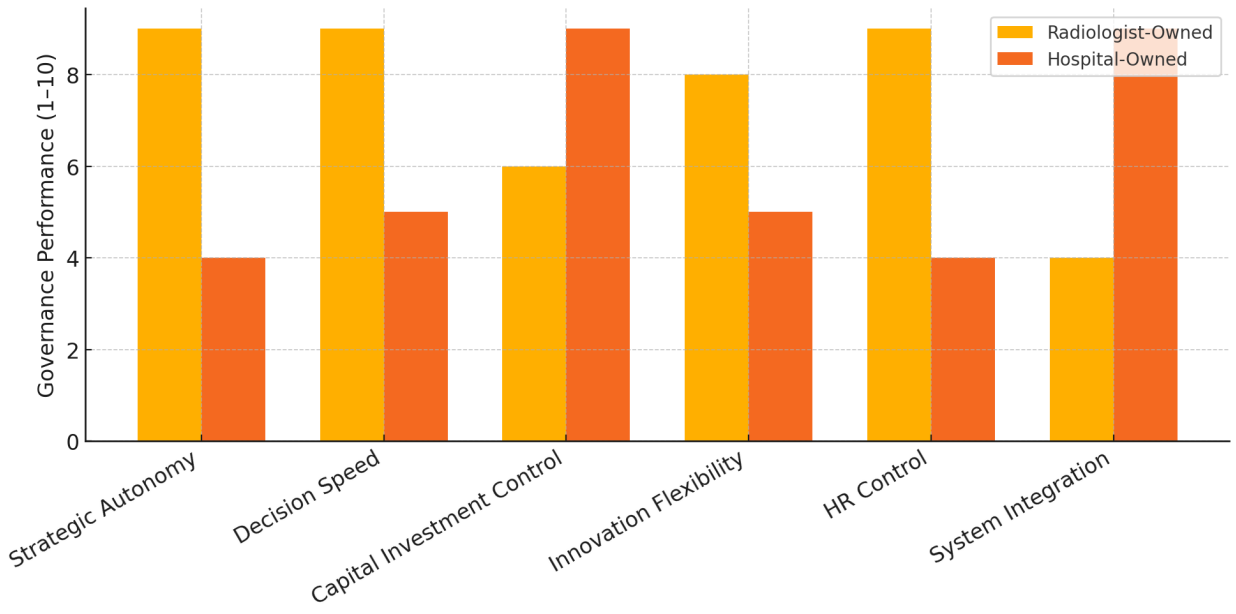
2.6.3 Comparative Governance Dynamics

The table below details the strategic governance features for both ownership models.

Table 2.4: Governance and decision-making comparison

Dimension	Radiologist-Owned	Hospital-Owned
Strategic Autonomy	High - clinician-led	Limited - executive-led
Decision Speed	Rapid and flexible	Slower, bureaucratic
Capital Investment Decisions	Owner-driven, subject to funding limitations	Institutional, aligned with hospital priorities
Innovation Approval	Informal, rapid adoption	Formal, delayed by approval processes
HR & Staffing Control	Direct and informal	Centralised via the HR department
Alignment with the Hospital	Independent, externally aligned	Fully integrated into hospital systems

Sources: Adapted from (Mintzberg *et al*., 2005); Nguyen *et al*. (2021)



Sources: Authors' own illustration (2025)

Figure 2.3: Governance and strategic decision-making comparison.

The graph shows the difference between radiologist-owned and hospital-owned models across six key governance areas. Radiologist-owned practices score higher in independence and adaptability, while hospital-owned models excel in system integration and capital infrastructure.

2.6.4 Theoretical Application in Context

The Resource-Based View (RBV) proposes that radiologist-owned models gain a competitive edge through implicit knowledge, specialised experience, and decision-making independence (Barney, 1991). These intangible assets facilitate quicker innovation and development of niche services.

Institutional Theory (Scott, 2017) explains the conformity of hospital-owned departments to corporate governance frameworks, often shaped by external expectations such as accreditation, investor oversight, and legal compliance.

Contingency Theory (Donaldson, 2001) suggests that in dynamic or uncertain environments, decentralised governance structures (such as those in radiologist-owned practices) are more adaptable, whereas centralised hospital-led governance is more effective in routine, high-volume settings.

Ownership structure plays an important role in the innovation of radiology practices. Radiologist-owned models are agile and responsive to clinical trends but have capital and scaling constraints. It is often true that hospital-owned models can drive system-wide innovation, but these models are also limited in their local relevance or flexibility. Understanding these dynamics will be vital in delivering technological uptake that balances patient needs and institutional imperatives in South Africa's private healthcare system.

2.7 Technology Adoption and Innovation

Technology adoption and innovation in radiology are central to diagnostic accuracy, efficiency, and patient satisfaction. Ownership structure significantly influences the pace, strategy, and flexibility of technology-related decisions. Radiologist-owned practices tend to prioritise agility and clinical innovation, while hospital-owned departments often operate within centralised frameworks that emphasise compliance, integration, and cost-efficiency (Bhargavan *et al*., 2009:459).

This section compares how radiologist-owned and hospital-owned models adopt new imaging modalities, software platforms, and digital tools, especially within the South African private healthcare context.

2.7.1 Innovation in Radiologist-Owned Practices

Radiologist-owned practices are often among the first to adopt new imaging technologies, especially in competitive urban markets. With clinicians directly involved in governance, innovation decisions are closely tied to clinical priorities and local patient needs. For example, a radiologist might independently approve the purchase of a portable ultrasound, an Artificial Intelligence (AI) triage tool, or a low-dose Computer Tomography (CT) scan upgrade based on identified clinical requirements.

These practices are particularly effective when innovation is needed for sub-speciality growth (e.g., musculoskeletal Magnetic Resonance Imaging [MRI] or breast imaging). However, financial constraints still pose a challenge. Without institutional capital, investments are usually financed through private funding or leasing, making large-scale upgrades difficult to maintain (Nguyen *et al*., 2023:3).

2.7.2 Innovation in Hospital-Owned Radiology Departments

Hospital-owned radiology departments benefit from centralised procurement and access to significant capital. They are often able to acquire cutting-edge technology (e.g., 128-slice CT, 3T MRI) and integrate it across multiple hospital sites using standardised vendor contracts. Infrastructural upgrades like enterprise PACS, structured reporting platforms, and teleradiology systems are typically well-supported.

However, innovation is often delayed by bureaucratic approval processes. Radiologists may have little influence over vendor selection or the implementation schedule. Additionally, innovation tends to follow corporate-wide strategies rather than being customised to specific site needs (Nguyen *et al*., 2023:3).

2.7.3 The South African Context - Radiology

In South Africa, both models have strengths and weaknesses. Introduction of AI-enabled chest X-ray screening was conducted in a radiologist-owned practice in Bloemfontein, which implemented it earlier than multiple hospital sites, driven by radiologists' initiative and general practitioners' demand. In contrast, hospital-owned radiology site implementations in Netcare and Mediclinic have deployed end-to-end PACS systems and mobile reporting solutions at regional hospitals, enhancing users' experiences but with limited scope for local feature personalisation. This contrast points to larger issues about what motivates innovation, i.e., clinical need or system homogenisation.

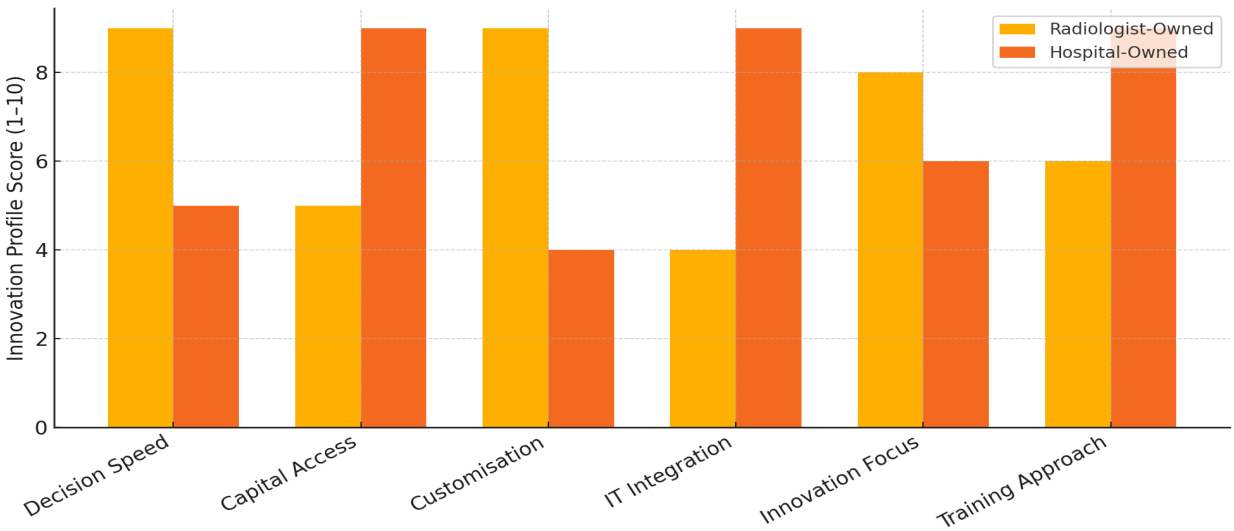
2.7.4 Comparative Summary of Innovation Domains

Table 2.5: Technology and innovation comparison by ownership type

Domain	Radiologist-Owned	Hospital-Owned
Decision Speed	High - clinician-led	Moderate – subject to central approval
Capital Access	Limited - private investment	High - hospital-funded
Customisation and Flexibility	High - localised decision-making	Low - standardised across sites
Integration with IT Systems	Variable - vendor-dependent	High - system-wide integration
Innovation Focus	Patient-driven and niche-oriented	Strategic alignment with hospital objectives
Training and Rollout	Informal - peer-led	Formalised - HR and IT support teams

Sources: Adapted from (Nguyen *et al*., 2023)

Figure 2.5 compares radiologist-owned and hospital-owned radiology practices across key innovation domains. Radiologist-owned models lead in speed, customisation, and clinician-driven innovation, while hospital-owned models excel in integration, capital access, and structured training.



Sources: Author's own illustration (2025)

Figure 2.4: Key innovation domains

2.8 Operational Efficiency and Resource Allocation

Operational efficiency in radiology pertains to the effective utilisation of resources, including time, personnel, equipment, and infrastructure, to provide high-quality imaging services. Resource allocation involves strategic decisions on how these inputs are distributed across departments, modalities, and timeframes. These factors are heavily influenced by ownership models, which affect workflow design, budgetary authority, and responsiveness to change (Nguyen *et al*., 2023:2).

In the South African private healthcare sector, where demand for imaging remains high but resources are unevenly spread, ownership structures directly influence how radiology practices balance clinical quality with operational sustainability.

2.8.1 Efficiency in Radiologist-Owned Practices

Radiologist-owned practices often demonstrate greater agility in daily operations. With decentralised governance, clinical leaders can make rapid decisions about staff scheduling, protocol modification, and equipment use. This model supports tailored service delivery, particularly in dynamic environments such as trauma centres, peri-urban clinics, and specialist referral hubs.

For instance, if a general practitioner increases obstetric referrals, a radiologist-owner might adjust the ultrasound schedule or expedite sourcing a high-resolution probe without awaiting board approval. This kind of responsiveness helps reduce turnaround times (TAT) and enhances communication between clinicians and referrers.

However, operational efficiency in radiologist-owned practices may be limited by tight budgets, smaller staffing pools, and manual reporting systems. These limitations can cause workflow inconsistencies during busy periods or when staff are absent.

2.8.2 Efficiency in Hospital-Owned Radiology Departments

Hospital-owned models benefit from standardised systems and access to support departments such as finance, HR, and biomedical engineering. Centralised procurement and resource sharing across departments often result in improved infrastructure, more consistent equipment maintenance schedules, and adherence to quality assurance (QA) protocols (Nguyen *et al.*, 2023:2).

These departments usually depend on enterprise-wide PACS/RIS systems, formal staffing policies, and clear escalation procedures for workflow disruptions. However, their responsiveness is often limited due to rigid organisational hierarchies. Changes to scanning hours, protocol updates, or temporary staff redeployment may need approval at multiple levels. In some cases, operational rigidity results in resource underutilisation, especially when modality allocations are fixed and do not reflect real-time demand (Scott & Cunningham, 2022).

2.8.3 Comparative Case Reflection - South African Context

At RH Matjhabeng in Welkom, the hospital-owned radiology department benefits from PACS connectivity and structured Quality Assurance (QA) routines. However, local radiographers report that urgent CT requests from orthopaedic surgeons are sometimes delayed due to interdepartmental clearance policies.

Conversely, a radiologist-owned facility in Bloemfontein manually allocates overtime shifts and adjusts imaging protocols in response to referrer feedback (Table 2.6).

Although less structured, this system results in quicker patient handling in time-sensitive cases but puts pressure on small teams and informal rostering systems.

2.8.4 Theoretical Application in Context

Contingency Theory (Donaldson, 2001) states that operational structure must align with environmental demands. Radiologist-owned practices perform well in variable, high-touch settings due to adaptable decision-making. Hospital-owned models are better suited to high-volume, standardised care environments where consistency and adherence to protocols are essential.

Institutional Theory (Scott, 2017) speaks to how hospital-owned departments can align with broader institutional expectations, such as accreditation, regulatory compliance, and board oversight, which affect resource allocation. Radiologist-owned practices tend to operate more independently but with less institutional support.

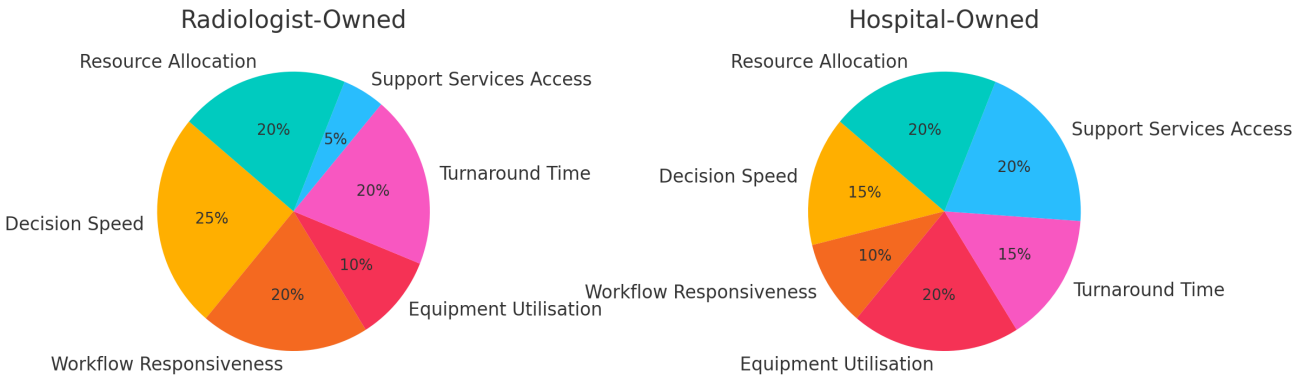
Table 2.6: Operational efficiency and resource allocation comparison

Factor	Radiologist-Owned	Hospital-Owned
Decision-Making Speed	High - localised and clinician-led	Moderate - subject to administrative review
Workflow Responsiveness	Agile - shifts and schedules adjusted rapidly	Standardised - based on HR templates
Equipment Use	Optimised for clinical priorities	Allocated via budget planning
Turnaround Time (TAT)	Shorter, variable	Consistent but slower in urgent cases
Support Services Access	Limited - outsourced or informal	Highly-integrated technical/HR/QA units

Resource Allocation	Flexible, reactive	Pre-planned, policy-driven

Source: Adapted from Nguyen *et al.* (2021)

These graphs illustrate estimated proportional focus on key efficiency areas in radiologist-owned versus hospital-owned radiology practices. Radiologist-owned models emphasise speed, responsiveness, and flexible allocation, while hospital-owned models place greater emphasis on support services and standardised equipment utilisation.



Source: Author's own illustration (2025)

Figure 2.5: Operational efficiency distribution by ownership model

2.9 Quality Assurance and Clinical Governance

Quality assurance (QA) and clinical governance are essential components of radiology practice, ensuring that imaging services are safe, precise, efficient, and in accordance with ethical and regulatory standards. These functions include routine equipment checks, radiological peer review, protocol adherence, audit cycles, error reporting, and clinical oversight (Scott & Cunningham, 2022). The ownership structure directly shapes the governance framework and quality management systems, influencing how quality is defined, monitored, and enforced.

2.9.1 Quality Assurance in Radiologist-Owned Practices

Radiologist-owned practices often implement practical, clinician-led QA mechanisms. Because of their relatively small size and close-knit teams, these practices might employ

informal review methods such as daily peer discussions or immediate feedback during reporting. For example, when anomalies or errors are identified during double reads, the issue is typically escalated immediately to the radiologist involved. This encourages direct accountability and swift resolution, which can improve learning and minimise reporting errors. However, these practices might lack formal audit trails, structured incident reporting systems or dedicated QA personnel. While flexibility is a strength, the absence of formal oversight can expose the practice to medico-legal risks, particularly if compliance with statutory or professional standards (e.g., HPCSA or RSSA guidelines) is not properly documented (RSSA, 2023).

2.9.2 Quality Assurance in Hospital-owned Radiology Departments

In contrast, hospital-owned radiology departments operate within formal governance frameworks. QA processes are institutionalised, involving scheduled audits, standard operating procedures (SOPs), and centralised reporting systems. These departments often have dedicated QA coordinators, risk managers, and IT-supported compliance dashboards (Nguyen *et al*., 2023:3).

Standardisation across hospital departments ensures that radiology services align with hospital-wide clinical governance strategies, including infection control, radiation safety, and interdisciplinary review boards. While this system reduces variability and complies with national accreditation standards (e.g., COHSASA), it can also create bureaucratic inefficiencies. For example, resolving a repeated image quality concern may require input from radiology leadership, radiographers, PACS administrators, and QA personnel, which can extend the resolution timeline. Despite this, the structured documentation improves accountability and readiness for external audits.

2.9.3 Comparative Insight - South African Practice Environments

Variation exists, especially in private healthcare settings in South Africa. A radiologist-owned practice in Estcourt might conduct QA through modality-focused weekly checks with radiographers, supplemented by occasional clinical advice from radiologists. At a hospital such as Mediclinic Bloemfontein, however, radiology QA is embedded within the

broader clinical governance framework, which includes monthly updates, safety drills, and standard KPIs communicated to central headquarters.

2.9.4 Theoretical Application in Context

Institutional Theory (Scott, 2017:856): Hospital-owned departments are influenced by external regulations, accreditation standards, and institutional norms. QA systems are put in place not only for internal control but also to convey legitimacy to funders, partners, and regulators.

Contingency Theory (Donaldson, 2001:9): QA structures (see Table 2.7 on page 52) must align with the organisational context. In stable, high-throughput environments, structured QA proves more effective. In high-variability, niche environments, clinician-led adaptive QA may outperform rigid systems.

Resource-Based View (RBV) (Barney, 1991:645): Radiologist expertise in quality interpretation is a distinctive internal resource. Exploiting this tacit knowledge can become a competitive advantage in radiologist-owned practices if it is systematically captured and refined.

