Evaluation of the indicators used in ranking higher education in South Africa

by

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Submitted in full fulfilment of the requirements for the degree

Philosophiae Doctor

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DEDICATION

I dedicate this Ph.D. thesis to my late father Mr. Oluwatoyin David Olatunji. Without him, I would not be doing this work.

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To have achieved this milestone in my life, I would like to express my sincere gratitude to the following people:

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ETHICS STATEMENT

"The author, whose name appears on the title page of this thesis, has obtained, for the research described in this work, the applicable research ethics approval. The author declares that he/she has observed the ethical standards required in terms of the University of Pretoria's *Code of ethics for research and the policy guidelines for responsible research*".

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I, **Olushola Adebayo Olatunji**, declare that this thesis, titled ***Evaluation of the indicators used in ranking higher education in South Africa,*** which I hereby submit for the degree Philosophiae Doctor in Education Management and Policy Studies at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

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ABSTRACT

The practices of neoliberalism and managerialism in ranking higher education in South Africa include performance-based evaluations and efforts to optimise, frame and regulate the life of academics (Morrissey, 2015). In the context of ranking indicators, neoliberalism and managerialism mean higher education institutions operate like consumer-oriented corporate institutions that define education as a market commodity. The neo-liberalistic and managerial factors of rankings tend to commercialise and corporatise institutions of higher learning by reframing their orientation and purposes. The problem around these ideologies speaks to the complexity of indicators used in ranking higher education globally and in South Africa. In essence, this means implicitly that anyone who is educated is market-led. This study is limited to evaluating the indicators used in ranking higher education in South Africa. The researcher used desk research to gather information on ranking indicators from QS World University Rankings reports between 2012 and 2020. A quantitative analysis of secondary data was conducted to conclude the implications of indicators used in ranking higher education in South Africa. Error Correction Modelling and Fully Modified Ordinary Least Square were employed to estimate the study's objective. The statistical analysis of indicators, weighting, and ranking South African higher education institutions between 2012 and 2020 present descriptive outputs such as mean, standard deviation, skewness, kurtosis, and Jarque-Beta statistics. Essentially, the analysis also includes whether the conditions for testing for co-integration (Augmented Dickey-Fuller Unit Root) have been met. A major finding from the data is that the size of a university may not contribute to its academic reputation.

Keywords: Indicators of ranking, Performance, QS rankings, Higher education, Weighting, Neoliberalism, Managerialism, South Africa

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LIST OF ABBREVIATIONS

ARWU	Academic Ranking Of World Universities
CHE	Center for Higher Education
CWTS	Centrum Voor Wetenschap en Technologische Studies
DEST	Department of Education, Science and Training
FTE	Full-time equivalent
GUG	Good universities guide
HEI	Higher Education Institution
IoT	Internet of Things
HERS	Higher education ranking systems
IREG	International Ranking Expert Group
IT	Information technology
KAU	King Abdulaziz University
LSE	London School of Economics
LTPF	Learning and Teaching Performance Fund
NFWCU	Newly Formed World-Class Universities
MNCS	Mean normalised citation score
PBRF	Performance-Based Research Fund
OLS	Ordinary least squares
QS	Quacquarelli Symonds
QSWUR	Quacquarelli Symonds World Univerity Ranking
R&D	Research and development
RAE	Research Assessment Exercise
SJTU	Shangai Jiao Tong University
STEM	Science, Technology, Engineering And Mathematics
THE	Times Higher Education
THES	The higher education sector
THEWUR	Times Higher Education World University Rankings
WUR	World University Rankings

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CHAPTER 1
THE BACKGROUND AND CONTEXT OF THE STUDY

1.1 Introduction

Throughout history, higher education and the various processes that generate knowledge have contributed to human and social development. Higher education is indispensable in all societies and economies to develop the knowledge economy (World Bank, 2019). However, this potential has been curtailed in developing countries because of rankings and indicators that challenge governance, equity, and access to higher education finance. These challenges have been further compounded by rankings and linked to the growing significance of the knowledge economy in global economic development, rapid changes in technology, and the globalisation movements (Salmi, 2009). This study evaluates the ranking indicators in higher education to understand and explain to arrive at conclusions about past occurrences that may help anticipate and explain the future of higher education in South Africa.

One of the most contested issues when it comes to higher education around the world is the ranking of universities (Çakır, Acartürk, Baykal, & Akbulut, 2015). Ranking has become a contested issue because of the concerns and reservations about the methodology used for the rankings (Lim & Williams Øerberg, 2017). Scholars like Pusser and Marginson (2013) who are against the idea of ranking at a conceptual level, argue that this promotes elitism in universities. A literature review shows that there is no consensus regarding what reviewers consider the best model to follow when ranking universities (Daraio, Bonaccorsi, & Simar, 2015; Jöns & Hoyler, 2013; Ordorika & Lloyd, 2015). The literature is critical of rankings because it does not seem to have a good construct validity for educational and research excellence. The overall consensus is that there are far too many indicators that, when taken together, define what constitutes a great and high-performing university. These indicators may further propagate a neoliberal and managerialism approach in the higher education sectors.

The “neoliberalism and managerialism” approach has presented a new kind of regulation within South Africa’s higher education. The leading instruments of regulation are located around accountability, transparency, reporting, audit, and performance cultures (Van der Walt, 2017). As a result, South Africa’s higher

education sits precariously between two narratives; the first being forcing academic independence, freedom of expression and thought, exploration, and heterodoxy to generate new frontiers of knowledge, and secondly, a progressively invasive sequence of supervisory regimes seeking to steer, control and manage higher education in a manner that serves the economy's and state's interests. By exploring the impact of neoliberalism and managerialism in the rankings of higher education institutions in South Africa, this study shows this complexity through analysis of indicators.

The changes in the labour market and the global economy as well as the continuous rise in human and machine cooperation are driving new developments in research and learning that will significantly alter the assessment practices and the higher education market. Researchers like (Chessell, 2018; Bolton, Machová, Kovacova, & Valaskova, 2018) allude to the fact that the growth of economies worldwide is now based on the information economy. What this means is that there are new international pressures, and to respond to this, Higher Education Institutions are now evolving into complex organisational systems that use a wide range of technology and infrastructural solutions. However, with the over-saturation in the higher education sector, there seems to be a rise in the number of institutions competing for students' attention, which in turn has led to a reliance on international rankings. According to Bolton (2018), International ranking systems set the standard for distinguishing between Higher Education Institutions. The implication of this is that the decision-making processes of important stakeholders (including students and parents, businesses, media outlets, and so on) to seek out institutions that best meet their needs are based on these international ranking systems.

Higher education in South Africa is often characterised by the presence of internationally-established education approaches, in-country policies and higher education strategic planning.

The earliest higher education rankings were developed in 1900 in the United States of America out of the preoccupation and origins of prominent or famous leaders in society (Myers & Robe, 2009). The initial higher education rankings were exclusively outcome-based, focusing on eminent male students that attended, taught, and/or

graduated at particular institutions. In 1904, Havelock Ellis studied nurture vs. nature and compiled and ranked universities depending on the geniuses that attended them. Institutions developed reputational rankings in 1924 based on peer-review opinion. Reputational rankings became famous as the significance of institutional reputation substituted student prominence. Following through on these foundations, reputational higher education rankings are now a principal approach to creating academic quality rankings.

Rankings is the process of assessing the relative strengths and reputations of HEIs nationally and internationally (Kweik, 2021). According to authors Lnenicka, Luterek, & Nikiforova, (2022), rankings are created to inform interested parties like customers, policymakers, and stakeholders on the relative merits of various service providers that provide the same products and experiences. And as such, rankings play a crucial role since they influence which country attract the most students from other countries. This is especially true for South Africa, one of the biggest economies in Africa, and boasts of considerable research funding availability. The importance of luring students from other nations cannot be overstated. By increasing the institutions global profile, international students help boost the institution's rating, which in turn helps the university hire more qualified staff and advocate for more funding.

University rankings mean positions or status of higher education institutions based on various blends of factors. According to McAleer, Nakamura, & Watkins (2019), the first step in the process of assessing institutions is collecting data from preeminent data sources, site visits, institutional studies, and research. Selecting variable amounts and types and standardising indicators based on this data comes next. Finally, the comparisons of the computations necessary to rank the institution. Current rankings offer an all-inclusive overview of the institutions' strengths based on easily computable characteristics and results (Decuypere & Landri, 2021). Several rankings focus on a combination of numerous measures like endowment and funding, influence, and/or excellence in research, internationalisation, specialisation knowledge, admissions, scholar options, number of awards, rate of graduate retainment, industrial connections, historical standing, and other criteria (Johnes, 2018). What this means is that the rankings achieved represented by their scores may vary from one instance to the next and whether or not the standard indicators

are utilised depends on the indicators being used. All HEIs are unique and each has its own sets of advantages and disadvantages. One or more of an institution's department may excel while others may fall short. If we compare two universities, one that focuses on teaching and the other on research, we can find that the former has a greater student throughput (and hence more publications) while the later has a lower one. Due to this fact, a broad range of factors, such as research productivity and student and staff diversity are taken into account when developing and weighing the indicators.

Kim (2018), states that critics of higher education rankings contend that the rankings divert attention of higher education institutions away from social responsibility and teaching towards the kind of scientific studies valued by the indicators employed for the exercise of ranking. Concerns arise that given the robust longing to feature in the leading institutions, employing a specific criterion for higher education institutions or rankings encourages the homogenisation of the higher education institutions (Brankovic, Ringel & Werron, 2018). The practice of homogenisation makes the ranking less appropriate and responsive to instant contexts. According to de Wit (2019), rankings, therefore defeat equity by favouring the advantages of the best 200 institutions.

This study builds on this literature specifically to review and evaluate the indicators used to rank universities in South Africa. The most important indicators currently used to measure the performance of higher education institutions in South Africa are these institutions' research output and throughput. These include the number of graduates an institution produces in a year, the number of publications per year divided by the number of academic staff, and output benchmarks like patents and other related intellectual property. According to Cloete (2014), these overall research outputs determine each institution's funding support. On the other hand, rankings and South African indicators of performance for higher education needs to be explored to understand the determinants of performance for higher education in the present century.

Taking the United States of America as an example, it appears that the concept of university rankings is more commercial as the rankings determine the prestige each

academic institution receives, making it more desirable for prospective students. Consequently, prestigious academic institutions, based on the university rankings, can afford to attract the very best staff and charge significant tuition for students because there is a demand for places and an attraction for research funding (Vernon, Balas, & Momani, 2018). This works differently for universities in the Global South as students are motivated by choice of universities based on rankings (Rauhvargers, 2013). This situation may have increased the competition for universities to be ranked among the best. This also means complying with the ranking indicators whether it fits into the context of the operation and governance of the institutions.

In relation to the context, a few South African higher education institutions are among the highly-ranked institutions in Africa and globally (Cheng, Wang & Liu, 2014). Also, Kwaramba (2012) and Mohamedbhai (2012) posited that about four South African higher education institutions are among the most highly ranked institutions in Africa and globally. However, numerous concerns are emerging on what these rankings and indicators of performance mean for the future of South African higher education in the face of declining government funding, continuous demand for quality, and change in the pattern of knowledge institutions must generate (Higgs, 2016). These concerns are one of the variables which motivated this study to determine if there is any correlation between the national global ranking of a particular institution and its perceived quality.

Some of the concerns that higher education scholars have expressed are that the obsession with the ranking of educational institutions in South Africa might have led to the encroaching of commodification on higher education in South Africa (Allais, 2017). According to Allais (2017), brand and identity-ranking trading has inevitably commoditised higher education globally and in South Africa. In South Africa, rankings generate an impression that everything is of value in the nation's education and, consequently, should result in national development. Therefore, since one of the aims of higher education is to contribute to national development, high rankings should not only mean the quality of the institution but should also manifest in the form of development for South Africans (Gyamera & Burke, 2017). If the concerns are grounded in any evidence, this suggests that South African education is moving along the education system of the United States where higher rankings are

equated to quality, and tuition is determined by that perceived quality. Put differently, what do indicators and ranking mean for South African higher education situations?

The indicators have been challenged to reflect the shortcomings in higher education policies regarding rankings. For example, the policy assumption that one size fits all is reflected in the same indicators used by ranking agencies to rank universities irrespective of the institution's size, context, type, adjustments for the scientific field, and the time frame of measurements. An example is where the ranking agencies include an indicator for internationalisation. This indicator means an institution that does not attract considerable international appeal either through foreign students or staff from other countries would most likely remain low on the ranking scale. In South Africa, where history and politics are driving the agenda on higher education, the indicator of internationalisation may also need to reflect national policy.

Looking at the ranking of universities in the aspect of the international indicator may not have helped South African universities in the ranking. Before the international outlook indicator was introduced, South African universities have always performed well in research publications, as Pouris (2012) revealed. According to Pouris (2012), South Africa was ranked 35th in the world in terms of its number of research publications during 2000. In 2010 South Africa was ranked 33rd, an improvement of two positions, although the country more than doubled its number of publications. South Africa overtook Argentina, New Zealand, the Ukraine, and Hungary during that period, but Portugal and Iran overtook South Africa during the same period. That same year, Brazil, Russia, India, and China were all scientifically stronger than South Africa in terms of scientific knowledge produced. China produced 124,822 publications, India 40,711, Brazil 31,274 and Russia 26,374. During that same year, South Africa produced only 7,468 publications. The ranking of South African universities has dropped due to the inclusion of the international outlook indicators. One would expect the rankings to have allowed South African universities to be able to attract more international students and foreign academics. The inability to achieve these indicators may not necessarily be due to a lack of quality but may suggest more problems at both national and institutional levels that need further examination.

While it is important to see how a university is perceived by prospective students or academic staff from other countries, this by no means determines the institution's quality. The chances are that some universities might be attracting foreign staff and students due to the type of institution (for example, Distance Learning Institutions like UNISA) or other factors like cheaper tuition than their home institutions. These all show the flaws of the policy assumption that “one size fits all”.

Considering the complexity of the universities, their diverse operating environments, and the multiple things that they do, all of which contribute to the overall performance of the university, the study seeks to examine these indicators and determine if they can be deemed adequate to measure the quality and performance of universities in South Africa.

1.2 Background

One of the complaints that have been levelled against the university ranking system is that its indicators are arbitrary and, for a committed university, these can be manipulated to get higher rankings (Dill, 2009). There seems to be no correlation between the standing of a university on the ranking table and the institution's quality or performance (Stack, 2016). For example, King Abdulaziz University could shoot up the AWRU and THEWUR rankings by giving profitable contracts to over a hundred international researchers and academics with outstanding records in the field of sciences in exchange for adding KAU as a secondary affiliate in their articles (Stack, 2016). Another instance of manipulating the ranking system leading to higher rankings was when some ranking agencies used per-pupil spending as a stand-in for quality leading some university leaders to include overhead costs such as utilities, water, and energy into their calculations (Teichler, 2011; Bekhrandia, 2016).

These examples show that ranking indicators may influence performance and cause some interruptions to how universities manage their core activities. In South Africa, governments and institutions need to consider issues of diversity, equality, and policy of transformation as they respond to indicators for rankings. While the literature has pointed out some inherent challenges, this has not led universities to take up issues with the rankings (Teichler, 2011; Dill, 2009). Rather, universities have now accepted rankings primarily to enhance their reputation to attract foreign students. They use

the criteria endorsed by the “Big Three” Quacquarelli Symonds World University Rankings (QSWUR), Times Higher Education World University Rankings (THEWUR) and the Academic Ranking Of World Universities (ARWU) to determine whether or not a university is world-class (Stack, 2016). Some HEIs have even resorted to merging in the hopes that pooling their resources would considerably boost their ranking status (Azziz et al., 2019). A higher probability of advancement in the ranking is associated with the institution’s size; the greater the size, the greater the number of citations. Also, the greater the number of students, the greater the number of STEM disciplines represented. Rankings may also significantly influence policymaking, but not always. The clearly articulated goal behind the logic “big is beautiful” is the drive to trim institutions to enable them to soar on the university league tables (Stack, 2016).

In South Africa, larger universities with rankings are likely to use ranking indicators to challenge policy on transformation, especially seeing it as an opportunity to deny access to historically disadvantaged students. Not just individuals use university rankings but the media and policy makers also use rankings to identify institutions with the biggest gains and losses in the higher education landscape. This practice has further exacerbated the issues with the measures/techniques employed in the rankings. Furthermore, rankings affect the ability of governments to allocate resources and the ability of universities to attract students. Even if an institution has a long history of success in teaching and service, data from Stack (2016) suggest that such institutions may be rebranding themselves to focus on research. Over a hundred US law professors and deans were surveyed for a study that looked at how the US news and world study report affected their careers. The study's results showed that rankings impacted both admissions and students’ final decisions leading to the “magnifying of the small and statistically random distinctions established by measuring equipment” (Stack, 2016). If indicators of rankings contribute to reasons why students might be denied admissions, the South African policy on higher education may need to rethink the influence of ranking indicators on access and throughputs.

Similarly, the New York Times piece "Promiscuous College Come-ons" gives readers an idea of the kind of language used by HEIs to entice prospective applicants. It

asserts that HEIs engage in data purchasing to locate receptive candidates, who they subsequently cold-call using tactics similar to those of telemarketers. To improve their standing on the all-important selectivity index, HEIs, for instance, send out VIP application letters to boost their applicant pool and, in turn, their number of rejections (Bruni, 2014). What follows is a dissection of the American economy. HEIs that make the cover of U.S. News & World Report's college rankings "enjoy a dramatic boost in admission indicators," according to the rankings' authors. This practice means that top-tier institutions have a larger application pool of the most qualified students from which to draw, benefitting their standing in subsequent rankings (Hazelkorn, 2016). Thus, the power and politics of elite universities have been further reinforced by ranking practices. In the Global North, this is motivated by the desire to dominate global knowledge space. In South Africa, it is still linked to continuous struggles to redress past inequalities.

According to Lucander and Christersson (2020), while many higher education scholars and leaders have shown some resistance to rankings, that has not slowed down the willingness to spend considerable amounts of money, time, and research to be involved in rankings. In 2007, Indira Samarasekera, the president of the University of Alberta, organised a boycott of a popular magazine called Macleans. A total of 25 institutions out of the 90 institutions in Canada participated (Samarasekera, 2007). Samarasekera stated that: "the time had come to investigate these arbitrary rankings … influenced by capitalism and profit margins and only had the intention of selling more newspapers" (Stack, 2016). Likewise, few universities in China have expressed an interest in withdrawing from the global rankings. The reasons differ from country to country (Huang, 2015). While ranking indicators are causing various issues in different countries, rankings appear to have become major policy instruments for the government and institutions in driving the quality of the higher education system. However, what these indicators mean for the future and South Africa society needs to be investigated.

An investigation into how ranking agencies operate and use indicators to influence higher education governance is critical. It is important to understand the rankings system and agencies responsible for disruptions in global higher education. The three major ranking agencies will be discussed. However, the focus will be on the QS world

university rankings in terms of analysis. This discussion aims to compare the modes of operation to reflect on how their expectations regarding indicators change the landscape of higher education in South Africa.

1.3 QS World University Rankings

The QS World University Rankings (QS WUR) was first published in 2004 in conjunction with the Times Higher Education Supplement, a partnership that lasted five years and captured the attention of prospective students, parents, academics, and the broader public (Estrada-Real & Cantu-Ortiz, 2022). In many ways, this partnership provided the impetus for the development and proliferation of higher education ranking systems (HERS) across the globe (Sagintayeva & Kurakbayev, 2012). So successful was the synergy of this partnership that it was perhaps inevitable that it would lead to other systems being introduced into what is now a very different higher education market environment. University management teams are now substantially more aware of global mobility, competition, and the reputational value of being seen to progress in at least one global or regional ranking (O'Leary, 2017).

Since the QS rating indicators rely heavily on reputational surveys, they are frequently criticised for lack of transparency in their methodology (Kaycheng, 2013). Despite this, QS was one of the first ranking methods to be "audited" and validated by the IREG Observatory on academic ranking and excellence using the Berlin Principles, one of which deals with transparency. As QS relies more heavily on reputational surveys than other ranking agencies, Redden (2013) and Huang (2011) believe that its approach is more contentious than others. Half of the QS WUR technique relies on surveys (Redden, 2013). Forty per cent of the overall weight goes to responses from a poll about the candidate's academic reputation, and ten per cent goes to responses from a survey about the candidate's reputation among employers (Shahabuddin, 2022). An institution's academic reputation accounts for 40% of the total score (Shahabuddin, 2022). The QS WUR technique compiles the views of over 130,000 academics and other professionals working in the higher education sector on the quality of teaching and research at universities worldwide based on various survey results (ALFZ, 2022). As a result, it has become the world's biggest survey of

academic opinion, and its breadth and scope make it the best possible gauge of academic opinion (Liu, Moshi, & Awuor, 2019).

Likewise, the employer reputation with a 10% weight gives an impression to the student that this is an excellent way to be ready for the workforce (Abbas et al., 2022). Since the target audience of this rating is the international student body, it is crucial that the quality with which different schools provide this preparation be evaluated. Redden (2013) states that more than 75,000 employers participated in the QS Employer Survey, which compiled data for the employer reputation metric. The survey asked businesses to name the educational institutions from which they recruited their most capable, creative, and productive new hires. Regarding employer surveys, QS is the biggest in the world (Fauzi, Tan, Daud, & Awalludin, 2020). This means that the QS methodology metrics for ranking a university give room for Universities in Africa to improve their academic reputation by churning out viable academic journals since academic reputation is allocated a 40% score, and employer reputation is allocated 10% (Anowar, Helal, Afroj, Sultana, Sarker, & Mamun 2015). It is metrics like these that justifies the objective of this study. In addition to comparing institutions based on their research, teaching, employability, and international orientation of interest to prospective applicants, QSWUR also ranks institutions against each other (Dobrota, Bulajic, Bornmann, & Jeremic 2016).

