The Market Structure of Private Pathology Laboratories in South Africa

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DECLARATION

I, LUNGILE KASAPATO, declare that this research article is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at Wits Business School, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

LUNGILE SISHI KASAPATO

Signed at PARKTOWN

On the 31st day of March 2019

DEDICATION

This research is dedicated to all the hidden heroes of medicine, the Medical Technologists who wish to start their own laboratories but find themselves prohibited by the oligopolistic and uncompetitive market structure of pathology laboratories in South Africa.

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ABSTRACT

The South African private healthcare industry plays a crucial role in providing healthcare service to the citizens of South Africa. In recent years, there have been growing concerns that the cost of private healthcare has been escalating above the inflation rate, year on year. This escalation in costs has seen private healthcare become inaccessible to many. This is a challenge in a country that is working toward attaining universal health coverage by 2030, through its National Health Insurance. Pathology services have been identified as having the highest escalation rate. The pathology industry in South Africa is a typical oligopoly, with about 80% of the market controlled by three large pathologist owned laboratories. Because the three laboratories do not engage in price competition, prices have remained high. Medical technologist tariff rates are 17% lower than the pathologist tariff. These places medical technologist in a position to enter the market, increase competition, force the prices down and make healthcare more accessible. However, there have been very few medical technologists that have taken this opportunity. Many of those that have done so have not been able to establish thriving laboratories. This study seeks to explore the less salient reason why this is the case. A focus group discussion was conducted with medical technologists to explore their perceptions about their profession and private practice. Seven individual discussion interviews were conducted with private healthcare experts to explore their views on the private pathology industry market structure, its effects on cost and access to healthcare, its sustainability, and the role that the medical technologist laboratories could play. The focus group discussion results revealed that medical technologists felt that pathologists utilised occupational closure tactics to prevent them from participating as entrepreneurs in the private pathology industry. Interviews with the industry experts revealed that the experts felt

the market was oligopolistic, had high barriers of entry and restricted competition. This resulted in limited access to healthcare for the middle- and lower-income population. There was a consensus that the industry structure is unsustainable and needed to be transformed to allow fair competition and increased access to healthcare. This would benefit individuals and the economy.

Keywords: medical technologist, pathologist, healthcare, oligopoly, occupational closure, professional monopoly, laboratory

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LIST OF ACRONYMS

BBBEE: Broad-Based Black Economic Empowerment

BSEC: Business School Ethics Committee

BTech: Bachelor of Technology

CC: Competition Commission

CPI: Consumer price index

DHMS: Discovery Health Medical Scheme

EE: Employment Equity

FGD: Focus group discussion

GDP: Gross domestic product

GEAR: Growth, Employment and Redistribution

GEMS: Government Employees Medical Scheme

HMI: Health Market Inquiry

HPCSA: Health Professional Council of South Africa

IDI: In-depth interview

MT: Medical Technologist

NDP: National Development Plan

NGO: Non-governmental organisations

NHLS: National Health Laboratory Services

NPG: National Pathology Group

OECD: Organisation for Economic Co-operation and Development

OPEC: Organisation of Petroleum Exporting Countries

RDP: Reconstruction and Development Programme

SA: South Africa

SAMA: South African Medical Association

SAMDC: South African Medical and Dental Council

SMLTSA: Society of Medical Laboratory Technologists of South Africa

UHC: Universal health coverage

WHO: World Health Organisation

CHAPTER 1 - INTRODUCTION

1.1 Introduction

This chapter provides a background of the importance of a pathology laboratory in the medical field. The different professions involved, and their roles are outlined. The roles are then used as a basis for a discourse about pathology being the cornerstone of medicine. The details of the South African (SA) private healthcare structure and costs with specific attention to private pathology are discussed. The negative impact of the costs is the main justification for this study. This impact is addressed in this chapter.

1.1.1 *Pathology*

Seventy percent of medical record information is generated from a pathology laboratory (Misialek, 2014; Salinas et al., 2013). For this reason, pathology is viewed as the cornerstone of medicine. The factual basis for this statement is important because it reveals that diagnosis of illnesses is profoundly linked to the critical information mostly generated from pathology laboratories.

Pathology refers to the study of the causes and effects of diseases, particularly the branch of medicine which deals with the laboratory testing of samples of body tissues or fluids for the purpose of diagnosis or forensics (Oxford, 2019). The professionals involved in pathology testing are pathologists, medical laboratory scientists, medical technologists, medical technicians, laboratory assistants and supplementary laboratory assistants (HPCSA, 2019d).

1.1.1.1 *The Pathologist*

A pathologist is a medical doctor trained in the nature and cause of disease (Estridge, Reynolds, & Walters, 2000). In SA, a pathologist must complete a six-year medical

degree, one year internship and two-years community service, and then specialise in pathology for four years or more (Loftus, 2014). In other countries, like the United Kingdom, a pathologist may also be a scientist with specialist clinical training (RCPATH, 2019). The pathologist's training and skill allows him to act as a bridge between the laboratory and the clinician (Loftus, 2014; NPG, 2016) by interpreting complex cases to assist clinicians to determine a proper diagnosis or a proper categorisation of disease.

The average salary of a pathologist is R1,389,198.00 per annum (Payscale, 2019a). In 2019, there were 927 registered pathologists in SA. Of these, 588 are registered in the clinical and chemical pathology, haematology, microbiology, cytology and virology specialities (HPCSA, 2019c); these are the pathologist of relevance to this study as their scope of practice is interrelated to that of the Medical Technologists (MT). About a third of pathologists work in private laboratories. Pathologists are paid 100% of the medical scheme tariffs.

1.1.1.2 *The Medical Technologist*

According to the "Regulations defining the scope of the profession of medical technology" 1974) , a Medical Technologist (MT) is a trained professional who analyses human samples to enable a medical practitioner or dentist to diagnose or initiate treatment. The act further stipulates that the MT also interprets, consults and gives advice based on the results that the MT generates. The current training of an MT includes a three-year diploma or a four-year Bachelor of Technology (BTech) degree at a university. This is followed by an 18-month internship in a laboratory approved for training by the Health Professions Council of South Africa (HPCSA). To be able to register as a professional MT with the HPCSA, after internship, the intern must pass the board examination which is administered by the Society for Medical

Laboratory Technologists of South Africa (SMLTSA) on behalf of the HPCSA. (HPCSA, 2019d) These qualifications are currently being phased out, making way for a four year Bachelor of Health Science in Medical Laboratory Science (Bridgemohan, 2015). The average salary of an MT is R244,094.00 (Payscale, 2019b) per annum. According to HPCSA (2019c), there were 10893 registered MT's in South Africa (SA), the majority of whom are black women. Medical technologists were not allowed to own private laboratories until 1991, this changed after a long struggle that was spearheaded by the SMLTSA (SMLTSA, 2019b). The MT tariff paid by Medical schemes is 83% of the Pathologists tariff (Medi Tech News, 2015).

1.1.1.3 ***Other Laboratory Personnel***

The other personnel, mentioned above, that are involved the laboratory are:

Medical laboratory scientists, these are Bachelor of Science graduates who are involved with development, evaluation and practice of scientific procedures involving samples or equipment ("Regulations defining the scope of the profession of medical science," 2009). Medical scientists do not test patient samples; they often work together with pathologists and are often stationed in academic laboratories.

Medical technicians are involved in sample testing however they work under the supervision of MT's (SANAS, 2014). They do not need tertiary training but should acquire practical in-house training for a minimum of two years in a training laboratory before they write and pass the Technician Board Examination also administered by the SMLTSA (SMLTSA, 2019a).

Laboratory assistants and supplementary laboratory assistants are involved in handling of samples before and after testing and any other duties but are not involved

in sample testing ("Regulations relating to qualifications for registration of laboratory assistants," 2007). They do not need tertiary qualification. All the discussed personnel are obliged to obtain licensure from the HPCSA.

1.1.2 Pathology: the cornerstone

The largest employer of pathologists and MT's is the National Health Laboratory Services (NHLS, 2018b). The NHLS is the biggest laboratory network in SA, with more than 265 laboratories nationwide. It was established in year 2000, as a parastatal organisation with the main mandate being to provide affordable, quality and sustainable laboratory and related service to all public health care providers. It services more than 80% of the population through public healthcare centres (NHLS, 2018a). In the NHLS, pathologists are stationed in academic university hospital and regional tertiary laboratories. There are nine tertiary and ten regional tertiary hospitals in the country (NHLS, 2018b). MT's are employed in both regional and tertiary laboratories.