Table 2.7: Quality Assurance (QA) and governance features by ownership model

Dimension	Radiologist-Owned	Hospital-Owned
QA Structure	Informal, clinician-led	Formal, policy-driven
Incident Reporting	Ad hoc	Institutionalised
Audit Frequency	Variable	Scheduled and enforced
Peer Review	Frequent but informal	Structured, documented
Risk Management	Reactive, experience-based	Proactive, systematised

Compliance Monitoring	Self-managed	Overseen by the hospital QA unit

Source: Adapted from Nguyen *et al*. (2021)

2.10 Patient-Centred Service and Access to Care

Patient-centred care is a fundamental principle of current health service delivery that highlights accessibility, responsiveness, dignity, shared decision-making and continuity of care (Epstein & Street, 2011:101). In radiology, patient-centredness refers to how imaging services are scheduled, communicated, delivered and followed up. The ownership structure influences not only how patients interface with these services but also how specifically these services are designed to take local needs and contexts into focus.

2.10.1 Patient Engagement in Radiologist-owned Practices

Radiologist-owned practices often adopt a personalised approach to care. The proximity of decision-makers (i.e., radiologists themselves) allows for flexible scheduling, quicker feedback to referring doctors, and better accommodation of patient preferences. These practices often serve patients in close-knit communities or specific medical networks, where word-of-mouth reputation and responsiveness influence patient loyalty (Jensen *et al*., 2023; RSSA, 2023).

Advantages include:

- Same-day or walk-in imaging services
- Radiologist availability for direct patient consultation
- Customised protocols for recurring or high-risk patients
- Closer rapport with referring general practitioners (GPs) and specialists

However, radiologist-owned models may lack dedicated patient liaison staff, multilingual communication materials, or extended service hours. Their ability to expand access is also limited by capital constraints and workforce availability, especially in semi-rural or under-resourced urban areas (Nokulunga, 2022:3).

2.10.2 Access and Patient Pathways in Hospital-owned Models

Hospital-owned radiology departments commonly operate within centralised systems that support wider patient flows. These environments benefit from integrated hospital records, coordinated appointment scheduling, and structured patient education protocols. Access to care is formalised through standardised referral procedures, often governed by internal hospital policies (Nguyen *et al*., 2023:3).

Advantages include:

- Strong alignment with inpatient and emergency pathways
- Interpreter services and disability-friendly environments
- Cross-referral efficiency across departments (e.g., oncology, surgery, trauma)
- Better access to advanced modalities (MRI, CT, mammography)

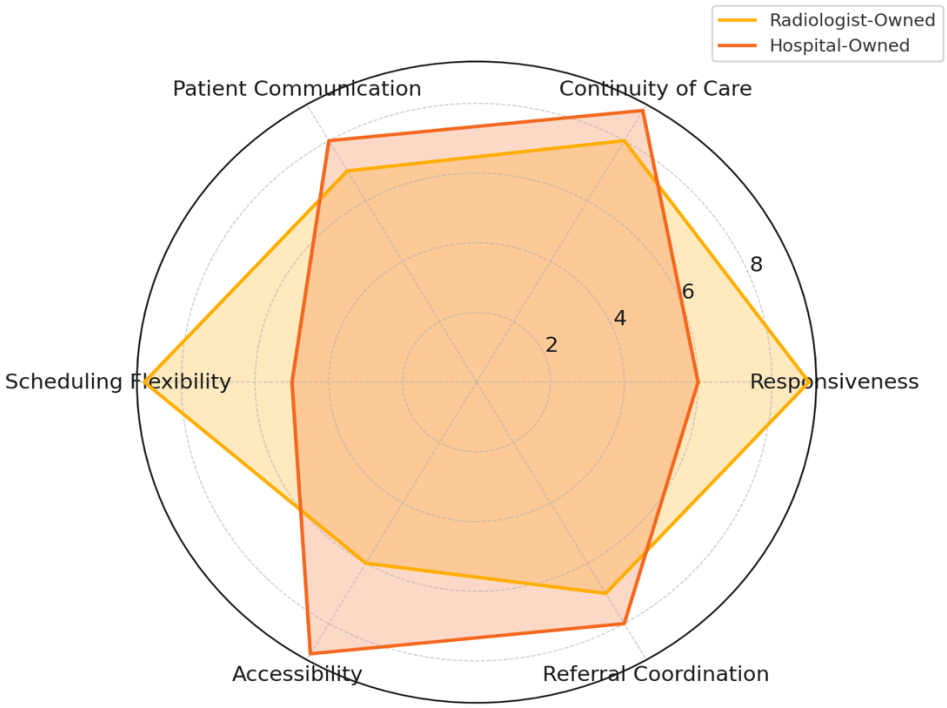
However, patients may experience delays due to longer queues, rigid appointment slots, and lower individual clinician accessibility. In some cases, the impersonal nature of large hospital systems may reduce patient satisfaction, particularly for diagnostic procedures that involve anxiety or physical discomfort (Scott & Cunningham, 2022).

2.10.3 South African Contextual Insights

In South Africa's private health care system, inequalities in access to radiology services remain significant. Radiologist-owned practices have historically filled gaps in peri-urban and rural areas of the country that lack large hospitals. Razo Health Radiology in Estcourt, for instance, serves patients from nearby small towns by accommodating walk-ins and tailoring protocols to resource-limited patients. In contrast, patients at hospital-owned facilities might gain faster access to advanced imaging but face burdensome administrative hurdles. This dichotomy is particularly acute in provinces such as the Free State and KwaZulu-Natal, where spatial disparities in radiology availability showcase broader challenges in healthcare access (Bateman *et al*., 2021:52).

Figure 2.6 compares radiology practices owned by radiologists and by hospitals across six core patient-centred domains. Radiologist-owned practices score higher in

responsiveness and flexibility, while hospital-owned departments perform better in structured continuity and referral coordination.



Source: Author's own illustration (2025)

Figure 2.6: Patient-centred care dimensions across ownership models

2.10.4 Theoretical Application in Context

Institutional Theory suggests that hospital-owned models are more likely to adhere to national quality frameworks and patient rights charters but may overlook local nuances or cultural preferences (Scott, 2017). Contingency Theory argues that in variable patient environments, such as remote communities or transient patient populations, decentralised, clinician-led models are better suited to deliver tailored, empathetic care (Donaldson, 2001). Resource-Based View (RBV) emphasises that patient rapport, reputation, and trust can be intangible assets in radiologist-owned models, giving them a strategic advantage in markets where service differentiation is significant (Barney, 1991).

Ownership structures greatly influence the patient experience in radiology. While hospital-owned models offer organised access and advanced technology, radiologist-owned practices provide flexibility, responsiveness, and closer relationships. Both models face challenges in delivering comprehensive, patient-centred care across all settings. In South

Africa, where geographic and socio-economic disparities exist, finding a nuanced balance between institutional scale and personalised care remains crucial.

2.11 Theoretical Framework Integration and Literature Gaps

This section integrates the theoretical lenses used throughout the literature review, Resource-Based View (RBV), Institutional Theory, and Contingency Theory, to frame the comparative insights gained from studying radiologist-owned and hospital-owned radiology models in South Africa's private health service sector. It also highlights critical gaps in the literature that justify the empirical component of this research.

2.11.1 Resource-Based View (RBV)

According to the Resource-Based View (Barney, 1991), a sustainable competitive advantage is achieved by exploiting unique internal resources. Clinically based aspects of delivery, such as clinical directives, patient acclimation, turnaround times, and agility in integrating new technologies, can be part of the radiology equation. Tacit knowledge, the clinician's reputation, and flexible service are used by radiologist-owned practices to target market share. Leveraging these intangible assets, small practices can build strong referral networks and respond rapidly to local needs.

Hospital-owned departments, meanwhile, leverage tangible resources such as PACS infrastructure, institutional capital, and structured human resource support. Their advantage lies in scale, stability, and access to multidisciplinary teams. However, the literature does not thoroughly examine how this differing resource configurations affect long-term sustainability, staff retention, and the diffusion of innovation, particularly in middle-income country settings such as South Africa.

2.11.2 Institutional Theory

According to Institutional Theory (Scott, 2017), organisations tend to accept dominant norms, regulations, and external pressures to legitimate themselves. Radiology departments owned by hospitals, particularly those in a hospital network (e.g., Mediclinic, Netcare), have greater 'care' influence through accreditation requirements, corporate governance policies, and formal accountability mechanisms. Such limitations increase

the level of standardisation but diminish clinicians' autonomy. Radiologist-owned practices, with more freedom from institutions but less accountability for compliance systems, may be underinvested or defer compliance investments, instead relying on earmarked approaches, leading to either a pro-regulatory blind spot or potential medico-legal issues later. But what has been underexplored is the impact of institutional pressures on clinical decision-making, particularly when local service realities (such as staffing crises or delivery delays) conflict with directives from head office or national guidelines.

2.11.3 Contingency Theory

Contingency Theory (Donaldson, 2001) posits that the effectiveness of an organisation depends on how its internal structures align with external conditions. This theory explains why no single ownership model is universally superior. In unstable, referral-driven, or sub-specialist settings, radiologist-owned practices perform better than others through their agility and responsiveness. In contrast, in high-throughput, regulated hospital settings, hospital-owned models are especially suitable due to consistency, economies of scale, and multidisciplinary integration. The literature lacks comprehensive empirical studies comparing ownership models across different service environments (e.g., rural versus urban hospitals, general versus specialised imaging) in South Africa, which this study directly addresses (see Table 2.8 on page 57).

Table 2.8: Summary of key literature gaps

Gap Area	Summary
South African Context	Most studies are based on U.S. or European models; South African private radiology dynamics are underrepresented.
Operational Outcomes	Limited data comparing actual KPIs (e.g., TAT, error rates, innovation uptake) between ownership models.
Theoretical Application	RBV and Contingency Theory are rarely applied to radiology service structures in middle-income settings.
Institutional Pressures	Few studies evaluate how hospital protocols affect radiologists' decision-making or service flexibility.

Patient-Centredness	Lack of comparative insight on how ownership models shape the patient experience in diagnostic imaging.

Source: Adapted from RSSA (2023)

The ownership of radiology services contributes significantly to strategic decision-making, operational efficiency, quality assurance, innovation capacity, and patient experience. Regardless of whether radiology services are owned by radiologists or hospitals, each model has its own strengths and limitations, best explained in a layered theoretical framework. While the international literature offers critical insights into what is happening, there is scarce research on South Africa that operationalises the above frameworks to reflect local processes in private radiology service provision. This gap in the literature underscores its importance and authenticity for the present research, which seeks to generate practical knowledge for practitioners, hospital managers, and policymakers.

2.12 Summary of the Chapter and Literature Gap

This chapter has provided a comprehensive review of the literature on healthcare ownership models and their relationship to operational practices, with a specific focus on radiology services in private hospital settings. The purpose of this summary is to synthesize the key insights from the literature, clarify the conceptual foundations of the study, and explicitly identify the gap that this research is designed to address.

2.12.1 Defining the Key Variables

Before synthesizing the literature, it is essential to clarify the two key variables that form the focus of this study.

The independent variable is the ownership model of radiology services. Within South Africa's private healthcare sector, two dominant ownership models exist. The first is the radiologist-owned practice, where clinically led, independent entities controlled by radiologists manage both clinical operations and strategic direction. These practices are characterized by professional autonomy, direct clinician involvement in decision-making, and financial independence. The second is the hospital-owned department, where radiology services are integrated into larger corporate hospital groups and operate within

formalized institutional hierarchies. These departments are governed by hospital policies, benefit from centralized resources, and are subject to corporate oversight (Sithole et al., 2022; Nguyen et al., 2021).

The dependent variable is operational practices, which encompass the day-to-day procedures, decision protocols, and workflows that healthcare facilities utilize to ensure the delivery of high-quality and timely health services (Slack & Brandon-Jones, 2022). For the purposes of this study, operational practices are conceptualized as comprising five interrelated domains: workflow efficiency (measured by turnaround time, patient throughput, and equipment utilization); decision-making autonomy (the speed of decisions and level of staff discretion); quality assurance (formal protocols, audit frequency, and regulatory compliance); innovation and technology adoption (the capacity and speed of adopting new technologies or modifying protocols); and patient management (scheduling flexibility, communication processes, and responsiveness to feedback).

2.12.2 Theoretical Framework

This study is guided by three complementary theoretical perspectives that together provide a multidimensional lens for understanding the relationship between ownership models and operational practices.

The Resource-Based View (RBV) , developed by Barney (1991), posits that organizations achieve competitive advantage by strategically deploying their valuable, rare, inimitable, and non-substitutable resources. In the context of this study, RBV provides a framework for examining how ownership models shape access to and control over key resources. Radiologist-owned practices may leverage intangible resources such as tacit clinical knowledge, professional reputation, and decision-making agility. Hospital-owned departments, by contrast, may capitalize on tangible resources such as advanced technology, economies of scale, and structured human resource systems. RBV helps explain how these differing resource configurations influence operational efficiency and innovation capacity.

Institutional Theory, as articulated by DiMaggio and Powell (1983), explains how organizations are shaped by external pressures, regulatory, normative, and cultural, that lead to isomorphism within organizational fields. This theory is essential for understanding how external forces, such as HPCSA regulations, accreditation standards, and the impending National Health Insurance (NHI) reforms, influence operational practices. It helps explain why hospital-owned departments may prioritize formal compliance and standardization, while radiologist-owned practices may exhibit greater variance in their responses to institutional pressures.

Contingency Theory, developed by Lawrence and Lorsch (1967), suggests that there is no single best way to organize; rather, organizational effectiveness depends on the alignment between internal structures and external environmental demands. This theory is critical for understanding why different ownership models may be optimally suited to different contexts. The agility of radiologist-owned practices may be better suited to dynamic, low-volume, or specialized environments, while the structured stability of hospital-owned departments may be more effective in high-volume, regulated settings. Contingency Theory directly informs the analysis of operational flexibility, responsiveness, and adaptability under varying conditions.

Together, these three theories provide an integrated framework for investigating how ownership structures shape not only system operations and decision-making but also innovation, resource allocation, quality assurance, and patient-centred care.

2.12.3 Literature Synthesis by Research Objective

The literature reviewed in this chapter was organized around the study's core research objectives, revealing both what is known and what remains unexplored.

Objective 1: To compare workflow efficiency and service delivery across ownership models.

The literature indicates that ownership structure significantly influences workflow design and responsiveness. Internationally, radiology services embedded in hospital systems tend to exhibit more bureaucratically cumbersome workflows due to centralised decision-

making, while independent, radiologist-owned systems benefit from greater flexibility and adaptability (Slack & Brandon-Jones, 2022). However, centralisation can offer advantages in standardisation, risk management, and regulatory compliance (Porter & Teisberg, 2006). In the South African context, studies have documented operational challenges in private hospitals, including resource constraints and staff shortages, but have not systematically compared how these challenges manifest differently across ownership models (Porter & Teisberg, 2006).

Objective 2: To explore variances in decision-making autonomy and governance.

The literature on governance structures reveals that physician-owned entities tend to prioritize clinical autonomy and patient-focused decision-making, while corporate ownership privileges efficiency and profit maximization (Cutler, 2022; Scott, 2013). In radiology specifically, research suggests that radiologists in hospital-owned settings frequently encounter managerial constraints that impact diagnostic turnaround and innovation (Schoeman, 2023). However, these studies do not systematically compare the degree of autonomy across ownership models within a single healthcare market.

Objective 3: To identify operational challenges and opportunities within each model.

The literature identifies several challenges common to private radiology services, including resource allocation inequalities, staff retention difficulties, and reliance on imported medical technologies (Porter & Teisberg, 2006). Studies in South Africa have highlighted concerns about operational governance and clinical leadership (Madlala et al., 2021), but these analyses do not disaggregate findings by ownership structure. Similarly, research on operational integration within private hospitals (Sithole et al., 2022) falls short of comparing radiologist-owned and hospital-owned entities as distinct organizational forms.

Objective 4: To analyse quality assurance, innovation, and patient outcomes.

The literature demonstrates that quality assurance mechanisms vary significantly across ownership contexts. Hospital-owned departments typically operate within formal

governance frameworks with scheduled audits and standard operating procedures (Nguyen et al., 2023). Radiologist-owned practices, by contrast, often rely on informal, clinician-led quality mechanisms (RSSA, 2023). Innovation capacity also differs: independent practices may adopt new technologies more rapidly due to clinician initiative, while hospital-owned departments benefit from centralized procurement but face bureaucratic approval processes. However, comparative studies examining these differences in the South African context are absent.

2.12.4 The Literature Gap

Despite the valuable insights provided by existing literature, a significant gap persists. South Africa has a limited body of research on radiological service provision, particularly concerning ownership models. The scholarly literature, including Tiba (2018), primarily focuses on differences between public and private imaging capacity rather than on comparative dynamics within the private sector. Madlala et al. (2021) highlight concerns about operational governance and clinical leadership but do not break down their findings by ownership structure. Similarly, Sithole et al. (2022) examine operational integration within private hospitals but fall short of comparing radiologist-owned and hospital-owned entities as unique forms of organization.

Consequently, no published studies were found that directly compare hospital-owned and radiologist-owned radiology practices in South Africa regarding governance structures, workflow responsiveness, resource allocation, quality assurance, innovation capacity, or patient management. This lack of comparative empirical research represents a significant scholarly and managerial gap. Without such evidence, radiology heads, hospital managers, and policymakers lack the context-specific knowledge needed to understand the strategic and operational trade-offs inherent in each model.

2.12.5 How This Study Addresses the Gap

This study addresses the identified gap by empirically analysing both ownership models through the combined theoretical perspectives of the Resource-Based View, Institutional Theory, and Contingency Theory. By employing a comparative case study design and collecting qualitative data from radiologists, practice managers, and hospital

administrators across both models, this research will generate the first systematic, context-specific evidence on how ownership shapes operational practices in South African private radiology.

The findings will contribute to the limited South African scholarship on health service ownership and provide an evidence-based foundation for operational policy development, practice management, and strategic decision-making in private radiology. Furthermore, as South Africa navigates the transition toward a National Health Insurance (NHI) system, understanding how different ownership structures drive or hinder operational performance is essential for designing resilient, inclusive, and patient-responsive radiology services for the future.

The next chapter outlines the research design and methodological approach adopted to address the research questions and objectives that the literature review could not address. It lays the foundation for ensuring that the research questions are answered and the objectives of the study are achieved.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the approach adopted to evaluate the implications of the radiological service ownership model for operational behaviour in South African private hospitals. Methodology is the most fundamental and decisive aspect of empirical research as it defines how the research questions will be addressed, thereby ensuring an authentic and trustworthy study (Creswell & Creswell, 2018). This chapter builds upon the literature review and theoretical perspectives from Chapter 2: specifically, the Resource-Based View (Barney, 1991), Institutional Theory (Scott, 2017), and Contingency Theory (Donaldson, 2001).

Guideline on the techniques of data collection, such as semi-structured interviews, document analysis, and observation, and the methods of data analysis, such as thematic analysis and pattern matching, is documented in the chapter (Yin, 2018). The chapter also reviews ways to improve trustworthiness and rigour, which are related to established

criteria of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). Ethical issues are analysed from the perspectives of informed consent, confidentiality, and institutional prescriptions.