Therefore, the QS rankings' use of a reputational poll of academics has long been the subject of intense arguments amongst scholars (Huang, 2012), who typically claim that peer review may easily skew findings toward institutions with worldwide prominence (Huang, 2012; Taylor & Braddock, 2007). These arguments provide some evidence that these surveys do at least reflect a university's global standing. Quacquarelli Symonds believes that increasing the scope and depth of these reputational surveys will offer a significant advantage to prospective applicants looking for information about how their institutions are viewed globally by employers of labour and the academic community (Griffin, Sowter, Ince, & O'Leary, 2018). Sowter (2015) goes even further in defence of the academic survey indicator arguing that academics are the best people to make judgments about universities. The question "Who better to ask than the individuals working in the universities?" has

become essential to the QSWUR due to a lack of data on teaching and more recent comparisons of research (Sowter, 2015).

Sowter (2015) argues that academic survey scores are less susceptible to bias favouring English-speaking nations than citation scores. Participating institutions, prior respondents, and other databases all contribute to the pool of available respondents (Sowter, 2015). Respondents to the Academic Survey come from all levels of academia and administration, from adjunct professors to university heads, including provosts, principals, rectors or presidents of universities. Participants name numerous schools other than their own as the finest in the discipline with which they are associated (Baty, 2011). QS polled approximately 83,877 academics (participants) throughout the world for the 2019 edition to determine which universities are the best for research in the subject area(s) in which the participants claim expertise (QS, 2018). From 4,378 in 2018 to 4,764 in the 2019 edition, a 9.1% rise was seen in the number of institutions suggested by respondents (Griffin, Sowter, Ince, & O'Leary, 2018). The final tally is based on an equal-weighted average of the regionally adjusted indices for each of the five primary topic areas (Sowter, 2015).

The QS World University Ranking Employer Reputation indicator (which carries a weight of 10% in the overall score) is based on responses from 42,862 employers worldwide to a recent employer survey (Griffin et al., 2018). In the 2019 edition, companies nominated around 4,063 educational institutions from 140 different nations (Griffin et al., 2018). The increasing relevance and value of the QS surveys among academic institutions and employers may be linked to the rising number of participants and interest in both types of QS surveys (Griffin, 2018). However, as Kaycheng (2015) pointed out, many academics continue to criticise what they regard as over-reliance on peer-review surveys despite an increasing sample size year in and year out. They suggest that while it may be an important tool, prejudice may occur through conservative peers who might have a bias towards an institution based on its country of origin as well as reputation, name, size, and age (Kaycheng 2015; Soh, 2015). This latter argument is particularly interesting given that reputation was probably the only way to assess any university's performance before the advent of global rankings.

After concluding the data analysis of the 2009 QS rankings in detail, Huang (2012) raised certain concerns about the QS peer review process. For instance, the quantity of questionnaires returned from each country significantly influenced the final rankings. The methodology behind the worldwide distribution of the questionnaires and the tabulation of the findings also offered hints that the Commonwealth of Nations tended to do better in the QS Rankings. Huang (2012) also claims that most of the completed Academic Surveys were from Information technology (IT), engineering, social sciences and natural science domains. Financial/banking, professional/consulting, engineering/manufacturing, and computer/information technology services accounted for the bulk of reviewers' comments about their employers. Huang (2012) adds that the survey's implementation implies that the questionnaire lacks defined parameters, which might lead to answer manipulation (Huang, 2012).

In 2015 (for the 2016 edition), QS updated its Academic Reputation and Employer Reputation methodology by adopting a five-year historical data perspective, up from the previous three years. Three-quarters of the more current statistics are based on older data obtained four and five years ago (Huang, 2012; Sowter, 2015). Critics like Padlee, Reimers, Mokhlis, Anuar, & Ahmad (2020) point out that QS might be factoring in the opinions of long-retired professors and business owners if they keep repeating the same replies over a five-year period. Using data from the 2018 version of the Employer Reputation Survey, QS award both foreign and local replies the same amount of weight (50 per cent). Earlier, 70% of answers came from outside the country, while just 30% were internal responses.

Many higher education scholars maintain that, despite the fast progress of Information Technology (IT), there is still no replacement for traditional classroom settings (Downing, 2012). Practically speaking, according to Downing (2012), the faculty-student ratio indicator should provide for the amount of time and contact that lecturers spend with their students, despite not being a particularly sophisticated assessment of teaching and learning quality. Downing (2012) also alluded that students tend to place high importance on working in small groups and having access to tutors. Sowter (2015) acknowledges this and argues that this proxy measure is relatively accurate. In addition to the difficulties of collecting data, Huang (2012) notes that the definition

of staff and students varies from university to university; for example, a school may exaggerate the number of faculty members listed on an indicator, making it seem higher than it is. However, there is at least some safeguard against this because inflating faculty numbers would damage the citation performance per faculty indicator since the same faculty full-time equivalent (FTE) number is used for both. Furthermore, since the indicator is meant to be a proxy for teaching quality, institutions might choose to recruit research-only personnel who do not necessarily collaborate with students to boost their student-staff ratio (Bekhradnia, 2016).

For the QS WUR 2019 edition, about 13 million publications and 67 million citations found in Elsevier's Scopus database were analysed (Griffin et al., 2018). According to Griffin (2018), the average number of citations received by a single academic has climbed from 52 in the previous year's edition to 60 in the following year. In a similar vein, the research output of the collaborating universities increased by roughly 12.1 per cent (Griffin et al., 2018). Although citation counts are frequently seen as objective statistics, focusing just on the mean citation count might reward colleges that have produced a small but highly referenced body of work (Huang, 2012). Distinct academic disciplines have different citation practices, but the social science area generally has a lower ratio of citations to staff than the scientific sector. Because of this, certain academic disciplines may be favoured over others when determining rankings (Huang, 2012).

QS is aware of and responding to some of the criticisms levelled at this indicator. The citations per faculty indicator have been the subject of a few changes in some years. After receiving a lot of criticism, the number of affiliated authors per publication was reduced from its original 10 (in 2015/16) to 5 (in 2016/17), with each area being treated separately. During the 2016–17 edition, the number of citations was likewise standardised across disciplines (Downing et al., 2021). QS did not include citations earned in the calendar year the rankings were released (2017/18 edition). In addition, the publishing window was kept at five years, but the citation window was increased to six years (QS, 2017). The 2019 version of QS rankings is based on a tally of citations made between 2012 and 2016, for works published between 2012 and 2017. (Griffin et al., 2018). Some of these adjustments significantly impacted the ranking's stability, although they were widely regarded as methodological advances by many

academics. On the other hand, THEWUR seems to have similar indicators but quite different ways of measuring the performance of HEIs. It is important to explore the similarities and differences between THEWUR, QS and other ranking agencies.

1.4 The Times Higher Education World University Rankings

Times Higher Education (THE) magazine releases their annual World University Rankings each year (Stack, 2013). From 2004-2009, THE magazine partnered with QSWUR to publish university rankings called THE-QS World University Rankings. From 2010 to 2013, the publisher switched to Thomson Reuters (Schwekendiek, 2015). In 2014, the publication renewed its partnership with Elsevier, and as part of that agreement, the magazine began providing Elsevier with the information needed to create the rankings. (Hanafi & Boucheri, 2019).

One of the methodologies used for Times Higher Education World University Rankings (THEWUR) is the criteria and weighting methodology. There are a total of 13 metrics spread throughout the following 5 sections: citations (impact of research; 30%), teaching (30%), international outlook (7.5%), research (30%), and industry revenue (2.5%). This is an increase from the six factors included in the THE-QSWUR that appeared from 2004 until 2009. (THEWUR, 2011). According to THE, the technique is “robust, sophisticated and transparent”. According to THEWUR (2011), the methodology was settled upon after robust consultation with many higher education experts worldwide and sorting through 250 pages of feedback from 50 senior figures across every continent in a process that took 10 months. Z-scores were generated for each dataset to facilitate comparisons among datasets of varying characteristics before the final ranking was determined (THEWUR, 2011).

Times Higher Education stated on the 13th of September 2011 that only the top 200 universities would be included in its 2011-2012 annual rankings. According to Baty (2011), the reason for this was that institutions lower down the table required more data, which didn’t create significant differences between institutions.

Nonetheless, Baty (2011), also stated that the rankings would include a “best of the rest” list in alphabetical order and unranked institutions from 201 to 400 according to its data and methodology (Baty, 2011). Yet, Baty (2011), has revealed that "980

institutions from 79 countries" would be ranked in the 2016/17 edition of the Times Higher Education World University Rankings, set for publication on 21 September 2016 (Baty, 2016; THEWUR, 2016).

Furthermore, there was a change in the ranking algorithm for 2011-12, as set out in THEWUR (2013). Only THEWUR, according to its editor Phil Baty (2013), evaluates the international standard of a university's teaching environment, while all other ranking agencies are devoted to research (University World News, 2013). According to Baty (2013), THEWUR is the only ranking agency that values research in social sciences, arts, and the humanities as much as research in the hard sciences (Baty, 2011). That assertion, however, is no longer valid. To avoid institutions with a heavy focus on Life Sciences and Engineering from skewing the QS World University Rankings, QS implemented faculty area normalisation in 2015 (QS, 2016).

Times Higher Education methodology has always been criticised for not being appropriate and not comprehensive enough (Bautista-Puig, Orduña-Malea, & Perez-Esparrells, 2022). Measuring effective education using citations as a metric is always going to be problematic in several ways. A glaring problem with this is that institutions that do not use the English language as a medium are already at a disadvantage (EUA, 2011). Many journals and academic societies have adopted English as their international language. This would generally make publications and citations in a language other than English much harder to find. This language reality, in turn, puts institutions that do not use English at a disadvantage (EUA, 2011).

Because books, which are either not covered at all by digital citation records or are only covered very rarely, are the primary tool for publication in humanities and social sciences, it is a disadvantage for universities that do not use English as the primary language of teaching and learning (Scientometric, 2012).

It has been said that Times Higher Education favours universities that emphasise "hard science" and have a high output of research in these domains over those that emphasise the social sciences and the humanities (Phillips, 2014). As an example, the London School of Economics (LSE) was rated 11th in the world in 2004 and 2005 by THE-QSWUR, but fell to 66th and 67th in 2008 and 2009, respectively (Altbach,

2015). THE found that the surveying firm Quacquarelli Symonds used on their behalf was biased against several schools, including LSE, in a report published in January 2010. According to the Thomson Reuters spokesperson, THE's new partner, the following was said about the controversy: "LSE was at just 67th in the recent THEQSWUR- some error surely? Yes, and quite a large one" (Baty, 2014). However, after switching to Thomson Reuters as their data source the following year, LSE dropped to 86th place, a position which a Thomson Reuters official defended as being "a fair depiction of their stature as a world-class institution" (Baty, 2013). As a result of the intrinsic methodological bias still applied, LSE, while consistently rated at the top of the rankings nationally, has placed behind other universities in the United Kingdom in the THEWUR (Sciencepo, 2011). In 2015 and 2016, Trinity College Dublin's rankings were decreased due to a simple error in the data it had supplied. Education administrator Bahram Bekhradnia claimed that this demonstrated "extremely minimal vetting of data" on the part of those who carry out such assessments. Additionally, Bekhradnia said, "although Trinity College was a reputable institution which could be depended upon to supply honest statistics, sadly, that was not the case with many colleges worldwide." (RTE, 2016).

The intended audience of most rankings is seldom specified. Undergraduates, in particular, may lack an interest in a university's research activities (Ella, 2012). The cost of a degree also has no role in the overall standing. This omission implies that private colleges and universities in North America are measured against their European counterparts. In several European nations, including France, Sweden, and Germany, free tuition at public universities is a longstanding policy (Maclsaac, 2015). It was alleged in 2021 that the University of Tsukuba in Ibaraki Prefecture, Japan, lied to the THEWUR about the number of overseas students registered at the school (University World News, 2021). The finding prompted an inquiry, but it also prompted academics to complain about the simplicity with which THE's rating system might be gamed. The subject was debated in Japan's National Diet on April 21, 2021. (Shugiintv, 2021) Mumbai, Delhi, Kanpur, Guwahati, Madras, Roorkee, and Kharagpur are seven Indian Institutes of Technology that have decided to stop participating in THE rankings beginning in 2020. Because of ethical considerations, some universities have opted out of the rankings (Indian Express, 2021).

It is expedient to note that the bone of contention here is that indicators of rankings are becoming problematic rather than promoting equality and stability among higher education institutions. However, ARWU also may not be different because it is one of the top-ranking agencies. There is much benchmarking of ARWU ranking indicators. On the other hand, finding synergies in selecting ranking indicators contributing to the purpose of higher education is far more important than the business of rankings.

1.5 The Academic Ranking of World Universities

Another publication that is published yearly is the Academic Ranking of World Universities (ARWU), often referred to as the Shanghai Ranking. The University of Shanghai Jiao Tong created this ranking table in 2003; it was the first global university rating to include a broad range of indicators (Pavel, 2015).

Together with the THEWUR and the QSWUR, ARWU is considered one of the three most prominent and extensively followed university rankings (Marszal, 2015). It has been praised for its neutrality and methodology (Marszal, 2015), but it has also been widely criticised for favouring larger institutions over smaller ones in its rankings since it does not account for their relative sizes (Bekhradnia, 2016).

ARWU was called "the most frequently cited yearly rating of the world's research institutions" in a 2012 Economist assessment of higher education (The Economist, 2012). According to The Chronicle of Higher Education (2010), ARWU is a renowned and the most important worldwide rating of institutions (Chronicle, 2015). Academic Ranking of World Universities' clarity of purpose, openness, and consistency was cited by Philip G. Altbach as major assets, while the Chancellor of the University of Oxford, Chris Patten, as quoted by Altbach (2013), stated that "ARWU methodology appears really sound, it might be the most decent attempt at a fair comparison. While ARWU has its roots in China, it has been lauded for being fair to universities around Asia, including those in China" (ARWU, 2013).

Some have stated that the ranking emphasises accolades rather than teaching excellence and the arts (Marszal, 2015). Results from the Shanghai rankings could not be recreated from raw data using the approach outlined by Liu and Cheng (Florian, 2007), according to an article published in the journal Scientometrics in 2017.

In 2013, a report published in the same journal detailed how to replicate the Shanghai rating findings (Docampo, 2013). Using their expertise in Multiple Criteria Decision Making, J C Billaut, D. Bouyssou, and Ph. Vincke analysed the ARWU (MCDM). They found that the criteria used were irrelevant, that the aggregation process was fraught with difficulties, and that key criterion selections had not received adequate consideration (Billaut, Bouyssou, & Vincke, 2010).

Even ARWU scholars like Cheng, Wang & Liu (2014) agree that it's impossible to quantify how good a university is; hence they believe that any rating is certain to be contentious. They urge that extra care should be taken when publishing or applying the findings of university and college rankings and that the processes behind these rankings must be well understood. Some EU member states and the European Commission have accused ARWU of favouring "Anglo-Saxon higher education institutions" (Radulescu, 2012). In France, for example, ARWU is the source of a yearly discussion because of its perceived incompatibility with the country's scholarly culture (Rauhvargers, 2013) and the excessive weight it gives to studies that were conducted in the past (Longden, 2011). It has also been criticised for being used as an excuse to force university mergers in Europe (Rauhvargers, 2013). The number of award winners or articles published, for example, will automatically accumulate as universities are grouped together regardless of the quality. Therefore, when two equally ranked institutions merge, they significantly improve their score and climb higher up the ranking table without necessarily changing/improving quality (Bekhradnia, 2016).

Finally, CWTS ranking indicators show an interesting direction, but the arguments are not far different regarding what the whole objectives of ranking mean for higher education stakeholders.

1.6 CWTS Leiden Ranking

Bibliometric measures are used only in the CWTS Leiden Rating, a worldwide university ranking published annually. The Centrum Voor Wetenschap en Technologische Studies (CWTS) at Leiden University in the Netherlands is responsible for compiling the rankings. Publication and citation statistics are obtained

from the Web of Science bibliographic database maintained by Clarivate Analytics (CWTS, 2014).

The Leiden Ranking is a global ranking of universities based on their scholarly publications' volume and citation effect (CWTS, 2014). Rankings accounting for variations in language, field, and school size are shown (Van Raan, Van Leeuwen, & Visser, 2011). Several rankings of the top researchers in a field are published annually, each based on a different set of bibliometric normalisation and impact indicators, such as the total number of publications, the average number of citations per paper, and the field-normalised impact per paper (Leiden Ranking, 2014). The Leiding Ranking considers in-house and external scientific cooperation between universities and the citation effect to determine university placement (CWTS, 2014). The Leiden Ranking evaluates institutions based on their citation impact and their level of scientific cooperation.

According to an article published by Leydesdorff & Opthof in 2010, the Leiden Ranking's approach of standardising citation effect across disciplines has been heavily questioned. While "not meant for the scientometric assessment, but for the purpose of information retrieval," the ISI topic category categorisation used in the Web of Science forms the basis of the mean normalised citation score (MNCS) indication (Leydesdorff & Opthof, 2010). Compared to normalising at the level of individual articles, normalising at a higher aggregate level provides greater credit to older publications, especially reviews and publications in disciplines with historically higher citation counts (Andrejs, 2014).

Generally, ranking agencies used similar indicators to rank higher education institutions globally. However, they assigned different weighting to each indicator. This shows, for example, that South African higher education institutions' performance will vary from one ranking agency to another. There are situations where universities subscribed to be ranked by more than one ranking agency. This puts strain on ensuring that ranking agencies' indicators align with the national policy and institutional quality process. This may have further profound consequences for achieving sustainable development in reducing inequality and poverty and providing solutions to social problems in South African society if ranking indicators become a

major focus in the business of higher education. This problem is caused by a capitalistic view of managing higher education systems.

1.7 Problem Statement

The practices of neoliberalism and managerialism in ranking higher education in South Africa include the performance-based evaluations and efforts to optimise, frame, and regulate the life of academics (Morrissey, 2015). In the context of ranking indicators, the idea of neoliberalism and managerialism means higher education institutions operate like consumer-oriented corporate institutions that define education as a market commodity. The neo-liberalistic and managerialism factors of rankings tend to commercialise and corporatise institutions of higher learning by reframing their orientation and purposes. The problem around these ideologies speaks to the complexity of indicators for ranking higher education globally and in South Africa. In essence, this implicitly means that anyone who is educated is market-led. In other words, education is quantified in terms of acquiring human capital. According to Lynch (2014), this has led to the introduction of groupings and tables of universities which are mostly led by powerful publishing interests. Today, ranking is locking South Africa's higher education into a rival field wherein differently situated agents and institutions of higher education compete in an endless struggle to achieve their goals or interests. At present, output-centred funding, performance measures, economic value measures, impact, and relevance tests and funding agency relations based on audits, contracts, and accountability underpin the discourses of excellence and quality. What this means for the future of higher education in South Africa and South Africans needs to be challenged.

Universities in African nations have been struggling in part because neoliberal policies have been widely implemented (Mok & Montgomery, 2021). During the 1970s, neoliberal policies were first used in the political sphere. Non-redistribution legitimation and anti-redistributive goals of neoliberalism, propagated via individualism and the philosophy of choice, have resulted in cuts to public funding for higher education across the world. Increases in neoliberalism's small-state theory are leading to a decrease in public expenditure and dedication to higher education even though the economy is booming. The poor in the majority of the world's areas or regions are negatively impacted by global shifts in education away from an emphasis

on rights and needs and toward markets and choices (Van der Walt, 2017). As a consequence, just 6% of youngsters in sub-Saharan Africa apply to university institutions, whereas this number is over 80% in other OECD countries.

As a result of neoliberal policies, universities are under pressure to improve their rankings and to operate as autonomous businesses that can pay their costs via tuition and other fees (Gyamera & Burke, 2017). Since tuition is the universities' primary source of income, this significantly raises the expense of higher education for the vast majority of Africa's poor households (Cini, 2019). As a result, the more aggressively a university competes for funds and attention, often by highlighting its higher rankings, the more out of reach it becomes for many African students due to the resulting increase in tuition.

The South African higher education system has been commercialised thanks to the proliferation of brand and identity systems (Allais, 2017). Educational rankings promote the idea that all parts of a country's educational system matter and should work together to improve the country's standing. One of the aims of higher education is to contribute to national development, therefore a high ranking should not only represent the greatness of the school but also materialise as progress for South Africans (Gyamera & Burke 2017). According to Gyamera and Burke (2017), universities' primary function is to use their resources and expertise to discuss societal problems and progress social and economic progress, but this objective may be made the ultimate sacrifice in the name of global recognition and the associated ranking system. Consequently, one could argue that the commercialization of education has affected not only students who are no longer able to afford the fees, but also society at large, as the pursuit of branding and recognition is stifling the universities' capacity to function effectively in other critical places, such as community outreach.

Higher education rankings continue to be used in South Africa as a barometer of the country's worldwide competitiveness and a means of assessing the relative quality and performance of individual institutions and whole systems of higher learning (Hall, 2011). As a result, there has been a drive at universities to produce greater results from their research. Students and faculty at several schools are rewarded monetarily

if they publish research. While this is to be applauded as research outputs are a major factor in rankings, some worry that this is compromising quality as faculty and students strive for quantity over quality to improve their institution's position (Tomaselli 2018).

Higher education in South Africa is becoming more regulated by rankings due to the nature of the system. When it comes to contesting class inequities, South Africa's higher education has done very little, even in areas where it is clearly in the public interest (Allais, 2017).