About 237 NHLS laboratories do not have pathologists. In these laboratories, MT's who are laboratory managers, oversee all operations, quality assurance and are the final decision makers. They are also the liaison between the clinicians and the laboratory. In private laboratories, pathologists are stationed in reference laboratories and have virtual connection to the regional laboratories via Laboratory Information Systems.

With the exception of histopathology laboratories, where the pathologists make the diagnosis, virtually all laboratory tests are performed by MT's together with other technical staff (Estridge et al., 2000; Labtestsonline, 2019; "Who works in pathology and what do they do?," 2019).

Contrary to the assertion by the National Pathology Group (NPG) presentation that “the one cannot stand in for the other” (NPG, 2016), there is no laboratory that is or can be operated exclusively by pathologists, while there are numerous laboratories run exclusively by MT’s, together with other laboratory personnel, without any pathologists involvement.

This begs the question then, when asserting that pathology is the cornerstone of medicine, does it mean that a medical doctor cannot make most diagnoses without a highly qualified medical specialist professional, called a pathologist, or does it mean that the medical doctor cannot make a diagnosis without a pathology test result, which is generated by an MT?

1.1.3 The private medical industry

The goals of a health system is to improve health, respond to population demands and to ensure that no one suffers serious financial loss as a result of ill health (Organization, 2000).

South Africa has a two-tier health system, comprising the public and private system. The public system is tax-funded. The private system is funded mainly by medical schemes but is government subsidised. The two systems cost approximately the same amount. Together they make up about 8.2% of the Gross Domestic Product (GDP). This GDP percentage is close to the Organisation for Economic Co-operation and Development (OECD) countries’ average of 8.9% (excluding the United States of America (USA) which is an outlier at 9.2%) (Econex, 2013a).

Despite this seemingly enough spend, the problem is that it is not equitably distributed among South African citizens. The total health expenditure for SA in 2016/2017 was

approximately R378bn. Of this, R182.71 billion (48.33%) was spent by the government on public healthcare (Carole Veitch, 2017; UNICEF, 2018), providing services to 44.9 million people (84% of the population). The other half, R189.08 billion (50.02%), was spent on only 8.8 million people (16% of the population) who were serviced in private institutions (Carole Veitch, 2017; Competition Commision, 2018; Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009).

This skewed distribution of resources is characteristic of a highly unequal society that SA is, where 71% of the wealth is in the hands of the richest 10% of the population while the bottom 60% holds only 7% of wealth. This inequality was confirmed by the country scoring the world's highest Gini coefficient of 0.63 in 2015 (The World Bank, 2019).

Inequality means that private healthcare is inaccessible to the majority of the population (Mayosi & Benatar, 2014) because they cannot afford it. Moreover, the past several years has seen a constant and concerning upward trend in private healthcare costs as reflected by the overall claims from all medical schemes, averaged about 9.25% between 2011 and 2014. This was consistently at least 4% higher than the consumer price index (CPI) which ranged between 5.0% and 6.1% (Council for Medical Schemes, 2018; Statssa, 2019a). These increases are apparent even month on month. In 2019, the CPI edged up from 4.0% in January to 4.1% in February mainly due to increase in medical insurance and transport costs. The former increased by an average 8.3% compared to 8.0% in 2018 (Statssa, 2019).

In 2018, pathology expenditure paid by medical schemes amounted to R8, 7 billion, representing 5.4% of all healthcare benefits paid (Council for Medical Schemes, 2018). A further analysis of the out-of-hospital costs indicates that pathology costs had the highest increase of 12.38% compared to the other medical costs like medicines and

radiology (Competition Commision, 2018). From 2012 to 2014, pathology costs increased by 360%, compared with a 200% increase of other specialities (Verirad (Pty) Ltd, 2016). The NPG disputes this and claims that in real terms, the increase in pathology costs from 2008 to 2014 was only 7.9% (NPG, 2016) while Lawrie and Good (2013) suggest that the increase was 3.78%. The cited causes of the surge in costs is ascribed to increased utilisation due to the worsening risk profile, an increased disease burden and defensive medicine spurred by increased litigations (Lawrie & Good, 2013; NPG, 2016). While this trend is not unique to SA, in India, for instance, the pathology industry is one the fastest growing industries, cited cost drivers were increased awareness of health concerns and the health insurance penetration (Ken Research, 2019). Pathology utilisation is largely externally driven, nevertheless, pathologists can take a proactive role on cost effective test ordering to ensure sustainability.

Although the SA medical scheme membership increased by 24% from 2000 to 2012, when accounting for population growth, real increase remained within 14.8% – 17% (Econex, 2013). Statssa (2019b) reports that by 2011 membership started to decline and the percentage of the covered population fell from 16.55% to 15.61% in 2017. An increasing number of medical scheme members are downgrading their cover in an attempt to save money (Businesstech, 2019). This indicates that private healthcare is becoming more unaffordable even for those that could previously afford it.

The SA pathology industry has three dominant laboratories which, together, control more than 80% of the market share. This scenario, in which a handful of firms control a majority market share, is called an oligopoly. Firms in an oligopoly (oligopolists) typically have power to control the market in different ways (Competition Commision, 2018). The three laboratories, henceforth referred to as the big three, are Ampath (40%) (Ampath, 2019), Lancet (+/-23%) and PathCare (17%) (PathCare, 2015). The

big three employ 295 pathologists, 3000 MT's and 1000 technicians (NPG, 2016). The ownership of the big three is in even fewer hands of partners. In 2014, for instance, Lancet laboratories, employed 80 pathologists, 25 (31.25%) of whom were profit sharing partners (Webber Wentzel, 2014a). The shareholding of the other two laboratories was not readily available, but using the 31.25% as a guide, it can be approximated that of the 295 pathologists employed by the big three (NPG, 2016), approximately 90 individuals own 80% of a R9 billion industry; the majority of the partners are white males.

The evolution of the big three into an oligopoly was fuelled by mergers and acquisitions of different practices that have been occurring over time (Lancet Laboratories, 2019). All mergers are subject to approval by the Competition Commission (CC), whose mandate includes controlling mergers that may give rise to dominant market positions as seen in oligopolies (Competition Commission, 2019). The CC describes mergers in the healthcare industry as creeping mergers; in that in isolation, they posed no threat and were thus permitted, but over time, they compounded and now threaten competition (Competition Commision, 2018).

Pathologists, particularly within the NPG, do not partner with technologists. Even though for the past 28 years MT's have been allowed to open laboratories, there has been no significant increase in the number of MT laboratories who control about 2% of the market. Eighteen percent of the remainder of the market is controlled by smaller independent pathologists (Adams, 2015).

1.1.4 Problem statement

Generally, oligopolies negatively affect consumers and the economy. Prices in an oligopoly are not set by supply and demand forces, they are set by the oligopolists themselves, who extract maximum profit. They can do this because there are only a handful of firms. Oligopolists have the potential to expand and achieve economies of scale and to produce at a cheaper cost than a small firm. Yet even when the cost of production has been reduced, because in an oligopoly there is limited competition, there is no incentive to reduce prices (Taub, 1998). This entices oligopolists to keep the number of firms low to maintain the equilibrium at high prices. Firms in an oligopoly are likely to use real and artificial barriers to keep new entrants out of the market (Stigler, 1964). This causes deadweight loss and supresses economic growth. The effect on the consumer is the high cost of goods that may lead to unaffordability. The result in an oligopolistic private health care is limited access to private healthcare for the poor and lately for the middle class, to whom private healthcare is progressively becoming unaffordable. It stifles economic growth, undermines transformation, delays the attainment of developmental goals, and poses a threat to the MT profession.

1.1.4.1 Negative impact on economic growth (stifling small businesses)

Globally, small businesses are believed to contribute towards GDP growth (OECD Secretary General, 2017; Storey, 2016) and to reduce unemployment (Audretsch, Carree, & Thurik, 2001; Finfind, 2017; Robbins, Pantuosco, Parker, & Fuller, 2000). In an effort to encourage small business development, the government of SA, among other things, has implemented policies like the National Small Business Act ("National business act," 1996) and established the Ministry of Small Business in 2014, yet entrepreneurship in SA still lags behind other emerging economies (OECD Secretary

General, 2017) and the rest of Africa (Herrington, Kew, Kew, & Monitor, 2010) and 70 to 80% of small businesses fail within the first year in SA (Institutional Advancement, 2019). A market structure that discourages small business entry should therefore be a cause for concern. Other reasons for poor entrepreneurship in SA include lack of finance, government policies and education and training (Herrington et al., 2010). Medical technologist laboratories are not immune to these realities and would have to overcome these too, in order to thrive.