The purpose of this chapter is to make the methodological preferences and practices explicit to achieve fit between the research objectives, questions, and assumptions. It will provide a strong basis for sound, contextually grounded findings on the interplay between ownership forms and operational behaviours in private radiology practices within South Africa.

3.2 Research Paradigm and Philosophy

This study adopted a pragmatic research paradigm, which recognises that knowledge is constructed through interaction between researcher and participants and that no single methodological approach can fully capture complex, context-dependent organisational phenomena (Creswell & Creswell, 2018; Morgan, 2007:49). Pragmatism emphasises practical problem-solving and values both subjective and objective realities, thereby allowing the researcher to draw upon multiple data sources and theoretical perspectives to understand how radiological service ownership models shape operational practices in South African private hospitals.

This paradigm is particularly well suited to applied, practice-based research questions and the contextually specific assertion of private radiology services. Private hospitals in South Africa operate within a range of institutions, regulations and markets that require a methodology sensitive to complexity, flexibility and the coexistence of multiple organising logics (Scott, 2017:857). The pragmatic approach enables the researcher to overcome dichotomies between the positivist and interpretivist schools, thereby underpinning both the theoretical rigour and the practical relevance of the findings (Saunders, Lewis, & Thornhill, 2019).

Furthermore, the pragmatic paradigm aligns with the theoretical framework of the present study. The Resource-Based View (Barney, 1991) argues that competitive advantage is derived from the strategic use of resources; Institutional Theory (Scott, 2017) claims that organisational institutional norms and pressures shape practices; and Contingency

Theory (Donaldson, 2001) argues that effectiveness depends on conforming to the context. Pragmatism also allows the researcher to synthesise these lenses, recognising the overlaps and pluralities of what is ‘real’ as it influences operational behaviour.

3.3 Research Design

Using a qualitative case study approach, this study explored how radiological service ownership models affect operational practices in South African private hospitals. Such case study methodology is suitable for the understanding of the ‘how’ and ‘why’ phenomena in their real-life contexts, as context is necessary for understanding the phenomenon of interest (Yin, 2018). Due to the limited empirical research on the relationship between ownership structures and operational practices in the South African private radiology sector, qualitative case studies enable the researcher to obtain rich, contextual insights into this complex, context-dependent issue.

An inductive design is appropriate for the study, as it seeks to explore and interpret patterns, themes, and relationships rather than test preset hypotheses (Merriam & Tisdell, 2016). The multi-case design is developed and used to compare several nested cases, meaning radiology departments and practices working under different ownership models, such as radiologist-owned, hospital-owned, and hybrid or joint-ventured. This comparative approach facilitates cross-case analysis, allowing the researcher, based on the data, to discern both commonalities and divergences in operational strategies across different ownership forms regarding the researcher's own objects of investigation (Eisenhardt 1989:534).

The design incorporates methodological triangulation through semi-structured interviews with radiologists, practice managers, and hospital executives; document analysis of internal policies, workflow protocols, and operational reports; and, where possible, direct observations of workflow processes. This approach improves the credibility and trustworthiness of findings by mitigating potential biases inherent in relying on a single data source (Patton, 2014).

The use of a case study design was consistent with the theoretical model of the research, that is, the Resource-Based View (Barney, 1991), Institutional Theory (Scott, 2017), and

Contingency Theory (Donaldson, 2001). Situating this empirical investigation within a multi-theoretical framework enhances understanding of how ownership models mediate the deployment of resources, institutional conformity, and operational responsiveness in radiology. This design generates contextually informed, theoretically grounded answers to the research questions in this study, whilst also making significant contributions to the academic and management literature in the South African private health service context.

3.4 Research Approach

This is a qualitative research study, as it requires a nuanced, contextual, and particularised understanding of the effects of ownership models on working practices in South African private hospitals. Qualitative research approach is considered an appropriate method for researching subtle social phenomena that depend on human standpoint, institutional setting and organisational dynamics (Denzin, 2018). Quantitative investigations concerned with quantification and generalisation were not deployed alongside the qualitative approaches, which have concentrated on depth, meaning, and context-bound understanding of processes as they unfold (Creswell & Poth, 2018).

Adopting a qualitative methodology, this study employed semi-structured interviews, document analysis, and observational data collection to generate an interpretive understanding of working practices in varying ownership frameworks. This method enabled the emergence of findings that are both academically sound and directly impactful for managers, decision-makers, and radiology practitioners in the fast-changing South African private health services environment.

3.5 Case Selection and Study Context

The research used an intentional multiple-case selection methodology to explore the impact of distinct ownership models of radiological services on operational practices of private hospitals in South Africa. Case selection in qualitative research is important to provide for depth and richness of data to enhance the understanding of the phenomenon (Patton, 2015). To complement the exploratory scope of the study, cases were specifically selected for their relevance to the research questions, the diversity of ownership

structures that they reflect, and their ability to afford information-rich descriptions of operational practices and decision-making.

Three of the primary forms of ownership seen in South African private radiology were covered in this study led to its inclusion: radiologist-owned practices (a number of radiologists own, and run the service independently), hospital-owned radiology (control by the hospital group) and thirdly a hybrid or joint-venture model where different contractual or shared equity basis are entered into between hospital groups and radiologists. The aim in such heterogeneity was to allow for between-case comparisons and to uncover how various ownership models frame resource allocation, workflow response time(s), standardisation, and managerial discretion (Eisenhardt, 1989:535).

Geographically, cases were drawn from both urban and semi-urban regions, reflecting the uneven distribution of private health services infrastructure in South Africa. Urban sites typically exhibit higher patient volumes, greater technological investment, and increased competitive pressures, while semi-urban settings often face resource constraints, differing institutional norms, and various operational challenges. This contextual distribution was considered essential for examining how local market dynamics and institutional environments interact with ownership structures to shape operational practices (Scott, 2017).

Selection criteria included:

- Ownership model variation - the researcher ensured representation of each of the three primary ownership types.
- Organisational maturity - the researcher included both long-established practices and relatively new ventures to capture how operational practices evolve.
- Access to participants - they were radiologists, practice managers, and hospital administrators who were willing to participate in interviews and share documents.
- Operational complexity - cases with established protocols, documented workflow processes, and varied service offerings (e.g., General radiology, CT, MRI, ultrasound).

By situating this study within multiple organisational, geographic, and ownership contexts, the research aims to illuminate not only common patterns but also the contextual factors that mediate the relationship between ownership structures and operational practices. This case selection approach provides a solid empirical foundation for theoretical analysis, ensuring that findings are both rooted in context and theoretically grounded.

3.6 Sampling Strategy

Following this research, a purposive, non-probability sampling strategy was employed to identify participants with direct, experiential knowledge of operational practices within radiology services operating under different ownership models in the South African private health sector. Purposive sampling is well-suited to qualitative research that generates rich, nuanced data (Creswell & Poth, 2016), rather than a sample that typically yields statistically generalisable findings. Because the study concentrated on ownership structures as they relate to operational practices, the sampling strategy focused on respondents who possess the authoritative knowledge regarding decision-making, resource allocation, workflow management and institutional constraints.

The primary inclusion criteria for participants were:

- Participants should have a minimum of two years' experience in their current role, ensuring familiarity with organisational practices and historical context.
- They should have direct involvement in operational or strategic decision-making within their radiology practice or department.
- Representation across the three primary ownership models examined in the study: radiologist-owned, hospital-owned, and hybrid/joint-venture practices.

Participants included:

- Radiologists employed and partners/owners with the ability to talk about clinical workflow, autonomy, and operational agility.
- Managers, overseeing administration, budget and staff.

- Hospital administrators, including operations or departmental leadership, are responsible for the integration of radiology service into larger hospital systems.
- Administrative personnel as applicable to further context operations related to areas like scheduling, patient flow, and accounts Receivable processes.

Participants were identified through professional networks, referrals from industry contacts, and from publicly available institutional directories. Following ethics approval for the study, formal e-mail invitations were sent, including participant information sheets outlining the purpose of the study and reassuring prospective participants of its voluntary nature and the underlying confidentiality. Information about potential participants was obtained through snowball sampling, which worked particularly well within the radiology community, as initial informants referred others with similar backgrounds (Patton, 2015).

The goal was not to establish statistical representativeness, but rather evidential sufficiency-data saturation when new participants' input increasingly provides no more new themes or insights (Guest, Bunce & Johnson, 2006:61). During iterative data analysis and ongoing sampling, the researcher included perspectives from across ownership types, geographic contexts, and levels of operational responsibility. This sampling strategy enhances the credibility and transferability of the findings (Guba & Lincoln, 1994), ensuring the research produces contextually grounded and theoretically meaningful insights.

3.7 Data Collection Methods

Semi-structured interviews were selected because they allowed a balance between structured questioning and the freedom to explore new topics (Creswell & Poth, 2018). Interviews were conducted amongst radiologists/practice managers and hospital administrators with intimate operational knowledge. Each lasted 45 to 90 minutes, was conducted in person, by telephone, or by videoconference, was audio-recorded with permission, and was transcribed verbatim.

Document analysis (e.g., policies, SOPs, memos, QA reports) provided organisational context and corroborated or contrasted interview accounts (Bowen, 2009:29). While limited, site-based observation captured workflow patterns, staff interactions, and

resource use during visits, enriching the interpretation of interview data (Creswell & Poth, 2018). Using triangulation across these methods enhanced the credibility and dependability of the findings (Guba & Lincoln, 1985:109). The following section details the interview instrument developed to guide data collection.

3.8 Data Collection Instrument

As the primary data collection instrument in this study, a semi-structured interview schedule was utilised. Semi-structured interviews were selected because they provide an optimal balance between consistency in questioning and the flexibility to explore emerging issues in depth, while remaining firmly aligned with the research objectives (Creswell & Poth, 2018). This approach is particularly well-suited to qualitative studies investigating operational practices across different ownership models, where participants' experiences, perceptions, and contextual knowledge play a vital role in generating rich, meaningful data.

The interview schedule was deliberately designed to operationalise the study's research objectives and to explore the key domains of operational practices identified in the literature review (Chapter 2). Each question was constructed to gather insights into how ownership models (radiologist-owned versus hospital-owned) influence specific aspects of operational practice, while also enabling comparability across cases and encouraging participants to share nuanced, context-specific perspectives. This careful alignment ensures that the data collected are directly relevant to the research questions and grounded in the study's conceptual framework.

The structure of the interview schedule was organised into eight thematic sections, each corresponding to one or more research objectives and the operational domains derived from the literature. This alignment is demonstrated below.

Section 1: Background

This section gathers contextual information on the participant's role, years of experience, and the ownership model within which they operate. This data enables the researcher to situate participant responses within their professional context and to compare

perspectives across different roles and models. This aligns with the study's comparative design and the need to capture diverse viewpoints from within each unit of analysis, as discussed in Section 3.4.

Section 2: Operational Efficiency and Turnaround Time

This section explores how imaging requests and reporting times are managed, the challenges faced in maintaining efficiency, and how ownership structure influences workflow. These questions directly address Research Objective 1 (to compare workflow efficiency and service delivery across ownership models) and operationalise the domain of workflow efficiency as defined in the literature review (Section 2.8), with specific attention to indicators such as turnaround time, patient throughput, and equipment utilisation (Slack & Brandon-Jones, 2022; Rivers & Glover, 2008).

Section 3: Decision-Making and Autonomy

Questions in this section investigate who holds decision-making authority regarding staffing, equipment purchases, and clinical protocols; the extent of radiologist autonomy; and how ownership structure affects the speed and effectiveness of decision-making. This section addresses Research Objective 2 (to explore variances in decision-making autonomy and governance) and operationalises the domain of decision-making protocols as discussed in Section 2.6, focusing on the speed of decision implementation, levels of staff autonomy, and governance hierarchies (Porter & Teisberg, 2006).

Section 4: Resource Allocation and Financial Sustainability

This section examines how staff, budgets, and equipment resources are allocated; the financial challenges faced; and how ownership influences investment in new technology. These questions address Research Objective 3 (to identify operational challenges and opportunities within each model) and operationalise the domain of innovation and technology adoption as discussed in Section 2.7, as well as the resource dimensions of the Resource-Based View (Barney, 1991).

Section 5: Staff Management and Organisational Culture

Questions in this section explore staff motivation, training, retention, teamwork, and workplace culture, and how ownership structure influences these human resource dimensions. This section addresses Research Objective 3 (operational challenges and opportunities) and operationalises the human capital aspects of the Resource-Based View, recognising that staff expertise and organisational culture are key intangible resources that shape operational performance.

Section 6: Institutional Pressures and Adaptability

This section investigates how practices respond to external pressures, including HPCSA regulations, NHI policy, and BEE requirements, and how adaptable they are under different ownership models. These questions address Research Objective 4 (to analyse quality assurance, innovation, and patient outcomes) and are grounded in Institutional Theory (DiMaggio & Powell, 1983; Scott, 2017), which explains how external regulatory and normative pressures shape organisational behaviour. This section also speaks to the quality assurance domain discussed in Section 2.9.

Section 7: Service Quality and Patient Outcomes

Questions in this section explore how ownership affects service quality, innovation, and patient care, and examine the standardisation and quality monitoring practices in place. This section directly addresses Research Objective 4 and operationalises the domains of quality assurance and patient management as defined in Sections 2.9 and 2.10. It probes the formal and informal mechanisms by which quality is monitored and how patient-centred care is delivered under each model.

Section 8: Comparative Reflection

This final section invites participants to reflect on the strengths and weaknesses of their current ownership model and, where they have experience with both models, to offer comparative insights on which model demonstrates better overall performance and why. This section is unique in that it directly solicits the kind of cross-model comparative data that is central to the study's purpose. It ensures that the collected data provide direct

evidence for evaluating how ownership shapes operational practices, rather than relying solely on inference.

Alignment with Research Objectives and Literature

To summarise the alignment described above:

Section 1 (Background) provides contextual information that supports all objectives and is grounded in the comparative case study design discussed in Section 3.4.

Section 2 (Operational Efficiency and Turnaround Time) aligns with Research Objective 1 and draws on the literature in Sections 2.4 and 2.8, which discuss workflow efficiency and operational practices.

Section 3 (Decision-Making and Autonomy) aligns with Research Objective 2 and draws on Section 2.6, which examines governance structures and decision-making autonomy.

Section 4 (Resource Allocation and Financial Sustainability) aligns with Research Objective 3 and draws on Sections 2.7 and 2.8, which discuss technology adoption, innovation, and resource allocation.

Section 5 (Staff Management and Organisational Culture) aligns with Research Objective 3 and draws on the human resource dimensions of the Resource-Based View discussed throughout Chapter 2.

Section 6 (Institutional Pressures and Adaptability) aligns with Research Objective 4 and is grounded in Institutional Theory as discussed in Sections 2.5 and 2.11.

Section 7 (Service Quality and Patient Outcomes) aligns with Research Objective 4 and draws on Sections 2.9 and 2.10, which examine quality assurance and patient-centred care.

Section 8 (Comparative Reflection) supports all objectives and provides direct comparative data essential for answering the primary research question.

This systematic alignment ensures that every question in the interview schedule is anchored in the study's research objectives and grounded in the literature review. This enhances construct validity (Yin, 2018) by ensuring that the data collected are directly relevant to the concepts the study seeks to investigate. Moreover, the inclusion of a dedicated comparative reflection section ensures that the collected data provide direct evidence for evaluating how ownership models influence operational performance, rather than relying solely on inference or indirect measures.

The finalised interview schedule, presented in full in Annexure A, therefore serves as a robust and theoretically grounded instrument for generating the empirical data necessary to address the research questions and achieve the study's objectives.

3.9 Data Analysis Techniques

The study used thematic analysis to interpret qualitative data from interviews, document analysis, and observational field notes. Thematic analysis is especially useful for identifying patterns and meanings within contextually rich data and is well known for its flexibility and rigour (Braun & Clarke, 2006:79).

The analysis followed Braun and Clarke’s (2006:79) six-phase framework:

- Familiarisation with the data,
- Generating initial codes,
- Searching for themes,
- Reviewing themes,
- Defining and naming themes, and
- Producing the report.

A hybrid approach supported this structured process; inductive coding allowed themes to emerge from the data, while deductive coding was guided by the study’s theoretical framework, namely the Resource-Based View (Barney, 1991), Institutional Theory (Scott, 2017), and Contingency Theory (Donaldson, 2001).

The NVivo software was employed to code and organise processed data, enabling structured comparisons across and within cases (Bazeley & Jackson, 2013). Data and

theory alignment were matched to patterns in accordance with Yin (2018). Regarding trustworthiness, dependability was ensured through an extensive audit trail of coding decisions, peer debriefing with the supervisor, and reflexive journaling (Nowell *et al.*, 2017:3; Guba & Lincoln, 1994). Throughout these overlapping phases, the analysis was transparent and theoretically underpinned, yielding credible conclusions about how ownership constructs affected operational practices in South Africa's private radiology sector.

3.10 Trustworthiness and Rigour

Trustworthiness and methodological rigour are vital in qualitative research to ensure that the findings are credible, dependable, transferable, and confirmable (Guba & Lincoln, 1994). This study used multiple strategies to address each aspect of trustworthiness, thereby enhancing the validity and quality of the research process and its outcomes.

Credibility is defined as the belief in the truth of the results (Marshall *et al*., 2013:1424). To achieve this, the study used extended engagement with participants during interviews to establish rapport and prompt candid dialogue about work practices. The researcher employed member checking, or sharing preliminary results and themes with some participants, to allow for verification of interpretations and to rectify potential misconceptions (Creswell & Poth, 2018). Data were also triangulated from a variety of sources (e.g., semi-structured interviews, document review, and observation data), further increasing credibility through multiple lines of evidence around the identified themes (Patton, 2015).

Dependability is about ensuring the research is logical and traceable; it should be documented in detail. A detailed audit trail was kept, systematically documenting coding frameworks, the development of themes and methodological decisions that were made during the research process (Nowell *et al*., 2017:3). Scheduled meetings with academic supervisors and colleagues will provide opportunities for peer debriefing in order to scrutinise the method of analysis, to question any personal biases that may exist on the part of researchers, and to fine-tune interpretations (Guba & Lincoln 1994:107).

Transferability refers to how well findings can be applied to other contexts (Marshall *et al*., 2013:1425). While qualitative research does not aim for statistical generalisation, this study will offer detailed descriptions of the research setting, participant roles, organisational environments, and institutional dynamics, allowing readers to evaluate the relevance and applicability of findings to similar contexts (Geertz, 1973:4). Confirmability is achieved by showing that the findings are rooted in the data rather than researcher bias or personal preconceptions.

A reflexive journal was kept by the researcher throughout the process, recording assumptions, potential biases, and how these might affect data interpretation (Creswell & Poth, 2018). In addition, triangulation and peer review further enhanced confirmability by providing independent validation of the analysis. These strategies reflect an approach to research that seeks to follow stringent qualitative guidelines for the quality and veracity of the research process and its findings, producing credible, contextually rich, and reliable findings pertaining to the relationship between radiological service ownership models and operations in South African private-sector hospitals.

3.11 Ethical Considerations

The ethical principles of research involving human beings were fully respected during this survey, including safeguarding participants' dignity, rights, and well-being (Wiles, 2013). Ethical approval was granted by the North-West University Economic and Management Sciences Research Ethics Committee (NWU-EMS-REC) on 12 August 2025, with ethics number NWU-25-4. The research was deemed to be of low to minimal risk and approved as a single postgraduate research project.