Quality assurance is the preeminent accrediting technique and method with which South Africa ensures some conformity in higher education, which is surveillance politics (Maistry, 2014). Higher education rankings in South Africa are a reflection of the international competition for excellence in this field and continue to be used to determine the status of individual institutions, evaluate the effectiveness of the entire higher education system, and assess the country's ability to compete on the international stage (Hall, 2011). According to Morrissey (2015), rankings in South Africa's higher education are also a tool of managerialism, reconstructing the purpose of higher education institutions and the meaning of higher education. Rankings prevail as part of some politically enthused, performance-driven governance champion intended to guarantee, through intensive auditing systems, the alignment of all higher education institutions in South Africa with the market values. This is how global rankings and their agencies depict Africa's higher education institutions. It is almost like a business game that completely ignores systemic issues that are endemic in those countries, and this is also the case in South Africa.

The "neoliberalism and managerialism" approach has presented a new kind of regulation within South Africa's higher education. The leading instruments of regulation are located around accountability, transparency, reporting, audit, and performance cultures (Van der Walt, 2017). As a result, South Africa's higher education sits oddly amidst two narratives; the first being promoting academic independence, freedom of expression and thought, exploration, and heterodoxy to generate new frontiers of knowledge, and secondly, a progressively invasive sequence of supervisory regimes seeking to steer, control and manage higher

education in a manner that serves the economy and state's interests. The only way we can create knowledge out of 'neoliberalism and managerialism' is by exploring the impact neoliberalism and managerialism have had on higher institutions in South Africa. This study analyses the indicators of ranking in South African higher education to do so.

1.8 Research Objectives and Questions

*1.8.1 **Research Objectives***

Given the problem statement advanced in the preceding section, the following objectives will be achieved through the conduct of this research:

- To evaluate the indicators used to rank higher education in South Africa.
- To analyse the criteria used in ranking.
- To evaluate how the concept of ranking contributes to the quality of education among South African universities.
- To analyse the validity of the indices used in ranking.

1.9 Research Questions

Following the identified research objectives of the proposed research, the following corresponding research questions will be answered in the course of the study:

1.9.1.1 Main Research Question

What is the relationship between the metrics and indicators used in ranking higher education in South Africa?

1.9.1.2 Research Sub-questions

- What is the relationship between the ranking indicators and higher education performance in South Africa?
- What is the validity of the indices used in the ranking?
- How does the concept of ranking contribute to the quality of ranking in South African Universities?

1.10 Ethical Considerations

The following ethical guidelines have been followed:

- Permission to conduct the research was applied for and approved by the University of Pretoria, Ethics Office in the Faculty of Education after submitting a proposal and details of how the study will be conducted.
- The research used QS secondary or historical data. The QS data is accessible on public domain for research and analysis.
- No form of deception was used to obtain information.
- The data was analysed to evaluate the indicators used in ranking universities in South Africa.
- No data was collected from any individual by questionnaire.

1.11 Significance of the Study

This study's findings and recommendations are expected to generate much needed information that diverse stakeholders will use to know the validity of the indicators used in ranking African universities, particularly South African universities. Through this research, the results will serve as guideposts to aid various educational stakeholders, academics, and heads of universities in recognising the need for ranking of universities. Additionally, this study will shed light on how the concept of ranking contributes to the quality of ranking in South African universities. Finally, it will lead to a positive way to redefine and understand the ranking indicators used among South African universities.

1.12 Scope of the Study

This study is limited to evaluating the indicators used in ranking higher education in South Africa based on QS historical data. It will not address other issues concerning indicators used in ranking higher education in other southern African countries because the research's primary goal is to evaluate the various analyses of ranking higher education in South Africa. The findings, though valuable, may not be applicable in their entirety to another country in the Southern African region. This study was a specific case from which further studies can be developed for more substantial and generalised conclusions to be drawn.

1.13 Study Assumptions

This research study was based on detailed assumptions outlined below:

- The data collection was adequate in covering all the variables that were under investigation in this research.
- The QS data gave truthful information for statistical analysis of the research questions.
- The research methodology chosen provided full-bodied proof of the research subject.

1.14 Chapter Organisation

The remaining parts of the project were structured in sequential order as set out in the table below.

Table 1.1

Structure of Thesis

Chapter	Title	Description
Chapter One	Introduction	This chapter introduces the background of the study, the research aim and objectives, the research questions, and the scope and significance of the study. It also provides the structure of the thesis.
Chapter Two	Literature Review	This chapter presents the literature review related to the objectives of the study. These include the globalisation of ranking, the validity of the indices used, an investigation of how ranking contributes to quality education in South Africa, and an analysis of the criteria used in ranking and the different interpretations of university rankings.
Chapter Three	Methodology	This chapter presents the research methodology and approaches used for this study. These include the research design, the research study's objectives, the participants' characteristics, the data gathering process, measuring instruments, statistical analysis and

		ethical consideration and the summary of the discussed issues.
Chapter Four	Data presentation and analysis	In chapter four, the data is analysed, and the findings are presented.
Chapter Five	Discussion of the Findings, Recommendations and Conclusion	This chapter presents the research findings, discussions, conclusions and limitations of the study, as well as implications for future research.

1.15 Definition of Terms

1.15.1 ***Higher Education:***

Tertiary education culminating in a degree is known as "higher education." After completing secondary school, many students choose to continue their education at the university level, often known as the third level of formal education or tertiary education (Alemu, 2018).

1.15.2 ***Quacquarelli Symonds World University Rankings (QS WUR):***

The 51 disciplines included by the QS World University Rankings by subject are ranked alongside the best institutions in the world. The rankings were developed in response to the widespread interest in comparative analyses of certain academic disciplines to assist prospective students in locating the best universities in the world for their chosen major (QS, 2022).

1.15.3 ***The Times Higher Education World University Rankings (THEWUR):***

Times Higher Education (THE) magazine releases its annual World University Rankings every year. Since its inception in 2004, it has served as an indispensable guide to the world's top higher education institutions (Baty, 2014).

1.15.4 ***The Academic Ranking of World Universities (ARWU)***

One of the annual releases of global university rankings is the Academic Ranking of World Universities (or the Shanghai Ranking). It was initially produced in 2003 by the University of Shanghai Jiao Tong, and at the time, it was the first worldwide university rating based on a wide variety of factors (Safón, 2019).

1.15.5 ***CWTS Leiden Ranking***

Bibliometric measures are used only in the CWTS Leiden Rating, a worldwide university ranking published annually. The Centrum Voor Wetenschap en Technologische Studies (CWTS) at Leiden University in the Netherlands compiles the rankings. Publication and citation statistics are obtained from the Web of Science bibliographic database maintained by Clarivate Analytics (CWTS, 2014).

1.16 Conclusion

This chapter presented an introduction to the study of university ranking. Specifically, the study seeks to interrogate the validity and relevance of some indicators, benchmarks and indices used to rank universities globally. Additionally, the study also seeks to ascertain if there is a correlation between the ranking of a university and the quality of education it offers. The chapter also presented the research questions to be answered when the study is completed, the research objectives to be achieved through the interrogation of empirical data and the research problem which motivated the study. The significance and justification of the study are also presented.

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CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

This chapter will provide a state-of-the-art summary of the debate around rankings. It will initially illustrate how rankings work and what they measure. It will then examine how higher education and its stakeholders respond to the growing influence of rankings, drawing upon international data and experience. The final section will consider some of the wider policy implications and speculate on their legacy.

2.2 Overview of University Ranking

Some studies trace the origins of university rankings to the article written by Cattell J. M. (1910): who wrote the article: *A further statistical study of American men of science*. The article compared and showed the relative scientific strengths of different universities and their faculty members' reputations. The rankings were then predicated on several variables, including the number of books in the library, student ratio, academic resources available to faculty members, the relative success of the students later in life, and the faculty members' relative qualifications.

This contrasts with contemporary rankings that focus on the reputation of the institution and the relative output and throughput of the institution. Karabel (2005) notes that although there have been defining moments like the 1961 Science Citation Index and the 1966 Social Sciences Citation Index, the defining moment came in 1983 with the US News and World Report Best College Rankings (USNWR). This coincided with the rising Zeitgeist, which led to the commodification of the university space and intensified the drive towards research outputs as a way to climb the academic rankings. Some of the more influential rankings at the time include the CHE-Hochschul Ranking, which the German Centre for Higher Education Development developed in 1998. However, what is needed is how the history of rankings in higher education brought about problematic indicators used to measure performance.

Another milestone in university rankings is the 2003 Shanghai Jiao Tong Academic Ranking of World Universities (ARWU). While the initial motivation for the rankings was to highlight Chinese universities and convince the academic community that Chinese education was comparable to, if not better than, to Western universities, these rankings have become mainstream. They are now widely used to determine

the influence and impact of universities. It is also important to point out that besides the key rankings mentioned above, several other university rankings have proliferated over the years. Some of these include The Leiden Ranking (2008), maintained by the University of Leiden's Centre for Science and Technology Studies (CWTS). The rankings use bibliometric indices to map the academic output of over 1 000 universities globally. There is also the Russian Global University Rankings (2009) which use a questionnaire sent to universities worldwide. Some minor rankings worth mentioning also include the 2011 European Union's U-Multirank, which makes use of the U-Map classification; the 2007 Taiwan Performance Ranking of Scientific papers for Research Universities (HEEACT); the 2008 USNWR's World's Best Colleges and Universities; the 2004 THE-QS World University Ranking (THE-QS) and the 2004 Webometrics by the Spanish National Research Council. These ranking agencies tried to show that they have functional indicators to measure university performance. The complexity and reliability of indicators may also depend on the objectives of the rankers and universities. If these two are not aligned, their rankings may be irrelevant in improving the quality of higher education.

There are several factors that ranking institutions utilise when it comes to ranking higher education institutions. However, these ranking metrics more often than not give little or no credence to the broader strengths of the institutions as they base their results on several measurable characteristics. The practice of rankings is not limited to a handful of organisations, as academics, websites, magazines, governments, and newspapers also conduct rankings. In addition, departments, schools, organisations, and entire institutions are also ranked.

There are several indicators considered by ranking agencies regarding ranking institutions. Indicators include admissions, area of expertise, research influence/excellence, and number of awards, historical reputation, endowment /funding, graduate employability, student options, industrial linkage and a host of other criteria. It is expedient to note that numerous rankings are carried out by mainly evaluating the research output of the institutions (Shay, 2017). Some ranking institutions rank institutions within a single country while other agencies engage in the global assessment of higher education institutions (Sukardi, Mulia, & Muslim, 2019).

According to Marklein (2016), there is a lot of debate about the accuracy and usefulness of rankings. There seems to be a lack of consensus due to the criticisms surrounding the ever-growing rating methodology. There is also evidence to suggest it is possible to manipulate the system. Research conducted by Mussard and James (2017) showed that excessive self-citations or researchers supporting one another in research surveys make it possible to play the system of rankings to one's advantage.

Organisations like UNESCO, while acknowledging that although rankings are seen as bringing about some measure of quality, and as such allow for competition between HEIs in the world, they have also questioned whether rankings are causing more harm than good (UNESCO, 2016).

According to Mwenda and Muuka (2009), the advent of the university rankings can be traced back to 1970 when the Carnegie Commission on Higher Education started classifying US universities. However, this has since evolved to the current format which consists of a league table format that was developed by the US and World Report. This format was further refined by The Times of the United Kingdom in 1993, leading to the widely available format today. It is important to note that at the time, "The Times" concentrated on institutions in the United Kingdom. However, following widespread popularity and the relevance and applicability given to the ranking system, this went on to be developed into a global system. However, national ranking systems have evolved into global and regional rankings. There has been a positive argument in favour of national rankings that may address current and contextual issues in a country rather than global rankings that create indicators outside of the national interest.

In 1981, the world report ranking and news agencies in the United States of America pioneered a ranking system that compared HEIs within the border of the USA. Lately this practice has become quite prevalent in the United Kingdom, Canada, Poland, Italy, Germany, Spain, and China (including Hong Kong) (Usher & Savino, 2006).

Williams and Van Dyke (2006) also pointed out that institutions have started developing their own ranking systems. An example is the Melbourne Institute Index of the International Standing of Australian Universities. It should be pointed out that

even if a ranking system has not been developed for an institution, other institutions may develop one. Another example is the ranking system for Russia's top 100 universities, which has not been developed in Russia or by Russian institutions, it was developed outside the country by Huazhong University of Science and Technology (Sadlak, 2006).

Australia alone has three national ranking systems: The Good Universities Guide, the Learning and Teaching Performance Fund (LTPF), and finally, the Melbourne Institute Index. In 2003, as part of the Australian government initiative called "Our Universities: Backing Australia's Future initiative, the Learning and Teaching Performance Fund" (LPTF) was announced with the sole aim of rewarding Higher Education Providers that "demonstrated the best excellence in teaching and learning" (Department of Education, Science and Training, 2005). Its metrics are based on seven (7) measures which are then grouped into three different categories: student satisfaction, success, and outcomes. Unsurprisingly, this methodology has come under a lot of criticism which DEST has tried its best to address. For example, in 2006 (funding for 2007); several changes were made to include adjustments to some outcomes and measures reported in the broad groups and the weighted metrics were equally distributed.

However, other indicators or indices measure teaching and learning more explicitly and beyond just student success. For instance, the Melbourne Institute Index measures performance in terms of research and other indices such as teaching and research training (Williams & van Dyke, 2006). The indicators of the Melbourne Institute Index are based largely on 36 different metrics, which are then grouped under six categories and weights namely; undergraduate admissions quality (11%), quality of academic staff (40%), quality of graduate programmes (16%), level of resources (11%), opinions for surveys (8%), and finally the quality of undergraduate programmes (14%) (Williams & van Dyke, 2006).

In the same study in 2006, the authors Williams and van Dyke (2006) asserted that while the standing of an HEI may greatly affect the choice of a prospective undergraduate student in selecting an HEI, for graduate students, like PhD students, post-doctoral researchers and master's students, standing in the field is often more important. As such, they ranked institutions by discipline, using a combination of

performance measures and surveys from previous years (Williams & van Dyke, 2006).

While the emphasis of ranking on student success was found to be transforming learning, it is likely to influence how institutions are coping with access and success.

For instance, the good universities guide (GUG) was created as a public service for potential students and did not use its findings to assign grades or position to universities. To help students evaluate potential colleges, it rated them on several criteria (Baltaru, 2019). There are five tiers for each measurement used to classify institutions. Five stars denote the top 20% of institutions, four stars the next 20%, and so on. Like Australia, South Africa measures its institutions, particularly public universities, through CHE indicators and periodical reviews. Though there are no national ranking systems, government agencies such as the NRF evaluate institutions' research performance based on academic research outputs over a certain period. These indicators have some international elements, but the idea is to have a sense of institutions' contributions to national development. The idea is that ranking should be comprehensive and not be skewed towards research or teaching, for instance. The quality of higher education may be managed by other indicators beyond ranking metrics if institutions can demonstrate them. South African quality and performance indicators should include diversity, ethnicity, and racial and historical issues. It is unclear if ranking indicators show and promote these assessment criteria. Thus, the global ranking has been blamed for lacking local relevance and context in its evaluation. The analysis of global ranking indicators and their objectives needed re-examination to determine what it means for South African higher education situations.

2.3 University Roles and Functions

There seems to be an assumption that in many countries, the federal government has control over public Higher Education institutions. This assumption is based on the fact that many public institutions have strong links to the government and as such would prioritize national interests over students. The government's financial support for public universities creates an implicit obligation for such institutions to align their objectives and growth plans with the governments. Public universities have a duty to

contribute to national and societal growth in the areas of social, economic, political, and technical advancement. As Hamid & Jaharudin (2017), pointed out, this is typical of schools in Africa and around the world. As though the government is the driving factor behind the rise of colleges in the periphery, this notion has persisted without any resistance. The central-periphery hypothesis of development is a common idea amongst scholars in the field.

Robiah (1980), conducted a study on the roles of Universities in national development which validated this idea. Public universities in South Africa are seen as the driving force behind the country's efforts to promote economic mobility, ethnic equality, and the production of highly skilled professionals across a wide range of industries. Since higher education creates the skilled labour force essential to the modern industrial economy and global marketplace, it may be said that the "thesis is higher education" is the key to a growing middle class.

Woo (2013), provides credence and the apparent valid premise that there is a growing consensus that public institutions can and should play a pivotal role in fostering economic mobility, fostering professional and technical human resource development across several industries, and promoting racial and ethnic equality. Universities, as corporate bodies and responsive organisations, often plan and establish their own growth agenda and goals, taking into account both their external and internal contexts. Both business and academic institutions may benefit from Davies and Ellison's (1999) concrete and workable approach to planning organisational growth. University campuses under this system are seen as separate entities with the authority to make decisions about their own missions, strategies, and development schedules. Professionals and specialists at universities may be used to craft an individual strategy for growth that meets the specific requirements of that institution (Lemmer, 2002).

It seems that the strategic organisation development approach has been implemented by public universities in Malaysia throughout the last decade. For this model to work, universities will need to detail their long-term goals, short-term aims, day-to-day operations, long-term plans, and key performance indicators. The process's end result, a development plan, may serve as a roadmap to success by

coordinating many efforts toward a common goal (Davies and Ellison, 1999; Kaufman, 1992).

It seems that in the previous decade, the strategic organisation development model has been more popular at universities. Institutions using this approach are expected to define their goals, tactics, and metrics for success, as outlined by Kaufman (1992). The method yields a development plan that may be used as a roadmap to bring about the intended changes via a synchronised and coordinated set of efforts (Davies & Ellison 1999). In addition, a growth plan for a university would often cover all the bases, including the school's finances, academic offerings, student services, human resources, research, and physical plant. By breaking down the plan into its constituent parts, a university can determine what it hopes to accomplish, how those tasks should be performed, when those tasks should be completed, who should carry them out, who should be held accountable, what resources will be required, and how much money should be set aside for the endeavour. A company stays on the course because of the development plan's vision, goals, and objectives (Allen, 1988). This is what has sparked a paradigm shift in what colleges do and why.

One of the recurring themes in literature is the apparent impact of university rankings on university administrators' general planning and policy. Writing from an Australian perspective, Marginson (2007) acknowledges the obsession of university administrators with the university ranking but also acknowledges the apparent flaws inherent in the system. To address the shortcomings of the ranking system, the author advocates the adoption of the system of university comparisons developed by the Centre for Higher Educational Development (CHE) in Germany. This is because the advocated system evades most of the problems and perverse effects of the other ranking systems, particularly reputational and whole-of-institution rankings. It provides data more directly useful to and controlled by prospective students, and more relevant to teaching and learning.

Horta (2009), while acknowledging the significance of university rankings, observes that for countries and specifically universities that need to improve their rankings, the state needs to play significantly higher role. The author admits that although the majority of the rankings are based on research output, the internationalisation,

reputation and general globalization of the university also count significantly. This is where the state can come in as it has more resources at its disposal to significantly improve the brand name of the university than if the university attempts to do that on its own. Horta (2009), further shows the correlation between the internationalisation of a university and its global ranking. This is done through a causal relationship between the university's ranking and the diversity, in terms of nationality, of its staff and students. This is usually achieved through a strong international brand that attracts staff and students from other countries. This brand development can then be enhanced through state assistance especially when foreign missions and embassies help to drive the brand of local universities. The researcher also believes the internationalization of the academic staff is strongly and positively associated with the internationalization of the doctoral student population which further helps in global rankings.

Usher and Medow (2009) also discuss some of the apparent challenges associated with ranking systems. The authors observe that one of the main causes of institutional unease is the tendency of institutional ranking schemes to use weighted aggregates of indicators to arrive at a single, all-encompassing quality ‘score’, which in turn permits institutions to be ranked against one another. By selecting a particular set of indicators and assigning each a given weight, the authors of these rankings are imposing a specific definition of quality on the institutions being ranked. The fact that there may be other legitimate indicators or combinations of indicators is usually passed over in silence. To the reader, the author’s judgement is in effect final. Intriguingly, however, there is little agreement among the authors of these indicators as to what indicates quality. The world’s main ranking systems bear little if any relationship to one another, using very different indicators and weightings to arrive at a measure of quality.

2.4 Global Rankings

The ARWU, QSWUR, THES, and NWU are today's most prominent global ranking systems. With its 2003 debut, the SJTU ranking set out to quantify the academic and research performance difference between top Chinese institutions and the best in the world (SJTU, 2006). The top 500 institutions are ranked mostly based on their publishing and citation rates (Science & Nature [20%], Social Science Journals [20%]

and finally, highly referenced researchers ([20%]) (Waltman et al., 2012). Nobel laureates and field medallists among the institution's alumni and personnel account for another 30%, while the number of faculty members makes up the remaining 10%. Therefore, scientific research and Nobel Prizes are indicators of excellence in higher education, as interpreted by SJTU. Metrics do not seek to include things like classroom instruction, service to the community, or global engagement; instead, they focus on recognising and rewarding outstanding research (Waltman et al., 2012).

Many people believe that their institution’s reputation might be damaged by the SJTU rating (Marginson, 2006a; Van Raan, 2011). In 2004, THES started issuing its rankings to reflect the growing globalisation of the higher education sector (THES, 2004). It relies heavily on opinion polls to determine its list of the top 200 institutions (10 per cent from graduate recruiters and 40 per cent from peers) (THES, 2004). Foreign academic members and students each account for 5%, respectively, of the remaining 50%. (THES, 2004). The mechanism used to determine THES rankings has been heavily criticised. However, THEWUR has been around for quite some time, dating back to 2006, when it published its printout version that included the top 500 universities. One can simply conclude that THEWUR primarily equates an HEI's reputation (as measured by surveys) with quality in higher education.

However, efficiency measures like the student-faculty ratio and the citations per faculty (favouring English-speaking journals) that were meant to represent quality in teaching, research, and internationalisation, fall short (THES, 2004).