1.1.4.2. Negative impact on economic growth (poor human capital)

Affordable and effective health service is a sign of inclusive and sustainable economic growth, and of civilized, peaceful and stable communities (African Development Bank, Health Systems Research India Initiative, & Wits School of Governance, 2017). In SA, doctors have emphasised the relationship between a healthy economy and a healthy population from as far back as 1892 when they warned of national economic losses that could occur due to failure to prevent diseases (Gilder, 1983). This is because an unhealthy population means a poor human capital that cannot be productively employed. This directly affects the country's productivity and therefore the county's Gross Domestic Production (GDP) (Ashraf, Lester, & Weil, 2008). Barberton mine, for example, reported that every day 3.6% of its workforce was either sick or on sick leave (Neingo & Tholana, 2016). According to Careers24 (2016), an average 5% of the SA workforce is sick every day costing the economy R5.3 billion annually.These loses to the economy can be reduced if the population is healthier.

1.1.4.3 Undermines trasformation efforts

The three biggest challenges of SA are poverty, unemployment and inequality. Inequality is not only morally unjust, but it is economically destructive. To demonstrate an economic loss of value which results from inequality, Treuhaft, Scoggins, and Tran (2014) reported that the USA could grow its GDP by 14% if racial pay gaps were abolished. In highly unequal societies, everyone is a loser and unless the economic growth is inclusive, it will not sustainable. The consequences are an unhealthy labour force with a short life span and unable to be productively employed and who are a burden to the state.

Pre-1994, black South Africans were legally excluded from all economic and political participation. This resulted in an unequal society, with high levels of unemployment and poverty. To reverse this, the government introduced several macroeconomic policies meant to transform SA into an ideal envisioned in the SA constitution, through inclusive growth. These included the Reconstruction and Develipments Plan (RDP) which was to assist in the alleviation of poverty and other socio-economic problems; the Growth, Employment and Redistribution (GEAR) meant to stimulate faster economic growth; the New Growth Path (NGP), aimed at job creation; the National Development Plan (NDP) to eliminate poverty and reduce inequality, and the Private Public Partnership (PPP) and many others. These, together with equity policies like Employment Equity (EE), and Broad Based Black Economic Empowerment (BBBEE), were meant to not only grow the economy, but to promote the inclusion of the previously disadvantaged (SA History, 2019).

The pathology industry remains highly untransformed and there have not been many visible efforts to change this. The current private pathology industry status undermines the transformation agenda as it limits participation by potential entrants.

1.1.4.4 Failure to attain developmental goals

High healthcare costs mean healthcare is accessible to the selected few who can afford it. This is contrary to international and national policies and guidelines. The third Sustainable Development Goal by the United Nations is to achieve good health and wellbeing for all, at all ages by 2030 (Thomson, 2015). The World Health Organisation (WHO) prescribes that all people should have access to healthcare, not only those who can afford it, that this care should be of such quality that it benefits the recipient and that no one should suffer financial loss as a result of healthcare received (WHO, 2019). The Organisation for Economic Co-operation and Development (OECD) promotes policies aimed at providing equal access to healthcare based on need and reducing health status inequalities (OECD, 2019). Our own bill of rights, which is the cornerstone of the democracy of SA states that all citizens have a right to access healthcare services ("The Constitution of the Republic of South Africa," 1996).

Working towards achieving these goals and providing a “Long and healthy life for all South Africans” (South African Government, 2019) is not only the responsibility of the government, but also of healthcare professionals, in the public and in the private sector. While healthcare workers also have a right to make a living, increasing costs to the point at which access is denied to many, is unconstitutional and unethical.

At the end of this study, the researcher hopes to have answers for the following main and related questions:

1.1.5 Research Questions

The ratio of MT's to pathologists is almost twelve to one. The tariff for medical technologist is 17% less than that of pathologist. For the past 28 years MT's have had a right to apply to operate privately like pathologists. MT's can run laboratories independently of pathologists while pathologists cannot.

Looking at these facts and the constant demand for pathology testing in a country with the most expensive private healthcare in the world (Lorenzoni & Roubal, 2016), one would have expected that the number of MT laboratories would have increased significantly over the past 28 years. This has not been the case and raises many questions to any curious observer.

Questions that will be asked in this study are the following:

1. Why the industry is structured this way?
2. Does this structure support the right to health for all SA citizens?
3. Can MT laboratories provide solutions?
4. What are alternative models that can be explored?

1.1.5 Purpose of study

This study is conducted to explore the less salient reasons why many MT's have not accessed the private pathology market. The purpose was to explore academic literature on the oligopolistic market structure and to determine if there are similarities that can be drawn between the literature and the reasons given by MT's. The current status quo would then be viewed through the lens of health experts, who are not involved in the laboratory, but understand the two professions and the impact of cost of pathology on access to health.

1.1.7 Justification

There are few studies that have been conducted on this topic, and none that explores the effect of an oligopolistic pathology market structure on the access to market for MT's, the impact on cost and access to healthcare, the economy and on transformation.

According the OECD Secretary General (2017), SA has the highest private healthcare costs in the world. This study seeks to shed light on how this oligopolic structure impacts private healthcare costs. It seeks to identify barriers to entry into the industry, which are important to the context of SA, in line with the transformation agenda for all industries. While there has been a more robust effort to transform other economic sectors, like the mining sector ("Broad-based socio economic empowerment charter for the mining and minerals industry," 2018), the same cannot be said about the health industry and particularly the pathology industry despite these industries contributing a significant R378 billion to the economy (Carole Veitch, 2017).

This understanding will assist initiate a discourse about the roles of the two professions. It will also inform policies geared at stimulating competition and transformation that will result in reduced costs and facilitate attainment of universal healthcare. Insights gained will also contribute to the MT teaching curriculum and to assist laboratory management to achieve higher employee engagement.

1.1.8 Study objectives

The objectives of this study were:

1. To explore the perceptions of MT's about their profession, private practice and entrepreneurship through a focus group discussion (FGD)
2. To explore the views of healthcare experts on:
    a. The market structure of the healthcare industry, in particular, the pathology industry.
    b. The effect of this market structure on the cost and right to healthcare.
    c. The role they think private MT laboratories could play, if any.
    d. Alternative models or solutions to the rising healthcare costs.

1.1.9 Scope

Medical technologists from Gauteng, that have been qualified for more than ten years formed part of the FGD. They were selected from different backgrounds, including NHLS, private practice, entrepreneurs, academia and government.

Industry experts from health-related fields in Gauteng were interviewed to ascertain what their opinions regarding the healthcare oligopolies, the national health insurance (NHI), on MT laboratories are. This sample included people working in top management of large and small medical schemes, large and small hospital groups and innovative healthcare solutions among others.

CHAPTER 2 - LITERATURE REVIEW

2.1 Introduction

This review examined occupational closure and how it is used to gain professional monopoly. It looked at the different market structures, their characteristics and examples. It then focused on the oligopolistic market structure and the behaviour of firms operating within this market structure. The barriers of entry to this market and how they give these firms an ability to control prices and maintain high profits over time were also explored. It then touched on the practice of collusion and the formation of cartels.

It went on to explore the concept of right to health and universal health care that is enshrined in the Constitution of SA. It looked at the origins and the justifications why the government decided to have this as part of the Constitution by briefly looking at the healthcare system pre-1994, particularly the imbalances of accessibility that it sought to redress.

2.1.1 Occupational closure and professional monopoly

Closed shop agreements, once widely used globally (McCarthy, 1964; Spielmans, 1943), are agreements which stipulate that employers may employ only workers belonging to a certain union (Heald, 2016). These agreements, outlawed in many countries (Gregg & Machin, 1992; Nelles, 1932), serve as barriers for anyone not affiliated to the recognised union, regardless of their competence.

With the demise of closed shop agreements, occupational closures became common. Redbird (2017) suggests that occupational closure is a new form of closed shop agreements. Occupational closure refers to the ability of some professions to set up and maintain institutional barriers to access to the profession which results in the

limited supply of labour of that profession and an ability to obtain an economic rent or a premium above what would be paid in a perfect market (Bol, 2014).

This theory is best described by the neo-Weberian and Frank Parkin's social closure theories which argue that barriers or boundaries around occupations are ratified by a minority group with an intention to raise rewards of their members by limiting the labour supply, increasing and channelling demand and by legitimising its claim over a task or by claiming a superior quality of service (Bol & Weeden, 2014). These inadvertently affect the earning structures in their favour and increase the cost to the consumer (Bol & Weeden, 2014; Mackert, 2012; Weeden, 2002). The motive for occupational closure is always to gain a collective social mobility and market power (Sarfatti Larson, 1977) and is used in other professions, including accounting (Macdonald, 1985).