All participants gave written informed consent to participate. Every participant was provided with an information sheet including the aims of the study, procedures, possible risks and benefits, confidentiality and their right not to participate in or withdraw from the investigation at any time without penalties. We obtained signed forms to participate before interviews, document review and observation. All participants were assured that their contributions would remain anonymous in all research publications.

Confidentiality was strictly maintained. The complete data set, in the form of digital recordings, transcripts and field notes were stored under password protection electronic files that both the primary researcher and supervisor had access to. All names, institutional references and location details were deleted or replaced with pseudonyms in all transcriptions, analytic notes and reported findings (Orb *et al*., 2001:94).

The researcher observed that non-maleficence was enacted, as involvement did not pose participants or their institutions with reputational, professional, or psychological harm. Reflexivity was sustained, and the researcher kept a record of reflexivity regarding my personal biases, assumptions, and power relations that may affect interactions with participants and the interpretation of data (Finlay, 2002:532).

Finally, the study adhered to the Declaration of Helsinki, the NWU Research Ethics Policy, and the Protection of Personal Information Act (POPIA) of South Africa. The researcher will also submit annual monitoring reports to EMS-REC and a final report upon completion, in accordance with the conditions of approval.

3.12 Delimitations and Scope of the Study

This research is restricted to an assessment of the impact of ownership structures on operations, with specific reference to the South African private radiology market. The emphasis on the private sector is deliberate as this sector has distinctive market-driven dynamics, competitive forces and emerging ownership patterns that are quite dissimilar to those of public health. Consequently, the results will not be applicable to public sector radiology departments, academic hospital services, or community health clinics, which may operate under different funding models, regulatory requirements, and organisational imperatives.

The study is confined to the main ownership types prevalent in the South African private health care sector: (i) radiologist-owned practices, where practicing radiologists own and control operations; (ii) hospital-based-radiology departments, in which hospitals drive direct management of radiological services within an integrated healthcare delivery

environment and (iii) hybrid or joint-venture models in which a combination of various contractual arrangements or equity-sharing models exist between practising radiologists and hospital groups. This scope acknowledges the presence of other, possibly emerging forms of ownership, but maintains that it is important to concentrate on the analysis of the most prevalent and well-developed models in the market today.

The analysis focused on operational procedures, such as resource distribution, workflow establishment, staff organisation, response to clinical requests, standardisation measures and decision-making autonomy in the radiology departments. Wider strategic or purely financial performance outcomes are potentially relevant but are not the object of this inquiry and will be factored in only to the extent they interact with operational activities.

The study deliberately did not include the patient's perspective or patient outcome assessment. Considering the importance of care quality in radiology services, this research shifts focus to organisational actors; namely, those involved in service provision, such as radiologists and practice (or hospital) managers, whose roles provide critical access points for understanding on-the-ground practices that are shaped by ownership structures.

Finally, the research is geographically bounded to South Africa and does not attempt to draw comparative conclusions with private radiology markets in other countries, given the idiosyncratic regulatory, institutional, and demand conditions that characterise the country's private health services world. These limits kept the study focused, but they also led to a particular focus on the context, leaving theoretical contributions only lightly and globally addressed in interesting relationships between management models of ownership types and operational management in private radiology services.

3.13 Methodological Limitations

While this study was designed to produce credible, contextually grounded insights into how ownership models affect operational practices in South African private radiology services, several methodological limitations must be acknowledged. Transparency regarding these limitations allows readers to appropriately contextualise the findings and identifies avenues for future research.

Generalisability: The study employed qualitative methods and purposive sampling; therefore, the findings cannot be statistically generalised to all radiology practices in South Africa. The research did not seek statistical generalisation but rather analytical generalisation, generating theoretical insights that can be applied to other similar settings. However, readers should exercise caution in transferring findings to contexts with different regulatory, economic, or demographic characteristics (Yin, 2018).

Sampling and Access Constraints: Access constraints may have affected the diversity and range of cases included in the study. Some organisations declined participation due to concerns about confidentiality, competitive sensitivities, or reluctance to reveal internal operational issues. This limitation could introduce selection bias, as the study depended on willing participants who may not fully represent the wider sector. The stratified purposive sampling strategy mitigated this to some extent by ensuring representation across key roles and both ownership models, but the possibility of non-response bias remains (Palinkas et al., 2015).

Self-Report Data: The study relied primarily on self-report data collected through semi-structured interviews. Interview data, even when used in conjunction with document analysis and observation, are subject to recall bias (participants may not accurately remember past events), interpretive framing (participants may present their experiences through a particular lens), and social desirability effects (participants may represent their practices or organisation more favourably) (Patton, 2015). The researcher attempted to mitigate these issues through probing questions, establishing trust and rapport with participants, and triangulating interview data with document analysis and observational field notes where available.

Limited Observational Data: Due to logistical and time constraints, observational data were limited in duration and scope. Site visits, where conducted, provided valuable contextual insights but may have captured only typical operational practices rather than reflecting exceptional circumstances, long-term trends, or rare but significant disruptions that also affect operational dynamics. More extensive ethnographic observation would be required to fully capture the complexity of daily workflows and informal practices (Creswell & Poth, 2018).

Researcher Positionality and Bias: The researcher is a practising Diagnostic Radiographer with over fifteen years of experience in the South African private healthcare sector. This insider positionality enhanced access to participants, facilitated rapport during interviews, and provided valuable contextual understanding that enriched data interpretation. However, it also introduced the potential for interpretive bias, as the researcher's professional experiences and assumptions could influence data collection, coding, and thematic interpretation (Finlay, 2002). Several strategies were employed to mitigate this risk: maintaining a reflexive journal throughout the research process to document assumptions and potential biases; actively searching for disconfirming evidence in the data; engaging in peer debriefing with the academic supervisor; and anchoring thematic interpretations in direct participant quotations and existing scholarship. These strategies enhanced the trustworthiness and confirmability of the findings (Lincoln & Guba, 1985).

Scope Limitations: The study focused specifically on operational practices and their relationship to ownership models within private radiology services. It did not systematically investigate patient outcomes, patient experiences of care, or broader systemic factors such as national policy changes or funding mechanisms that may also influence operational environments. Furthermore, the study was confined to the private sector and did not examine public hospital radiology departments, which operate under fundamentally different resource and governance constraints. Therefore, the findings should be understood within the specific focus and scope outlined in Chapter 1.

These limitations are acknowledged to promote transparency, contextualise the study's findings, and highlight areas for potential future research using alternative methods, larger samples, longitudinal designs, or different settings.

3.14 Summary of the Chapter

This chapter introduced the methodology of this study, examining how radiological service ownership models influence operational activities in private hospitals in South Africa. It is stated by situating the research in the context of a pragmatic philosophy of

organisation, one that acknowledges complexity in organisational life and is committed to generating practically relevant, contextually specific insights. The chapter argues in favour of the use of qualitative methodology for such an analysis when it comes to unravelling the complex, socially constructed realities that constitute operational practices across different types of property.

This research was designed as an exploratory multiple-case study, allowing the researcher to investigate ownership models and practices as they naturally occurred in real-life situations where there are no boundaries between the phenomenon and the setting (Yin, 2018). The reason for case selection was articulated, focusing on the range of radiologist-owned, hospital-owned and hybrid models in various geographic and market contexts in South Africa. The sampling approach was described as purposive, complemented by snowball sampling, with the intention to select individuals who could provide rich and authoritative perspectives on organisational interactions.

Methods for data collection were described, such as the development of semi-structured interview guides informed by literature and a theoretical framework, and processes to analyse organisational policies, protocols and internal reports, as well as on-site observation of workflows and operational domains. The chapter described the iterative and reflexive process for data analysis, which includes thematic analysis supported by NVivo, pattern matching to theoretical propositions, and detailed cross-case analysis in search of common themes as well as contextual variations.

Trustworthiness and rigour strategies were described, including prolonged engagement, triangulation between data strands, member checking with a few participants, keeping a comprehensive audit trail of the study process, peer debriefing and ongoing reflexivity through journaling. Ethical issues were well considered, particularly regarding informed consent, participants' confidentiality, data security, and potential harm to individuals or systems.

The chapter also identified limitations, including that government department radiology practice and the patient perspective were not addressed, as well as methodological constraints, such as bias in self-reported data, limited observation opportunities, and difficulties in generalising the findings to other contexts, since the study was qualitative.

The method developed in this chapter offered a rationale, a systematic, and a theoretically driven basis for the ensuing empirical examination. The subsequent chapter will elaborate on this schematic by reflecting on the research outcomes of this methodological path to reveal a nuanced understanding of the relationship between ownership structures and working practices in South African private radiology. The findings from the semi-structured interview questions will be discussed in the next chapter.

CHAPTER 4: PRESENTATION OF THE RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the findings of a qualitative study based on twelve semi-structured interviews conducted across two radiology ownership models in South African private hospitals: radiologist-owned practices and hospital-owned departments. These ownership models exemplify divergent methodologies in service governance, decision-making, and operational coherence within private healthcare organisations. The analysis that follows seeks to systematically organise, interpret, and present the empirical data in a way that directly addresses the study's research questions, while remaining grounded in the theoretical frameworks introduced in earlier chapters.

The study sought to achieve the following research objectives:

Research Objective 1: To compare workflow efficiency and service delivery across radiologist-owned and hospital-owned radiology services in South African private hospitals.

Research Objective 2: To explore variances in decision-making autonomy and governance structures between the two ownership models.

Research Objective 3: To identify the operational challenges and opportunities experienced within each ownership model.

Research Objective 4: To analyse how quality assurance, innovation (including service development), and patient outcomes are structured and enacted under each ownership model.

These objectives guided the data collection process and provided the framework for the thematic analysis presented in this chapter. Through an inductive analytical process, four core themes emerged from the data that correspond directly to these objectives:

Theme 1: Workflow Efficiency and Service Delivery – capturing how patient flow, imaging requests, and reporting times are managed, and how ownership structure influences responsiveness and throughput.

Theme 2: Decision-Making Autonomy and Flexibility – reflecting the authority vested in different roles, the speed of decision implementation, and the degree of clinical and operational discretion exercised by staff.

Theme 3: Operational Challenges and Opportunities – encompassing the constraints and enablers experienced within each model, including resource limitations, staffing pressures, compliance burdens, and areas of strategic advantage.

Theme 4: Quality Control, Innovation, and Patient Outcomes – examining the mechanisms by which quality is assured, the capacity for innovation and service development, and the impact of ownership on patient-centred care.

The chapter is structured to present these themes separately for each ownership model to enhance comparability and analytical depth. For the radiologist-owned model, the findings are presented first, followed by the hospital-owned model. Within each model, the four themes are explored in sequence, with verbatim quotations from participants woven into the narrative to substantiate claims and preserve the authenticity of participants lived experiences. This approach ensures that the findings remain grounded in the data while enabling systematic comparison across the two models.

The themes are discussed in relation to the study's three theoretical frameworks. The Resource-Based View (RBV) provides a lens for understanding how each model leverages its unique resources, whether intangible assets like clinical autonomy and tacit knowledge in radiologist-owned practices, or tangible assets like infrastructure and economies of scale in hospital-owned departments. Institutional Theory illuminates how external pressures, such as regulatory requirements and accreditation standards, shape operational practices differently under each ownership structure. Contingency Theory helps explain why each model may be optimally suited to different environmental contexts, with radiologist-owned practices excelling in dynamic, low-volume settings and hospital-owned departments thriving in high-volume, regulated environments.

The findings presented in this chapter directly address the research questions and objectives outlined in Chapter 1. Theme 1 addresses Research Objective 1 (to compare workflow efficiency and service delivery across ownership models). Theme 2 addresses Research Objective 2 (to explore variances in decision-making autonomy and governance). Theme 3 addresses Research Objective 3 (to identify operational challenges and opportunities within each model). Theme 4 addresses Research Objective 4 (to analyse quality assurance, innovation, and patient outcomes). The cross-model comparisons embedded throughout the discussion provide the evidence base for answering the primary research question: How do ownership models influence the operational practices of radiology services in South African private hospitals?

The following subsections present the findings in detail, beginning with an overview of the data collection and analysis process, followed by the demographic profile of participants, and then the thematic findings for each ownership model.

4.2 Overview of Data Collection and Analysis

Consistent with a qualitative research approach, this study used in-depth, semi-structured interviews to elicit rich context-specific data on how radiology service ownership structures affect operational decisions within South African private hospitals. The intention was not one of statistical generality, but transferability and theoretical enlightenment from the depth of the experiences as proposed by Lincoln and Guba (1985).

4.2.1 Participant Selection

A purposive sample of twelve participants was used to maximise variation in ownership models, institutional type and professional role. Six were selected from radiologist-controlled practices, wherein physicians control operational as well as clinical aspects of the practice of radiology. The number of department types owned by hospitals in private groups that were part of larger corporate entities and fully integrated into overall hospital governance was six.

This convenience-sampling method is consistent with Creswell and Creswell's (2018) recommendation to choose "information-rich" cases that represent several different angles on the phenomenon under study. Eligible participants were those involved in or responsible for running radiology services and could discuss the intersection of ownership and radiological service provision at a day-to-day level.

4.2.2 Interview Process and Data Collection

Semi-structured interviews were carried out based on a flexible interview guide intended to stimulate open-ended reflection on topics such as organisational structure and workflow, staffing, governance mechanisms, quality assurance and patient centredness. The interviews lasted between 45 and 75 minutes, depending on participant preference and location (i.e., in person or over a secure videoconferencing platform). All interviews were audio-recorded after obtaining verbal consent and transcribed. Field notes were written during and after interviews to provide context for the content and nonverbal communication. This procedure received ethical approval from the ethics committee (see attached ethical clearance), and all participants were guaranteed anonymity and data confidentiality.

4.2.3 Data Analysis Strategy

The analytical process was guided by the thematic analysis method described by Creswell and Creswell (2018), which included data preparation, transcript coding, pattern identification, and theme development based on participants lived experiences.

The analysis proceeded in the following steps:

- Preliminary Reading and Familiarisation: Transcripts were read through several times for familiarisation and preliminary making sense of the data.
- Open Coding: Codes were generated inductively to reflect key issues and repeating themes in the language of the responses, including wording and emphasis, and inferred meaning.
- Pattern Recognition: Codes were grouped into analytic categories against which to compare and contrast the codes, creating themes that represent tensions between codes.
- Theme Development: Ultimately, themes were developed via an iterative process that black box iteratively with the data, epitomising concordances and discordances of experience amongst participants.

The researcher employed Lincoln and Guba's (1985) criteria of credibility, dependability, confirmability, and transferability throughout the study to ensure trustworthiness. To ensure the interpretive soundness of emergent themes, member checks were performed with three respondents. A record of programming decisions, analytic memos and the development of themes was kept throughout, thus increasing transparency and allowing for verification by independent researchers.

4.2.4 Rationale for Thematic Analysis

The thematic analysis facilitated a systematic, but at the same time flexible, presentation of the results, with the researcher being able to remain close to participants' language and relate observations to the theoretical framework as discussed in the introduction on page 76. Each theme included verbatim comments from participants to demonstrate these dynamics and support interpretations. Although specific to the South African context, the results speak to universal issues in health care management and service ownership.

4.3 Demographic Profile of Participants

The twelve participants involved in this study are profiled in this section. Demographic factors were noted in the qualitative analysis of data to help situate accounts of working experiences discussed during the interviews. Providing the profiles of participants across

two ownership options increases the credibility and transferability (Creswell & Creswell, 2018; Lincoln & Guba, 1985) of the findings.

Data are presented in four categories:

- Geographic/Ownership Location
- Age Groups
- Job Roles and Years of Experience
- Educational Background

This structure demonstrates that insights represent a balanced range of operational roles, career stages, and clinical/administrative expertise within private radiology services.

4.3.1 Location: Hospital-Owned vs Radiologist-Owned

The study intentionally recruited an equal number of participants from each ownership model (Table 4.1) to ensure a fair comparison and prevent bias in representation. This balanced approach enhances comparative validity and allows operational differences to be identified clearly during thematic analysis.

Table 4.1 Participants classification

Ownership Model	Number of Participants	Percentage
Radiologist-Owned Practices	6	50%
Hospital-Owned Departments	6	50%

Source: Author's own illustration (2025)

4.3.2 Age Groups

Participants spanned different career stages, enabling analysis of how operational perceptions develop over the careers of radiology professionals. Table 4.2 provides a brief overview of the composition of these participants.

Table 4.2: Age categorisation of participants

Age Category	Number of Participants	Ownership Representation
25–35 years	4	Radiologist-Owned = 2; Hospital-Owned = 2
36–45 years	5	Radiologist-Owned = 2; Hospital-Owned = 3
46–59 years	3	Radiologist-Owned = 1; Hospital-Owned = 2

Source: Author's own illustration (2025)

4.3.3 Job Title (Role) and Experience

Participants included both clinical decision-makers and frontline implementers, ensuring full operational representation. Table 4.3 provides a categorisation of participants by role, title, and experience. This ensures findings reflect leadership, clinical, and operational perspectives equally.

Table 4.3: Participants' titles and roles

Job Role	Participants (n)	Experience Level	Model Representation
Lead/Partner Radiologists	2	10+ years	Evenly distributed
Senior/Head Radiographers	4	5–10+ years	Evenly distributed

Practice/Operations Managers	2	3–8 years	Evenly distributed
Billing Administrators	2	5–7 years	Evenly distributed
Reception/Patient Interface Clerks	2	2–5 years	Evenly distributed

Source: Author's own illustration (2025)

4.3.4 Educational Background

Participants' qualifications show the natural skill set needed for success in radiology services. This profile confirms similar skill structures across both models, enhancing the reliability, validity, and trustworthiness of this study. Table 4.4 provides a brief overview of the participants and their qualifications.

Table 4.4: Participants' qualifications and their ownership representation

Qualification	Holders	Ownership Representation
MBChB + FC Rad	2	Radiologist-Owned and Hospital-Owned
BRad / National Diploma Diagnostic Radiography	5	Executive Management (Operational)
Business or Management Training	2	Practice/Operations Managers
Administrative Healthcare Certification	3	Administrative roles

Source: Author's own illustration (2025)

4.4 Thematic Findings and Discussion

Findings of the study are presented in this section along with a thematic analysis of twelve interviews across two ownership models, i.e., radiologist-owned radiology practices and hospital-owned radiology departments. The goal is to demonstrate the impact of

ownership on institutional practices within private radiology services in South Africa as per the main aim of this research. Themes are initially described in the radiologist-owned model, followed by the hospital-owned model to enhance comparability and analytic elaboration. Quotations from participants are presented in-line to substantiate claims and retain the participant's verbatim and contextual lived experiences on the ground. Table 4.5 on page 82 illustrates how each research objective was linked to the interview questions and the thematic framework that arose from the data analysis. These findings directly relate to the study's aims and illustrate how participants' operational experiences are presented within the themes discussed in this chapter. Themes emerged through an inductive coding process, where repeated patterns, shared meanings, and operational differences between ownership models were identified during analysis.