QS world university rankings share similar philosophies and objectives in measuring the performance of universities (Muhammad, 2020). The main difference is the weighting attached to each indicator or criterion. There are several reasons for decisions that went into the weighting and evaluations of universities. However, one critical question is whether they are democratic, fair and inclusive. One of the challenges of ranking criteria and agencies is that many of these indicators are copied or used without context.

When Newsweek originally released its rankings in August 2006, they said they had considered research distinction, diversity and transparency (Newsweek, 2006). Using a myriad of indicators, they compiled a list of the top 100 institutions around the globe. They based their compilation on indicators from the SJTU rankings (50%), and THEWUR (40%); the final 10% was for library holdings (Shahabuddin, 2022). There is a need for greater participation of universities in developing countries to be involved in the decision that pertains to indicators used to rank universities. Though it is a global ranking, the indicators should represent the diversity of the participating universities. In the case of web ranking, there are different dimensions and reasons why ranking universities is becoming complex and sometimes confusing.

New rankings have recently appeared (Jöns & Hoyler, 2013) that evaluate universities based on online visibility. These include the G-factor International University Ranking, the Webometrics Ranking of World Universities, and the four International Colleges and Universities (4icu). Hirst (2006) stated that the assumption behind the G-factor ranking (which generates data based on the number of links from the websites of universities) is that this would be an objective form of per-review, as the decision to add links into the university's website is taken by students, administrators and the millions of academics. On the other hand, 4icu uses the web popularity of websites like Alexa and Google to rank universities worldwide.

Webometrics ranks universities based on their web publications using several indicators (size, visibility, and rich files) (Cybermetrics Research Group, 2006). The indicators or metrics used in web rankings are not as strong as other ranking agencies' ranking indicators, but provide the opinion of people about the universities based on online interaction. This can help students select an institution, but opinions expressed online may not necessarily represent the quality of these universities. While both ranking algorithms include online presence comparisons across universities, they each take quite distinct approaches. Webometrics compares and ranks universities based on their online publishing and open-access activities, whereas the G-factor and 4icu appear to focus on giving information to potential employees and students (Jati, 2012).

The quality of colleges and universities is measured by the rating systems mentioned above, which cater to the needs of various stakeholders. According to the OECD's

research on higher education policy, "HEIs and governments do not have a monopoly on measuring quality" (OECD, 2006). How authors rank things depends on their own ideas of what constitutes excellence. A system of rankings that examines and ranks institutions and programmes based on each individual's preferred criteria would be preferable to attempting to accommodate one stakeholder's requirements at the expense of another. In collaboration with Die Zeit, the German Center for Higher Education Development (CHE) has created a system that gives students control over the criteria and weightings they use to evaluate institutions (CHE, 2006). Such a system might be used by a wider variety of stakeholders in higher education thanks to the breadth and usefulness of the comparative data it provides, which considers the variety of university education. However, what it translates to in terms of ranking indicators and corresponding outcomes and how it reshapes higher education globally and in South Africa needs further analysis.

2.5 Comparisons of the different Rankings Systems: Similarities and Differences

World university ranking has recently become a point of interest in different concerned organizations and institutes, which have been doing rankings over a period of years. The four most publicly visible ranking systems, the Academic Ranking of World Universities (ARWU), THE World University Rankings, the QSWorld University Rankings, and the Webometrics Ranking are critically reviewed to understand their similarities and differences. The construct validity for educational and research excellence, and the measurement validity of each of the existing ranking criteria is critically assessed. Based on the assessment, the identity of generic challenges and limitations in each of these systems for ranking universities and institutions worldwide are identified.

Different relevant organisations and institutions have lately begun rating universities throughout the world, after having done so for some time. The Academic Ranking of World Universities (ARWU) (Shanghai, 2007), the Times Higher Education World University Rankings (THE) (Soh, 2013), the QS World University Rankings (QS, 2012), and the Webometrics Ranking have been examined critically. An analysis of the reliability of each current criterion for rating universities, including their ability to accurately quantify academic and research quality. From this analysis, an attempt

was made to underscore certain restrictions and problems shared by the many HEIs and ranking agencies.

2.5.1 **THE**

Time Higher Education (The) in the World University Ranking, supported by Thomson Reuters, is one of the most respected sources for evaluating academic institutions worldwide (Shanghai, 2007). It is the only table that evaluates institutions across the globe based on their whole range of activities, including education, research, dissemination of information, and general popularity abroad. Peer review accounts for 40%, rankings from major (mostly international) graduate recruiters for 10%, citations (per capita) of published academic papers account for 20%, faculty to student ratios account for 20%, and 'international orientation' accounts for 10% of the total weight in THE's global university rankings (Soh, 2013). When these factors are considered, a "z-score" and then the rankings are determined (Soh, 2013).

Professionals in many fields are polled by THE to choose the best 30 schools in each discipline. However, the criteria for choosing the experts are not made explicit at all (Soh, 2013). Even while having a sizable foreign student body is not inherently a bad thing, THE gives preference in its rankings to schools that can boast a large number of international students. How this is handled is dependent on the nation where the institution is located. In addition, there is ongoing debate about how many criteria should be used to determine rankings given the wide variety of possible configurations between schools. The reputation table further evaluates schools based on an overall measure of their esteem that includes data on their research and teaching reputations (Soh, 2013).

2.5.2 **QS**

As of 2010, QS no longer collaborates with Times Higher Education (THE) to publish its annual global university rankings. QS World University Rankings factors include academic peer review (40%) and faculty student ratios (20%) and citations per faculty (20%) and employer reputation (10%) and foreign students (5%) and international faculty (5%). With this system, the most important factor is academic peer review (40%) (QS, 2012). When it comes to regional rankings, however, such as the QS University Ranking: Asia, the indicators' weightings have been adjusted, with

academic peer review now accounting for 30% of the total (Ioannidis, Patsopoulos, Kavvoura, Tatsioni, Evangelou, Kouri, & Liberopoulos, 2007). The faculty citation weight was calculated as 15% each for "Papers per Faculty" and "Citations per Paper."

Some have argued that the QS World University Rankings give too much weight to peer review (which accounts for 40% of the total score), which has been met with some criticism (Ioannidis et al., 2007). The arts and humanities produce fewer citations than scientific journals and other publications, hence there are still many problems to be solved about citations in various ranking systems. According to QS, reputational indicators were included in their analyses from the beginning (QS, 2012). There was a selection bias introduced into the QS Rankings' methodology for calculating university reputation surveys because of the lack of oversight over the quantity and quality of response (Ioannidis et al., 2007).

2.5.3 **ARWU**

Shanghai Jiao Tong University created the Academic Ranking of World Universities (also known as The Shanghai Ranking) to compile worldwide rankings of academic institutions (ARWU). This list has been criticised for its narrow concentration on the scientific sciences to the exclusion of the social sciences and the humanities. Investigations into the legitimacy of the ranking also raise concerns about the quality of education being provided (Shanghai, 2007). Its unbiased approach makes it more rational and consistent, and it has won acclaim all around the globe (Buela-Casal et al., 2007). The Academic Ranking of World Universities (ARWU) places a premium on many factors, including research productivity, faculty quality, and student outcomes.

In addition, five of ARWU's six criteria are measures of quantity (prizes and medals, highly cited researchers, papers in N&S, papers indexed by Thomson Scientific). It should come as no surprise that the size of the institution is substantially associated with all these characteristics. In addition, they favour higher-ranked institutions over lower-ranked ones when determining 'academic excellence' (Billaut et al., 2010). ARWU further states that its standards are objective and based on facts that can be

compared across countries. However, because they do not provide this information to the public, verifying its accuracy is impossible (Billaut et al., 2010).

2.5.4 Webometric

Another name for the Webometrics Ranking of World Universities is the Ranking Web of World Universities. It uses a different methodology for ranking than THE, QS, or ARWU. The quantity and quality of a publication's online content are essential measures for webometrics. The system is predicated on incoming connections from the outside world (Webometric, 2023). From the quantitative results provided by the most popular search engines, we were able to derive four indicators of Webometrics: the number of external links to a website (50%), the size of a website's web pages (20%), the number of rich files (15%), and the number of scholarly citations to a website (15%).

In addition, Webometrics was first developed to encourage Web publishing. Webometrics' principal goals centred on facilitating Open Access activities, including the electronic distribution of scholarly works. Universities often switch web domains while maintaining the previous one. There are consequences for organisations that engage in this behaviour (Webometric, 2023). Furthermore, audiences are unclear on what criteria colleges are being graded. As a result, webometrics is still misunderstood and misrepresented. Inconsistencies in the breadth of searchers' databases indicate bias. There are also some issues with the methodology.

2.6 How Rankings are Reshaping Higher Education

Rankings are widely used, and their widespread acceptance is due largely to how easy they are to use. The overall quality of universities is sometimes approximated by a single number derived from a ranking that compares them on several different metrics. A ranking table format is used to report the results. There is no such thing as an objective rating, as the selection of indicators relies on the expertise of each ranking body. Furthermore, there is no universally accepted standard for evaluating the quality of a school or university's programmes and services. Higher education institutions are complex organisations that serve the demands of demographically, racially, and culturally varied populations while also adapting to dynamic political-economic settings, all of which are overlooked in this procedure.

Thomson Reuters/ISI World of Science and Scopus are two of the most common bibliometric databases used in world rankings, along with data from Google Scholar (Hazelkorn, 2013a). However, studies in the biomedical and health-related fields will benefit most from this information. ARWU is the only organisation that tracks Science and Nature journal publications. However, rankings do not accurately measure educational quality, such as the quality of teaching and learning or the quality of the student experience (Hazelkorn, 2013b). Some rankings, including QSWUR and THEWUR, use questionnaires to gauge institutional reputation, assigning weights of 50% and 34.5%, respectively. However, there is little emphasis on the significance or value of research, and the reliability of bibliometric data decreases in the arts, humanities, and social sciences (Reale et al., 2018). Instead, emphasis is placed on scope and magnitude as surrogates for quality. Finally, civic and regional participation, a core role for many universities, is ignored (Hazelkorn, 2018). The various indicators may be the reason higher education is not responding to society's needs but overemphasises or promotes a capitalist agenda globally. Table 2.1 shows what ranking actually measures and does not measure to clarify the aim of university rankings and indicators for higher education.

2.7 Evolution of Ranking System & Change

There have since been several international initiatives to categorise and rate educational institutions. The Carnegie Foundation's attempt to categorise universities according to their degree-granting practices (e.g. doctorates, masters, bachelors, associates, and specialised colleges) dates back to the early 20th century (McCormick, 2013). The Carnegie Foundation's categorization system was used as the basis for the first widely disseminated rating, which was published in 1983 by the American publication US News & World Report (McCormick, 2013). Thus, the Carnegie Foundation may be credited with laying the groundwork for how modern university rankings are calculated. The British have also made an attempt to rate universities, which is notable in its own right. The Financial Times, a London newspaper, ranked UK colleges and universities in 1993 "with the express goal of enabling future students that were seeking admission to study the suitable subject and chose the appropriate institutions" (Obasi, 2006). There has been a profusion of national and international ranking systems since then (Obasi, 2006).

The Academic Ranking of World Universities (ARWU), the Webometeric Ranking of World Universities (WRWU), the Quacquarelli Symonds World University Ranking (formerly known as the Times Higher Education QS World University Ranking), the Leiden Ranking, and the Performance Ranking of Scientific Papers for Research Universities (HEEACT) are just some of the more popular global ranking systems currently in use (Peter, 2011). The criteria, performance metrics, and weights employed by various methods for rating universities are all different (Peter, 2011). During a meeting of the International Ranking Expert Group in 2006, the "Berlin Principles" were established as a set of standards for academic institution rankings (Rauhvargers, 2013).

2.8 What Ranking Captures and What It Does not Capture

While there may be some variation in the specifics, the fundamental technique used by many worldwide university ranking systems is the same. Create a rating system by converting proxy measurements of a few academic pursuits into numerical metrics and then adding them together. It is possible that the criteria have nothing to do with one another and are inadequate surrogates for the scholarly endeavour being evaluated. You can learn more about a school's affluence and hence its level of selectiveness from reputation surveys and student throughput than you can about the quality of their instruction.

In addition, the relative importance given to each criterion is very subjective. There is one possible hierarchy of educational institutions based on the weights assigned to publication and citation activity (20%) and online presence (10%). If you switch them to 25% and 5%, the order of the items changes dramatically. That many of the criteria may be read more as descriptions than as ratings is seen below. A high passing rate and a low student-to-teacher ratio are two metrics that are often treated independently, despite the fact that most academics would agree that they measure closely connected concerns (Iryna, 2010).

Similarly, the most prominent colleges can afford to be pickier about whom they accept as students and hire as faculty because privilege breeds privilege. They will then revel in their unavoidable success in graduating students, despite the fact that

higher education is not a meritocracy but generally maintains socioeconomic stratification (Tholen, 2017).

Reputational rankings, in which students, alumni, and the general public are polled for their opinions on which school is best, are a popular subject of many rankings. A high reputation, however, leads to an even stronger reputation, and so on. In reality, this just helps the most prestigious schools and has little to do with education itself (Marginson, 2014). Less well-off colleges' attempts to compete sometimes come at a high price that may be better spent on initiatives that are tailored to their specific environment. Although many South African colleges recognise the limitations of such rankings, they are increasingly competing to get higher in them (Max, 2010). However, taking part is neither innocuous nor a victimless crime.

This is not done in good faith, since colleges are well aware that the general public places a great deal of stock in these ratings. Because of this, people's decisions about where to go to school, where to work, and whom to hire are affected. They spend a lot of time attempting to get ahead instead of utilising their intelligence and diligence. There needs to be a significant rise in the number of studies conducted in the global South. There is no problem if rankings are the main influence. However, it is not helpful if the emphasis on publications and postgraduates comes at the cost of other significant qualities that are not included in rankings.

Some studies have also shown some reservations over the benchmarks that are used in the rankings. For example, Pouris and Pouris (2010) observe that the multi-indices used for university ranking are not able to assist in developing corrective policy and strategy guidelines. Additionally, some of the benchmarks used in the rankings are near impossible for lower-ranked universities to achieve. For example, in the Shanghai Jiao Tong University, rankings 30% of the weighting is allocated to alumni and staff who have won Nobel Prizes and Field Medals.

Additionally, despite the controversial weights used in the ranking system, the rankings that are used in the ranking are also complex. Matthew (2012) demonstrates the complexity of the ranking system in the following explanation:

> "*...they are ranked above the other 18 universities, with Cape Town in top position, mainly because they have significantly higher publication and citation counts. In the Shanghai Jiao Tong ranking Cape Town's Nobel Prize alumni and highly-cited researchers give it an additional lead over second-placed Witwatersrand, which has Nobel Prize alumni but no highly-cited researchers. KwaZulu-Natal, in third place, has no Nobel Prize alumni but one highly-cited researcher, which places it ahead of Stellenbosch and Pretoria despite the latter two having higher publication output*".

The above statement shows the complexity of the ranking system and shows how it is difficult for university administrators to put in place the measures needed to improve on the global rankings.

Table 1.2

What Rankings Measure

Rankings Measure	Rankings do not Measure
• Quantity and Intensity as proxy for quality	• Quality of teaching or research
• Bio- and medical sciences Research	• Teaching and Learning, incl. "added value", impact of research on teaching
• Publications in Nature and Science	• Arts, Humanities and Social Science Research
• Student and Faculty Characteristics (e.g. productivity, entry criteria, faculty/student	• Technology/Knowledge Transfer or Impact and Benefit of Research
• Internationalization	• Regional or Civic Engagement
• Reputation – amongst peers, employers, students	• Regional or Civic Engagement

Source: Hazelkorn (2011)

University rankings have had a powerful impact on higher education, despite the criticism of its indicators. Leaders in higher education are convinced that their institutions would gain directly from high rankings, while a bad ranking will result in a loss of funds and/or prestige (Dougherty et al., 2016). Stakeholders utilise rankings to inform their own budgeting, sponsorship, and personnel recruiting decisions. Academically sound students use rankings to browse and select prospective universities, and rankings may assist, preserve and improve an institution's standing and reputation (Hazelkorn, 2015). Other institutions use rankings for benchmarking, assessing participation in worldwide networks and organisations, and identifying possible partners in higher education. There is a sliding scale, but merely being in the published rankings may offer significant national and worldwide attention with branding and advertising value, especially for lower-ranked universities. According to evidence from across a variety of international institutions, rankings are increasingly utilised to drive strategic decision-making and management decisions (Siemens & Gasevic, 2012).

Seventy-six per cent (76%) of higher education officials say they monitored the success of similar schools in their own nation, and almost half said the same about

schools throughout the globe, all because of how they were ranked (Middlehurst, 2013). Almost 40% of higher education ranking institutions said that an institution's ranking was a factor in deciding whether or not to create a strategic collaboration with that school (Bowman, & Bastedo, 2013). As a corollary, 57% of heads of institutions claimed that rankings contributed to the reluctance of other institutions to collaborate with them. However, 34% stated that rankings made other institutions reluctant to support their institution's participation in professional and academic organisations (Hazelkorn, 2011). While a high ranking might comfort and attract new donors and partners, it can also trap institutions in a vicious cycle of decline for higher education (Millot, 2015). According to Holm and Malete (2010), African universities find it hard to establish collaboration because first-world universities generally look to improve their international image, stating that they cannot work with African institutions since they do not have adequate status in global university rankings.

Rankings also impact on how institutions are structured from the inside. Eighty-eight per cent (88%) of university presidents in the United States focused on retention rates, 84% on alumni donations, 75% on graduation rates, 71% on entry scores, and 63% on faculty salaries to attract faculty from top universities or "capacity-building professors," and 31% on the faculty-to-student ratio to boost their institution's ranking (Levin, 2002). Some universities are shifting their emphasis from instruction to research, from undergraduate to graduate study, and from one field to another. Funding is being (re-)allocated to departments and institutes where it is anticipated more gains will be made in terms of research output, quality of faculty (particularly at the international level), and the number and quality of publications and citations generated by the institution's staff (Bentley, 2012).

To enhance their rankings, several universities are taking measures such as increasing their minimum admissions requirements, adjusting their admissions policies to attract a certain demographic of students, reducing the number of incoming classes and graduating cohorts, etc. (Hazelkorn, 2011). In addition, universities have been accused of faking statistics, most often involving students' test scores and GPAs upon enrolment as well as institutions' hiring practices and admissions requirements (Pitman, 2014). Some schools in the United States have a bad reputation for "gaming"

student enrolment figures, yet this phenomenon is not exclusive to the United States (Pitman, 2014).

As a result, even small adjustments to rankings may significantly impact students' final decisions. High-achieving, overseas, graduate and professional students all pay close attention to and are impacted by rankings (Wilkins, Balakrishnan, & Huisman, 2011; Hébert, 2018). Students adapt their actions in the light of rankings because of the (perceived) increasing link between a school's prestige and future employment prospects (Wilkins et al., 2011). "Confer extra-economic benefits to students," as stated by the Economic and Social Research Council, "in the form of greater early-career incomes and higher probabilities of admission to the finest graduate and professional institutions" (Ehrenberg, 2004). Indirectly, it helps people get into the "right" social and golf clubs, the "right" schools, which may lead to opportunities later in life. The tide is turning in favour of selective students as countries and universities compete for top talent. Spanish universities have also expressed concern about falling short in the "global competition for excellence" (Phillips, 2014).

Many countries' approaches to higher education are reflected in the rankings problem and its indicators (Cheng, Wang & Liu, 2014). Ranking is frequently seen as a surrogate for global competitiveness due to the importance of higher education in the war for transnational and mobile talent and capital (Cheng et al., 2014). All nations are impacted, but those struggling with an economic crisis, high unemployment, and private and public debt are likely to feel the effects more keenly (Cheng et al., 2014). Several countries are reorganising their higher education systems and institutions to create more vertical or reputational distinction based on concentrating resources in a limited number of top colleges (Cheng et al., 2014). Using parameters supported by rankings, numerous nations, including Singapore, Latvia, Russia, China, France, Taiwan, India, Malaysia, Finland, Japan, Vietnam, Germany, South Korea, and Spain, have initiated efforts with the main goal of developing "world-class" or flagship institutions (Cheng et al., 2014). In South Africa, rankings and indicators of rankings have been used to promote status and need to be reconsidered to achieve transformation in higher education (Soudien, 2014).

Several nations, including Australia, Ireland and Norway, are working on an alternate ranking system. For this reason, they have been working to highlight vertical or purposeful distinction (Račić, 2018). The goal is to build a portfolio of HEIs that can compete internationally in terms of their credentials, areas of expertise, programme focus, regional focus, student demographics, delivery method, and research rigour and depth (Račić, 2018). This situation shows that ranking indicators can be used differently and may be used to promote the purpose of higher education in different countries. In South Africa, the expectation is that rankings, ranking status, or indicators will not be the reason for low access to historically white institutions or problematic admission criteria. In South Africa and elsewhere, rankings are promoted as agents of globalisation and should not further perpetuate inequality, discrimination and/or racism. Therefore, globalisation and ranking concepts should speak to grassroot problems in society. The nature of globalisation in South Africa and how the nation responds with immigration policy due to the influx of international students and academics needed examination.

2.9 Role of Government & Ranking Agency, Individual Institution in the Ranking Business

Both institutions and private businesses that compile and publicize global university rankings face stiff competition. People both praise and criticise them at the same time. Although there is disagreement about the best approach for compiling university rankings, almost everyone agrees that international comparisons of educational institutions are here to stay, even if no one rating can cover every institution. Colleges and governments are also taking notice and making changes.