Redbird (2017) distinguishes between an early version of monopolistic closure envisioned by Adam Smith, the father of economics, and the modern version. Redbird (2017) further emphasises that the former denied access through requiring the right demographic make-up and network connections while the latter utilises training requirement, state administered examinations, criminal backgrounds and other "impersonal" checks. Contrary to the popular view, when used appropriately, the latter enhances access for the previously disadvantaged while upholding quality, she concludes (Redbird, 2017).

Professional associations are instrumental in creating occupational closure. In the pathology profession, the SAMA, whose subgroup, the NPG, is the official representative organisation for pathologists in SA, has been used (NPG, 2019).

Medical associations date back to the 1800's when the only medical association was the British Medical Association, from which the South African Medical Association was born in Grahamstown in 1896 (Gilder, 1983).

In 1928, the SAMDC was appointed in accordance with Act 13 of 1928, to replace the four former provincial councils that were previously responsible for the registrations of doctors, dentists, dental technicians, pharmacists and nurses. This act was amended in 1971 to make provision to establish professional boards of medical technology, optometry and others and later replaced by Act 56 of 1974. At this time, the SAMDC was renamed Health Profession Council of South Africa (HPCSA, 2019a), but it was not until 1991 that the MT's succeeded in breaking the historical ethical barrier to enter private practice (SMLTSA, 2019b).

2.2 Market structures

The market structure in which firms operate determines their pricing and their behaviour. A market is any mechanism or institution that connects sellers and buyers of a service, good or information (Janse van Rensburg, McConnell, & Brue, 2015). Market are grouped into four distinct models or structures, based on the number of firms participating, whether their product is standardised or differentiated, ability to control price, ease of entry and exit and non-price competition. The four structures are a pure competition, a pure monopoly, a monopolistic competition and an oligopoly.

A pure competition is where many firms produce a standardised product and they can enter or exit the industry easily, like the agriculture industry.

A pure monopoly is where there is one sole seller of a unique product and additional firms are blocked from entry, as with a local utility.

A monopolistic competition occurs when there is a relatively large number of sellers that produce differentiated products, are engaged in non-price competition and entry is easy. Examples are retailers.

An oligopoly is where there are few sellers of differentiated or standardised products. Sellers have considerable control over prices, are mutually interdependent, and therefore prone to collusion. There is a non-price competition and barriers of entry are high (M. Levenstein, Marvão, & Suslow, 2015). Examples include the Organisation of the Petroleum Exporting Countries (OPEC), SA cement industry, the bread industry, SA construction industry and the SA Private Pathology industry. Collusion has bee

2.2.1 Oligopoly

The hallmarks of oligopoly are few firms, resulting from high entry barriers that always limit competition and result in high prices. In some cases, firms within the oligopoly may fiercely compete with one another as with Boeing versus Airbus (Al-Najjar et al., 2017) and Coca-Cola Company versus Pepsico (Taub, 1998). When oligopolies compete on price, the prices will be reduced, and the consumer reaps the benefits of value.

In other cases, which are more characteristic of oligopolies, firms choose to make explicit or tacit arrangements to avoid competition amongst themselves. They may fix prices or agree not to compete on price. They may decide to geographically allocate the market to each other or they may split the market by specialisation (Ari, Steen, & Toivanen, 2014). In this way, they form cartels and behave more like a monopoly to maximise the combined profits (Stigler, 1964). Cartels may collectively agree on how to respond to tenders in order to influence the outcome. This was the case with the SA construction firms that were fined R1.46 billion for “rampant” collusive tendering in 2013 (Ratshisusu, 2014). In other cases, they chose to collectively boycott a bid or

embark on a co-ordinated refusal to deal (Asker, 2010). Collusive practices have been demonstrated among the big three. In a national tender issued by Discovery Health medical scheme in 2005, the big three submitted prices that were so similar that Discovery was forced to abandon the process. In 2012 and 2014, Discovery issued regional tenders in areas where Lancet Laboratories and Ampath Laboratories had a substantial presence, yet both declined to participate. The regional tender was awarded to a smaller laboratory (Competition Commision, 2018). This suggests that the big three operates like a cartel.

The theory of oligopoly is best described by game theory. Because the firms are so few, each is fully aware of what the other is doing. Assuming they are not colluding, a firm will have to anticipate the reaction of its counterpart to the firm's planned move, before it makes that move. This makes these firms mutually interdependent and this determines the type of competition in which the firms engage. When in a cartel, firms often find themselves in a prison's dilemma, constantly calculating if others will keep to the agreement and what happens if they or the other break the agreement (Hajek, 2017).

The type of market in which a firm operates, influences the competition, the barriers to entry to the market and ultimately, the escalation in the prices of the services rendered. In a perfect competition, it is imperative for firms to be efficient in order to make a profit. The prices reflect the value of the input resources, and they are the lowest sustainable because competition forces them down. In an oligopoly, firms have control over prices, and they can maintain high prices for extended periods by preventing new entrants to the market. This leads to allocative inefficiency. The pernicious effect is borne by the consumer who pays more that the cost to produce the goods or service (M. C. Levenstein, Sivadasan, & Suslow, 2015). The poorest are

hardest hit by high prices. The US alone has lost more than 163 billion dollars in the cost of oil over a 45 year period, because of paying 10 percent higher due to the OPEC cartel (Hajek, 2017). Other potential players are kept out by the entry barriers. The Competition Commision (2018) classifies barriers to entry into three categories**,** **i**ntrinsic barriers, which are capital outlay for equipment, start up and sunk costs brand loyalty, behavioural or strategic and regulatory barriers.

In its findings the HMI concluded that the pathology market is concentrated and that the players have significant market power. This market power makes negotiations with other stakeholders a challenge for the stakeholders since the oligopolists can act independently of even large clients (Competition Commision, 2018).

While some barriers are natural, others are artificial and created by oligopolies to deliberately keep competition out (Sajedianfard & Sadraei Javaheri, 2016; Schmalensee, 1992). Oligopolies stifle entrepreneurship and innovation which as far back as in the nineteenth century were cited by Professor Schumpeter as the drivers of the economy (Sweezy, 1943). Innovation is finding a different way of doing things in the realm of economic life and it is a causative factor for change. Oligopolies have a vested interest in maintaining the status quo. They will resist change, and any innovation that threatens to disrupt the oligopolistic market structure.

2.3 Right to health

Healthcare cannot be compared to other goods and services and access or absence thereof can mean the difference between life and death. This was crisply captured by Fuchs (2011) in his acclaimed book *"Who shall Live".* The fact that the first parliamentary act to be amended post 1994 was the National Health Act, demonstrates that the African National Congress (ANC) placed the national health as one of its priorities (Zwarenstein, 1994). This priority was informed by

the Bill of Rights, enshrined in the Constitution, which was inspired by the Freedom Charter that promulgated that health care is a human right and should therefore be universally accessible to all South Africans, regardless of their gender, colour, creed, social or economic standing (RSA, 1996). These reforms were supported by the (World Health Organisation (WHO) (Organization, 1983). They included opening up public health institutions to all racial groups (Horwitz; Susser & Cherry, 1982). The government has managed to increase access to basic health care to many previously disadvantaged communities. This was achieved, amongst other things, by building 600 new clinics, providing free antenatal care and free antiretroviral treatment (Harsch, 2001).

Critical as access to healthcare is though, it is worthwhile to note that medical care does not guarantee health. Medical care is not a major determinant of health outcomes for every condition. For others, factors like occupation and income, where one lives and social interconnectedness play a bigger role (Gold, 1998). Rabson (1963) argued that the responsibility of practicing preventative medicine, lies not with the doctor but with the patient, the grass-root society, who should be educated by the government and health professionals, to make the ultimate decisions to implement preventative medicine. Elwood and Longley (2010) further assert this and emphasise the need for educating the patients even when there is no consensus among experts. This should remind authorities that poor health is but one of many wicked problems, and therefore should never be treated in isolation. For example, the use of the fee-for-service model has been shown to result in greater inequality of healthcare access. This was demonstrated in China, 15 years after the introduction of this system. However, despite this greater observed inequality, there was no decline in measurable health status of the population. The anticipated decline was mitigated by improved socio-economic conditions and the continued emphasis on preventative programmes

(Hesketh & Zhu, 1997). This observation confirms the assertion by Gold (1998) that medical care is not the major determinant factor in health and highlights the need for a systems approach to this wicked problem.

2.4 Value based care

While the general perception is that private healthcare is SA is superior to public healthcare, because there is currently no standard (unit) of measurement for value based outcomes, this perception cannot be substantiated (Competition Commision, 2018). A study that measures the healthcare efficiency index revealed that South Africa had the lowest efficiency (spend on healthcare/outcomes) rating of 11.09 compared to the average of 26.69 calculated across 16 different countries that included India, Brazil and China. Interestingly, 48% of the SA general population rated the SA healthcare as meeting their needs while only 31% of healthcare professionals agreed. Both ratings were however still below average (Phillips, 2018). This perception gap emphasises a need for a uniform measure.