Table 4.5: Alignment between research objectives, themes and interview questions

Research Objective	Operational Domain (from Literature Review)	Relevant Literature Sections	Corresponding Interview Sections (Methodology)	Emergent Theme in Findings
RO1: To compare workflow efficiency and service delivery across ownership models.	Workflow Efficiency: Management of patient flow, imaging requests, reporting times, and equipment utilisation. Measured by turnaround time (TAT), patient throughput, and responsiveness to clinical demand.	Section 2.4 (Operational Practices) Section 2.8 (Operational Efficiency and Resource Allocation) Slack & Brandon-Jones (2022); Rivers & Glover (2008)	Section 2: Operational Efficiency & Turnaround Time Section 8: Comparative Reflection	Theme 1: Workflow Efficiency and Service Delivery
RO2: To explore variances in decision-making autonomy and	Decision-Making Protocols: Authority structures, speed of decision implementation,	Section 2.6 (Strategic Decision-making and Governance Structures) Section 2.5 (Theoretical	Section 3: Decision-Making & Autonomy	Theme 2: Decision-Making Autonomy and Flexibility

governance across ownership models.	level of staff autonomy, and governance hierarchies. Organisational Structure: Formal and informal arrangements governing coordination, authority distribution, and decision-making processes.	Framing - Contingency Theory) Porter & Teisberg (2006); Andersen (2019)	Section 8: Comparative Reflection	
RO3: To identify operational challenges and opportunities within each ownership model.	Resource Allocation: Distribution of financial, human, and technological resources. Human Capital: Staff expertise, motivation, training, retention, and organisational culture as	Section 2.8 (Operational Efficiency and Resource Allocation) Section 2.4 (Operational Practices) Section 2.11 (Theoretical Framework Integration - RBV) Barney (1991)	Section 4: Resource Allocation & Financial Sustainability Section 5: Staff Management & Organisational Culture Section 8: Comparative Reflection	Theme 3: Operational Challenges and Opportunities

	intangible resources (Resource-Based View).			
RO4: To analyse quality assurance, innovation (including service development), and patient outcomes across ownership models.	Quality Assurance: Formal and informal mechanisms for ensuring diagnostic accuracy, safety, and regulatory compliance. Measured by existence of QA protocols, audit frequency, and incident reporting. Innovation and Technology Adoption: Capacity for adopting new technologies, modifying clinical protocols, and introducing new services	Section 2.9 (Quality Assurance and Clinical Governance) Section 2.7 (Technology Adoption and Innovation) Section 2.10 (Patient-Centred Service and Access to Care) Section 2.11 (Theoretical Framework Integration - Institutional Theory) DiMaggio & Powell (1983); Scott (2017); Nguyen et al. (2023)	Section 6: Institutional Pressures & Adaptability Section 7: Service Quality & Patient Outcomes Section 8: Comparative Reflection	Theme 4: Quality Control, Innovation, and Patient Outcomes

	(service development). Patient Management: Systems governing patient interaction, scheduling flexibility, communication processes, and responsiveness to feedback.			

Source: Author's own illustration (2025)

4.4.1 Radiologist-Owned Practices

4.4.1.1 Theme 1: Workflow Efficiency and Service Delivery

In a radiologist-owned setting, the elements of efficient workflow and patient service remain derived from rapid decisions, direct responsibility, and intimate interdepartmental teamwork. Through the six interviews, participants characterised operations as being responsive and flexible with a limited resource base. Although participants concurred that there were shortcomings, the prevailing discourse highlighted the advantages of being near those who make decisions, leading to quicker service cycles for handling imaging requests, billing and patient scheduling.

- Billing administrator - Efficient processing but understaffed

The billing administrator explained that "*claims are captured directly*", and rejections are dealt with swiftly due to a lack of bureaucratic delays. She added, "*we don't need multiple approvals*" and "*billing decisions are made faster here*" than in hospital-owned environments. However, she also noted being "*overwhelmed*" by workload due to limited staff capacity, stating, "*one person does a role of more than one*". This aligns with Lincoln and Guba's (1985) observation that operational fluidity in smaller teams can increase adaptability, but also heightens dependency on individual multitasking, which can compromise long-term sustainability.

- Receptionist - Speed versus structure

Drawing on experience from both ownership models, the receptionist reflected on differences in scheduling flexibility. She stated, "*urgent cases can be slotted in quickly if the radiologist approves,"* contrasting this with her previous experience in a hospital setting where "*the system was rigid, and patients often waited longer*". Her reflections echo Creswell and Creswell's (2018) emphasis on "participant perspective" as central to qualitative rigour, showing how real-time responsiveness at the front desk is directly enabled by the decision structures found in radiologist-owned models.

- Head Radiographer - Fast turnaround and direct escalation

The head radiographer described her environment as one where "*turnaround time is usually fast*," owing to direct escalation channels: "*If a doctor wants to adjust reporting priorities, the owners can approve instantly.*" She noted that, while resource limitations exist, the absence of lengthy approval chains enables nimble responses to imaging demands. This indicates a classic manifestation of Contingency Theory, where organisational efficiency improves when structural design (in this case, ownership) aligns with environmental needs, especially in time-sensitive, diagnostic-driven healthcare settings.

- Practice manager - Decision-making drives speed

Having migrated out from the hospital-owned model, the practice manager noted that in the radiologist-led environment "*turnaround times are quicker*," since "*we make the decisions ourselves*." He compared it to the hospital environment, where "*processes are standardised but slow*," requiring "*several layers*" of approval. This resonates with the Resource-Based View (RBV), where managerial independence and close decision-making proximity are transformed into strategic assets and lead to more agile utilisation of human and technological resources.

- Senior radiographer - Speed with limitations

The senior radiographer noted that "*decision-making is fast and efficient*" and that "*radiologists are directly involved*," a dynamic that expedites patient handling and workflow throughput. But she acknowledged that "*every now and then we will have equipment breakdowns,*" showing that speed does not insulate these practices from infrastructural fragility. This highlights the trade-off between operational agility and technical sustainability. Workflow speed may be enhanced, but equipment-related delays can still affect efficiency, particularly when capital reserves are low.

- Radiologist (Professor) - Protocol agility as competitive advantage

Having both academic and ownership experience, the interventional radiologist also said he focused on the point that "*we can hire locums quickly, adjust shifts, and set our own*

protocols without waiting for hospital committees." He credited faster turnaround times and improved service delivery to this autonomy, though he cautioned that resource constraints "*challenge sustainability*." And this is a case study in how Institutional Theory can be applied: independent practices can bypass bureaucratic inertia and respond swiftly to clinical needs while remaining vulnerable in terms of scale and compliance infrastructure.

- Interpretive synthesis

All six radiologist-owned participants unanimously considered their workflow to be "*much improved*" regarding workflow efficiency due mainly to localised decision-making, diminished communication hierarchies and role intermingling. These are the criteria conducive to being agile in (re)scheduling, prioritising and time to imagine. But they also introduce operational trade-offs such as growing workloads, late upgrades and reliance on ad-hoc systems.

In theoretical character, the results indicate:

- RBV - Independently, autonomy and decision speed are immaterial(intangible) resources that contribute to the increase of strategic potential.
- Contingency Theory - The organisation of radiologist-owned practices is well adapted to the type of work needed for such care.
- Institutional Theory - Organisations become operatively responsive at the expense of an attenuated compliance infrastructure.

4.4.1.2 Decision-Making Autonomy and Flexibility

In radiologist-owned radiology practices, decision-making autonomy is a central feature of organisational identity. Participants consistently referenced the speed and proximity of decision-making as both an enabler of workflow efficiency and a mechanism of professional empowerment. Across the six interviews, autonomy was exercised in relation to staffing, protocol adjustment, equipment procurement, billing decisions, and day-to-day workflow changes. This decentralised authority structure was perceived as

both a strength and a challenge, enabling responsiveness but demanding high personal accountability.

- Billing Administrator - Local authority & swift resolution

The billing administrator described an environment where billing policy decisions are not subjected to multiple managerial tiers. She stated, "*The practice manager or radiologist decides, and I can make small day-to-day calls*," adding that "*we are faster here…in hospitals, you need approval from the whole office*". This case demonstrates clear functional decentralisation, where administrative staff possess discretion to act within defined limits. According to Creswell and Creswell (2018), participant narratives that reflect operational discretion indicate strong alignment between organisational structure and task autonomy.

- Receptionist - Empowered at the frontline

Having experience in hospital and radiologist-owned models, the receptionist reflected how quick decisions can be taken in her current place: "*If I need to change something, I can talk directly to the practice manager or radiologist… at Life Healthcare, even small changes had to go through multiple approvals*." She added, "*Here… suggestions are heard and implemented*," which reflects the participatory culture of smaller, clinician-led organisations. This corroborates Lincoln and Guba's (1985) claim that trust and open dialogue strengthen decision-making in decentralised systems, enhancing the credibility of operational choices.

- Head Radiographer - Clinical and operational inclusion

The head radiographer spoke confidently about her participatory role: "*Decisions are made directly by the radiologist, often in consultation with me*," and "*it feels like a partnership, not a hierarchy*". Her position at the intersection of clinical operations and team management illustrates how radiologist-owned models promote both vertical and lateral decision alignment, which Contingency Theory would frame as structural congruence within small-to-medium enterprises in health care.

- Practice Manager - Dual responsibility & localised control

The practice manager emphasised dual dynamics of authority and accountability: "*Radiologists decide on big-ticket items… but I have significant autonomy to manage daily operations*." Compared to her experience in hospital-owned settings, she noted, "*everything required sign-off from corporate or hospital management, which caused delays*". This reflects a lean governance model, where leadership is distributed based on task criticality. Creswell and Creswell (2018) argue that descriptions of layered autonomy in qualitative studies often signal a healthy balance between strategic and operational control.

- Senior Radiographer - Direct access & quick response

The senior radiographer explained that although key decisions lie with the radiologist-owners, she "*can raise issues directly… and they usually get attended to immediately*." Her degree of autonomy, she said, was "*quite a lot*", and decision-making was "*taken seriously*". This shows a culture of trust, where frontline professionals are encouraged to influence operational direction, a hallmark of agile healthcare environments.

- Radiologist (Professor) - Strategic control

As both owner and clinician, the professor highlighted the strategic advantages of full decision control: "*We have full autonomy… if a new interventional machine is needed, we decide internally*." He illustrated this with an example: "*We purchased and installed a CT perfusion scanner within months; our colleagues in hospitals are still waiting for approval*". This narrative powerfully demonstrates the Resource-Based View (RBV) in action, organisational agility enabled by control over strategic assets and the capacity to deploy them without bureaucratic obstruction.

- Interpretive synthesis

Decision-making was characterised by participants as decentralised, nimble and reactive in radiologist-owned practices. This model accelerates tasks, encourages a sense of team, and leads innovation. Unlike hospital-owned practices, where business decisions often are made remotely by corporate structures at the expense of local providers'

expertise and their finger on the pulse of a community's health delivery system, these practice models take advantage of proximity to knowledge and situational awareness when choosing what they do.

Theoretical alignment includes:

- Contingent Theory - The type of ownership is appropriate for the current dynamic health sector, in that flexible decisions need to be made quickly.
- Resource-Based View (RBV) - The internal control over strategic resources such as human, financial and technology is a basic strategic hygienic factor.
- Lincoln and Guba's Trustworthiness Criteria - Participant stories have been consistent here, which may highlight good dependability and credibility in these devolved modes.

Yet such independence also means that individuals are burdened to fulfil several roles, as well as juggle different demands without the support of extensive administrative structures. Decision-making is at a premium velocity, but the cost of execution is distributed thinly across a decreasing number of heads, which we will delve deeper into under operational challenges in the next section.

4.4.1.3 Operational Challenges and Opportunities

Radiologist-owned practices, while agile and decentralised, also face structural and resource-related challenges that influence their ability to deliver high-quality care consistently. Participants described limitations in workforce capacity, infrastructure maintenance, IT support, and long-term sustainability planning. At the same time, the autonomy inherent in these models opens opportunities for service differentiation, personalised workflow design, and internal innovation. The dual nature of these experiences, constraints and agency was a dominant thread across all six cases.

- Billing Administrator - Human resource strain

The billing administrator expressed concern about being "*overstretched*" due to multitasking: "*We do not have enough admin staff, so one person handles billing, phones, reception, it's too much sometimes*." Despite this, she also described the opportunity to

improve internal systems: "*We've started using short codes and colour tags for account types, it wasn't there before*". This tension between the burden of work and informal innovation reflects the strengths and weaknesses of a decentralised system. It aligns with Contingency Theory, where flexibility can breed creativity, but without structured support systems, this can also lead to burnout and inefficiencies.

- Receptionist - Tech and space constraints

The receptionist noted limitations in physical and technological infrastructure: "*We don't have enough computers, sometimes we share,*" and "*our waiting area is very small, and patients complain.*" However, she also emphasised the openness of leadership to improve: "*When I raised it, the radiologist said we can look into rearranging or adding seats*". Her experience reveals environmental constraints often associated with independently managed health facilities. However, it also underscores the Institutional Theory perspective: where internal actors shape systems through localised decisions, even in the absence of formalised protocols.

- Head Radiographer - Limited tech upgrades

The head radiographer observed delays in the purchase of newer imaging equipment: "*Our machine is functional but a bit outdated… we must budget carefully*." She said that, although radiologist-

owners attempt to act fast, "*capital upgrades take longer because we need to save over time*." This is an example of a classic Resource-Based View (RBV) limitation, where ownership allows for control, but constrained capital access limits the ability to renew strategic resources. It could impact the service's competitiveness in markets where hospital-owned units have centralised capital budgets.

- Practice Manager - regulatory and risk exposure

The practice manager emphasised regulatory burdens: "*We have to handle all compliance ourselves… no corporate risk or legal department to help."* He also flagged challenges in standardising processes across staff: "*If I'm away, processes can slip because it's hard to maintain consistency*". Here, decentralisation produces a vacuum in

institutional support, placing compliance and operational risk directly on the shoulders of a few individuals.

- Senior Radiographer - Scheduling pressure

The senior radiographer described inefficiencies caused by under-resourcing: "*There are days when we are short of radiographers, and we have to delay scans*." She added that "*public holidays and weekends stretch the team*" but appreciated the flexibility to "*adjust shifts without asking higher management*". This reinforces the pattern of flexible but strained staffing and illustrates what Institutional Theory call "*role layering*", where adaptability is enhanced by blurred professional boundaries, yet systemic support is lacking.

- Radiologist (Professor) - Sustainability risk

The interventional radiologist described the strategic potential ownership presented but noted long-term sustainability risks: "*We compete with hospital-owned practices who have deeper pockets and more brand power*." He also talked about burnout, "*I do clinical work, business operations, and HR… it's a lot*". This recognition reflects a wider strategic tension: Ownership creates a degree of clinical and operational autonomy but may risk losing focus, leading to personal burnout, and scalability limits. This is consistent with elements of contingency theory, which contend that success depends on aligning organisational design with the level of operational complexity, balancing which independent practices are less well fitted.

- Interpretive synthesis

The operational issues among all coinvestigators were also categorised based on four domains as follows:

- Staff retention and workload demand (Billing Administrator, Senior Radiographer)
- Restrictions in infrastructure and equipment (Receptionist, Head Radiographer)
- Regulatory and Compliance Issues (Practice Manager)
- Strategic sustainability risks (Radiologist-Professor)

But those limiting factors were met by an equally compelling narrative of opportunity:

- Agile shift structuring
- Internal workflow innovations
- Open communication with owners
- Quick response to frontline feedback

This paradox reflects a fundamental truth of qualitative organisational analysis: distributed models are adaptive, yet at the same time make risk and accountability quite centralised. The lack of layered institutional support makes them agile but exposed. Table 4.6 demonstrates this analysis alongside the theoretical framework on which this study is based. The model below provides a clear visual of the findings, incorporating challenges and opportunities across five key operational domains.

Table 4.6: Synthesis Model: Operational challenges and opportunities in radiologist-owned practices

Operational Domain	Observed Challenges	Opportunities	Theoretical Lens
Human Resource	• Staff shortages • Role duplication • High individual workload	• Versatile workforce • Empowered decision-making	Contingency Theory
Infrastructure	• Delayed tech upgrades • Physical space constraints	• Flexibility in procurement decisions • Quick implementation of layout changes	Resource-Based View (RBV)
Workflow & Processes	• Manual systems • Limited redundancy • Overdependence on key individuals	• Agile workflow adjustments • Innovation from frontline staff	Institutional Theory
Compliance & Governance	• Lack of formal compliance units • Risk burden on Individuals	• Direct knowledge of standards • Ability to respond quickly to regulatory	Institutional Theory and Contingency Theory

		changes	
Strategic Positioning	• Limited market visibility • Lower capital reserves • Fragile long-term scalability	• Niche differentiation • Closer clinician -patient relationships • Autonomy in brand and service design	RVB and Contingency Theory

Source: Author's own illustration (2025)

- Implications of practice

The balance model is the key lesson here. While ownership promotes agility, empowerment, and innovation in services, its lack of systems and infrastructure support can become counterproductive as complexity grows. How accurately we manage this will determine how much we sap the spirit of autonomy as we construct the institutional framework to hold us up in our rush away from poverty, which may become increasingly complex amid growing competition and policy developments such as South Africa's National Health Insurance (NHI) reform.

4.4.1.4 Quality Control, Innovation and Patient Outcomes

Quality control was reported as not being structured or policy-based, but rather integrated into everyday clinical judgment, interprofessional confidence, and line management. In radiologist-owned practices, quality practice can be based as much on 'watching each other's backs', role awareness, and group culture as it is driven by an institutionalised QA process or the measurement of Key Performance Indicators (KPIs). This allowed quicker innovation and adaptation of the protocol but also led to a variety and informality that do not scale well. Yet participants viewed these conditions as enabling high responsiveness to patient needs and clinician input.

- Billing Administrator - Patient-centred efficiency

The billing administrator explained that patient feedback was often informal but acted upon swiftly: "*When patients raise issues, like delays in receiving statements or confusion over codes, we change things immediately. No need to wait for monthly meetings*." She emphasised that this culture of direct responsiveness improved "*patient confidence in the service*" and reduced complaints. This insight reflects the Institutional Theory principle that quality can emerge from informal norms and practices shaped by organisational culture rather than codified systems.

- Receptionist - Patient feedback as innovation trigger

The receptionist noted that changes to the waiting area, booking system, and signage were implemented in response to "*what patients say every day*." She remarked, "*Patients*

complain, and we adjust. At the hospital, it would take a month of emails." She also said that "*our follow-up reminders and bookings have become faster*" because staff initiated a new system using WhatsApp and colour-coded folders. Her comments speak to grassroots innovation, what Innovation Theory describe as "*contextual problem-solving*", highlighting how frontline autonomy enables responsiveness and service-level enhancement.

- Head Radiographer - Continuous protocol refinement

The head radiographer explained that "*we constantly update imaging protocols*" and that "*radiologists involve us when trying something new or refining a scan sequence*." She mentioned that staff meetings are used to assess scan quality or patient complaints: "*It's informal, but we talk and fix things*." However, she acknowledged the absence of formal documentation or audit logs. This reflects an experiential learning model of quality control, continuous and adaptive, but lacking in standardisation. It demonstrates how learning happens in a dynamic professional ecosystem but raises questions about traceability and external accountability.