China's Shanghai Jiao Tong University released the first global rankings, known as the Academic Ranking of World Universities or Shanghai Rankings, in 2003 (Shanghai, 2007). After the Chinese government launched a programme to develop world-class universities, they were first utilised to improve China's worldwide status. But in the increasingly globalised business environment of today, governments everywhere are turning to rankings as a barometer of their worldwide standing. Soon after the Shanghai Rankings were released, QS and Times Higher Education released their own global rankings of universities. There are now three pre-made lists of the greatest institutions in the world, which has increased competition everywhere

and prompted governments to pay closer attention and even use rankings to inform policy choices.

Developing nations now place a premium on higher education and are eager to forge collaborations with the best institutions in the developed world. Science Without Borders is a national scholarship initiative funded by the Brazilian government that intends to send 100,000 students and researchers in the STEM fields to the greatest universities in the world. QS and Times rankings were used to choose the partner institutions. All international institutions that want to form partnerships with Indian universities are required by the Indian government's University Grants Commission to be rated in the top 500 in the world (Gardner, 2011).
Immigration policy is also being affected by university rankings (Vargas, 2017). Overseas students are a major business, especially given projections for a rise in the number of globally mobile students brought on by shifting demographics and growing affluence in developing nations. In 2011-2012, they contributed almost £10 billion to the UK economy. Thus, the British government hopes to enrol 90,000 more international students by 2018.

As a result of the ongoing controversy over USA immigration policy, many international students have developed an unfavourable impression of the country and no longer feel "welcome" (Lee and Rice, 2007). The number of students from India and Pakistan studying in the United States of America has dropped dramatically as a result of this. The recruitment of leading professors and scientists is also affected by current immigration policies (Khan, 2021). As a result, France has relaxed visa requirements for students from India.

In an effort to rise in the rankings, several other nations have similarly liberalised their immigration policies (Pearson, 2012). Some nations, including the Netherlands and Denmark, have altered their immigration policies to prioritise graduates from prestigious colleges throughout the world. Graduates from the top universities in the QS, Times, and Shanghai Rankings get a higher point value. Authorities in Russia have just passed a new law that recognises degrees from foreign institutions that are among the top 300 in these rankings, in an effort to make the country more appealing to international academics and expats. Students who did not attend elite schools or

hail from the former Soviet Union (with the exception of Uzbekistan) will still be required to complete a more involved certification procedure. This is in accordance with the Russian government's efforts to make the country more globally competitive, such as by increasing the number of its citizens who study at prestigious foreign institutions. As a direct consequence of Russia's dismal showing in international university rankings, the country's government is working to reform its own higher education system (Huisman, 2019). Fifteen of the country's institutions were singled out for additional funding after an independent assessment found they fell short of meeting rankings requirements.

Similar initiatives have been implemented in other nations to strengthen their higher education systems and create top-tier educational institutions, including Germany, France, Japan, and Singapore. An intense "reputation race" has developed in Asia as a result of the university rankings, with institutions and governments there keeping a careful eye on the constantly shifting criteria used to determine rankings (Rauhvargers, 2013).

2.10 Globalisation of Rankings

Robertson and Olds (2016) contend that globalization has resulted in the unprecedented moving of academics and students worldwide. Similarly, globalisation has occasioned South Africa to produce world-class institutions of higher education that can actually compete (Mwesigye & Muhangi, 2015). In South Africa, globalization entails HEIs receiving scholars from foreign nations as well as sending scholars to foreign HEIs, engaging in intercontinental research and doubling cross-border technical collaboration in the last twenty (20) years (Ariail, 2016). Globalisation has led to internationalization as well as worldwide competitiveness because it serves to ensure the capacity to participate in world science (Ariail, 2016). According to the OECD (2019), nations with high international student levels now profit from the contributions of the students to local R&D (research and development) while the nations with low records of international student levels find it hard to benefit from such external contributions to the national production of human capital. One of the gravest implications of globalisation and rankings on South Africa’s higher education is that rankings have changed peoples’ attention to a different normative and cognitive order in their evaluation of higher education (Tan et al., 2017). Globalisation has caused

the sweeping aside of queries of purpose, politics, and value of higher education to get the best ranking method (Tan et al., 2017).

Globalization has certainly had an impact on higher education, and it is true that there is often a focus on rankings and prestige in this context. However, it is important to remember that higher education serves many purposes beyond just achieving a high ranking. Higher education is a means for individuals to gain knowledge and skills, and to develop critical thinking abilities. It can also be a way to promote social mobility and increase opportunities for personal and professional growth (Tan et al., 2017). Additionally, higher education can contribute to research and innovation, which can benefit society as a whole. While rankings can be useful for comparing different institutions and assessing their strengths and weaknesses, they should not be the sole focus of higher education. It is important to consider the broader goals and values of education, and to strive for excellence in a variety of areas, such as teaching, research, community engagement, and ethical leadership (Venugopal, 2015). Furthermore, the purpose and value of higher education can vary depending on the context and the needs of the individuals and communities involved. It is important to consider these factors when assessing the impact of globalization on higher education, and to work towards creating educational systems that are responsive to the diverse needs of learners and the broader society.

Likewise, globalisation focuses on using numbers and labelling and academics must build counter-hegemonic discourses to neoliberalism and managerialism in higher education institutions (Lynch, 2014). The discourses must be founded on principles of equal participation and democracy that form the core of the tradition of public education. Globalisation and rankings have changed the focus of higher education executives from reinvigorating South Africa’s vision of higher education to suiting global criteria forced by rankings most of the time (Lynch & Hennessy, 2017). There is a need for debate on public-interest values in higher education rankings. The debate must entail constant and collective radical action and reflexivity at the institutional levels across each higher education institution to unmask the power in globalisation and the abuse of power in rankings (Hazelkorn & Gibson, 2017). This debate, however needs a basis. This study will help understand stakeholders'

tensions, trends, and general impression of what rankings mean for South Africa's higher education system.

An analysis by Bain & Company concluded that higher education in the United States "is at a tipping point" (Hanson, 2020). Too often, the report said, higher education leaders think their problems are temporary and will disappear when the economy improves. "But those who see things this way probably have not been exposed to the data [that] shows convincingly that this time is different" (Hanson et al., 2020). The current crisis is different because it does not appeal to higher education's conscience—it aims at its wallet (Hanson et al., 2020). As Bain noted:

> *It's likely that money is becoming tight if you're the president of a college or institution that isn't wealthy and doesn't have a multibillion-dollar endowment. This is true even if you're one of the most creative people in your field. The explanation is straightforward: around a third of all institutions have much poorer financial statements now than they did a few years ago.* (Hanson et al., 2020).

Colleges and universities have more debt, higher debt service payments, and rising costs "without the revenue or the cash reserves to back them up" (Fagence & Hansom, 2018). This was a more manageable problem in the past because colleges could simply pass the additional costs onto students or state and federal taxpayers. "Because those parties had the ability and the willingness to pay," the Bain report noted, "they did." That has changed (Sykes, 2016). Consequently, advanced projects in US universities depended on the school's reputation (Hughes, 1925). Further exhaustive standings of higher education institutions began being published in 1983 when the American Broadcast and World Report started to situate school undergraduate programmes, with this positioning being disseminated yearly since 1987 (King, 2011). The issue of student loans and funding in South Africa is a political and policy problem. The expectation of students after 1994 is that higher education would be free because of government promises (Hay & Monnapula-Mapesela, 2009). Institutions cannot provide free higher education, and highly ranked institutions must charge more (King et al., 2011). These situations require policies that speak not only

to ranking or the voice of students but also the collective aims of South Africa's higher education.

Students want to develop enthusiasm when preparing for small classes, more customized instruction and help (Fagence & Hansom, 2018). Universities have vital rousing powers to spend additional cash on inquiry (Fagence & Hansom, 2018). There is an argument to be made that there is an understanding between instructing and inquiring. There is a belief that these two activities will be in sync, that students will improve their preparation for learning in an explorative area, and the exploration will benefit from student contribution (King et al., 2011).

Regardless of whether students profit by setting off to a university with coordinated efforts in the educating inquiry interconnection, for some, taking a chance on a highly rated, recognised university can improve monetary prosperity and business prospects (Grant, 2017). Further, for most students, the degree of the eminence of a specific university is often seen as a component of the foundation shown in the diverse university positions, which are affected by exploration execution (Grant, 2017). To this end, there is basic eagerness for the idea of exploration regarding the overall assessment of cutting-edge instruction establishments verbalised through university positions (King et al., 2011).

Despite constant conversations on the utilisation and authenticity of university standings in terms of ranking, they engage learners, seen as their customers, to take a look at foundations inside a nation and around the globe as they settle on choices concerning which university to join (Hazelkorn, 2015). Furthermore, for some university presidents and heads, rankings impact authoritative missions, systems, enlistment, and advertising (Hazelkorn, 2009). Moreover, Bastedo (2012) pointed out that rankings regularly drive the portion of resources with leaders and managers sensitive to the subsequent renown that might be related to positioning execution. Globally, governments and sponsoring organizations are similarly continuously using rankings as procedure mechanisms to assess the show of cutting-edge training establishments (Sponsler, 2009). By way of global learners involving 15% of all alumni learners in the US (Gonzales, 2013), the US has long been the target for learners from abroad, with the lion's share from China (Gonzales, 2013). However, South

Africa may need to depart from using ranking indicators to policing employees to comply and for students to adapt to criteria that do not necessarily support transformation (Ramoupi, 2014).

Recently, this pattern of using rankings to achieve different purposes has begun to vary, with Indian students and learners from the Republic of China inflowing to American graduate schools (Allum, 2013). In 2013, alumni admissions from India extended by forty percent with, strikingly, those that are from Brazil rising out and out by 17% because of the Brazilian administration financing tremendous degree award tasks to send students to another nation, particularly in technical studies (Allum, 2013). There is a need to understand the outflow of South African students to other countries due to rankings.

Unavoidably, university rankings are going to be considered by some students. Universities taking the initiative in selecting global students are possibly proactive to survive with an apparent low positioning in universally perceived university league tables (Briggs, 2012). In the case of students using university places to educate and inform their choices; any who disregard this matter may act at risk (Briggs et al. 2012). One way to address this issue is to define ranking and use it to achieve the national purpose of higher education.

2.11 Defining Ranking

According to Lynch (2015), ranking can be referred to as the process of comparing HEIs nationally and internationally in terms of prestige and power. In the 20th century, rankings began as an academic exercise in the United States of America (USA) (Snyder, 1993). In the 1980s, rankings turned into a commercial data service for students before turning into the current forebear of a reputation contest with some geo-political inferences (Lynch, 2015). Today, rankings prevail as an indicator of the universal battle for excellence. They are used and perceived as the determinant of the status of higher education institutions, for assessment of performance and quality of the higher education system, and a tool for gauging international competitiveness (Lynch, 2015). Rankings of HEIs have, since the 1990s, become pervasive (Shore & Wright, 2015). Historically, rankings are motivated to classify and reclassify

institutions, giving power to well-ranked institutions to determine the price for higher education. In the end, inequality grows in societies.

According to Collins and Park (2016), since neoliberalism and managerialism are politically and performance-driven kinds of systems, rankings are intended to guarantee the alignment of the institutions of higher education with the prevailing market values by rigorous auditing systems. Rindova, Martins, Srinivas & Chandler, (2018), stated that rankings are seen as a form of information intermediation, as comparative orderings, or as a means for surveillance and control. The information intermediation perspective views rankings as information products that address information asymmetries between the ranked organizations and their stakeholders; the comparative orderings perspective views them as representations of organizational status and reputation; and the surveillance and control perspective emphasizes their disciplining power that subjects ranked organizations to political and economic interests (Rindova, Martins, Srinivas & Chandler, 2018). If reputation is weighted seriously towards the historically conventional prestige, money and power, new players can never enter the contest and if they do, such institutions compete and enter on equal footings, not of their creation or those they can never succeed (Berg, Huijbens & Larsen, 2016). Rankings are about power, profit, and negotiation. In other words, the higher universities are highly ranked globally, the more research funding they attract which in turn attract students who further enhances the reputation of the university thereby creating a self-perpetuating virtuous cycle.

Therefore, this result relates to the managerialism theory because managerialism is becoming increasingly entrenched in a university context. It is offered as an ideological approach to ensure that universities become more responsive; fulfilling a greater range of needs more efficiently. Santiago and Carvalho (2004), explain that the drive for managerialism is aimed at addressing two weaknesses within universities. First, the higher education institutions do not adapt to change as fast as the changes that occur in the environment. Second, collegial governance is dominated by traditional academic structures and practices aligned with guild-like interest that leads to the creation of irrationalities and inefficiencies in the systems and its institutions. According to Chaharbagi (2007), managerialism manifests itself in costly administrative burdens to the management of universities that seem to be

undermining the morale, motivation and goodwill of university employees, managers and professionals. The effects of this managerialist movement impacts universities at various levels. At the national level it could result in political strategies aimed at system reorganisation; at the institutional level it could include strategies addressing governance, management and changes to the institutional culture and at the individual level it can have an impact on the behaviour of the university professionals (Santiago & Carvalho, 2004).

In the aspect of neoliberalism, rankings of universities are now often used to standardise the whole sector of higher education (Erkkilä, 2014). As rankings are an inherent part of audit and surveillance systems of supervision and control that universities rely on to maintain efficiency in an academic area, they are an unavoidable by-product of neoliberalism in higher education. What is valued and measured inside universities changes as a result (Al-Haija & Mahamid, 2021). Although it is great that rankings make information more accessible, their political motivations mean they also put pressure on universities to be more like for-profit corporations with strict productivity goals (Hazelkorn, 2018).

If reputation is weighted seriously towards the historical, conventional prestige, money and power, new players can never enter the contest. If they do, such institutions compete and enter on an equal footing, in a situation not of their making where they can never succeed (Berg, 2016). Rankings are about power, profit, and negotiation. Consequently, only students coming from privileged families can attend these highly-ranked universities. For South Africa, it means transforming the higher education system. In reality, this is not happening because literature has not considered transformation from the perspective of people who are end-users of rankings and higher education.

For Warren (2017), the outwardly objective character of rankings obscures their grave political significance. The rush of numbers has deeply transformed what people choose to undertake, who they attempt to be, and all they think of themselves in higher education (Warren, 2017). The main implication or impact of rankings is that there is a side-lining of social justice deliberations on outcomes, access, and participation in higher education (Shahjahan, 2017).

In the 1970s, policies that were neo-liberalistic started to appear at the political level (McGuigan, 2006). Neoliberalism has reduced the public spending on higher education around the world through legitimising non-redistribution as well as ant-redistributive aims (McGuigan, 2006). McGuigan (2006), also pointed out that the rise of neo-liberalism has brought about the decline of the commitment to public investment and higher education.

According to Van der Walt (2017), globally, education has changed its focus to market and choice rather than rights and needs, which has greatly impacted the less fortunate. This idea informs ranking and a rise in using certain indicators to measure higher education performance. What indicators mean for South Africa can be analysed based on the transformation agenda of 1996 and its pillars (Van der Walt, 2017).

2.12 Indicators used in the South African Ranking System

Performance indicators have become an international issue (Boocock, 2013; Kalinina, 2013; Rajkaran & Mammen, 2012). A key function of performance indicators is to facilitate the comparison of internal performance to standards established for process control, improvement, and benchmarking, as well as the comparison of external performance to standards established for competition (Oakland, 2014). That's why the adages from Rajkaran and Mammen (2014), like "what gets measured gets attention" are true. They added, “what gets measured, gets done”, “if you can’t measure it, you can’t manage it”’ and “if you cannot measure it, you cannot improve it” (Rajkaran & Mammen, 2014). These have been repeated to accelerate and amplify quality research, QA, and QC at academic institutions. The words "performance indicators" and "key performance indicators" are particularly common in this context.

Rajkaran and Mammen (2014) further explained that performance indicators are gaining traction in the higher education sector for a variety of reasons, including economic constraints, the need for new management techniques among institutions and the government, the importance of effectiveness and efficiency in the mission of higher education, the growing autonomy of individual institutions; and the priority placed on the individual and society by higher education. Recent research including the works of Mostafaeipour et al. (2020), Van Niekerk et al., (2020) and Mengistu, et

al. (2019), reveal that similar concerns persist. Allocating scarce funds wisely and consistently pushing for greater pedagogical excellence are also essential for successful universities.

Al-Turki and Duffuna investigated several metrics that may be used to evaluate the effectiveness of academic units (Al-Turki & Duffuna, 2013). Professionals and academics have been slow to adopt the metrics because of the top-down process used to determine them. For instance, researchers in nursing and midwifery (McCance et al., 2011) and higher education (Rajkaran & Mammen, 2012) have used consensus-based methods to construct key performance indicators. Academics' buy-in to key performance indicators in their departments is essential with the increased focus on quality management in higher education; thus, institutions must develop KPIs based on broad agreement (Rajkaran & Mammen, 2012).

Universities in South Africa, as in other countries, experienced challenges in framing the national aim for education, especially after 1994. This led to a transformation agenda to redress the past's inequality and ensure equity of access and success in their higher education system (Mogashoa, 2014a). This is the idea of quality in the post-apartheid South Africa era. Nevertheless, this indicator of quality has also met with issues of race and gender, among others. Put side by side with the literature on quality, quality assurance, and the aim of higher education since 1990 when it became popular in the field of higher education (Mogashoa, 2014a), it is safe to say there is no uniformity and commonality in defining quality (Mogashoa, 2014a). However, the interesting aspect of quality is the privatisation of higher education that has been taking place in Latin America and Asia Pacific, and that took the form of a merger after 1994 in South Africa (Mogashoa, 2014b). Whether the quality of public and private higher institutions is ensured similarly in terms of funding is questionable and what it means for the macro-economic development of a country needs investigation.

Beyond the South African context, Mutula (2009), while writing about the challenges of doing research in Africa, also notes that when it comes to African universities some of these rankings do not show the correct information, which results in distorted rankings (Mutula, 2009). For example, the researcher notes that the ranking organisations rarely, if ever, visit African universities to determine some of the

information used in the global rankings. Mutula (2009) further notes that, in the absence of physical evidence, the global rankings rely on the information on the university websites and other third-party sites. However, most African countries do not track research output at a university level, with a few exceptions (Altbach, 2013). This means the research output from some staff members is not credited to the university (Altbach, 2013). Additionally, the information on the university websites is either outdated because of the lack of staff to maintain the websites or the necessary information to compute the information (Altbach, 2013).

2.13 The Different Interpretations of University Rankings

What rankings signify and how they might affect the higher education industry are subject to at least five distinct interpretations. These five viewpoints are not exclusive of one another but are given independently to highlight the many roles that rankings may play in higher education.

2.13.1 ***Rankings as Market Regulation***

The implication of these rankings for the future of higher education may be seen in the light of recent shifts in the industry's regulatory and governance structures (King, 2009). From this vantage point, the state is no longer in charge of the regulation and governance of higher education. As such, the sector is increasingly dispersed and more complicated than in the past, resulting in a hybrid governance system (Gornitzka & Maassen, 2011). The state has encouraged several market-based and quasi-market-based governing measures, such as greater competition among higher education institutions, as part of these hybrid governance systems (Bagley & Portnoi, 2014). Several connections between rankings and this guiding principle may be made. It is worth noting that in certain nations, institutional standing in rankings is directly correlated with funding levels (Salmi & Saroyan, 2007)

Examples of this trend that may be seen as a "outsourcing" of the instruments of governance include the Research Assessment Exercise (RAE) in the United Kingdom and the Performance-Based Research Fund (PBRF) in New Zealand (Clarke, 2005). The possibility that governments may begin to connect their policy-making with the construction of (global) rankings because of such direct links between ranking exercises and governmental financing is fascinating, even though it is still fairly rare. The possible effects of this shift are fascinating enough without considering the

likelihood that some of the rankings are based on dubious methods. From this vantage point, rankings serve as more than just a means to an end in a more market-regulated industry, where they may be seen as a regulatory tool (Benjamin, Miller, Rhodes, Banta, Pike, & Davies, 2012). Rankings may also play a factor in this evolution, as has been suggested. The general public has a deeper understanding of higher education's activities and results, thanks to the transparency and accessibility of rankings. The public's ability to form its own judgement on the sector's quality is likely to improve. As a result, the public may demand or be granted a greater say in the policymaking process. (Alderman & Brown, 2005).

2.13.2 ***Rankings as Globalisation***

One might also look at rankings differently as a component of the trend toward higher education's increased internationalisation (Marijk, 2008). While most rankings are conducted at the national level, international rankings inevitably get more interest (van der Wende, 2008). The concept of state abdication is downplayed in this viewpoint (van der Wende, 2008). Instead, attention is being paid to the new global economy, liberalisation of commerce, and increasing mobility of students and faculty (van der Wende, 2008). It is crucial to gather, systematise, and compare the service providers in the higher education industry in the context of the global economy (Gumport, 2011). Transparency has become more important as the higher education industry shifts from a mostly national focus to an international one (Huisman & van der Wende, 2004). From this vantage point, rankings serve as a source of information for the many buyers and sellers engaged in the globalised game of higher education services. Players can access data that purports to make international comparisons between universities via global rankings. For this reason, rankings contribute to the homogenization of society's institutions (Brunsson & Jacobsson, 2011), which might have unintended effects on the variety of such institutions. In contrast to the state's permissiveness toward market processes in the former viewpoint, the market is "in command" in the latter viewpoint, limiting the scope of state involvement in the sector's administration (Brunsson & Jacobsson, 2011).