SA is in the process of implementing National Health Insurance (NHI), which is its version of Universal Healthcare Coverage. Among other critical success factors for the NHI are measurement and evaluation systems for all medical interventions. Unless the healthcare that is made accessible to all is of high quality, it may not lead to measurable improvements (Kruk et al., 2018).

2.5 Conclusion

The market structure of an industry determines the level of competition within that industry. In an oligopoly there is limited competition and prices are high. Oligopolies are formed when barriers to entry are high. Some barriers to entry are natural while

others are artificial. The latter are created by players within the oligopoly the create demand for their products and thus be able to charge higher costs. In healthcare oligopolistic markets renders healthcare inaccessible.

CHAPTER 3 - METHODOLOGY

3.1 Introduction

This chapter describes the methods used to gather the views and perceptions of MT's and those of the industry experts. It also details the population, data collection and ethical considerations.

3.2 Study design

Two different methods were used to collect data. The first was to create a carefully structured focus group in order to conduct a discussion to pursue the research questions with MT's. This method was chosen to assist in getting rich and diverse conscious, semiconscious and unconscious sociocultural views from the MT population subgroup's different perspectives without doing individual in-depth interviews (IDI) with each one (Basch, 1987). A discussion guide with different topics was used to guide the discussion. Only first name introductions were done at the beginning in order not to reveal titles which could potentially negatively affect the group dynamics. Formal introductions were done at the end of the session (White, 2002).

The second was a qualitative field study that was done to interview industry experts. This required going out to interact with respondents (Zikmund, Babin, Carr, & Griffin, 2013).

To get the most out of the respondents and to avoid leading them to certain answers, semi-structured individual discussion interviews (IDI) were conducted, using open-ended questions. The advantage of this method is that it gives the participants the freedom to express their views and encourages a productive interaction (Thomas, 2017). These semi-structured IDI's allowed participants to give further insights about

other topics or perspectives that might have eluded the interviewer. This approach allowed the interviewer to become a participant and to use her own interests and understanding to interpret the responses (Thomas, 2017). There was a risk that the responses of the open-ended questions might be haphazard. This could cause further analysis to be challenging. To mitigate this, an interview schedule was used as recommended by Gill, Stewart, Treasure, and Chadwick (2008) and Thomas (2017). The interview schedule contained topics, possible questions, possible follow up questions and probes (Thomas, 2017). Probes were used to get clarity and depth to answers (Zikmund et al., 2013). This tool assisted the researcher to cover all the intended questions in a natural flow as dictated by the dialogue without the rigidity of a structured interview. Responses were analysed to determine if there were emergent patterns that align with the theory of oligopoly, competition, right to health and different models of healthcare. Patterns were used to formulate answers to the objectives.

3.3 Paradigm

The adopted paradigm was the constructivism / interpretivist view, as described by George Herbert Mead (Cherryholmes, 1992). In interpretivism, dividing the social world into categories of variables is regarded as artificial (Thomas, 2017). In other words, this paradigm assumes the relativist ontology which hypothesises that the reality of the researcher is created intersubjectively from the meaning and comprehension that is developed through social and experimental experiences. The second assumption is the transactional/ subjectivist epistemology which claims that the researcher cannot separate herself from what she knows. There is a link between the investigator and the subject such that their world view is central to how they both understand themselves, others and the world (Haraway, 1988). The researcher works in an MT with experience and knowledge from which she cannot divorce herself and

therefore declares that objectivity is not considered in this study, as suggested by Thomas (2017) and Angen (2000).

3.4 Population and sample

A purposive sampling technique was used which means, findings may not necessarily be generalised to a larger group (Basch, 1987). This was done to ensure the respondents are diverse and that they have the necessary experience within the profession to have formed views or questioned the status quo.

The MT focus group discussion was made up of seven MT's from diverse backgrounds with more than ten years post-registration experience. For logistic purposes, the study was limited to MT's from Johannesburg. Participants were requested by email and followed up telephonically. A discussion guide was used to direct the discussion.

Participant	Sector	Position
1	NHLS	Manager
2	NHLS	Information Technology specialist
3	Private	Training manager
4	Academia	Professor, entrepreneur
5	Academia	Head of Department
6	NHLS	Retired
7	Government	Deputy director
*8	Private	Entrepreneur

Table 1: List of FGD participants

*Participant eight could not make it to the discussion and was interviewed telephonically.

A purposive sampling technique was used to select the industry expert sample for the semi-structured ID's. All respondents are highly qualified and have experience across different areas within the healthcare industry. All are currently working in the private sector and most occupy executive positions.

Interviewee	Background
1	Medical Fdoctor, small medical scheme, hospital management, healthcare consultancy
2	Medical doctor, small medical scheme, hospital management, medical scheme administrator
3	Medical Technologist, risk assessment, large medical scheme
4	Medical specialist, large medical scheme, medical consultancy
5	Registered nurse PhD, large medical scheme
6	Administrator, consultancy, pathology laboratory,
7	Medical Technologist, consultancy, risk assessment

Table 2: List of interviewees

3.5 Data collection

Two methods of data collection were employed, as discussed at the beginning of the methodology chapter (chapter 3). Semi-structured IDI's were conducted with seven industry expert respondents. A separate focus group discussion (FGD) was held with seven MT participants. Data was collected between January and February 2019. Appointments were secured and IDI's conducted at an agreed time and venue. IDI's lasted between 30 minutes and two hours. An interview guide was used, but in most cases, the discussions naturally flowed and covered the topics in the guide. The IDI's were audio recorded with prior verbal consent.

The FGD was held at WBS. It lasted for two hours and was audio recorded. It was highly charged, and the participants appeared to have found a forum in which to talk about issues they have not previously had an opportunity to do so. There was not enough time to discuss all issues. The outstanding issues were discussed telephonically with three of the FGD participants. Follow up discussions were between 20 and 45 minutes. They were audio recorded with consent. The eighth participant who could not make it, was interviewed telephonically. The IDI was audio recorded with consent.

3.6 Data analysis

All audio recordings were transcribed verbatim. A thematic analysis, according to Aronson (1995), was performed on the transcripts. Patterns of ideas, views and experiences were listed. All data relating to the patterns was identified and classified accordingly and combined into sub-themes which were analysed and the findings discussed with reference to the literature review to give the story credibility (Vaismoradi, Jones, Turunen, & Snelgrove, 2016). Only themes relevant to the study were discussed.

3.7 Reflexivity

The researcher is a qualified MT with 27 years post qualification experience. She is registered in Clinical Pathology for private practice with HPCSA. She has spent the last seven years as an entrepreneur in private practice. Before private practice, she perceived the capital-intensive investment needed to open a laboratory as a barrier to entry. Her lived experience has however proved her to be wrong. In this study, she endeavoured to find out what perceptions her peers, and medical doctors have and determine if these perceptions are linked to the market structure of the private

pathology industry. Interpretative paradigm studies make it an ethical requirement to promote a fair context within which the voices of the MT's may be heard (Flax, 1990). The researcher's perspective, her background and her thinking may cause her to have a researcher's bias that may influence the results. For this reason, the researcher constantly reminded herself to be conscious of this danger and to consciously avoid it. The researcher also did not interview any of her acquaintances to prevent intersubjective dynamics from influencing the responses.

3.8 Validity and reliability

In this study, internal validity was satisfied as the researcher has made provisions to identify and isolate any other confounding factors not related to market structures that cause failure of MT Laboratory (LeCompte & Goetz, 1982). These could include insufficient operating capital and inadequate business management skill. These factors reduced the internal validity of the study. By making the questions general and broad, and avoiding leading questions, the researcher got reasons that pertain to each participant.

External validity was not entirely satisfied as the results from the sample cannot be necessarily inferred to the rest of the population (Basch, 1987). Ideally, qualitative data should be gathered until empirical saturation is reached but this is often not practical (Baker, Edwards, & Doidge, 2012; Guest, Bunce, & Johnson, 2006). Baker et al. (2012) recommend any number from twelve to sixty to be adequate. There were 15 participants in the study, therefore, the external validity criterion was fulfilled.

Descriptive validity could not be ensured in this study as there are no other investigators with whom to compare data analysis. It was not possible to obtain different observer perspectives. Interpretative validity was ensured by consented voice

recordings to ensure low-inference descriptors during data gathering (Johnson, 1997). Data analysis and conclusions were discussed with peers who are not involved in the study. A critical friend was used to provide honest and open critical analysis during the study to increase interpretative validity (Angen, 2000).