- Practice Manager - Ownership foster accountability

Quality is "*taken seriously because it affects our name and referrals*," said the practice manager. He noted that "*doctors want their patients scanned quickly, accurately, and without chaos, that's our quality test*." However, he also admitted the lack of written Standard Operating Procedures (SOPs) or benchmarking tools: "*We go by experience, not documentation*." This buttresses the RBV: quality is ensured through the reputational capital of radiologists and the goodwill of referring doctors. Non-existence of formal KPIs may lead to objective performance tracking and quality assurance difficulties.

- Senior Radiographer - Workflow and imaging consistency

The senior radiographer noted that "*we try to ensure all radiographers follow the same imaging standards, especially for CT protocols*." However, she admitted it relies on "*experience, verbal reminders, and trust*." Despite that, she stated that "*patients are usually satisfied*" and that reporting turnaround is "*better than at big hospitals*". Again, this

shows a personality-driven quality system, efficient and trusted, but vulnerable to staff turnover or scaling challenges. It also reflects an ethos in which clinical familiarity substitutes for formal quality assurance processes.

- Radiologist (Professor) - Rapid innovation & limited evaluation

The interventional radiologist viewed the autonomy of ownership as a strategic enabler of innovation: "*We trial new techniques regularly… without waiting for board approval*." He described introducing perfusion imaging, streamlining contrast protocols, and training radiographers in new interventional workflows. However, he noted that "*we lack formal outcome tracking or peer audit, it is all experience-based*". This aligns with the concept of clinical entrepreneurship, where independent units serve as testing grounds for innovation. Yet it also underscores the absence of structured, outcome-based evaluation frameworks that would allow for evidence-informed refinements.

- Interpretive synthesis

Quality control across all six participants was informal, not a formal structure. It relied heavily on:

- Trust and professional collaboration
- Rapid responsiveness to feedback
- Continuous, informal improvement cycles

However, weaknesses included:

- Absence of documented SOPs
- Absence of formal auditing or review
- Minimal patient outcome measurement tools

Key Takeaways:

- Strengths: Extremely adaptable, responsive to patient load, creatively motivated and clinically involved.

- Concerns: Lack of rigour in processes, potential for inconsistency, lack of benchmarking and traceability.

The tensions described in this section are consistent with Contingency Theory; radiologist-owned practices are shaped by the conditions in which they operate but may also require structural change if they are to continue to provide quality care as their size and interactions with regulation (such as NHI) increase.

4.4.2 Hospital-Owned Radiology Department

4.4.2.1 Theme 1: Workflow Efficiency and Service Delivery

- Head of Department

The Head of the Department provides a brief overview of the workflow dynamics during the transition from radiologist-owned to hospital-owned. Digital PACS (Picture Archiving and Communication System) and registry system helped track patient throughput accurately and improved transparency as well as performance management. She notes, "*With the new PACS system, we are able to pinpoint exactly how long it takes to register the patients, how long the patients are waiting… we are able to determine exactly what our turnaround times are and where we are lacking*." However, she also warned that staff training and complexity of programme continue to be challenges during times of high demand, while having corporate resources has helped offset this load.

- Receptionist/Admin

The receptionist provides a frontline perspective on workflow bottlenecks. Transitioning to new software platforms introduced registration delays, especially for first-time patients. She explains: "*It takes about 40 minutes for a new patient to be processed… whereas someone in the system takes two minutes. So, the system is better long-term, but it's still teething*." Despite inefficiencies during initial system integration, the digitisation process is viewed as a net improvement, particularly with enhanced internet infrastructure and cloud-based report sharing. However, these advances were not universally accessible, especially for rural patients without email access.

- Claims Administrator

The Claims Administrator stresses procedural standardisation and digital integration, including billing workflows and patient record management. She confirms, "*Everything is now done on Infinite. The turnaround time is still improving, but billing happens almost immediately, and reconciliation is more accurate*." Automated claims and fewer manual interventions improved accountability and reduced administrative delays, thus improving service delivery in a financial processing capacity.

- Practice Manager

The manager described the transition phase as "*operationally turbulent*," but there was increasing stabilisation under the corporate ownership model. They noted that: *"The first six months were chaotic. We had dual systems running… but now, with centralised IT and equipment calibration from head office, things are smoother*." However, bureaucratic approval procedures continue to hinder rapid operational change, suggesting a trade-off between standardisation and adaptability.

- Lead Radiologist

From a clinical leadership perspective, the lead radiologist pointed out a growing detachment from operational decision-making. Nonetheless, she acknowledged the benefits of automated scheduling and report dissemination: "*Now that we've removed the typists and moved to voice reporting and automation, the average report turnaround is under 24 hours unless urgent.*" Although radiologists have less direct control over administrative aspects, clinical efficiency, particularly in diagnostic output, has improved through technology integration.

- Radiographer

Having worked in both radiologist-owned and hospital-owned environments, this participant noted the difference in workload management and service delivery: "*In the hospital-owned model, everything is protocolled… you scan, you report, and you move on. It's efficient, but you lose a bit of that personalised pace you had in the private model*." She appreciated the predictable structure and workflow standardisation under hospital

ownership but noted the loss of individualised decision-making and immediate intervention capabilities.

- Interpretative synthesis

Across all six participants, the transition to hospital-owned radiology departments has led to:

- Greater standardisation of workflows through digitised systems (e.g., PACS, Infinite).
- Improved report turnaround times, especially for follow-up patients.
- Challenges in initial implementation, including steep learning curves and registration delays.
- More structured, less flexible workflows, leading to both increased efficiency and reduced autonomy.

The theme highlights a paradox central to hospital-owned radiology: while efficiency and consistency have improved, these gains have come at the expense of personalisation and immediate adaptability.

4.4.2.2 Theme 2: Decision-Making Autonomy and Flexibility

- Head of Department

She detailed a clearly hierarchical structure of governance, in which the decision-making is "*channelled through management lines*." This is a way of standardisation, but it doesn't give any room to the department to operate independently: "*We can make some operational suggestions… but for most things, like equipment, software, or even signage, it must go through corporate channels. You can motivate, but you can't act*." This is typical of a top-down management model found in corporatised hospital systems. This concept fits with Institutional Theory, where decisions are embedded in broader organisational routines that stabilise operations, often at the expense of local flexibility.

- Receptionist/Admin

The receptionist reinforced the idea of limited operational influence. While she felt her voice was heard at the team level, her suggestions had to follow a formalised chain before implementation: "*We give feedback to the supervisor, but we don't really change things ourselves. For example, I suggested a more visible signage for the changing rooms, but it still hasn't changed*." This shows that staff at the administrative level are somewhat detached from decision outcomes. Unlike in radiologist-owned models, where front-desk staff implement real-time changes, here decision-making is centralised and slow-moving.

- Claims Administrator

In terms of workflow changes and billing procedures, the Claims Administrator clarified that: "*We follow the protocols set by head office… There's no room for personal discretion. If a code doesn't pull through, we escalate to Information Technology (IT); no one changes anything manually*." This demonstrates zero discretionary authority at her level; protocol overrides and dynamic responses are discouraged, reinforcing standardisation and control over flexibility. However, this also minimises error, improving consistency.

- Practice Manager

The Practice Manager described a dual tension, i.e., responsibility without equivalent authority. They are responsible for site-level outcomes but must escalate most decisions: "*We manage the day-to-day operations, but everything strategic, staffing changes, budgeting, or IT implementation, must be approved at the national level. We execute, not decide."* This corresponds to what literature often describes as "operational responsibility without strategic voice." While it protects governance integrity, it may lead to demotivation at the middle-management level and hinder adaptive change.

- Lead Radiologist

The lead radiologist thought about the lower clinical authority of the hospital-owned model: "*I used to be part of management decisions, now I'm more like a contractor. My input is valued for patient care, but not for broader system decisions, procurement, hiring,*

or tech upgrades are now above my level." This limitation on radiologist autonomy is completely different from under the radiologist-owned model, where clinicians wield both financial and operational control. Here, the ownership of the hospital curtails the clinical voice in non-clinical decision-making, resulting in potential dissonances between strategy and reality at the frontline.

- Radiographer

The radiographer provided a direct comparison of autonomy levels: "*In the private [radiologist-owned] model, you could suggest a change, and it would happen the same week. Here, you raise it in a meeting, it goes to management, and you wait weeks, sometimes months*." She described the hospital system as "*more stable but less responsive,"* reflecting a trade-off between consistency and speed.

- Interpretive synthesis

Across all participants, the following insights arise regarding autonomy and flexibility within hospital-managed radiology departments. Table 4.7 illustrates the notion in regard to independence and flexibility.

Table 4.7: Autonomy and flexibility analysis

Dimension	**Observed Pattern**
Governance Structure	Centralised decision-making through formal hospital/corporate hierarchy.
Clinical Input	Radiologists affect patient care but not infrastructure or administrative systems.
Operational Responsiveness	Lower: Workflow changes are slow and subject to multiple layers of approval.
Administration Autonomy	Minimal: Front-line staff cannot make spontaneous changes or process improvements.

Middle Management Power	Limited strategic control despite operational responsibility.

Source: Author's own illustration (2025)

Based on this analysis, Institutional Theory describes the rigidity and routinisation of decision pathways, ensuring consistency but restricting adaptive innovation. Contingency Theory highlights a potential misfit, while standardisation helps manage risk across hospitals, it can hinder the responsiveness required in dynamic clinical environments.

4.4.2.3 Operational Challenges and Opportunities

- Head of Department

Head outlined several operational challenges arising from the transition to hospital ownership, most notably workflow rigidity and reporting burdens: "*All changes have to be approved, sometimes up to three levels. If the system fails, we can't override or workaround it; it has to be escalated, and we wait. That's frustrating during emergencies*." She also mentioned opportunities in digitisation and performance tracking, suggesting that centralised systems enabled evidence-based improvement despite slower responses. The environment provides structured growth opportunities but lacks situational flexibility.

- Receptionist/Admin

The receptionist highlighted persistent technical and infrastructure-related challenges, particularly during the onboarding of new software systems (e.g., Infinite). She noted, "*We had days where we couldn't log into the system, and IT was off-site. So, we'd queue patients manually, then re-enter later. That creates delays and mistakes*." However, she acknowledged that once stabilised, the system improved traceability and enabled more accurate data capturing, an operational opportunity that radiologist-owned practices lacked. Still, she emphasised that rural patients are often excluded from digital communication (e.g., email-only report access), presenting an inclusion barrier.

- Claims Administrator

The Claims Administrator described a bureaucratic-heavy claims environment: "*You can't edit or reprocess without formal permission. If the account's wrong, you send a query and wait. It's cleaner but not faster*." She added that corporate audit protocols added accountability but introduced delays, a trade-off between compliance and agility. The structured environment reduces error, but at the expense of real-time problem-solving.

- Practice Manager

The Practice Manager noted disconnection at the strategic level between hospital leadership and radiology-specific requirements: "*Imaging has unique challenges, timing, tech, emergencies, but decisions are made centrally, sometimes by people with no imaging background*." He identified opportunities for improved resource allocation and shared budgets, but he also noted a lack of authority to customise staffing or procure equipment. There's potential for value from scale, but only if clinical voices become an integral part of strategic planning.

- Lead Radiologist

The Lead Radiologist identified equipment standardisation as a double-edged sword: "*We got a new ultrasound machine that no one asked for. It's good quality, but it doesn't fit our workflow. Now it just sits in a corner most days*." That is a classic problem of centrally controlled environments that results in an operational misalignment between procurement and practice. She later expressed grief about the lack of voice in hiring decisions, which indirectly impacts clinical operations through staffing dynamics.

- Radiographer

This participant outlined strict protocol adherence as both a safeguard and a barrier: "*There's a protocol for everything. It's safe and predictable, but if a patient needs urgent scanning outside hours, we can't always accommodate without three levels of sign-off*." She emphasised that while the hospital system ensures safety and legal compliance, it sacrifices workflow agility, especially in emergency or high-volume scenarios.

- Interpretive synthesis

Operational Challenges Identified

- Delayed responsiveness due to approval chains and policy-driven decision-making.
- IT dependency and system rigidity, especially during outages or transitions.
- Staffing inflexibility and inability to adapt quickly to workload surges.
- Disconnection between central procurement and department-specific needs.
- Barriers to rural patient inclusion in digital-first reporting systems.

Operational Opportunities Noted

- Digitised workflow systems improving traceability and analytics.
- Centralised quality assurance supporting legal compliance.
- Standardisation reduces variation in imaging protocols.
- Scalability of infrastructure and training under the corporate umbrella.

Theoretical Reflections

- Institutional Theory explains the constraints introduced by centralised control, standardised systems, and compliance-focused routines.
- Contingency Theory reveals a potential misfit between operational demands (e.g., emergency scanning, fast-track billing) and the bureaucratic design.
- Resource-Based View (RBV) suggests that while physical and informational resources are plentiful, intangible resources (e.g., team autonomy, clinician voice) are constrained.

4.4.2.4 Quality Control, Innovation, and Patient Outcomes

- Head of Department

The head provided insight into how quality controls in corporate hospitals are enforced through centralised policies and audit tools. She described performance tracking as tightly monitored: "*We do weekly quality audits. Our infection control, turnaround times, and reporting volumes are all logged centrally. There's no room to fall short repeatedly; performance is visible*." This embodies an institutionally enforced quality system that is

propelled through metrics, performance dashboards, and top-down accountability. The system manages with consistency but can focus on compliance more than adaptive concepts.

- Receptionist/Admin

At the frontline, the receptionist viewed quality control primarily through patient feedback mechanisms. Although her role is not managerial, she explained how patient complaints or compliments are escalated: "*Patients give feedback through surveys and forms. It's monitored monthly. We don't always see the changes, but management does follow up*." While this reinforces a culture of feedback collection, it suggests that response mechanisms are opaque to lower-tier staff. There is a clear formalised monitoring system, but little decentralised empowerment to act on feedback at source.

- Claims Administrator

In a billing context, quality was assessed based on accuracy and audit readiness. The Claims Administrator said, "*If your claim is wrong, it's flagged in the audit. We don't have second chances; they want 98% and above clean claims rate*." This increases the value of the financial assurance on quality assurance, but it tends to deter flexibility or discretion in addressing complex patient circumstances. The claims environment is quality-focused but inflexible.

- Practice Manager

While the manager was happy that compliance-driven quality systems abound, he cautioned against innovation inertia: "*Quality is measured, no doubt. But the downside is that innovation is slow. You need approvals, trials, and sign-off. Good ideas die waiting*." There is a tension here between controlled quality and the pace of innovation. It supports stability but precludes proactive betterment.

- Lead Radiologist

The radiologist provided a clinical view of how innovation is constrained: "*In the old system, we'd trial a new imaging protocol by end of week. Now it has to go through R&D,*

regional clinical heads, and risk assessment. We've lost momentum." She acknowledged that patient safety and standardisation have improved, but felt clinical agility has been reduced. Her account illustrates a shift from clinician-led quality to administrator-defined metrics.

- Radiographer

Working in both models, this participant provided a valuable comparison: "*Here, everything's by the book. You don't get unsafe practices, which is good. But if you want to try a new technique or change sequence settings, you can't. You follow protocol, or you're flagged*." This highlights how quality is tightly regulated, reducing variation and error, but also discouraging frontline innovation and experimentation.

- Interpretive synthesis

Strengths of Hospital-Owned Quality Systems:

- Repetitive formal audits of cycles maintain uniformity, safety and accountability.
- Strong levels of compliance are a way to mitigate legal and clinical risks.
- Real-time monitoring is made possible by digitised dashboards and reporting.
- Organised training and protocols equalise service levels.

Limitations Identified:

- Innovation impasse due to long approval processes.
- Disempowerment of clinicians, particularly radiologists, who wish to better tailor the protocols.
- Quality feedback and front-line invisibility in response cycles: Feedback may not lead to change on the ground.
- Excessive standardisation and its role in preventing the flexibility of adaptation towards patient-specific or institution-specific workflow requirements.

Theoretical Reflections

- Institutional Theory accounts for the pervasive procedural thickening and normative inertia but also predicts stagnation at innovation in bureaucracies.
- According to Contingency Theory, such departments would be overfitted for regular surroundings and might have a hard time adjusting during a crisis or emergent situations.
- RBV uncovers that infrastructure and auditing are solid, but human capital (e.g., clinical talent, frontline experience) is underleveraged in the innovation workstream.

Table 4.8 on page 107 is a text-based synthesis of Themes 1-4 for the hospital-owned radiology department. It offers a brief analysis of these themes in relation to the research questions and objectives.

Table 4.8: Synthesis of key themes in hospital-owned radiology department

Theme	Observed Strength	Observed Limitations	Theoretical Lens
Workflow Efficiency & Service Delivery	• Standardised processes enhance predictability and structure • Digital systems improve patient tracking and turnaround metrics • Improved access to central IT support	• Initial implementation delays (software transitions) • Longer patient registration for new cases • Reduced flexibility in urgent workflow adjustment	• Contingency Theory: Fit between tech systems and operational needs • RBV: Infrastructure as a strategic asset
Decision-Making Autonomy & Flexibility	• Clear governance hierarchy ensures consistency • Escalation protocols reduce error risks	• Limited autonomy for radiologists and staff • Strategic decisions made without clinical input • Slow approval for even minor operational adjustments	• Institutional Theory: Stability through routinisation • RBV: Underutilised human capital
Operational Challenges & Opportunities	• Access to corporate procurement, IT, and shared infrastructure • Quality assurance embedded through KPIs and reports	• Disconnection between central decisions and clinical realities	• Contingency Theory: Misalignment with emergent clinical needs

		• Limited control over hiring, procurement, and resource planning • Inflexible response in crises	• Institutional Theory: Bureaucratic Inertia
Quality Control, Innovation & Patient Outcomes	• Routine audits and patient safety protocols enforced • Structured performance monitoring through digital systems	• Innovation bottlenecks due to top-down approvals • Reduced clinician influence on protocol development • Feedback loops opaque to frontline staff	• Institutional Theory: Formalisation of quality • RBV: Clinical expertise sidelined in innovation processes

Source: Author's own illustration (2025)

Drawing on the results reported in Themes 1-4 and the complete cross-model analysis, Table 4.9 on page 108-109 outlines coverage of the research questions and related objectives (both primary and secondary) within this study. It provides evidence of data saturation, with all key thematic areas closely explored for twelve participants (6 from each model), indicating depth across these models.

Table 4.9: Alignment between research questions/objectives and findings

Research Questions/Objective	Extent Addressed in Findings	Evidence of Saturation
Primary Research Question: How do ownership models influence strategic decision-making and operational practices?	Fully addressed through cross-model comparison in Themes 2 and 3, showing clear contrasts in decision-making autonomy, governance structures, and operational authority.	Saturation was achieved across all 12 interviews with repeated themes of autonomy, divergence, and structural contrast.
Secondary RQ1: How do workflow efficiency, patient management, and service provision differ?	Directly addressed in Theme 1. Radiologist-owned practices were agile and personalised; hospital-owned practices were structured but slower.	Similar observations recurred among all radiographers and managers across both models.
Secondary RQ2: What autonomy in decision-making exists between ownership models?	Explicitly explored in Theme 2. Radiologist-owned models afforded wide-ranging decision power; hospital-owned models showed centralised control and delays in approval.	Converging data from all staff levels confirmed consistent power dynamics across both groups.