2.13.3 ***Rankings as the Rise of the Audit Society***

As the higher education industry has grown in the 21st century, both in terms of the number of students enrolled in university and the amount of money dedicated to it, there has been a corresponding rise in interest in the outcomes and the results it produces (Voogt & Roblin, 2012). The development of the audit society has made

previously off-limits conversations between the state and institutions about how to improve efficiency and effectiveness more accessible (Power, 1997). Again, the growth of higher education is a driving force behind this trend, not only because of the influx of new service providers. The fear that the quality would suffer due to rapid growth in quantity is a common concern in many areas of society (Power, 1997). Several quality-assessment methodologies have emerged in higher education during the last several decades (Westerheijden, 2007). Although quality assurance has been more widespread throughout this time, some may contend that it has not successfully resolved problems associated with student achievement (Stensaker, 2011). Since traditional accountability systems have failed to address the public's most pressing concerns, audit societies may see rankings as innovative accountability in higher education. Even though rankings' accountability role might be read from a commercial viewpoint, it is also possible to claim that rankings serve an essential democratic function in society by providing a reliable, neutral source of information on an increasingly vital field (Stensaker, 2011).

2.13.4 ***Rankings as Institutional Identity Creation***

A new and distinct perspective on rankings becomes apparent when shifting from a macro to an institutional level of examination. Many ranking agencies say that changing students' decisions and actions is their ultimate goal, however the institutions of higher learning may be the ones acting in response to rankings (in a bid to improve their standing in the rankings) (Dill & Soo, 2005).

Rankings may boost a school's profile depending on where they fall in the system. Institutions in the United States see the reputations and positions of other universities as vital for their own strategic growth, as noted in a study of university emulation by Labianca (2011). From this perspective, rankings serve as a catwalk upon which various institutions parade their wares and compete for attention (Labianca, 2011). Due to the value placed on hierarchy and exclusivity in the fashion industry, rankings determine who is considered "hot" and who is not (the “haute couture”). Whether the constructed identity serves any practical use or is even relevant to the larger system is less important. Fashion establishes its own realm with quite distinct standards, values, and logic from those found in other areas of society (Labianca, 2011).

2.13.5 ***Rankings as a Symptom of the Knowledge Society***

Academic societies tend to place more focus on qualitative shifts in the creation and organisation of knowledge, as opposed to the quantitative growth of higher education, movement of knowledge, and trade within the current knowledge base, which are all emphasised by a globalisation viewpoint (Gibbons, Limoges, & Scott, 2011). The latter emphasises the creative potential of information, namely its economic use and exploitation (Gibbons et al., 2011).

For ages, colleges have served as centres of knowledge production, generating concepts and theories applicable in various fields and settings. The results of rankings might alter this picture. Therefore, in this view, ranking is an indicator of the maturing knowledge society, which has the propensity to place more emphasis on specific aspects of knowledge creation (Gokcen & Meliah, 2017). From this vantage point, rankings serve as a tool for organising information. While this viewpoint includes the information function's exterior implications, it focuses mostly on how higher education could shift internally due to these changes. By placing more weight on metrics like research output, patenting activity, graduate employment rate, and institutional ties to industry, rankings can alter long-held beliefs about what counts as important information and how that knowledge should be organised (Lyotard, 2011). Given the divergent opinions on ranking, the concept of the knowledge society may act as a normative filter on our thoughts about the numerous values of knowledge (Lyotard, 2011).

2.14 The Epistemic Basis for Rankings

Given the view of the influence of rankings on higher education, assessing their epistemological foundation is a crucial step. Rankings claim to take a common sense approach to the fundamental processes of higher education by placing a premium on data that is not self-reported and giving priority to indicators with considerable legitimacy such as Nobel Prizes. However, a serious epistemological analysis should also question our beliefs, knowledge, and attitudes towards the methods and strategies used to create the rankings (Mehrpouya & Samiolo, 2016). While there have been recent efforts to create some basic rules for how rankings should be conducted (International Ranking Expert Group [IREG], 2006), it may be very difficult to question the views about higher education on which many rankings are founded.

An important aspect to acknowledge is the fact that before a formal ranking is released, there is widespread awareness within and outside the higher education communities about which institutions are among the very best in the world. According to the IREG (2006), ranking organisations are now formalizing these beliefs.
It is reasonable to doubt that every single component of a university can be "great" due to its sheer number of colleges, schools, and departments; nonetheless, many rankings fail to provide breakdowns of data at the institutional level. Because few individual units correspond to the total place an institution is assigned in the rankings, the image we are shown is an "imagined average" (IREG, 2006).

The significance of particular characteristics of knowledge creation in universities, as well as the attitudes about the connections between research and teaching and between professional expertise and student learning, are also crucial to the rankings' composition (Marvasti et al., 2015). Indicators like student-teacher ratios, money spent on personnel, and different infrastructural indicators are often used to represent these attitudes visually (Marvasti et al., 2015). At most, weak correlations between these supplementary metrics and service quality are expected. An associated issue is that many of the variables used in rankings are input elements rather than outcomes, such as student learning. To show a link between teaching and research, even metrics that seem to be output-based, such as research publication, should be seen as input indicators (Marvasti et al., 2015).

The selection, weighting, and prioritisation of indicators within the broader study of available data present a third challenge with rankings (Amindoust et al., 2012). The authenticity and trustworthiness of data acquired for other reasons is often not checked before being used in rankings (Moed, 2017). Although some rankings do not give priority to one signal over another, the vast majority do (Moed, 2017). However, it seems that the procedure of determining these weights is very subjective (Moed, 2017). While a reader may be made aware that certain signs are given more weight than others, the rationale behind this disparity and the specifics of how this weight is calculated are often not shared (Moed, 2017).

Finally, there is the premise that knowledge can be broken down, measured, and summed up in total scores, which is cause for worry when considering the epistemic

component of rankings (IREG, 2006). While many scholars in the field of higher education have maintained for quite some time that the information produced in institutions of higher learning is contextual, integrated, and culturally ingrained, recent research has cast doubt on this long-held belief (Clark, 2011), rankings treat knowledge almost as an externality of the university. The complexity around ranking requires evaluation, and for the present study, a South African higher education analysis can provide a contextual understanding of this issue.

2.15 An Analysis of the Criteria Used in Ranking

2.15.1 ***Evaluation of the Criteria Used***

King (2011) notes that although universities generally revile ranking agencies because of the perceived arbitrariness of their benchmarks, they proved very popular with both students and parents and began to be used as a justification for the rapid increase in tuition fees. The popularity of the new global ranking system also inspired other similar ranking systems underlying the relative importance that the academic community usually places on the rankings (Çakır et al., 2015).

The idea of quality in higher education is deeply problematic. While several kinds of literature (for example, Mogashola, 2014a) reflect on student learning and satisfaction as critical indicators of quality, it is still unclear what this means for Africa in terms of what the aim of higher education should be. Many African countries are still at the stage of economic and political development, yet education is seen as a tool for empowerment. Thus, education is perceived as serving economic needs. This perspective on quality has been greatly challenged and critiqued in the body of literature (Mogashola, 2014). Put differently, employment is tied to curriculum design and delivery. As a result, higher education is blamed for unemployment and a skills shortage in South Africa (Kim, 2015). Meanwhile, there are several systemic issues within the institutions, higher education space, inter and intra-regional influences, and a political will that may also drive education outcomes in South Africa. For example, history plays an important role in South Africa in understanding policy dimensions, activities of quality regulatory bodies and quality assurance frameworks for higher education.

On the other hand, the rise of the university ranking systems is creating general anxiety amongst HEIs and shaping a race for reputation wherein the institutions of

higher education are striving for higher placement in the university charts year in and year out (Lynch, 2015). Overton-de Klerk and Sienaert (2016) state that although it is indirect, such a race for reputation results in higher education homogenisation, as the aspiring higher education institutions replicate the successful research-intensive institutions model.

Altinors (2018) stated that while the scores from ranking do capture certain aspects of every institution's general quality, the rankings of higher education institutions in South Africa are no longer speaking to the diverse choice of issues like the student's satisfaction within the institutions or the quality of life in the country. Due to the growing reputation of higher education rankings, South Africa's higher education institutions' existence is largely dependent on the cost of maintaining a reputation from the rankings (Barron, 2017). In this case, stakeholders such as students or parents are likely to be on the receiving end of increasing tuition fees. Even where certain HEIs in South Africa are vying for high rankings, a majority find mentioning as beneficial to helping them overcome local traditions (Wu & Naidoo, 2016). Stakeholders often have competing interests and priorities, and their views and experiences may vary widely. While some stakeholders may see tuition increases as necessary to support academic excellence and innovation, others may view them as a burden that limits access to higher education and places undue financial strain on families. It is important to engage in constructive dialogue and collaboration with all stakeholders to understand their perspectives and concerns and work towards fair, effective, and sustainable solutions. Additionally, it is important to recognize that local traditions and cultural values can play an important role in shaping higher education systems and practices. While globalization can bring many benefits and opportunities, it can also create tensions and conflicts as different cultures and values come into contact. It is important to approach these issues with sensitivity, respect, and an open mind, and to seek ways to promote diversity, equity, and inclusion in higher education. South Africa's institutions of higher education and administrations are now using ranking as a cultured recruitment and marketing strategy to attract high-achieving scholars with scholarships and financial packages, often with benefits like financial aid and particular facility access (Justin & Gert, 2010). As such, South Africa's HEIs are using rankings for publicity or lobbying the national and local governments (Da Wan, Sok, Sirat, & Un, 2018). In such a sense, the HEIs have become a podium for

service exchange involving the selling and buying of education services. For South Africa's higher education, the HEI offers access to the sale of the service (knowledge) for the purchase of the service (scholars). Therefore, rankings are seen less as an abdication by the state but as a key element of globalised economies, the liberalisation of trade, and improved mobility among academic staff and students (Tan et al., 2017). The danger of this is focusing on compliance while ignoring the quality of life of people in the country.

Aside from the quality of life that rankings ignore in their criteria, generally, rankings ignore teaching or measure it incorrectly (Klamen et al., 2016). Quality teaching can not only be observed using a questionnaire (Klamen et al., 2016). On the other hand, rankings focus more on measuring research productivity (Lynch & Hennessy, 2017). In its numerous permutations, research earns more attention because it has clear-cut measures and the uppermost prestige. Worldwide, higher education institutions prefer being research-intensive like most top-ranking and respected universities (Rust & Kim, 2016). Such supremacy in research in the international hierarchy and rankings remains jointly reinforcing. If the majority of South African higher education is highly ranked in research, what does this mean for national development and the current situation in the country?

One other dilemma is that rankings only focus on indicators like publications, research funding, or Nobel prizes to indicate quality and be counted as comparable across the ranked countries and institutions (Zajda & Rust, 2016). Such focus on research has resulted in science-centred institutions of higher education ranking better than institutions strong in the rest of the fields like the humanities and social sciences (Zajda & Rust, 2016). While numerous systems in South Africa are endeavouring to guarantee a better image for "soft" studies like the humanities and social sciences, the "hard" sciences-focused institutions of higher education tend to generate more study funding, articles, and citations. Besides, reputational ranking favours Anglophone institutions of higher education, the institutions that host most intercontinental scholars and are visible to most individuals. These HEIs are largely in English-speaking nations (Andersson & Mayer, 2017). However, research has not shown a relationship between rankings of research and issues of power or political

structure within the institution that determines recruitment of students and academics (Andersson & Mayer, 2017).

According to Obasi (2008), the ranking should be understood in the context of different fields of study because these are generally consistent across institutions. However, ranking whole institutions is distorted as some top-performing and underperforming departments are lumped together to give an average score (Obasi, 2008). This partly explains the criticism levelled against the Gourman Report, published by the Princeton Review (Hedding, 2019). The report has been criticized for failure to evaluate individual programmes, and for not fully disclosing the indices that lead to the ranking which are developed as well as some inconsistencies like ranks of non-existent departments and narrow gaps in scores with no variation in gap widths (Hedding, 2019).

A study by Lynch (2014) noted that the ranking of universities has elitist and marketing connotations. This view has led many prospective students to apply to universities that rank highly on the published rankings. This student behaviour is common despite the criticism that has been levelled against the ranking systems, especially the claims that they are not objective, scientific or systematic and consistent in their application (Mwenda and Muuka, 2009). Most concerning, according to Obasi (2008), is the fact that some funding decisions by donors and other funding organisations are now predicated on the supposed position of the universities on the rankings table.

2.15.2 ***Quality and Indicators of the Ranking***

To better understand the allure and significance of university rankings, it is important to understand some underlying motivations and why so much significance is placed on them (Vernon, 2018). However, at the very basic level, there has been a consistent correlation between the possession of higher education qualifications with better career opportunities, income, and lifestyle (Vernon, 2018). However, as the cost of education increases, more and more students seek to enter institutions that are more likely to return their investments in education (Tomlinson, 2016). This leads to a choice of higher-ranked universities as these are more widely known and are associated with quality education. The general prediction is that the students coming from these institutions will perform better than those from the lesser-ranked

institutions (Tomlinson, 2016). In short, the ranking of the universities subconsciously engenders consumerist tendencies within prospective and current students even if they are not aware of it (Tomlinson, 2016). In some instances, especially when it comes to mobile international students, ranking is the only tool that they have at their disposal to choose from the thousands of potential institutions where they can apply (Tomlinson, 2016). An argument can be made that ranking has emerged to fill an information void where information was not available to help prospective students and university employees determine their next academic destination other than the physical location of their homes (Tomlinson, 2016). Kayyali (2023) states rankings matter to university employees because they provide valuable information to educators and researchers. This information helps evaluate universities on their research output and also helps researchers and educators identify institutions that are making significant contributions to their field. Rankings can also be valuable to researchers who are looking for HEIs to partner with on research projects. Ranking also provides information to researchers looking for HEIs to apply for grants.

Ehrenberg (2001) observed that university rankings have emerged as one of the battlegrounds for the constant competition for talent and excellence within academia. Ehrenberg (2001) further argues that following the advent of the 2008 global crisis, university rankings have been used to determine the best possible institutions where students can get value for money. This is especially the case where research funding is supposed or expected to produce specific and expected outputs that can be further monetised. Ehrenberg (2001) further stated that despite having more than 15 000 higher education institutions globally, the university rankings had created a culture focused on the top 100 institutions (Ehrenberg, 2001).

Remarkably, the instinct of the political class seems to be to double down on many of the same policies that created the current bubble (Tomlinson, 2016). Even though much of this bloat has been fuelled by government money, the more aid there is, the higher the tuition costs have gone—politicians seem intent on spending even more. Many on the left have responded to the declining value and escalating cost of higher education with various ideas: debt forgiveness, loan deferrals, income-based repayment plans, increased aid, and even two years of free community college (Tomlinson, 2016). All those proposals reflect the desire to transform at least some of

the cheap money of student loan debt into “free money”. This is today's reality of the higher education complex (Tomlinson, 2016).

Government funding can have a significant impact on higher education, and policies related to funding and financial support can influence the priorities and practices of universities and colleges. However, it is important to recognize that government funding for higher education is not always easy to obtain or maintain. In many countries, governments face competing demands for limited resources, and decisions about funding priorities can be complex and politically charged. Moreover, government funding may come with conditions and requirements that can limit institutional autonomy and flexibility. Additionally, it is important to consider the broader societal benefits of investing in higher education. Higher education can contribute to economic growth, social mobility, and the development of a skilled and engaged workforce. It can also foster innovation and contribute to the advancement of knowledge and understanding in a wide range of fields. Ultimately, the relationship between government funding and higher education is complex and multifaceted, and it is important to approach these issues with a nuanced understanding of the factors at play. It is important to work towards policies and practices that balance the needs of institutions, students, and society as a whole, and that promote excellence, innovation, and social responsibility in higher education.

2.15.3 ***Ranking Indicators for Research Performance***

One of the arguments constantly brought up in the debate on research is that research publications and subsequent citations are not as important as they are billed to be (Shaker & Plater, 2016). Lawrence B. Martin, a professor of anthropology at the State University of New York at Stony Brook, has developed algorithms to quantify and demystify the question of faculty productivity, measuring publication rates and balancing them with teaching loads (Shaker & Plater, 2016). Martin estimates that colleges and universities waste between $1 billion and $2 billion on salaries of professors with low teaching loads but who seldom publish anything (Shaker & Plater, 2016). According to Martin quoted by Shaker and Plater (2016), “If the least scholarly and productive 20 percent of faculty, who are effectively producing little or no scholarship are receiving reduced teaching loads, then the cost of that is staggering” (Shaker & Plater, 2016).

The other argument raised is the perceived expense of higher education, especially when it is pegged to university ratings. Paine (2016) has criticised higher education, arguing that the whole premise of research upon which rankings are based is flawed. According to Paine (2016), research is not enough. It must—somehow, someplace—be published, but not in anything resembling a popular or widely read magazine or journal. Instead, the research has to be published in one of the thousands of academic journals unread by the masses, for obscurity is vital (Paine, 2016). Collectively, the professional learning community is in search of tenure, promotion, and invitations to academic conferences (Paine, 2016). The author further notes that evidence suggests that little has changed, except for evidence that some articles have zero readership. One study at Indiana University concluded that “as many as 50% of papers are never read by anyone other than their authors, referees and journal editors.” In other words, fully half of the scientific papers do not have a single reader after publication (Paine, 2016).

It is also possible to measure the influence of such articles by tracking the number of times they are cited by other scholars (Paine, 2016). Again, the numbers are hardly edifying. The Indiana study found that nearly 90% of the published articles are never cited by anyone. As critic Gordon (1976, p. 14) noted: “To put it differently, the vast majority of scholarly articles fail to make a meaningful contribution to the field as a whole, despite the fact that they often take years to write, gather data for, submit, and finally see print in reputable journals.” Gordon went further:

> Papers have been presented to me on such topics as 17th-century Scottish coins, political parties from countries that no longer exist, and the definition of the word "capitalist." My thoughts at the time were not on the extreme narrowness of the research being presented, but rather on the frustration one must feel as a scholar working on a topic that is so far on the periphery of human interest. These arcane subjects are the norm, not the exception, in the academic community; they are not the province of a select few. (Gordon, 1976)

The problem of unread academic articles seems likely to get even worse as more go online (Paine, 2016). As Paine’s (2016) study concluded: “There was a shift toward more recently published works as more issues of journals were available online; also,

fewer journals and articles were cited overall, and the proportion of citations to fewer journals and articles increased" (Paine, 2016). "Researchers are finding it harder and more time-consuming to keep up with the ever-increasing volume of scholarly articles", concluded one prominent study titled "Attention Decay in Science" (Parolo, Pan, Ghosh, Huberman, Kaski, & Fortunato, 2015). As a result, many articles go unread, uncited, and are quickly forgotten (Paine, 2016). This attention deficit was becoming a problem, the study noted, because the number of citations an article received "is the major currency of the scientific community, and together with other types of acknowledgment provides the foundation for promotions and the reputation of scientists" (Paine, 2016). Thus, the report warned that the decline in focus was a serious issue

Until recently, higher education's "ever bigger, ever more" model worked because consumers were willing to pay inflated prices for the coveted credentials it conferred (Amirault, 2015). For most students, parents, and trustees, higher education was still living up to its end of the bargain (Haverhals, 2007). Universities required little of students, and in turn, students asked little of universities (Haverhals, 2007). The fact that the degree could be acquired with minimal effort or stress was not seen as a particularly vexing problem for students who could glide through four or five years with few demands being placed on their abilities or work ethic (Haverhals, 2007). The role of ranking and policy is necessary to ensure indicators are not the reason for pressure to produce graduates and knowledge with no consideration for the quality process.

2.16 An Investigation of how Ranking Contributes to Quality Education in South Africa

Brusoni et al. (2014**)** identified learning factors to include the quality of the academic curriculum, the research curriculum and its process, the learning facilities, Lecture Theatre, and access to other platforms that will aid the learning process of the students. These facilities could include virtual libraries and offline libraries where students can access information to meet their learning needs (Brusoni et al., 2014). Also, Bradley (2015) stated that teaching factors include the qualification and expertise of the teaching faculty and the quality of the teaching aids used to communicate the crux of each curriculum and improve the students' learning experience. According to Obasi (2008), the whole concept of the university ranking

system is only a natural outcome of the competing nature of the global education system, especially at a time when a premium is being placed on the knowledge economy. Obasi (2008) further observed that universities in Africa are, as usual, at the crossroads as they face challenges posed by the global university rankings. These rankings confront the universities with a double challenge of experiencing a "mission in crisis" and a "crisis of mission." For example, not many know that the recent ranking of universities internationally by Webometrics has been based primarily on the web presence and visibility of the universities (Obasi, 2008). As such:

> *One major problem that has arisen from the discussion of international rankings is the fact that no African institution has yet been included in the THEWUR list of the top 200 universities in the world. ARWU was released in 2012, and once again just four universities, all located in South Africa, made the cut into the top 500. (SITU). This shocking news has and will continue to cast a shadow on the reputation of several African HEIs. However, it does prompt some serious inquiries over the validity of the rating itself. As a first question, why and how are these lists compiled? Second, how trustworthy and valid are the evaluation criteria? Last but not least, why bother with a rating at all? (Obasi, 2008)*

In many African countries, a large portion of the public believes that many academic degrees from the United States, in contrast to most degrees from British universities, are suspect and that they are too easily acquired (Brooks, 2011). That said, some do acknowledge that there are some good American universities, such as those found in the top tier of the U.S. universities league tables (Gibbons, 2015).

The suspicion seems to be based on several factors that include the proliferation of dubious privately owned universities in the United States (Wilkins & Huisman, 2015). Further, what worries some people in Africa is that certain individuals who failed to gain admission to universities in their home countries, not due to a lack of financial sponsorship but rather because they did not meet the academic standards for admission, have found their way into degree-granting institutions in the United States (Wilkins & Huisman, 2015). There is a perception that all it takes to get a degree from US-ranked university is just the capacity to pay the fees (Wilkins & Huisman, 2015).