The researcher ascertained that the questions she asked and the way that she collected data did not distort measurements obtained. This ensured trustworthiness/ reliability of the responses. Some questions were repeated during the IDI to check if the same answer would be obtained from the same respondent (Krefting, 1991). Some questions were rephrased and asked at different points of the IDI to ensure equivalence reliability. Demographics of the participants were collected. During data analysis, the answers to the questions were correlated to check if there was a difference in the way respondents from different backgrounds interpret questions. Mood related questions were avoided. Lastly, this survey was pre-tested on three acquaintances in the MT profession to gain feedback on the effectiveness of the tool in gathering the desired information (Krefting, 1991).

3.9 Ethical consideration

Ethical clearance was obtained from the Wits Business School Ethics Committee (BSEC). Verbal consent for participation and voice recording was requested from all participants prior to data collection. Personal information of all participants is kept confidentially, and results are reported anonymously. The locations of the IDI was decided upon, taking into consideration the convenience of the participants as recommended by Smith (1992). The researcher consciously considered “micro-ethic” issues which are often overlooked. These pertain to everyday life considerations like establishment of trust (Guillemin & Gillam, 2004). Only the researcher, the supervisor

and the transcribers have access to audio recordings that will be kept in a password encrypted file for two years following study accomplishment, after which they will be destroyed. Transcribers signed a confidentiality agreement (Appendix 4).

CHAPTER 4 - FINDINGS

4.1 Introduction

This chapter details the themes drawn from responses that were received from the FGD and from the interviews.

This study sought to explore the effects of the pathology industry market structure on the participation of MT's in the private pathology industry in SA. This was done through an FGD in which MT's discussed a range of issues. These included their role, career growth opportunities and entrepreneurship.

The effect this market structure has on the cost of and access to private healthcare in SA was explored. This was done by conducting interviews with private healthcare health experts from different backgrounds.

4.2 MT focus group discussion

4.2.1 The role of a Medical Technologist

Quotes in italics were made by FGD participants.

The participants expressed having passion and being proud of their profession even though many of them were no longer doing routine laboratory work. *"I love it with a passion."*

They felt their profession was indispensable to the medical field. *"Without the MT's, the health service will collapse, we are the people that actually diagnose the diseases."* They felt that they are the unsung heroes in medicine*. "We are the hidden heroes in*

medicine we are not known, we are hidden, we are behind doors we are not acknowledged."

Participants said the structure of education in SA was partly to blame for their non-recognition because *"if you have technical training, then you are viewed as inferior,"* but they were confident that their technical training gives them a competitive edge to perform tests.

4.2.2 Career growth

Participants felt that there was little room for growth within the laboratory. There was neither remuneration nor promotion reward for studying further. "*Like it doesn't matter how many degrees, I'm not even seen."* Lack of career growth was perceived as the main reason why MT's leave the profession. *"And that's why there are a lot of Medical Technologists who have branched out and studied other things and left the profession."* Participants felt that pathologists control the laboratories and they supress the growth of technologists. *"Making sure that the technologist remains a button pusher."*

4.2.3 Transformation

Participants felt that there was no real transformation in the industry and that although there are more black people entering the industry, there was *a "systemic and hidden hand"* that ensure that black people do not realise their full potential as scientists. *"Transformation has been very much cosmetic." "Is done very systematically and it's done by the old guard."* This observation was ascribed particularly to the NHLS.

Participants felt that non-recognition was also in research, where they contribute in different forms to a research but are never fully informed about the study and do not

get any recognition when the paper is published. *“But at the end of the day I'm not mentioned in any paper.”* They mentioned that even when they wrote proposals to conduct research, they were told to, “*Just hand it over to a scientist and a pathologist and then they will do it.”*

Participants felt that the MT’s are sometimes to blame as some insist on monetary reward when presented with opportunities that need a sacrifice from them. *“We want to attach monetary (value) to everything.”*

4.2.4 Opportunities for MT’s

Opportunities were identified in entrepreneurship, *“having their own labs, academia, research, pharmaceutical representatives”.*

Participants felt that MT’s should naturally be active in the private pathology space. *“In fact, the work in the laboratories is done by technologists and only technologists can do it. To me, basically, that makes the laboratory a space for technologists, which makes me believe that even the business of the laboratory should be belonging to the technologist, but currently the business does not belong to the technologist because we are pressed down in the lab so that we can remain there as a hand to make money for the pathologist*.”

4.2.5 Entrepreneurship

Some participants felt that the entrepreneurship culture or discourse within the medical technology profession was virtually non-existent *“It is something that never crossed my mind”, “There was no one who was talking about private practice”*. The entrepreneurship training offered was not adequate*. “Training was not very clear on*

how you can become an entrepreneur… you need practical training and not just theory".

They said the market is not receptive of MT laboratories. Some doctors insist that there should be a pathologist in charge of the laboratory for it to be credible. This contributed to the failure of many MT labs. Participants felt that mentorship or incubation programmes could assist MT's with the business skills which they often do not have. Participants felt that MT's do not do enough homework before venturing into private practice.

4.3 In-depth interviews

4.3.1 Oligopoly

The oligopoly theme was interrelated with the MT laboratories as most interviewees considered the MT laboratories as potential disruptors to the oligopoly, albeit with a lot of hurdles to overcome. Interviewees felt that the structure of the pathology industry is oligopolistic and that because of this, the big three control the market, there is little competition because there are few players and high prices that are continuing to increase *"You basically have a few people determining the price." (Interviewee 1, 2019).*

They expressed that this is not good for the patient and the country. While this situation is not desirable, it has advantages. Advantages include a national footprint of the big three which medical schemes find desirable. There was a view that the big three have capacity to access remote areas which might not make economic sense for smaller players. This was opposed by another view that remote areas were neglected by the big three and smaller players could fill this gap. Potential solutions to the oligopoly

were cited as being the entrance of more players to the market. *“Adding in a smaller player who is nimble, and agile who can compete easily.” (Interviewee 5, 2019).*

Interviewees felt that the big three have an advantage in terms of cost because they have economies of scale, they have bargaining power over medical schemes, so they end up paying less for their tests. They also have buying power over the reagents and equipment suppliers. Interviewees felt that these benefits do not filter down to the consumer because *“There is no incentive to bring costs down.” (Interviewee 1, 2019).* They felt that the value that the pathologist adds to the result was less than the cost they charge*, “I think that my colleagues will view me as a traitor because, quite honestly, the value that the pathologists add is not commensurate to the value that they extract out of the market” (Interviewee 1, 2019)*

They also thought that in eliminating the oligopoly and creating competitive environments, there is the risk that quality would decrease in order to maintain lower, more competitive prices. Also, the larger firms that have access to many resources, can find and exploit loopholes in regulation and legislation.

They felt that the current market structure has reached market failure and is totally unsustainable. *“In fact I think in five years’ time none of us (big laboratories) will exist in the current form.” (Interviewee 6, 2019).*

They said SA healthcare problems lie not only in the oligopolistic nature of markets, but also the fragmentation of services, and the prioritisation of a profit over the welfare of patients. By denying access into the market for new competitors, the big laboratories are denying South Africans access to services and competitive prices.

4.3.2 Barriers to entry

Unfortunately, because of the nature of this market, there are many barriers to entry. These include lack of cash flow and credit lines with suppliers, lack of national footprint, lack no access to hospitals, due to the former relationships between laboratories and hospitals ,"*Netcare owned 50% of Ampath, Afrox Healthcare- 35% of Lancet and Mediclinic- 35% of PathCare or thereabout" (Interviewee 7, 2019)*. Lack of support from medical schemes and funders, lack of business acumen on the part of the MT, inexperience, lack of mentorship, no relationship with doctors and suppliers also contributed contribute to the barriers. Perverse incentives offered to doctors were viewed as a barrier.

Interviewees felt that the barriers were not insurmountable. *"By completing feasibility studies, doing cash budgets and having access to savings, the MT laboratories could thrive" (Interviewee 7, 2019).*

4.3.3 Government and legislation

Interviewees agreed that government has a role in changing the industry and there is a need for their intervention. With no price control, for private pathology services and no imposed tariffs, the prices of the services have increased more than any other speciality of healthcare. Policy framework changes by the government should be helping to create an open and competitive environment for those who wish to enter the pathology industry.

The healthcare market was perceived as being profit-orientated, with stakeholders whose interest is vested in profit maximisation. The current renumeration models like the fee for service were seen as ineffective since they disregard the outcomes of medical interventions, *"The only way to reform the delivery of the pathologist service*

Or any other clinical service is that you must get rid a fee for service and you must move to a value-based care contracting." "A global fee that is either capitation or value based care" *(Interviewee 4, 2019)* should be imposed so that there is a balance between cost and satisfactory outcomes.