Secondary RQ3: What are the implications for operational flexibility and patient care?	Themes 2 and 3 jointly addressed this. Radiologist-owned models promoted responsiveness but risked inconsistency; hospital-owned models ensured stability but reduced agility.	Themes repeated consistently across roles, including clinicians, admin, and operations.
Secondary RQ4: What factors should radiologists/administrators evaluate when organising operations?	Implicitly answered through cross-theme synthesis. Themes 3 and 4 provide insights into structural resilience, staff burden, and innovation potential per model.	Interview data included diverse roles, yielding comprehensive perspectives.
Secondary RQ5: How do quality control and innovation differ under each model?	Directly answered in Theme 4. Radiologist-owned models are informal but flexible; hospital-owned models are formalised but innovation-resistant.	Patterns observed across radiologists, managers, and radiographers.
Secondary RQ6: What do divergent findings imply for policy and private sector performance?	Addressed in Chapter 5 discussion and comparative synthesis. Implications drawn for NHI alignment, autonomy regulation, and decentralised decision-making.	Perspectives reinforced through analytic generalisation and strategic implications across data.
Primary Objective: Compare strategic decision-making and operations in both models.	Achieved through comprehensive cross-case and cross-theme comparison. Synthesised in Chapter 5.	Repetitive responses were confirmed across multiple participants.

Secondary Objective 1: Assess ownership impact on workflow, patient care, and service delivery.	Fully addressed in Theme 1. Contrasts in digital systems, adaptability, and personalisation are evident.	Findings triangulated across receptionists, radiographers, and managers.
Secondary Objective 2: Explore variances in governance autonomy.	Addressed in Theme 2. The central theme in distinguishing the two ownership models.	Clear patterns with no new emergent themes, confirming saturation.
Secondary Objective 3: Assess the effect of autonomy on flexibility and care.	Themes 2 and 3 jointly support this. Greater autonomy is linked with flexibility but weaker system redundancy.	Consistent across all radiologist interviews.
Secondary Objective 4: Identify concerns/benefits for radiologists and administrators.	Found in all themes. Radiologist-owned = empowerment + strain; Hospital-owned = support + bureaucracy.	Covered via multidimensional roles (radiologists, PMs, admins).
Secondary Objective 5: Analyse quality assurance, service development, and patient outcomes across models.	Theme 4 provided full coverage. Quality is more formalised in the hospital-owned model; innovation is freer in the radiologist-owned model.	Themes repeated across models and corroborated in discussion.

Secondary Objective 6: Investigate structural/policy implications for SA's private health sector.	Addressed in Chapters 5 and 6. Emphasis on regulatory readiness, innovation environments, and NHI compliance.	Saturation is achieved through consistent responses and reflections from professionals in both environments.

Source: Author's own illustration (2025)

This table not only demonstrates alignment with all research objectives and questions but also offers methodological assurance that data saturation was reached, given the redundancy, consistency, and depth across diverse roles in both ownership contexts.

4.4 Summary of the Chapter

Chapter 4 presented the empirical results from twelve semi-structured interviews conducted at two separate radiology ownership structures in South African private hospitals: radiologist-owned practices and hospital-owned departments. After thematic analysis, there emerged four central themes: (i) Workflow Efficiency and Service Delivery, (ii) Decision-Making Autonomy and Flexibility, (iii) Operational Challenges and Opportunities, and (iv) Quality Control, Innovation, and Patient Outcomes. These themes were examined against the objectives and theoretical focus of the study.

Participants in radiologist-owned settings reported on consistently high operational flexibility, fast decision-making and a culture of informal innovation. Still, this model showed structural flaws too, including an over-reliance on individual leadership and a lack of formal governance protocols. By contrast, hospital-owned departments outperformed in infrastructure, standardisation, and compliance-driven quality control, but also struggled with bureaucratic inertia, reduced clinical autonomy, and slower responsiveness. There was evidence of data saturation, as consistent patterns emerged across organisational settings and roles. The results provide a strong basis to consider the effect of ownership on organisational behaviour, staff empowerment, and customer service outcomes in diagnostic imaging.

Based on the empirical research presented in Chapter 4, Chapter 5 critically analyses the influence of the ownership models on radiology practice within South Africa’s private healthcare sector. Thematic insights are synthesised in this chapter, drawing on the Resource-Based View (RBV), Institutional Theory, and Contingency Theory, thus presenting a comparative framework of organisational conduct, service dynamics and strategic decision making on both ownership managements. Chapter 5 will examine the implications of the intersection between autonomy and innovation for workflow responsiveness and control quality. This interpretive exercise provides a foundation for developing practical advice and recommendations for this study.

CHAPTER 5: DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This concluding chapter presents the principal findings of the study and offers practical recommendations based on the comparison of radiologist-owned versus hospital-owned radiology departments in the South African private sector. The findings were organised into four themes: workflow efficiency and service delivery, decision-making autonomy and flexibility, operational challenges and opportunities, and quality control, innovation, and patient outcomes. This chapter discusses these findings explicitly in relation to the prior studies presented in the literature review (Chapter 2) , demonstrating how the empirical evidence from this research aligns with, extends, or challenges existing scholarship. The discussion is framed within the study's three theoretical perspectives: the Resource-Based View (RBV), Institutional Theory, and Contingency Theory. The chapter also considers the implications of these findings for healthcare leadership, policy direction (particularly in the context of South Africa's impending National Health Insurance), and professional practice in diagnostic imaging services. Finally, recommendations are proposed for various stakeholders, study limitations are acknowledged, and directions for future research are suggested.

5.2 Thematic Comparison by Ownership Model with Reference to Prior Studies

Table 5.1 below provides a thematic comparison of radiologist-owned and hospital-owned radiology departments based on the primary data gathered through interviews. A fourth column has been added to explicitly link each comparative observation to the relevant literature reviewed in Chapter 2. Following the table, each theme is discussed in greater depth, with detailed references to specific authors and theoretical frameworks **Table 5.1:** Cross-Model thematic compari

Table 5.1: Cross-Model thematic comparison with Reference to prior studies

Theme	Radiologist-Owned Departments	Hospital-Owned Departments	Reference to Literature
Workflow Efficiency and Service Delivery	High agility and responsiveness; workflow adapted in real-time; less bureaucracy, faster clinical turnaround. Participants reported the ability to "slot in urgent cases quickly" and adjust schedules without multiple approvals.	Standardised systems (PACS, Infinite) improve traceability and consistency, but initial implementation delays and procedural rigidity can slow responsiveness. New patient registration times were noted as a persistent challenge.	Confirms Slack & Brandon-Jones (2022), who noted that independent systems benefit from greater flexibility and adaptability, while hospital-integrated services may be bureaucratically cumbersome. Extends Porter & Teisberg's (2006) observation that centralisation aids standardisation but may reduce responsiveness. Aligns with Sithole et al. (2022) on operational integration

			challenges in South African private hospitals.
Decision-Making Autonomy and Flexibility	Radiologists lead both clinical and operational strategy; staff at all levels feel empowered to act; flat hierarchy supports rapid innovation and problem-solving. One participant noted, "If I need to change something, I can talk directly to the practice manager or radiologist."	Decisions escalated to corporate or hospital management; minimal local discretion; clinicians excluded from strategic infrastructure decisions. Participants described a system where "even small changes had to go through multiple approvals."	Aligns with Andersen's (2019) analysis of governance in physician-owned entities, where strategic control remains with clinical leaders. Supports Scott's (2017) Institutional Theory perspective, which explains how formalised hierarchies in hospital settings create stability but constrain local autonomy. Confirms Crooks et al.'s (2021) observation that excluding clinicians from strategic decisions creates disengagement.

Operational Challenges and Opportunities	Staff burnout due to lean teams; no formal backup or compliance units; strong internal coordination but external risk exposure. Opportunities lie in niche service differentiation and close clinician-patient relationships.	Robust infrastructure and support systems, but compromised responsiveness and contextual fit; role ambiguity in middle management. Opportunities include economies of scale and structured career pathways.	Reflects Barney's (1991) Resource-Based View: radiologist-owned practices leverage intangible assets (agility, relationships) but lack tangible resources; hospital-owned departments possess tangible infrastructure but underutilise human capital. Confirms Nguyen et al.'s (2023) observation that hospital-owned departments benefit from scale but struggle with contextual adaptation. Supports RSSA (2023) concerns about sustainability in independent South African practices.

Quality Control, Innovation, and Patient Outcomes	Quality based on internal trust and culture; fast-paced innovation with minimal formal assessment; highly adaptive service design, including rapid protocol modifications and new service development. However, lack of formal documentation and audit trails was noted as a vulnerability.	SOP-driven quality systems and digital audits ensure consistency and regulatory compliance; innovation constrained by bureaucracy; limited feedback visibility for frontline staff. Participants noted that "good ideas die waiting" for approval.	Supports DiMaggio & Powell's (1983) Institutional Theory, where formalised quality systems in hospital settings reflect coercive and normative pressures. Confirms Schoeman's (2023) finding that radiologists in hospital-owned settings face managerial constraints that impact innovation. Extends RSSA (2023) observations on informal quality mechanisms in independent practices. Aligns with Nguyen et al. (2023) on the tension between standardisation and innovation.

Source: Author's own illustration (2025)

5.3 Discussion of Findings in Relation to Prior Studies

5.3.1 Workflow Efficiency and Service Delivery

The finding that radiologist-owned practices demonstrate significantly greater agility and responsiveness in workflow management directly confirms the observations of Slack and Brandon-Jones (2022), who noted that independent healthcare systems benefit from flexibility and adaptability precisely because they lack the bureaucratic layers characteristic of large institutions. Participants in this study consistently reported the ability to adjust schedules, prioritise urgent cases, and modify workflows in real-time, a direct reflection of the decentralised decision-making structures described in Section 2.4.1.

This finding also extends the work of Porter and Teisberg (2006), who observed that while centralisation aids standardisation and risk management, it can compromise responsiveness to dynamic clinical demands. The present study provides empirical evidence from the South African context that supports this trade-off. Radiologist-owned practices exemplified the benefits of decentralisation, while hospital-owned departments illustrated the efficiency-consistency tension that Porter and Teisberg (2006) theorised.

The implementation challenges reported by hospital-owned department participants, particularly during new patient registration and system transitions, echo the operational integration difficulties documented by Sithole et al. (2022) in South African private hospitals. Sithole and colleagues found that while digital systems improve traceability, they often introduce new inefficiencies during transition periods, a finding that this study corroborates.

However, the agility of radiologist-owned practices comes at a cost. The reliance on lean teams and informal systems, while enabling rapid responses, also creates vulnerabilities. Participants acknowledged being "overwhelmed" by workload and concerned about the sustainability of current practices. This finding extends the work of the RSSA (2023), which noted that independent South African practices often struggle with resource constraints and sustainability challenges.

From a theoretical perspective, these findings illustrate the Resource-Based View (Barney, 1991) in action. Radiologist-owned departments leverage intangible resources, clinical autonomy, trust-based relationships, and tacit knowledge, to achieve workflow efficiency. Hospital-owned departments, by contrast, optimise tangible resources, digital infrastructure, capital equipment, and formalised processes. Each resource configuration produces distinct operational outcomes, and neither is inherently superior; rather, each is suited to different environmental demands, as Contingency Theory would predict (Lawrence & Lorsch, 1967; Donaldson, 2001).

5.3.2 Decision-Making Autonomy and Flexibility

The contrast in decision-making autonomy between the two models strongly aligns with Andersen's (2019) analysis of governance in physician-owned entities. Andersen argued that when strategic control remains with clinical leaders, it fosters a sense of ownership and accountability throughout the organisation. This study's findings from radiologist-owned practices, where staff at all levels felt empowered to act and the flat hierarchy was seen as a key enabler of innovation, provide empirical support for Andersen's theoretical position.

Participants in radiologist-owned practices consistently contrasted their experience with previous roles in hospital settings, where even minor decisions required multiple layers of approval. This loss of local discretion in hospital-owned departments reflects what Scott (2017), drawing on Institutional Theory, describes as the formalisation and routinisation that occur when organisations seek legitimacy through conformity to external expectations. Hospital-owned departments, embedded in larger corporate structures, must align with institutional norms, accreditation requirements, and centralised policies, even when these conflict with local clinical needs.

The consequences of this centralisation were evident in participant narratives. One practice manager described having "responsibility without authority", expected to achieve operational targets but unable to make the decisions necessary to do so. This finding directly confirms the work of Crooks et al. (2021), who examined shared governance models in healthcare and found that excluding clinicians from strategic decisions creates disengagement and misalignment between organisational goals and frontline realities.

Furthermore, this study extends the observations of the Competition Commission of South Africa's Health Market Inquiry (2019), which noted that vertical integration between hospitals and diagnostic services tends to concentrate power at central decision-making points while compromising local autonomy. The participant accounts in this study provide vivid, real-world illustrations of this dynamic.

The theoretical implications are significant. Institutional Theory (DiMaggio & Powell, 1983) explains why hospital-owned departments adopt formalised, hierarchical governance structures: they are responding to coercive pressures (regulations, accreditation), normative pressures (professional standards), and mimetic pressures (copying what other large hospitals do). However, as this study demonstrates, the legitimacy gained through conformity comes at the cost of flexibility and local responsiveness, a trade-off that Contingency Theory would identify as potentially problematic if the environment demands rapid adaptation (Donaldson, 2001).

5.3.3 Operational Challenges and Opportunities

The operational challenges identified in each model reflect the resource configurations described by Barney's (1991) Resource-Based View. Radiologist-owned practices, while agile and innovative, face significant structural fragilities. The absence of formal backup systems, limited capital reserves, and reliance on lean teams create vulnerabilities that participants openly acknowledged. One radiologist noted the personal toll of managing both clinical work and business operations, describing the risk of burnout as a constant concern. This finding confirms the observations of the RSSA (2023), which noted that independent South African practices often struggle with sustainability due to resource constraints.

Yet these same practices also demonstrated remarkable strengths. The ability to respond rapidly to referrer requests, develop niche services, and foster close clinician-patient relationships were cited as key advantages. These intangible assets, what Barney (1991) would call valuable, rare, and inimitable resources, enable radiologist-owned practices to compete effectively despite their resource limitations. This finding suggests that the Resource-Based View must consider not only what resources organisations possess, but how they are deployed and combined to create competitive advantage.

Hospital-owned departments, by contrast, possess abundant tangible resources but struggle to deploy them effectively in response to local needs. Participants described equipment purchased without clinical input, staffing models that failed to accommodate workload surges, and middle managers burdened with responsibility but lacking authority. This finding aligns with Nguyen et al.'s (2023) observation that hospital-owned departments, while infrastructure-rich, often suffer from "contextual misfit", a misalignment between centrally determined policies and local operational realities.

The work of Madlala et al. (2021) on operational governance in South African healthcare settings is also relevant here. Madlala and colleagues highlighted concerns about clinical leadership and governance structures but did not disaggregate their findings by ownership type. This study extends their work by demonstrating how these governance challenges manifest differently under radiologist-owned versus hospital-owned models.

The theoretical lens of Contingency Theory is particularly illuminating here. Donaldson (2001) argued that organisational effectiveness depends on the fit between structure and environment. In hospital-owned departments, the highly formalised, centralised structure that ensures compliance and consistency in routine operations may become a liability when the environment demands flexibility, rapid response, or adaptation to local circumstances. This study provides empirical evidence of this misfit in the South African private healthcare context.

5.3.4 Quality Control, Innovation, and Patient Outcomes

The findings on quality assurance and innovation reveal fundamental differences that resonate with the theoretical frameworks and prior studies. In radiologist-owned practices, quality was embedded in daily clinical practice through peer review, team culture, and direct accountability. One participant described quality as "taken seriously because it affects our name and referrals", a statement that reflects the reputational incentives inherent in physician-owned models. This finding extends the RSSA's (2023) observations on quality mechanisms in independent South African practices, highlighting both the strengths and vulnerabilities of informal approaches.

The capacity for innovation in radiologist-owned practices was particularly notable. Participants described introducing new imaging protocols, trialling new techniques, and developing niche services without awaiting corporate approval. This finding directly challenges the assumption, often implicit in the literature, that innovation requires large, well-resourced organisations. Instead, it suggests that autonomy, clinical leadership, and proximity to patients and referrers may be more important drivers of innovation than scale and infrastructure alone. This insight extends the work of Nguyen et al. (2023), who noted that innovation in hospital settings is often constrained by bureaucratic processes.

In hospital-owned departments, quality assurance was highly formalised, with scheduled audits, standard operating procedures, and digital performance dashboards. This formalisation reflects the institutional pressures described by DiMaggio and Powell (1983), where organisations adopt standardised systems to achieve legitimacy with regulators and accrediting bodies, a manifestation of coercive isomorphism. However, as participants consistently noted, this formalisation imposed significant constraints on innovation capacity. The bureaucratic approval processes governing protocol modifications, technology adoption, and service development created what one participant termed "innovation inertia", a phenomenon characterised by extended decision cycles, multilayered authorisation requirements, and the eventual abandonment of promising initiatives due to procedural fatigue.

This finding directly confirms Schoeman's (2023) research, which identified managerial constraints as a key barrier to innovation in South African hospital-owned radiology settings. Schoeman found that radiologists in hospital-owned departments frequently encounter delays and obstacles when attempting to introduce new techniques or technologies, a pattern vividly illustrated in the participant narratives of this study. From an Institutional Theory perspective, the very structures that ensure compliance and standardisation, centralised governance, formalised protocols, and hierarchical approval processes simultaneously create rigidity that inhibits the adaptive innovation observed in radiologist-owned practices. This represents a fundamental tension between the legitimacy-conferring function of formalised systems and the organisational agility required for innovation in response to evolving clinical demands (Scott, 2017).

The concept of service development, introduced in Section 2.7 as a sub-domain of innovation, was particularly evident in radiologist-owned practices. Participants described responding rapidly to referrer requests for new types of imaging, modifying protocols to accommodate specific patient needs, and developing specialised services such as breast imaging or interventional radiology. In hospital-owned departments, such developments required multiple approvals and often resulted in delayed or abandoned initiatives. This contrast underscores the importance of ownership structure in shaping not only the pace but also the nature of service innovation, extending the observations of Porter and Teisberg (2006) on the relationship between governance and service development.

From a theoretical perspective, these findings reveal a paradox. Institutional Theory explains why hospital-owned departments adopt formalised quality systems: they are responding to external pressures for accountability and standardisation. However, the Resource-Based View suggests that by sidelining clinical expertise in innovation processes, these same departments may be underutilising their most valuable intangible resource, the knowledge and creativity of their clinical staff. This represents a significant missed opportunity and a key area for improvement, confirming the observations of Barney (1991) on the importance of leveraging human capital for competitive advantage.

5.4 Cross-Model Insights and Strategic Implications

The comparative analysis presented above leads to several key insights, summarised in Table 5.2 below. These insights suggest that neither model is inherently superior; rather, each has strengths and vulnerabilities shaped by its ownership logic. This conclusion aligns with the Contingency Theory perspective (Donaldson, 2001; Lawrence & Lorsch, 1967) that organisational effectiveness depends on the fit between structure and environmental demands.