This rather unfortunate view has been exacerbated by the proliferation of diploma mills in the United States (Wilkins & Huisman, 2015). and other countries (Wilkins & Huisman, 2015). By contrast, the British higher education system has enjoyed much respect in regulating and accrediting their higher education institutions (Wilkins & Huisman, 2015). The only question that seems to resurface, time and again, relates to the quality of education in some former United Kingdom institutions such as polytechnics (i.e., those higher education institutions that were granted university status in 1992 or any time thereafter) (Wilkins & Huisman, 2015). Again, these are not simple generalisations but existing market perceptions that one can choose to listen to or ignore at one's peril (Wilkins & Huisman, 2015).

2.17 Validity of the Indices Used in Ranking

2.17.1 ***Assessing the Validity of the Ranking Indices***

One recurring theme in the relevant literature is the purported effect that university rankings have on the strategic and operational decisions made by higher education administrators. Writing from an Australian perspective, Marginson (2007) acknowledges the obsession of university administrators with the university ranking but also acknowledges the apparent flaws inherent in the system. Marginson (2007) suggests using the system of the ranking system created by Germany's CHE as a means of resolving the problems with the current ranking system. This is because the proposed system avoids most of the issues and the systemic issues bedevilling the other systems, especially whole-of-institution and reputational rankings (Marginson, 2007). It also provides data best suited to learning and teaching, which is much more useful to and under the control of prospective applicants (Marginson, 2007).

While acknowledging the significance of university rankings, Horta (2009) observes that for countries, and specifically, universities that need to improve their rankings, the state needs to assist more financially and pay significantly higher (Horta, 2009). Horta (2009) admits that although most of the rankings are based on research output, the university's internationalisation, reputation and general globalisation also count significantly (Horta, 2009). This is where the state can come in as it has more resources at its disposal to significantly improve the brand name of the university than if the university attempts to do that on its own (Horta, 2009). Horta (2009) further shows the correlation between the internationalisation of a university and its global

ranking (Horta, 2009). This is done through a causal relationship between the university's ranking and its staff and students' diversity in terms of nationality (Horta, 2009). This is usually achieved through a strong international brand that attracts staff and students from other countries (Horta, 2009). This brand development can then be enhanced through state assistance especially when foreign missions and embassies help to drive the brand of local universities (Horta, 2009). According to Horta (2009), internationalisation of the faculty is significantly correlated with internationalisation of the doctorate student population, which in turn aids in international rankings (Horta, 2009).

Usher and Medow (2009) also discuss some of the apparent challenges associated with the ranking systems. The primary source of uneasiness for HEIs is the propensity for ranking systems to employ a weighted average of variables to deduce and encapsulate the quality score, which then enables HEIs to be evaluated against one another (Usher & Medow, 2009). The creators of these rankings are imposing a narrow conception of quality on the organisations they evaluate by choosing a subset of indicators and giving each a certain weight (Usher and Medow, 2009). As a rule, people don't talk about the possibility that there are other valid indications or combinations of signs (Usher and Medow, 2009). The author's decision is binding on the reader (Usher and Medow, 2009). Yet, interestingly, there seems to be little consensus among the writers of these measures as to what constitutes quality (Usher & Medow, 2009). There is minimal to no correlation across the world's most prominent ranking systems, which all use various criteria and weights to determine an overall quality rating (Usher & Medow, 2009).

One of the major complaints that have been laid against the various ranking system has to do with the underlying methodology, which computes the various benchmarks collectively then used to give a “ranking” (Brown & Carasso, 2013). This is particularly confusing for academics and students since each ranking system purports to use the best-ranking method differently (Brown & Carasso, 2013). This confusion has led to the splintering of the ranking system, with some leading systems emerging, but academics and higher education administrators picking and choosing the rankings of their choice, usually focusing on the ones which rank their institutions the highest (Hendel & Stolz, 2008). Hendel and Stolz (2008) argue that even when there is some

level of consensus, for example when prioritising research as most of the ranking systems like THE-TR, ARWU and HEEACT do, there is still a wide discrepancy or disagreement on the choice of citation and bibliometrics data (Hendel & Stolz, 2008). This is further compounded by the fact that there are as many citation databases as there are ranking systems, which serves to guarantee that no two ranking systems uses the same metrics to measure the significance of any given institution (Hendel & Stolz, 2008).

Hendel and Stolz (2008) further argue that there are no universally agreed definitions or understandings of some of the key metrics used in the whole ranking procedure to make the above scenario more complicated (Hendel & Stolz, 2008). As noted earlier, there are many citation databases that each ranking system uses for itself, usually driven by cost or convenience in their choice (Hendel & Stolz, 2008). Student entry scores are also used to determine the quality of students getting into a particular university (Hendel & Stolz, 2008). However, the scores for these students are not standard. For example, the graduation scores for undergraduate students in the United Kingdom (e.g. Upper Second Class) are different from the American GPA system (e.g. 3.7), and there is no direct conversion between these grades so that a student's ability can be assessed no matter where they are (Hendel & Stolz, 2008). The difference in scoring means the indices are also different, which further contributes to the understanding and standardisation of the ranking system (Hendel & Stolz, 2008).

The other single biggest challenge caused by the different ranking systems is the position of a single institution within the different rankings (Deem, 2020). Because the different ranking systems prioritise different variables, institutions rarely maintain the same position in the different ranking systems (Deem, 2020). This is because they score higher in some rankings and lower in other rankings (Deem, 2020). This proves confusing to prospective students and academic staff who are not sure of the exact position of an institution as the position changes depending on the ranking system you use. This is best exemplified by the example of Harvard University which is widely regarded as one of the best universities in the world. For example, Table 2.2 shows the relative position of the institution depending on the ranking system (Bok, 2015).

Table 1.3

University Ranking

Ranking System	Ranking (#)
CWTS Leiden Ranking	1
QS World University Rankings	3
Times Higher Education World University Ranking	6
Academic Ranking of World Universities (ARWU)	1

(Bok, 2015)

As seen in Table 2.2, while the position is relatively high and leads in two rankings, the institution drops lower on other rankings. This shows the relative inconsistencies of the metrics used to measure an institution's relative influence and reputation. Grewal, Dearden, & Lilien (2008), have also pointed out the rather static nature of the rankings at the top and bottom. Consequently, there is minimal movement at the top of the ranking as the same institutions occupy the same positions (Grewal et al., 2008). The same also happens at the bottom of the rankings where the same institutions sit at the bottom, probably fully aware that they are incapable of immediately changing their position. Grewal et al. (2008) note that most movement occurs in the middle, where a small change in the institution, like hiring foreign staff members, results in a dramatic leap in status. Consequently, there is no stability in the middle as well since there are always many staff and student movements within the institution, which means there are always changes in the institution's position (Grewal et al. 2008).

As Grewal et al. (2008) further note, one of the most problematic issues is that even for institutions very keen to provide their world rankings, there is no easy path to resolve this. Rather, the solution depends on the position of the rankings. The goal of the top ranked institutions is to improve their income streams and general resources inflow (Grewal et al. 2008). The funding and overall resources tend to attract skilled personnel who provide the reputation and output required to maintain the rankings, thus creating a self-serving virtuous circle (Grewal et al., 2008). On the other hand, at

the lower and middle ends, the solution to climb on the rankings is to improve the quality of their offering as this tends to attract funding, allowing them to further improve output. Put differently; the universities tend to be stuck at their respective positions because the macro-socio-economic conditions under which they operate do not change much, which directly translates to their static nature. This is ably captured by Grewal et al. (2008) through the following quote: “Increase in funding have more of an impact on a top university's position, while enhancements to a school's academic standing have more of an impact on a school's position” (Grewal et al. 2008).

The other challenge that is levelled against the ranking systems is that they cannot address the full breadth of the university academic system (Grewal et al., 2008). This is because some variables are simply too difficult or nearly impossible to put weights across and measure (Grewal et al., 2008). Some variables like opportunities, networks, the location of the university and the proximity of influential facilities and other independent institutions around the university simply cannot be captured in the full range of benchmarks (Grewal et al., 2008). What is captured is what can be measured, which does not reflect the entirety and totality of the university experience (Grewal et al., 2008). As a result, as much as rankings have not become the only factor determining where to work or study and how research and education resources are distributed, it is important to situate them in their proper context, that of a limited set of benchmarks that help in showing the performance of universities (Hazelkorn, 2011a). There have been attempts to normalise for these factors by controlling for institutional size or age, focusing on the field of science or using questionnaires or stakeholder surveys to capture impact beyond the academy, but each of these methodologies has limitations. These lacunae also demonstrate the degree to which rankings can dramatically diverge from and counterpoise public policy objectives – as will be discussed in Chapter 5 (Hazelkorn, 2011b). Einstein stated that the wider question to be asked of rankings is whether they measure what counts or count what can be measured (Einstein, as cited by Linders, 2011). Below are five brief examples.

- As noted earlier, many institutions recruit students with great scores on the premise that the students will maintain the averages of that score so that they will be able to finish their studies (OECD, 2012). In many instances, the universities that are great at recruiting are great universities. However, during the period of the present study, the specific role and contribution of the

university in developing the student is not known or quantifiable (OECD, 2012). At best, the contribution varies across students and their individual circumstances and backgrounds (Hawkins, 2008).

- In many instances, throughput (the rate at which students enter the system and graduate within the stipulated time) is determined as one of the measures of quality (Stetser & Stillwell, 2014). Ordinarily, it is such a measure. However, there are instances where this is not the case, as the individual circumstances of some of the students dictate that they take some breaks either because they cannot pay the required tuition or have some other family obligation (Stetser et al. 2014). This is largely independent of the quality of the university and might not be captured by a ranking metric, but it is a common reality for most students. In other words, the location and the socio-economic environment in which the university is located is likely to dictate the throughput of an institution.
- One of the complaints that is levelled against the current ranking systems is that they rely disproportionally on research output (Aghion et al., 2007)**.** Aghion et al. (2007) argue that this works best in scientific journals with multiple authors. However, for the social sciences, where many single-authored articles are published in a wide range of formats like monographs, translations, and reviews, this might make it nearly impossible to track down the publications (Aghion et al., 2007). In other words, while databases like Scopus and Web of Science do a decent job of keeping track of the citations in publications, this is not the entire collection which means some articles slip through the cracks and are not accounted for (Aghion et al., 2007).
- One of the criticisms of the current system is its dependence on peer review (Aghion et al., 2007). Ordinarily, this works well to ensure that only quality research findings find their way into journals. However, some authors have found that this process tends to be increasingly self-perpetuating, self-referential and subjective (Aghion et al. 2007). Because of the research ecosystems developed over the years, these tend to be self-promoting. The same researchers are also editors and reviewers for other journals creating a self-interest and self-perpetuating bubble (Aghion et al., 2007).

The discussion above highlights the underlying methodological challenges that rankings pose. Yet this has not halted the proliferation of rankings. It is often said that

the more rankings, the better, showing there are many ways to measure quality. Nevertheless, the fundamental flaws remain. Yet, as the next section illustrates, rankings' sphere of influence extends far beyond the academy. Rankings have acquired popularity due to their simple and easily understood format.

In a survey conducted in 2001, Levin (2002) notes that an overwhelming majority of US colleges responded that rankings were somewhat or very important for their institutions. Thirty-five per cent (35%) of the colleges announced their rankings in press statements, indicating their significance for them, 50% used them for internal benchmarks, while 51% indicated that they intended to improve their rankings (Levin, 2002). Most significantly, about 4% of the university leaders/presidents indicated that they had appointed committees or a task force to look into the issue of rankings to improve them (Levin, 2002). It is important to note that the phenomenon is not only limited to the US. Yonezawa, Akiba, & Hirouchi (2009), writing in the context of Japanese universities, found in a relatively similar study that 47% of Japanese national universities said university management decisions were shaped to some extent by the rankings (Yonezawa et al., 2009). Similarly, in their research, Adams and Baker (2010) found that "40% of Higher Education leaders found critical assessments to be 'valuable', and 45% found them to be at least moderately useful." (Adams & Baker, 2010).

To further underscore the significance of rankings for higher education administrators, 50% indicated that they use rankings for publicity purposes (Adams & Baker, 2010). A further 63% admitted that the rankings are important for student recruitment (Adams & Baker, 2010). In all cases, the administrators further disclosed that they displayed the rankings on their college web pages to distinguish them from their competitors (Adams & Baker, 2010). They also admitted that in addition to the web posts, they used the ranking in their commencement speeches, student orientations, and other platforms where highlighting the institution's achievements is important. Hazelkorn (2011) notes that one of the more visible efforts to pursue higher rankings is establishing the International Office at almost all universities. Supposedly established to serve the unique interests and demands of international students, these serve as important recruitment hubs considering the significance placed on international diversity in university rankings (Hazelkorn, 2011).

Hazelkorn (2011) observes that rankings have been criticised for putting academics under pressure in the pursuit to improve university rankings perpetually. The authors also note the concerns of academics globally complaining of being asked to publish more and establish more international collaborations to improve rankings (Hazelkorn, 2011). The other issue raised was the fact that the propensity for staff to publish has also disproportionately affected the way resources are distributed within the campuses (Hazelkorn, 2011). For example, the more one publishes, the more resources they get, which further improves their chances of more publications widening the resources gap between them and those who are less proficient (Hazelkorn, 2011). Hazelkorn (2011) further notes the unfortunate tendency for staff members to collaborate with lower-ranked colleagues as they perceive that this affects their standing and the rating of their work, thereby further widening the gap in publishing capacity between the more proficient academics and those who are not (Hazelkorn, 2011).

Jaschik (2010) points out that while there are some reservations about the current ranking system, there are also some benefits in the ranking system, specifically as it pertains to staff management. For example, staff salaries can be based on their research output performance, encouraging them to produce more (Jaschik, 2010). Additionally, staff with higher research outputs, who can significantly contribute to university or departmental rankings, can be specifically targeted and head-hunted in the pursuit of improving rankings (Jaschik, 2010). This is supported by Hazelkorn (2011), who observe that there has been a tendency to hire or have exchange visits from high achieving professors who can act in a “capacity building” role helping the other staff members.

Bastedo and Bowman (2011) observe that it is inevitable that university rankings are intrinsically bound to the institution’s reputation. This is corroborated by the empirical evidence that the authors collected in their interactions with college heads (Bastedo & Bowman, 2011). For example, 76% of the institution heads who were interviewed observed that they constantly monitor the performance of their peer institutions in the country (Huda & Rokhman, 2021). In comparison, 50% admitted that they are continuously monitoring their international peers (Bastedo & Bowman, 2011). A

further 57% noted that their collaborations and joint research exercises were influenced by the need to improve the institution's ranking (Bastedo & Bowman, 2011). This prioritization of rankings when collaborating and having joint research exercises has been confirmed by Holm and Malete (2010), who note that universities are usually reluctant to enter into partnerships with lower-ranked institutions as they feel that this will adversely affect their rankings. Rankings can be important starting points to identify institutions with which to collaborate and partner. Having a highly-ranked partner can, in turn, improve an institution's reputation. More than half of respondents to the EUA survey said rankings helped their institutions to establish academic partnerships and foster international collaborations (EUA, 2011). Importantly, a university's participation in rankings can influence whether an institution or company outside the higher education sector selects a university as a partner, or whether a funding body invests in research at a university.

Hazelkorn (2011) observes that rankings are bound to an institution's reputation. This has also affected hiring practices as employers increasingly prefer staff members from more reputable institutions. Additionally, when it comes to partnerships between industry and academia, the author also notes a tendency to favour the more reputable and higher ranked institutions more than the ordinary ones that could benefit from the partnership (Hazelkorn, 2011). The author cites examples from the Employers' Association, Germany, which admitted to being inclined to partner with higher-ranked institutions. Similarly, Boeing admitted that it uses performance data in the form of rankings to determine the partners they can work with in research (Hazelkorn, 2011). This all supports the assertion that even outside academia, rankings are also used as a key determinant in research partnerships and collaborations (Hazelkorn, 2011).

Several authors, such as Monks and Ehrenberg (1999), have noted the impact of rankings on student recruitment. According to the authors, a university's ability to remain in the top quartile of university rankings (i.e., on the first page) significantly affects student recruitment. Put differently, students are usually concerned with the top list in front of them when considering where to study and are generally not bothered looking beyond the first list and looking at the lower-tier institutions (Meredith, 2004). Monks and Ehrenberg (1999) also note that the change in ranking affects student recruitment in the form of students who may want to apply at a given

institution and the calibre of students that the institution accepts (Monks & Ehrenberg, 1999). Monks and Ehrenberg (1999) further note that when an institution makes marginal gains in its ranking, it attracts more student applications, allowing it to select the top calibre students from the pool of applicants as it does not have to worry about merely filling places. Being more selective benefits the institutions because it improves their selectivity index, which is one index that is used by some other ranking institutions (Monks & Ehrenberg, 1999). Consequently, Avery, Fairbanks, & Zeckhauser, (2009) note that some institutions have been manipulating their admission numbers and sometimes deliberately maintaining small class and cohort sizes to get a better selectivity index.

Roberts and Thompson (2007) argue that the manipulation of enrolment figures to improve the university ranking is not limited to the US. Rather, they point out that a university's reputation and prestige in Japan is predicated on its selectiveness of students. This means universities deliberately seek to enrol as few students as possible, creating greater competition and allowing them to select only the very best students (Findlay et al., 2011). This is confirmed by Yonezawa et al. (2009), who note that 25% use extreme selectivity in their student recruitment, while 73% admit to using this method to improve their global rankings (Yonezawa et al., 2009).

Bowman and Bastedo (2009) claim that one of the unintended consequences of the ranking system has been the rapid increase in tuition fees. This is because higher rankings correlate with quality education, which attracts more applicants. With the increasing number of applicants, college institutions feel justified in increasing the tuition because of the demand and supply variables (Bowman & Bastedo, 2009). Also, there is a perception that having lower tuition fees relative to the competition can be interpreted as signifying that the tuition and whole education and research experience being offered is of a lower quality (Bowman & Bastedo, 2009). Monks and Ehrenberg (1999) add that ultimately charging high tuition fees can only attract a certain number of students as the rest cannot afford the fees even though they might have grades that allow them to be recruited. The solution has been to provide "discounts" through such forms as loans, scholarships and grants.

2.17.2 ***Impact on Student Recruitment***

1. **Accountability and transparency** - One of the issues on students has been that of transparency and accountability (Sukardi & Djalil, 2019). There is growing concern that even national governments are shaping their policies around the information provided through ranking, which is even shaping the provision of resources (Sukardi & Djalil, 2019). In other words, the concern is that student rankings, which are a subjective exercise carried out by a few organisations with no public data, are finding their way into official policy with very little input from stakeholders like academics and students who are ultimately affected by the policy (Sukardi & Djalil, 2019).

   Leaders of higher education and offices of admissions are now clearly focusing on rankings as a vital tool for strategic positioning (Ariail, 2016). A higher ranking often enhances the visibility of that higher education institution and assists in creating a brand for that institution. However, at every level of the popularity stake, higher education leaders or stakeholders now perceive rankings as tools for making their institutions known internationally and nationally (Goglio, 2016). These institutions also use the rankings to select potential postgraduate scholars (Goglio, 2016). Due to rankings, recruitment agencies and other higher education institutions are interested in students and academics that only reflect their rankings (Booi, Vincent, & Liccardo 2017).

2. **Internationalization and the battle for talent** - As the world moves toward the knowledge economy, there is a growing need for talent. However, there are perceptions that rankings have skewed the distribution of talent as some of the best and most talented individuals get attracted to the higher-ranked institutions due to the recognition, reputation and resources that will be at their disposal (Grogger & Hanson, 2015)

While acknowledging the limitations of the current ranking system, Hazelkorn (2011) proposes a set of reforms that can make the current system marginally better. However, it won't resolve all the identified issues. Below are some of the amendments that the author proposes:

- ➔ Acknowledges the differences between institutions and devices and a system that acknowledges those variances. This allows institutions within the same category to be compared and ranked (Hazelkorn, 2011).
- ➔ Ensure that the totality of a university's areas of competence is captured instead of focusing on those dimensions that can be counted, like research output and citations (Hazelkorn, 2011).
- ➔ Allow other higher education stakeholders to provide inputs to the design of benchmarks, indices and performance indicators instead of leaving that to the ranking organisations (Hazelkorn, 2011).
- ➔ Lastly, the collection of the data, as well as the decisions/algorithms that go into the ranking process should be an open process. With such transparency, the academic community will be more receptive to the idea of university ranking (King et al., 2011).

2.18 Theoretical Framework for the Study

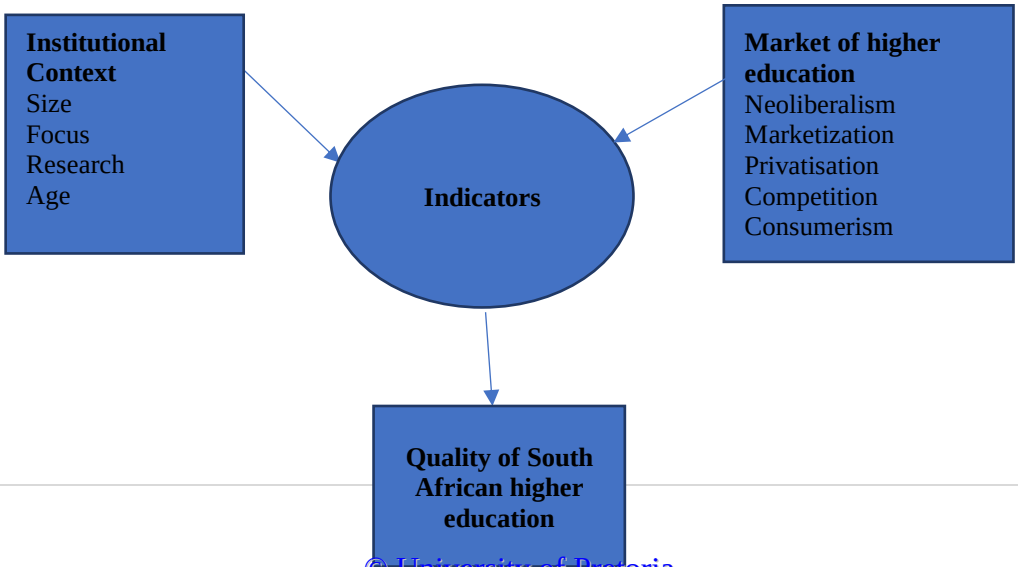
Indicators used in ranking is a multi-dimensional concept with numerous definition and diverse aspects as discussed in section 2.1 to section 2.5 of this chapter. Consequently, in order to fully comprehend the several methods used to rank South Africa's institutions of higher learning, the following models were examined.