Government can also enforce the issuing of certificates of need to laboratories in order to prevent saturation of the pathology laboratories in the urban market and encourage the set-up of laboratories in rural areas that are underserviced.

4.3.4 Opportunities

Most requesting doctors are not as conscious of the financial impact of tests as they are not involved in the payments. Pathologists have an opportunity to reduce over-servicing by reducing multiple testing and educating doctors on the necessity or lack thereof of specific tests and their costs. This service should be available to the doctor before he does the tests and not have, *"The pathology advisory elements always come after the testing…laboratories should have triggers that signal if the tests are being repeated."* (Interviewee 2, 2019)

4.3.5 Alternative models

"Basically, try and make an appeal to worrk together with the funders" (Interviewee 6, 2019).

A solution offered by one interviewee is that there is one laboratory for each healthcare facility and the hospital becomes the paymaster and dictates the terms and conditions of service to the laboratory.

For medical technology laboratories to be a success, they need to view their pricing inequalities as an opportunity and use their low cost of services as a marketing tool in

order to gain competitive advantage. In order to grow their businesses, they should start in areas neglected or overlooked by their competitors before they compete head-on with them. They need to focus on the ground level.

"*MT run labs can compete by offering specialised test, like TOGA Laboratories, which has proven to be quite successful and has survived the market. They can also make use of policy such as BBBEE to their advantage to negotiate discounts with suppliers in exchange for an increase in their BBBEE scores." (Interviewee 5, 2019)*

CHAPTER 5 - DISCUSSION

5.1 Introduction

Half of the total healthcare spend services only 20% of the population while 80% of the population is serviced by the other half. This has resulted in a highly unequal healthcare system. More concerning is that private healthcare costs escalate at about 5% higher rate that inflation. This makes if unaffordable for poor people and increasingly unaffordable for the middle class. This trend moves the country away from attaining universal healthcare, as recommended by international organisations and the Constitution of SA.

The main cost drivers for the increase in the cost of healthcare have been identified as hospitals and specialists. The most concerning of the specialist costs are the pathologist costs which have increased above the other specialists. The reason pathologists have managed to keep prices high is because they have formed an oligopoly of three big laboratories that has successfully kept MT laboratories out of the market.

5.2 Professional monopoly

As discussed in the main introduction, the MT competency to manage laboratories that have no pathologists in the public and private sector has never been disputed. The MT runs, comments on and communicates the results to the clinician, when available. The pathologist liaises with the clinicians according to the set protocols of the laboratory.

A case study on critical results by Genzen and Tormey (2011) is a classic example and representation of the involvement of an MT in testing, analysing, interpreting and finally diagnosing and liaising with the clinician in the laboratory. The MT performs all the tasks described above. Only when the MT cannot get hold of the clinician or another suitable person to communicate the critical result to, does the MT phone the pathologist on-call to escalate the issue in order for the MT to continue with testing other samples while the pathologist makes efforts to locate the clinician. This depiction of what transpires in the laboratory was confirmed throughout the FGD.

This acceptance of the MT role, skill and qualification by the pathologist is immediately inverted as soon as the MT assumes the role of an entrepreneur in private practice. When there is an economic benefit for the performance of the same tasks, the measure of competence becomes the qualification. The possession of a medical degree and pathologist fellowship becomes not only the gold standard but also a tool for a pre-entry closed shop agreement.

Qualification prerequisites and professional licensures are necessary for maintenance of standards and protection of the public. This forms part of the mandates of bodies like the HPCSA and The South African Qualifications Authority (SAQA) (HPCSA, 2019b; SAQA, 20149). However, when double standards are used to measure the importance of qualifications, professional monopoly and occupational closure results.

In the case of MT's and pathologists in private practice, when the public and the private sector are juxtaposed, it is evident that monopolistic closure is in place, as access for the previously disadvantaged which Redbird (2017) suggested differentiates between the early version of monopolistic closure and the modern version, has not been

enhanced . Ownership of the industry has remained firmly in the hands of a handful few white males. Other potential participants, the majority of whom are black women, have been restricted to providing only the labour factor of production.

Pathologists in private practice established themselves as the rightful and exclusive proprietors of blood testing by ensuring that the MT's, who actually perform the tests, were locked out of private practice through ethical rules and unwritten codes, that were set and upheld by associations like the South African Medical Association (SAMA) and the South African Medical and Dental Council (SAMDC), of which MT's were historically not part.

To date, pathologists have perfected the art of producing and projecting quality, accreditation and turnaround time. They are conscious of their public image and brand. Perhaps this is aided by the fact that they are often required to interact with the clinicians. They eloquently project themselves as the exclusive owners of laboratory testing. They are also very deliberate about distinguishing themselves as superior to medical technologist because their profession requires a "medical residency". They refer to the practice of MT's as "not necessarily related to medicine" (Webber Wentzel, 2014b), yet they use the same results generated by MT's, to diagnose and communicate to clinicians. This strategy is identical to that used by pathologists in the United States of America in the 1960's to establish a professional monopoly using their superiority as medical doctors (Bailey, 1977). The MT's, on the other hand, stay behind closed doors, have made no effort to promote their image or brand. As a result, the biased narrative, that the "pathologist" is the cornerstone of medicine, is the one that people outside the laboratory's closed doors accept as true.

Pathologists used different tactics to obtain and retain market share. Some of the widely used tactics were unethical, like the perverse incentives popularly referred to as kickbacks. A percentage of revenue generated from a doctor was paid back to him for having referred work to the laboratories (Hassim, Heywood, & Berger, 2014). These are considered perverse because although they were projected as being used to reward doctors for their support, they invariably encouraged doctors to order more tests than necessary. This manipulated the externally driven demand, driving up utilisation and costs to the patients.

The doctors and laboratories involved in the scandal were fined amounts around R20 000 and R300 000 respectively. Many people felt that the punishment was too lenient for crime (Ndaliso, 2017). This is contrary to penalties on laboratories found guilty of similar offences in the USA, where fines are in millions of dollars (Dumcius, 2015). Although kickbacks are not openly paid any more, the practice may still be ongoing. This assumption is based on the observation that many doctors still ask a new laboratory trying to recruit them, "what's in it for me?" as they reportedly did before the exposé. (Altenroxel, 2000).

The pathologists' professional monopoly is not peculiar to SA. In the United States of America (USA), pathologists used ethical barriers, contending through lawsuits that the provision of laboratory results was "the practice of medicine". The eventual upsurge of competing MT laboratories only came in 1956, after the ruling by the courts that a laboratory result was only a number and not "the practice of medicine" (US District Court ND Illinois, 1969). Pathologists deliberately referred to these MT laboratories as "lay laboratories", using occupational closure tactics in an effort to discredit them and to retain their prestige of "high technical competence and quality" based on their qualifications as medical specialists. MT laboratories operated on the

basis that the doctor requesting blood tests was knowledgeable, intelligent and qualified enough to interpret results and use them to make a diagnosis. The rise of MT laboratories led to the collapse of the professional monopoly by pathologists and resulted in the reduction of prices (Bailey, 1977).

The understanding occupational closure that was used by pathologists to acquire professional monopoly is crucial for the understanding of how oligopolies evolved.

5.3 Oligopoly

There is no contention that the SA pathology market is an oligopoly, a handful of firms control much of the market. This description fits the definition according to Taub (1998). All the FGD participants and interviewees agreed with the HMI report that the private pathology industry in SA is oligopolistic. This has a direct bearing on competition. If there are many players in the market, there is competition which results in lower prices for the consumer (Janse van Rensburg et al., 2015).