Table 5.2: Comparative Analysis of Models with Strategic Implications

Insight	Implication	Supporting Literature
Radiologist-owned models are fast, adaptive, and personal.	Best suited to high-acuity environments or entrepreneurial service models where responsiveness and clinical autonomy are paramount.	Confirms Slack & Brandon-Jones (2022); Porter & Teisberg (2006)
Hospital-owned models are structured and compliant.	Ideal for scalable operations and integration into national frameworks like NHI, where standardisation and accountability are required.	Aligns with Scott (2017); DiMaggio & Powell (1983)
Innovation is faster in radiologist-owned settings.	But lacks documentation and institutional sustainability, creating risks for long-term viability and regulatory compliance.	Extends Schoeman (2023); Nguyen et al. (2023)
Governance is stronger in hospital-owned models.	But can disempower clinicians and reduce operational ownership, leading to	Confirms Crooks et al. (2021); Andersen (2019)

	disengagement and missed innovation opportunities.	

Source: Author's own illustration (2025)

These insights have significant strategic implications for the South African context. The impending National Health Insurance (NHI) reforms will require greater integration and standardisation across the healthcare system. However, as this study demonstrates, standardisation achieved through centralisation and formalisation can come at the cost of the innovation, responsiveness, and clinical ownership that characterise successful independent practices. The challenge for policymakers and healthcare leaders, therefore, is not to choose one model over the other, but to design hybrid approaches that combine the strengths of both.

This conclusion resonates with the work of the Competition Commission of South Africa's Health Market Inquiry (2019), which called for governance reforms that balance institutional accountability with professional autonomy. The findings of this study provide empirical evidence to inform such reforms.

5.5 Summary of Key Conclusions

Table 5.3 below presents the key conclusions of this study, informed by the empirical data presented in Chapter 4 and the discussion above. These conclusions are organised by thematic area and ownership model, with explicit reference to the literature they confirm or extend.

Table 5.3: Key Conclusions Based on Empirical Data with Literature Support

Thematic Area	Conclusion: Radiologist-Owned	Conclusion: Hospital-Owned	Literature Support
Workflow Efficiency	High responsiveness and patient-focused delivery, but lacks scalability and system integration.	Standardised and consistent, but less responsive to urgent or context-specific operational demands.	Confirms Slack & Brandon-Jones (2022); Porter & Teisberg (2006); Sithole et al. (2022)
Decision-Making Autonomy	Full autonomy allows for local responsiveness and innovation, but informal systems can lack oversight.	Centralised decision-making ensures uniformity but reduces clinical ownership and adaptability.	Aligns with Andersen (2019); Scott (2017); Crooks et al. (2021)
Operational Strengths & Weaknesses	Agile and personalised care, but fragile structures and limited backup systems.	Infrastructure-supported delivery with strong compliance, but low flexibility and contextual misfit.	Reflects Barney (1991); Nguyen et al. (2023); RSSA (2023)
Quality Control & Innovation	Innovative and flexible with high clinical involvement, but poor documentation and sustainability.	Formal quality systems ensure compliance, but innovation constrained by bureaucracy and limited clinical input.	Supports DiMaggio & Powell (1983); Schoeman (2023); RSSA (2023)

Source: Author's own illustration (2025)

5.6 Recommendations

Based on the analysis and its relationship to the existing literature, the following recommendations are proposed for healthcare leaders, radiologists, and policymakers. These recommendations are designed to address the specific strengths and vulnerabilities identified in each model and to support the development of more resilient, effective radiology services in South Africa.

Table 5.4: Proposed recommendations of this study

Recommendation	Target Audience	Rationale	Supporting Literature
Develop hybrid governance models allowing operational flexibility within compliance frameworks.	Hospital groups & policymakers.	Balances the autonomy of radiologist-owned models with the standardisation and accountability of hospital systems.	Informed by Contingency Theory (Donaldson, 2001); aligns with Health Market Inquiry (2019) recommendations.
Include clinicians in strategic and infrastructural decision-making processes.	Hospital management.	Ensures clinical appropriateness and operational alignment in procurement, staffing, and workflow planning.	Addresses concerns raised by Crooks et al. (2021); Andersen (2019).

Strengthen documentation and audit readiness in radiologist-owned practices.	Private radiology owners.	Improves regulatory resilience and positions practices for potential integration into the NHI framework.	Responds to vulnerabilities identified by RSSA (2023); aligns with Institutional Theory (Scott, 2017).
Design adaptive training systems for hospital staff to respond better to workflow surges.	HR and hospital training departments.	Builds local responsiveness into otherwise rigid systems, especially in high-volume or emergency care settings.	Addresses contextual misfit identified by Nguyen et al. (2023); Slack & Brandon-Jones (2022).
Integrate patient feedback more visibly into quality management loops.	Both ownership models.	Enhances patient-centred service delivery and supports continuous service refinement.	Aligns with patient-centred care principles discussed in Section 2.10.

Pilot decentralised innovation units within hospital systems to test operational improvements faster.	Private hospital groups.	Accelerates innovation without bypassing formal governance, allowing for both speed and oversight.	Addresses innovation constraints identified by Schoeman (2023); Nguyen et al. (2023).
Expand research into blended models and NHI preparedness in diagnostic services.	Academics & policymakers.	Builds policy-ready evidence for	

Source: Author's own illustration (2025)

5.7 Study Contributions

This study makes several important contributions to knowledge and practice, each situated within the existing literature:

Theoretical Contributions: The study demonstrates the value of integrating multiple theoretical perspectives, RBV, Institutional Theory, and Contingency Theory, to understand complex organisational phenomena. It shows how these theories complement each other, with RBV explaining resource-based differences (Barney, 1991), Institutional Theory illuminating external pressures (DiMaggio & Powell, 1983; Scott, 2017), and Contingency Theory providing a framework for evaluating fit between structure and environment (Donaldson, 2001; Lawrence & Lorsch, 1967). This integrated approach extends the theoretical toolkit available for health services research.

Empirical Contributions: The study provides the first systematic, comparative analysis of radiologist-owned and hospital-owned radiology services in South Africa. It generates rich, contextualised data on operational practices across key domains, filling a significant gap identified in the literature (Section 2.12; Tiba, 2018; Madlala et al., 2021; Sithole et al., 2022).

Methodological Contributions: The study offers a methodological roadmap for future cross-model qualitative research in healthcare, demonstrating how comparative case study design, purposive sampling, and thematic analysis can be used to generate robust, contextually grounded findings (Yin, 2018; Creswell & Poth, 2018).

Practical Contributions: The study provides evidence-based insights for radiology leaders, hospital managers, and policymakers. It identifies the specific strengths and vulnerabilities of each ownership model and offers practical recommendations for improving operational performance, quality assurance, and innovation capacity.

Policy Contributions: The study informs policy dialogue on decentralisation, clinician agency, and service integration in the context of South Africa's impending NHI reforms. It provides evidence that can help shape the design of a more resilient, inclusive, and

effective national health system, responding directly to the concerns raised by the Health Market Inquiry (2019).

5.8 Limitations and Areas for Further Research

While this study achieved data saturation and provided deep comparative insights, several limitations must be acknowledged. These limitations also point to opportunities for future research.

Geographical Limitation: The study drew its sample from one regional area in South Africa. While this enabled depth of analysis, it limits the transferability of findings to other provinces or contexts with different demographic, economic, or regulatory characteristics. Future research should extend this comparative analysis to other regions.

Sectoral Limitation: The study focused exclusively on the private healthcare sector. The dynamics of public sector radiology services, which operate under fundamentally different resource and governance constraints, were not examined. Given the dual nature of South Africa's health system (Kanji & Noorbhai, 2021), comparative public-private research would be valuable.

Cross-Sectional Design: The study captured operational practices at a single point in time. Longitudinal research would be valuable to understand how practices evolve in response to policy changes (such as NHI implementation), technological advances, or leadership transitions.

Self-Report Data: The findings are based primarily on participant interviews, which are subject to recall bias and social desirability effects. While triangulation with document analysis and observation mitigated this to some extent, future research could incorporate direct observation over extended periods.

Patient Perspectives: The study did not systematically investigate patient outcomes or patient experiences of care. Given the importance of patient-centredness in modern healthcare (Epstein & Street, 2011), this represents an important avenue for future research.

Based on these limitations, the following areas for future research are suggested:

Public Sector Comparison: Future studies should examine radiology services in public hospitals to understand how state ownership shapes operational practices, extending the comparative framework developed in this study.

Longitudinal Studies: Research tracking radiology departments over time, particularly through major policy changes such as the NHI rollout, would provide valuable insights into organisational adaptation and resilience.

Quantitative Extension: Survey-based research with larger samples could test the generalisability of these findings and quantify relationships between ownership, operational practices, and outcomes such as patient satisfaction or clinical quality.

Patient-Centred Research: Studies exploring patient experiences and outcomes across ownership models would complement the organisational focus of this research.

Blended Models: As hybrid ownership arrangements become more common, research should examine how these models balance the strengths and vulnerabilities identified in this study.

Cost-Effectiveness Analysis: Future research could examine the cost implications of different ownership models, providing evidence for resource allocation decisions.

5.9 Final Reflections of the Researcher

Conducting this research has been a profound learning experience, both academically and personally. As a practising radiographer working within the South African private healthcare sector, I brought to this study an insider's understanding of the workflows, pressures, and dynamics that shape radiology practice. This positionality enriched my interpretation of participant narratives and enabled me to ask probing questions grounded in practical knowledge. However, it also required constant reflexivity to ensure that my own assumptions and experiences did not unduly influence the analysis.

Throughout this research, I maintained a reflexive journal, documenting my assumptions, biases, and the steps taken to mitigate their influence. I actively searched for disconfirming evidence, engaged in peer debriefing with my supervisor, and anchored my interpretations in both participant quotations and the existing literature. These strategies enhanced the trustworthiness and rigour of the findings (Lincoln & Guba, 1985).

The experience of comparing these two ownership models has deepened my understanding of how systemic factors, governance structures, resource configurations, institutional pressures, shape the delivery of radiology services. It has also reinforced my belief that there is no single "best" model. Radiologist-owned practices offer agility, innovation, and clinical ownership; hospital-owned departments offer stability, standardisation, and scale. The challenge for healthcare leaders and policymakers is to find ways of combining these strengths, creating hybrid models that preserve clinical autonomy while ensuring institutional sustainability, that foster innovation while maintaining accountability, and that respond to local needs while integrating into national systems.

As South Africa stands on the cusp of major healthcare reforms, the insights from this study are timely and relevant. The NHI will require greater integration and standardisation across the healthcare system, but it must not do so at the expense of the innovation, responsiveness, and clinical leadership that characterise successful independent practices. This study provides evidence that can inform that delicate balancing act.

Finally, I am deeply grateful to the participants who gave their time and shared their experiences so openly. Their voices are the foundation of this research, and it is my hope that this study does justice to their insights and contributes, in some small way, to improving radiology services in South Africa.

5.10 Summary of the Study

This chapter has illustrated the ways in which ownership models orient the logic and rhythm of radiology service provision and has explicitly discussed these findings in

relation to prior studies presented in the literature review. Radiologist-owned departments are characterised by agile, clinically led service delivery, with speed and autonomy as defining features, confirming the observations of Slack and Brandon-Jones (2022), Andersen (2019), and others. Hospital-owned models exemplify structured, systematised environments focused on compliance and standardisation, reflecting the institutional pressures described by DiMaggio and Powell (1983) and Scott (2017).

The discussion demonstrated how each model's strengths and vulnerabilities are shaped by its resource configurations (Barney, 1991) and its fit with environmental demands (Donaldson, 2001). Neither model is inherently superior; rather, each is suited to different contexts and purposes.

Recommendations were proposed for various stakeholders, grounded in both the empirical findings and the existing literature. The study's contributions to theory, practice, and policy were articulated, and limitations were acknowledged alongside directions for future research.

As South Africa moves toward a unified healthcare system through the National Health Insurance, understanding these operational dynamics will be crucial for designing resilient, inclusive, and patient-responsive radiology services. This study provides a foundation for that understanding, and a call for continued research, dialogue, and innovation in this critical field.

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ANNEXURE A: INTERVIEW SCHEDULE

Title of Study:

Exploring how ownership models of radiological services affect operational practices in South African private hospitals

Purpose:
This interview schedule was developed to guide semi-structured interviews with participants working in radiologist-owned and hospital-owned radiology practices. The schedule is aligned with the study's research objectives and sub-questions, ensuring that responses directly contribute to answering the central research problem.

Section 1: Background

1. Please describe your role, years of experience, and the type of radiology practice you work in (radiologist-owned or hospital-owned).

Section 2: Operational Efficiency & Turnaround Time

2. How are imaging requests and reporting times managed in your practice?
3. What challenges do you face in maintaining efficiency and managing workload?
4. How does your ownership structure influence workflow and turnaround time?

Section 3: Decision-Making & Autonomy

5. Who has decision-making authority regarding staffing, equipment purchases, and clinical protocols?
6. To what extent do radiologists enjoy autonomy in daily operations?
7. How does ownership structure affect the speed and effectiveness of decision-making?

Section 4: Resource Allocation & Financial Sustainability

8. How are staff, budgets, and equipment resources allocated in your practice?
9. What financial challenges do you face, and how are they addressed?
10. How does ownership influence investment in new technology and equipment?

Section 5: Staff Management & Organisational Culture

11. How are staff motivated, trained, and retained in your practice?
12. How would you describe teamwork, flexibility, and overall workplace culture?
13. In what ways does the ownership structure affect staff morale and organisational culture?

Section 6: Institutional Pressures & Adaptability

14. How does your practice respond to HPCSA regulations, NHI policy changes, or BEE requirements?
15. How adaptable is your practice to external pressures under the current ownership model?

Section 7: Service Quality & Patient Outcomes

16. In what ways does the ownership model affect service quality, innovation, and patient care?
17. Are there any practices for standardisation and quality monitoring in place?

Section 8: Comparative Reflection

18. What would you say are the strengths and weaknesses of your current ownership model?
19. Based on your experience, which ownership model (radiologist-owned or hospital-owned) provides better overall performance, and why?

ANNEXURE B: PARTICIPANT CONSENT FORM

Title of Study:

Exploring how ownership models of radiological services affect operational practices in South African private hospitals

Principal Investigator:

Joseph Thabiso Mabina

MBA Candidate, NWU Business School

Supervisor:

Dr Hazvineyi Saurombe

NWU Business School

Purpose of the Study

You are invited to participate in a research study that explores how different ownership models of radiological services (radiologist-owned vs. hospital-owned) affect operational practices in South African private hospitals.

Procedures

If you agree to take part in this study:

- You will participate in a semi-structured interview, lasting approximately 35–75 minutes.
- The interview will focus on your experiences and perceptions of operational practices in your radiology practice.
- With your permission, the interview may be audio-recorded to ensure accuracy.

Voluntary Participation

- Participation is entirely voluntary.
- You may decline to answer any question or withdraw from the study at any time without penalty.

- There are no direct financial benefits or risks for participation.

Confidentiality

- All responses will be kept strictly confidential.
- No personal identifiers will be included in the final dissertation.
- Data will be securely stored and used only for academic purposes.

Consent Statement

I have read and understood the information provided above. I voluntarily agree to participate in this research study.

Participant Name: _____

Participant Signature: _____ Date: _____

Researcher Signature: _____ Date: _____

ANNEXURE C: ETHICS APPROVAL LETTER

Title of Study: *Exploring how ownership models of radiological services affect operational practices in South African private hospitals*

Principal Investigator: Mr J.T. Mabina (Student number: 52151263)

Supervisor: Dr H.A. Saurombe

Ethics Number: NWU-25-4

Approval Date: 12 August 2025

Risk Level: Low/Minimal Risk

The North-West University Economic and Management Sciences Research Ethics Committee (EMS-REC) reviewed and approved the above-mentioned study. Approval is granted subject to compliance with institutional and national ethical standards.

(The official approval letter, signed by Prof Diana Viljoen-Bezuidenhout, Chairperson of EMS-REC, is attached below.)

Private Bag X1290, Potchefstroom
South Africa 2520
Tel: 018 299-1111/2222
Fax: 018 299-4910
Web: http://www.nwu.ac.za
Senate Committee for Research Ethics
Tel: 018 299-484
Feziwe.Mseleni@nwu.ac.za

12 August 2025

ETHICS APPROVAL LETTER OF STUDY

Based on approval by the **North-West University Economic and Management Sciences Research Ethics Committee (EMS-REC)** on 12 August 2025 , the Economic and Management Sciences Research Ethics Committee hereby **approves** your study as indicated below. This implies that the North-West University Senate Committee for Research Ethics (NWU-REC) grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title:	Exploring how ownership models of Radiological services affect operational practices in South African private hospitals		
Study leader/Supervisor (Principal investigator/Researcher:	Dr H.A. Saurombe	**University no.:**	24078093
Student:	Mr J.T. Mabina	**University no.:**	52151263

Ethics number:	N	W	U	-	0	0	7	7	2	-	2	5	-	A	4
	Institution				Study number						Year			Status	

Status: S = Submission; R = Re-submission; P = Provisional authorisation; A = Authorisation

Application type:	Single study - Postgraduate research	**Risk level:**	Low/minimal risk
Commencement date:	8/12/25		
Expiry date:	8/12/25		

Approval of the study is initially provided for a year, after which continuation of the study is dependent on receipt and review of the annual (or as otherwise stipulated) monitoring report and the concomitant issuing of a letter of continuation.

Special in process conditions of the research for approval (if applicable):

None.

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, the following general terms and conditions will apply:

- *The study leader/supervisor (principal investigator)/researcher must report in the prescribed format to the EMS-REC:*
  - *annually (or as otherwise requested) on the monitoring of the study, whereby a letter of continuation will be provided, and upon completion of the study; and*
  - *without any delay in case of any adverse event or incident (or any matter that interrupts sound ethical principles) during the course of the study.*
- *The approval applies strictly to the proposal as stipulated in the application form. Should any amendments to the proposal be deemed necessary during the course of the study, the study leader/researcher must apply for approval of these amendments at the EMS-REC, prior to implementation. Should there be any deviations from the study proposal without the necessary approval of such amendments, the ethics approval is immediately and automatically forfeited.*
- *Annually a number of studies may be randomly selected for an external audit.*
- *The date of approval indicates the first date that the study may be started.*
- *In the interest of ethical responsibility, the NWU-SCRE and EMS-REC reserves the right to:*
  - *request access to any information or data at any time during the course or after completion of the study;*
  - *to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process;*
  - *withdraw or postpone approval if:*
    - *any unethical principles or practices of the study are revealed or suspected;*
    - *it becomes apparent that any relevant information was withheld from the EMS-REC or that information has been false or misrepresented;*
    - *submission of the annual (or otherwise stipulated) monitoring report, the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and / or*
    - *new institutional rules, national legislation or international conventions deem it necessary.*
- *EMS-REC can be contacted for further information or any report templates through the secretariat. Botlenyana Maluleka (Botlenyana.Maluleka@nwu.ac.za/ +27 18 2852436) or the chair Prof Diana Viljoen-Bezuidenhout (Diana.Viljoen@nwu.ac.za / +27 16 9103403).*

The EMS-REC would like to remain at your service as scientist and researcher, and wishes you well with your study. Please do not hesitate to contact the EMS-REC or the NWU-SCRE for any further enquiries or requests for assistance.

Yours sincerely,

Prof Diana Viljoen-Bezuidenhout

Digitally signed by Prof Diana Viljoen-Bezuidenhout
Date: 2025.08.12 09:21:48 +02'00'

Prof Diana Viljoen-Bezuidenhout

Chairperson: NWU Economic and Management Sciences Research Ethics Committee