The presence of an oligopoly does not automatically mean that there is no competition. Some oligopolists compete fiercely (Al-Najjar et al., 2017; Taub, 1998), however because of their small number, oligopolies tend not to compete but to collude. The big three do not compete on price. All their prices are similar, this means that they act more like a monopoly (Stigler, 1964). This happens when oligopolists potentially collude, either explicitly or tacitly. Collusion often happens tacitly among oligopolists that belong to the same associations (Bloch, 1995) as was evidenced in the guilty verdict against South African Football Intermediaries Association (SAFIA) who used their association as a platform to agree on standard commission fees (Competition Commission, 2017). The CC has raised concerns about the role of the NPG and other associations like it in which agreements, meant to promote the interests of the

collective may be made. Colluding oligopolies tend to have geographic market allocations. When one looks at the geographic distribution of laboratories in the past, one cannot rule out the possibility of geographic market allocation among the big three. These claims are refuted by the big three. Collusive agreements, particularly the tacit form, are difficult to prove and prosecute (OECD, 2015)

5.4 Barriers to entry

One of the characteristics of oligopoly is high barriers to entry. Interviewees agreed that there are high barriers to the pathology industry. At some point, all three types of barriers, as described by Competition Commision (2018), have prevented MT's from private practice. These are intrinsic, strategic and regulatory. Historically, MT's were barred from private practice by regulatory barriers which were put in place by medical boards that were constituted of pathologists amongst others. After this barrier was removed in 1991, the other barriers remained. Over time, with the advancement of medical technology, the intrinsic barrier of capital outlay was lowered as the cost of equipment reduced. The barriers that interviewees alluded to include lack of acceptance by medical schemes and hospital groups who prefer to deal with pathologists and a strong relationship with doctors or brand loyalty. These barriers can be classified as strategic or behavioural or, according to Sajedianfard and Sadraei Javaheri (2016), artificial barriers. A common artificial barrier is for the big three to offer doctors incentives that far outweigh economic benefits that can be derived from the doctor. Accepted incentives include supplying the doctor with an in-house registered nurse and paying rent for the nurse's office in the doctors' rooms. In return, the doctor must exclusively use that laboratory. Faced with these offers, many doctors ask the MT laboratory to match the offer, which the MT lab cannot afford and therefore loses that doctor. Because of their size, big laboratories can absorb this loss which is a

worthwhile investment in protecting their territory and ensuring the competition stays out of their market. If these barriers remain, there will not be new entrants to the industry and no competition, in such a market there is no incentive to lower the prices (Stigler, 1964).

5.5 Profit versus ethics

Healthcare is a right and should therefore not be treated as a luxury or a commodity that can be traded using Adam Smith's principles or supply and demand. In the same way that healthcare work is regarded as an essential service under the SA labour laws, in that healthcare workers are prohibited from embarking on industrial action, the pursuit of profit by health professionals and professional's right to earn a living should always be balanced against the service and rights of patients that the professionals purport to promote This delicate balance between healthcare oligopolies, which is well articulated by Wong (2015) in his article, "The wealth of nations" should be the goal of all health entrepreneurs.

5.6 Government and legislation

Government has a central role to play to ensure that free markets are controlled to the extent that there should be a healthy competition in all industries (Alemani, Klein, Koske, Vitale, & Wanner, 2016). The SA government does this through the CC (Competition Commission, 2019). The CC is currently doing a lot of work, but it is possible that most of the cases they deal with are those that deal with offenders. It appears that the proactive role of preventing anticompetitive behaviour needs to be improved. Interviewees felt that the health industry is already in market failure and that it will be hard to reverse this failure. Inadequate control of the market results in inefficient markets. Although government has robust competition laws, these do not

cover the medical industry adequately. Currently, the role of punishing those who behave in an anticompetitive manner is left to the HPCSA which administers fines that are so low that they do not deter potential perpetrators or stop current perpetrators. In the USA, for instance, paying kickbacks is an offence punishable by a court of law. As a result, laboratories found guilty are dealt fines so high that they file for bankruptcy. There have been calls to make these actions unlawful, but government has been slow to act.

Policies for inclusive economic development and equity have not been adequately adopted by the big three. According to interviewees, for most of them, having good BBBEE ratings, has not been a priority because they currently do not do much work with the government. This shows that they do not see transformation as something that would benefit the wider economy and promote stability which benefits them as well. They see it as an obligation.

5.7 Recommendations

The government needs to intervene when there is a market failure as in the current situation with the healthcare system. There needs to be enforcement of current transformation policies in the health sector. There should be incentives for those who comply and punitive measures for the offenders.

All stakeholders should seek for alternative sustainable models of healthcare delivery and funding. Progressive organisation that have implemented innovative ways of healthcare delivery should be supported. Government should ensure that legislation is progressive and supportive of such organisations.

5.8 Conclusion

Medical technologist feel that they have a right to participate and to reap economic reward in the private pathology industry, but they feel that the pathologists have used occupational closure tactics to keep them out of the industry. Industry experts agree that the country needs to look at different models for health care because the current oligopolistic structures within the pathology industry and the rest of the healthcare industry are not sustainable. MT laboratories will play a crucial role in increasing competition and driving costs of pathology testing down. A market structure that promotes fair competition will result in lower costs for healthcare. This will ensure access to healthcare and move the country closer to equality and universal healthcare.

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APPENDIX 1 - Interview Schedule

TOPIC	POSSIBLE QUESTIONS	POSSIBLE FOLLOW UP QUESTIONS
1. OLIGOPOLY IN PRIVATE	If we talk about blood testing labs,	As many as you can remember
PATHOLOGY LABS	which laboratory names come to mind?	What do you think are the reasons for this?
	In the light of the HM, what should government do about this?	How would a different market structure change this?
2. COST OF HC	What effect do you think this type of setup has on the cost of HC?	
3. ACCESS TO HC	How does the cost of HC affect access to HC?	
4. SUSTAINABILITY	How sustainable is the current structure in the long run?	At the rate of increases, is there a risk of more SA's finding the cost of private HC unaffordable?
5. NHI/ GOVT	Implemented properly; what impact will the NHI have on oligopolies, cost and access to HC?	What concerns do you have about the NHI white paper debate and its future
		Are there any other models or examples of UHC that we could learn from
6. MT LABS	*Med techs are currently excluded from the economic benefits of PP,*	
	yet they run almost all the test (private and public) and manage the labs	
	Paths=900; MT = 11 000,	
	MT charge 17% less,	
	How do you think that making the market conducive for the MT PP	
	would impact on cost and access to HC	
The end	**Reliability: repeat one or two questions to check stability. Rephrase to check equivalence**	

APPENDIX 2 - Focus group discussion guide

TOPIC	POSSIBLE QUESTIONS	POSSIBLE FOLLOW UP QUESTIONS	PROBES
COMPETENCIES	How would you describe the competence of MT to manage a regional hospital laboratory?	What additional skills do MT's need?	
	How equipped do you think MT's are to manage private laboratories?	Are skills being offered?	
	What are the differences in skill sets required to run private and NHLS labs?	How could MT access these skills?	
	How well could these skills be useful in running own laboratory	Should they be included in the curriculum?	Why?
	What limitations do MT's have WRT laboratory management	Should they be offered as CPD?	
EARNING POTENTIAL	What do you think about private practice		
	Tell me about MT that have gone to private practice (PP)	How do you think they are doing?	What makes you think so?
	What has stopped you from going the same route?	Do you ever intend to go to PP	
	What do you see as barriers to entry in PP?	Have you ever inquired from an MT in PP?	
	What do you see as the single biggest barrier to entry in PP?	What makes you think so?	
	How could these barriers be removed?	Whose responsibility is it?	
	Do you know how much the private industry is worth?		
	Why do you think 99% of labs are owned by Pathologist?	How does this make you feel?	
	How competitive can MT's be?		
CAREER GROWTH	How do you view MT growth potential? Is the profession attractive?		

APPENDIX 3 - Interview letter Model

LUNGILE **KASAPATO**

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Dr XXXXX
XXXXX Health Solutions
XXXXXX
XXXXX
8 January 2019

DEAR DR XXXXX,

In partial fulfilment of my Master of Business Administration degree with Wits Business School, I am conducting interviews with individuals working in the health sector particularly, hospital management, medical aids and other related fields. The title of my project is "The oligopolistic market structure of the private pathology laboratories in South Africa and its impact on the prevention of access for new entrants".

Your wealth of experience and understanding of the provision of health facilities as well as the management and cost of healthcare in South Africa make you an ideal interviewee.

May I request the honour of spending not more than 30 minutes of your time interviewing you. I will ask you about six questions.

Kindly let me know which date and time will be convenient for you. I am happy to interview you in your office or over a cup of coffee.

I look forward to hearing from you soon.
Sincerely, Lungile

Kasapato

WBS MBA candidate

APPENDIX 4 – Transcription agreement form

TRANSCRIPTION CONFIDENTIALITY AGREEMENT

I, _____, as a transcriber, will be permitted to have access to interview

recordings in order to perform transcription.

I agree to keep all information that I learn about the interviewer and the interviewee confidential.

I understand that I may not discuss or disclose any information related to any interviewee and interviewer to anyone else.

I understand that it is my duty and responsibility to preserve and protect this privacy and

confidentiality which is protected by law.

By placing my signature below, I hereby indicate that I understand and agree to

maintain the privacy of all the information discussed between interviewees and the interviewer.

TRANSCRIBER	**WITNESS**
NAME	NAME
SIGNATURE	SIGNATURE
DATE	DATE