2.19 Conceptual Framework

Grant and Osanloo (2014) refer to a conceptual framework as the logical structure meant to depict how concepts in research connect to one another. Figure 2.1 shows the conceptual model for the study.

Figure 1.1

Conceptual model for evaluation of the indicators used in ranking higher education in South Africa



2.19.1 ***Context***

In ranking higher education, several variables need to be taken into consideration. These variables include the institution's size, wealth (available resources), history, and country. Therefore, indicators should focus on elements like the size of the institution. For example, larger institutions would ultimately have more students, leading to more research papers that produce more citations. In this case, using the same indicators for institutions of different sizes, resources, history, and varying geographical locations is problematic (Bonaccorsi et al., 2007). This needs to be investigated to know the extent of these variations before making conclusions about the world's higher education rankings. For instance, wealthier institutions would generally boast better facilities and amenities than institutions that aren't as comprehensively funded. In ranking higher education, variables like the country's financial potential and expenditure on research and development need to be considered.

2.19.2 ***Marketisation***

Rankings have inevitably led to the commercialisation of education which in turn enhances the promotion of competition among higher education institutions to win over the consumer (prospective students) (Gill, Khan, & Karim, 2014). The competition is intense in student recruitment (Gill et al., 2014). Obviously, universities with a high-ranking status are likely to attract students from different parts of the world (Gill et al., 2014). Such universities are also able to offer scholarships or bursaries in most cases. As a result, these universities will attract brilliant prospective students that can also contribute to the development of the institutions or form part of the elite alumni (Gill et al., 2014). The differentiation in resources affects higher education and the market supply of students to the institutions. This factor is crucial but mostly ignored in ranking exercises.

2.19.3 ***Quality***

This study engaged this concept to analyse indicators used in rankings from the conceptual meaning of market, quality, and context of South African higher education. The deconstruction of the ideas of neo-liberalisation and managerialism suggests reason for the complexity of rankings globally, not just in South Africa. In South Africa, higher education institutions are ranked according to expenditure on Teaching and Learning; an indicator that entails graduation rate, programmes and relative graduate

employment rate (Cloete, 2014). Regarding the quality of teaching and learning, ranking indicators focus heavily on student assessment of the programmes, academic staff/student ratio, the total departmental budget per scholar and the university budget per department (Cloete, 2014). These elements signify the outcome of education. The present research study reimagined this concept to determine whether rankings were equal to quality. Several issues that have emerged from the literature will be considered to critically engage this concept from the managerialism view (Cloete, 2014).

However, managerialism is not a non-partisan approach to leadership. It's supposed to make it such that all companies are run according to the same market-based principles (Clarke, Gewritz, & McLaughlin, 2000). It entails incorporating market principles and norms into the governance of publicly provided services (Farrell & Morris, 2003). As a result, managerialism in the public sector emphasises measuring outputs with regards to ranking and performance indicators (regardless of resources and inputs), contracts rather than permanent employment, competition, the choice of language, budget and the authority of line managers and finally, customer service (Hill, 2005). Additionally, it supports rigorous accountability similar to the market for public sector expenditures. As a result, public audits have become a standard tool for gauging whether or not financial and other goals are being met. Rankings play a crucial role in achieving another major objective, creating quasi-markets for services. These markets serve as an additional form of control via competition and public inspection of public sector services (Clarke et al., 2000). Managerialism is significant since it was transferred from the private to the public sector within nations and across countries (Harvey, 2005; Lynch, Grummell, & Devine, 2012).

With their central role in audit and surveillance systems of regulation and control, rankings are a natural by-product of managerialism. As a result, they change the ethos of evaluation inside academic institutions (Sauder & Epseland, 2009). Universities were placed on display, and expected to transform from "a centre of learning to a commercial organisation with productivity objectives" (Sauder & Epseland, 2009). They need to switch their focus "from the intellectual to the operational" (Doring, 2002). By dismissing the need for thought and approaching change as a simple "technical concern," the market's ideals may be embedded in the

very fabric of the university's operations. Changes in organisational structures are seen as a technological shift, a modification in form rather than function (Lynch, 2014).

However, language does more than label the world; it creates it (Reilly, Bishop, & Tomblin, 2014). Language shifts represent much more than just a shift in vocabulary (Reilly et al., 2014). Students' changing the connection with their instructors from one of instruction to one of market service occurs invisibly, as they go from being citizens with rights to education to consumers with preferences (Lolich, 2011). Using "key performance indicators" in higher education shifts the emphasis away from the nurturing and caring processes integral to education and toward the outcomes of that system (Lynch, 2010).

Most of the weight of a rating comes from the fact that it is hidden behind a set of names that are themselves neutral (Will, 2017). The positive implications of “modernising institutions”, “introducing new management systems”, and “giving students alternatives” obscure the new forms of governance and moral control that such reforms involve (Will, 2017). They do not consider that values like efficiency and effectiveness would dominate at the cost of others like compassion, autonomy, respect, trust, and equality (Will, 2017).

However, framing human connections at the university as transactional, with high performance and productivity as the final goal, is the inevitable result of an emphasis on quantifiable outcomes (Lynch, 2015). Because of this, concepts like trust, honesty, caring, and solidarity have to take a back seat to others, such as regulation, control, and competitiveness, which are considered lower on the social and moral hierarchy (Lynch, 2015). Whenever managerialist techniques become dominant, they feed off and undermine the university system's fundamental ideals (Lynch, 2015). While few would argue against efficiency as a means of making the best use of limited resources, the problem with managerialist approaches is that they tend to suppress other organisational values to the point that they become incidental (Lynch, 2015).

The depreciation of moral ends has led to public services, such as education, being reclassified as consumer commodities rather than capacity-building public goods.

According to Lynch (2015), there are two other effects of performativity, the first being that it redirects the focus from emotional, moral and social developments that do not have an instant, quantifiable performance value in favour of those that do. The second is that it opens up opportunities to replace commitment with contracts.

In essence, pedagogical, scholarly, and research activities in higher education can be reduced to quantifiable measures; they may be recast as performance contracts that can sometimes be put out to bid (Ball, 2012).

However, the neoliberal philosophy stresses the free market while downplaying the importance of government regulation or spending on public services (Harvey, 2005). Consequently, a fundamental tenet of neoliberalism is the belief that everything can and should be quantified for evaluation and competition (Gonzales & Martinez, 2014; Stratilatis, 2014).

Harvey (2005) argues that neoliberalism marked a departure from capitalism as an approach to political-economic policy actively supported by several different national authorities (China, England, and the US). Because of this, nations in North America, Latin America, Asia, and Europe began treating higher education as a commodity available for purchase on the private market, with students cast in the role of consumers and teachers cast in the role of academic labourers (Mumper et al., 2011; Shin & Harman, 2009).

To explain how these policy shifts affected the functioning of universities in Australia, the United Kingdom, and the United States, Slaughter and Leslie (1997) established the idea of academic capitalism (Slaughter & Leslie, 1997). They claimed that administrators at higher education institutions pressured (and financially rewarded) professors to advance the interests of powerful business and government interests via their institutions' research initiatives. In this setting, intellectual labour and academic work were suddenly valued for their financial potential, as Slaughter and Leslie (1997) demonstrated. By updating their original definition of "academic capitalism," Slaughter and Rhoades (2004) demonstrated how university administrations and faculty members were actively promoting neoliberal values and

norms from within the academy rather than merely reacting to external political and economic environments (Slaughter & Rhoades, 2004)

According to Slaughter and Rhoades (2004), a major result of neoliberalism is a shift in how individuals think the world should function. According to Slaughter and Rhoades (2004), neoliberalism's guiding concepts (e.g., free market, competition, education for labour market) become so embedded in people's decision-making that they are difficult to dispute. Davies et al. (2004) elaborated on this theme, stating that neoliberalism achieves its ends through mechanisms of compliance and regulation, which are then broadened and updated with a sophistication intended to scrutinise, measure, assess, reward and punish (Davies et al., 2004).

Davies et al. (2004), argue that neoliberalism is not simply an economic theory, but a broader political and cultural project that seeks to transform the relationships between individuals, markets, and the state. They argue that neoliberalism achieves its goals through technologies of compliance and regulation that shape individual behavior, shape public policy, and facilitate the spread of market logic and values. In the context of higher education, neoliberalism can be seen in the growing emphasis on market competition, efficiency, and accountability. This can manifest in policies such as performance-based funding, rankings and ratings systems, and the outsourcing of services traditionally provided by universities to private providers. These policies can create a culture of competition and individualism, and can reinforce inequalities and exclusions within the higher education system. At the same time, however, it is important to recognize that the effects of neoliberalism on higher education are not monolithic or straightforward. The implementation of neoliberal policies can be influenced by a wide range of factors, including local contexts, political ideologies, and the agency of individuals and institutions. Moreover, the impacts of neoliberalism on higher education can vary widely depending on the specific policies and practices in place.

Davies et al. (2004) suggest that mechanisms of compliance and regulation that are used to achieve neoliberal ends can take many forms, including:

I. Metrics and targets: These are quantitative measures used to evaluate and compare performance, often in the form of rankings, ratings, or performance indicators. They can be used to motivate individuals and institutions to compete and improve their performance, but they can also create a culture of quantification and narrow, short-term thinking.

II. Auditing and monitoring: This involves the use of inspections, audits, and other forms of surveillance to ensure compliance with regulations and standards. It can be used to increase transparency and accountability, but it can also create a culture of suspicion and surveillance.

III. Contracting and outsourcing: This involves the use of private providers to deliver services traditionally provided by public institutions. It can be used to increase efficiency and reduce costs, but it can also undermine the public provision of services and create inequalities in access and quality.

IV. Financial incentives and penalties: This involves the use of financial rewards and sanctions to encourage or discourage certain behaviours or outcomes. It can be used to align individual and institutional interests with market values and priorities, but it can also create perverse incentives and unintended consequences.

These mechanisms of compliance and regulation can be powerful tools for achieving neoliberal ends, but they can also have unintended consequences and create tensions and conflicts within and beyond the higher education sector. It is important to approach these issues with a critical and reflective stance, and to work towards policies and practices that balance the needs of individuals, institutions, and society as a whole.

By extrapolating these findings to higher education, we may better understand the establishment (and maintenance) of the ranking regime–governments see colleges and universities as marketplaces and thus link compliance with the ranking system to

tax revenue generation. More importantly, in this neoliberal age, the logic of ranking, measuring, evaluating, and even competing has become the norm (Gonzales & Nunez, 2021). When seen in this light, the practice of quantifying and ranking latent cultural processes like those at play in classroom instruction, research, and the creation of new knowledge looks quite reasonable, if not downright commonplace (Gonzales & Nunez, 2021).

One interesting correlation between neoliberalism and the acclaim of scientific epistemology is that competing has become the norm (Pasque, Carducci, Gildersleeve, & Kuntz, 2011; Stratilatis, 2014). Bleicher (1982), writing more than three decades ago, said that markets and science are inextricably intertwined since markets frequently benefit from innovations and discoveries in research. The general public has a positive impression of science and the scientific process, which may contribute to the ranking regime's widespread acceptance as a means to evaluate academic institutions (Gonzales & Nunez, 2021). That is to say, the epistemic orientations upon which the ranking system rests are normalised since they permeate society at large, especially in the West (Gonzales & Nunez, 2021).

2.20 Research Contribution

2.20.1 ***Contribution to Knowledge***

This study will add to knowledge by defining the methods of neo-liberalism and managerialism as applied to ranking higher education institutions in South Africa. Since South African institutions do not have a national rating system, this report assesses the metrics used to rate higher education in the country. South African education officials should be allowed to benchmark models depending on the results since rankings are only one tool to measure institutional performance or give better transparency. College guides, quality assurance, benchmarking, and categorisation are just a few examples of alternative ranking formats and approaches that might give more relevant information and promote better comprehension and comparison. Therefore, this study contributes to knowledge by reframing arguments and perspectives of indicators used in ranking universities from South African data and perspectives.

This study is important and innovative because instead of just looking at the numbers that determine the ranking of the universities, it tries to understand why South African universities perform well on the African continent but are ranked low on the international scene. The study is predicated on the hypothesis that this disjuncture explains South African universities' low performance.

2.21 Conclusion

This chapter investigated the function of references as a measurement of indicators used in ranking universities. The writing shows that the volume and pace of research in this field are broad. This thesis narrows down the argument by focusing on the peculiarity of the situation concerning the issues of ranking based on historical data. To this end, indicators play an important role in the leadership and management of higher education in South Africa and elsewhere. There is a possibility that the indicators used to rank universities may have a great influence on the functionality and sustainability of higher education in South Africa.

CHAPTER 3
RESEARCH PARADIGM, DESIGN AND METHODOLOGY

3.1 Introduction

According to Cohen, Manion, & Morrison (2017), methods and methodology are two distinct terms in educational research. Methods refer to the full body of models and approaches that are used to gather data for academic purposes. On the other hand, Cohen et al. (2017) posited that research methodology aims to conduct an analysis and description of methods, identifying their advantages and disadvantages as well as other resources. In the methodology, clarity is provided on the hypothesis and their significance as it relates to their capacities on the bounds of knowledge.

Thus, the methodology analyses and clarifies the whole research approach and all its processes (Gough, Thomas, & Oliver, 2012). However, the research approach is quantitative and based on secondary data from QS World University ranking reports. This research approach is commonly used to gather data from stakeholders in the public sector (Gough et al., 2021). The approach adopted for this research is one that is normally used to gather data from stakeholders because the data collected is public data that has been used by other researchers for primary reasons. This is the case of secondary data analysis which depicts the data that has already been collected through primary sources and made readily available for researchers to use for their own research (Kalu, Unachukwu & Ibiam, 2019). This research approach is heavily biased towards one collection technique, whose details are given more attention in the following sections. Additionally, after careful consideration and reflection on the research question, the researcher decided to adopt the research method and design its appropriate instruments to achieve the set goal. Besides the research method, other important aspects of this study, such as data collection techniques, are also discussed. This chapter also discusses the validity and reliability of this study and the techniques employed for this purpose. In essence, this chapter gives a deeper insight into the researcher's research processes in gathering data and analysing it to execute this study.

3.2 RESEARCH PARADIGM

3.2.1 ***Positivism***

This research follows the positivism paradigm to understand and analyse the phenomenon of rankings in South African higher education. In a positivist approach, the two types of theory—empirical and normative—are treated as distinct entities (Piattoni, 2010). Instead of focusing on "what should be," the positivist approach seeks to disclose the "what is" of phenomena. Therefore, social and political phenomena may be studied effectively using positivist methods (Konuralp, 2018). The positivist paradigm aids positivist researchers in their quest to gain insight into specific objects via empirical methods such as experimentation, sampling, measurement, focus groups, and questionnaires (Pham, 2018).

Therefore, this study's description, prediction, control, and explanation of rankings in South Africa were grounded in positivism and the methodological approach was a positivist perspective. The idea of explaining and exploring social reality using the positivist paradigm was propounded by the French philosopher August Comte (Tsang, 2014). Crotty (1998) pointed out that while Comte might not be the one who coined the term “positivism”, he had a huge role in popularising positivism.

According to Crotty (1998), Auguste Comte was one of the first theorists who came up with the Societé Positiviste (Crotty, 1998). Comte was convinced that all science needed a worldwide method of enquiry. Comte observed that the only way to comprehend human behaviour and acquire true knowledge was through experiment and observation. As is normal with any system, method or technique, the positivist paradigm also has disadvantages. Pham (2018) warned that it might be hard to quantify phenomena connected to human attitudes and intentions, calling into question the positivist paradigm's use in social research initiatives. Johnson (2014) also argues positivists see things as they are and tend to disregard unexplained phenomena. The dangers of a strict and biased focus on positivist epistemology were also observed by Schwartz-Shae and Yanow (2002), who explained that doing so limits a researcher’s ability to pose incisive questions which are relevant in exposing real facts and truth (Schwartz-Shae & Yanow, 2002). They also argued that an overemphasis on objectivity also weakens a researcher’s position because it takes

away both philosophical and methodological arguments which support their case (Schwartz-Shae & Yanow, 2002).

The meaning of the term 'positivism' (see Park, Konge & Artino, 2020) has evolved over the years, though at its core several key aspects have remained constant. It is based on a foundationalist ontology that is, one in which the world exists independently of our knowledge of it, and at its heart is the promise of unambiguous and accurate knowledge of the world which can be arrived at through sensory experience. Similar approaches are to be found throughout the history of philosophy but, in essence, positivism is a product of the Enlightenment. The data with which positivists proceed is that which can be observed and therefore ascertained through the application of the scientific method. Importantly, for a positivist, this approach can be applied to the social sciences with just as much success as it is to the natural sciences. Relationships between social phenomena can be observed with objective and unprejudiced eyes in the search for true knowledge of a subject, with an empirical, rather than normative, mindset found within the questioning. As such, causal relationships between social phenomena can be established. Normative statements contain value judgments. Often, they contain words like should or should not, better or worse. In a nutshell, empirical statements describe what is in the social world, without evaluating it. They are statements that can be measured empirically which depicts the approach of the study.

Thus, the present research considered both the strength and limitations of positivism in analysing issues of ranking in South Africa. The research was careful to generalise or predict beyond what the numbers suggest.

3.3 Data Collection

When it comes to desktop data collection, two main methods are possible whenever one is studying a phenomenon. These two primary methods are called primary and secondary data collection. This study focused on secondary data collection, which is described below.

3.3.1 ***Secondary Data Collection***

Martins, da Cunha, & Serra (2018), described secondary data as the information put together by researchers for a study other than the current study during a different time. Martins et al. (2018), further pointed out that if the data/information is being utilised in the current research, it becomes secondary information/data for the current researcher. The data/information may be available in different forms, such as electronic, typed or handwritten (White, 2010). Secondary data/information is easily available from a wide range of sources. The researcher could gather data on applying potential products in the marketplace. A researcher could also initially utilise secondary data to understand the research problem (Kalu et al., 2019). Secondary data can be categorised into internal or external data, which is determined by the source of the data (Kalu et al., 2019). Secondary data acquired within an organisation where the study is being carried out is called in-house or internal data. On the other hand, information/data sourced outside the organisation where the research is conducted, is referred to as external secondary data (Kalu et al., 2019). According to Perez-Sindin (2017), secondary data has advantages and disadvantages. Presently, scholars and researchers worldwide are collating and storing secondary data that is easily accessible (Andrews, Higgins, Andrews, & Lalor 2012). Secondary data/information can also be useful when investigators want to achieve certain objectives as they look to put certain basic principles in place (Victor, 2017). Many reasons can motivate researchers to use secondary data, including the scarcity of resources to engage in field research or time constraints. Many studies by other scholars on the topic have been reviewed and analysed to get a deeper insight and understanding of the topic area (Victor, 2017).

Secondary data analysis can be either qualitative or quantitative. This study can claim to be a quantitative approach as it involves the evaluation of numerical and statistical data. This is evidenced by Kalu et. al. (2019), who state that secondary data analysis can involve using quantitative data that was previously gathered by other people for a different purpose.

Dale, Arber, & Procter (1988), further elaborated that while secondary data analysis is flexible and can be used in many different ways, secondary data analysis is an empirical exercise. In essence, secondary data analysis is a systematic method with evaluated and procedural steps.

A serious attempt was made to utilise some new ideas and mathematical procedures to present the chapter.

3.3.2 ***Advantages of Secondary Data***

Pérez-Sindín (2017), stated that secondary data/information has the main advantage of being easily accessible and available, thereby having a very low-cost implication. Provided that the secondary information/data is of excellent quality, this leads to the production of research studies of equally high quality. Investigators/scholars can then design and work with new ideas, frameworks and models (Smith 2008).

3.3.3 ***Difference between Primary and Secondary Data***

The table below summarises the key differences between the primary and secondary sources. This presentation of the differences is important for determining the reasons for using secondary data.

Table 0.1

Difference between Primary and Secondary Data

BASIS FOR COMPARISON	PRIMARY RESEARCH	SECONDARY RESEARCH
Meaning	■ Research conducted to gather first-hand information for the current problem is called Primary Research.	■ Secondary Research involves the use of information gathered originally by primary research.
Based on	■ Raw data	■ Analysed and interpreted information
Carried on by	■ Researcher himself	■ Someone else
Data	■ Specific to the needs of the researcher.	■ May or may not be specific to the needs of the researcher
Process	■ Very Involved	■ Rapid and Easy
Cost	■ High	■ Low

Time	■ Long	■ Short
Example	■ Surveys ■ Questionnaires ■ Interviews ■ Focus Group Discussions ■ Observation	■ Newspapers ■ Databases ■ Maps ■ Satellite and sensor data

*3.3.4 **Typical Second Research Sources***

Below are some of the sources where researchers can access data for their studies.

Table 0.2

Formal Secondary Data Sources

Sources	**Description of Sources**
Government Publications	■ Trade Journals ■ Reports on Currency and Finance ■ Customs and Central Excise Tariff Data ■ Statistical Abstract ■ Reserve Bank Bulletins ■ Labour Gazette ■ Agricultural Statistics ■ Bulletin of Agricultural Prices ■ Economic and Social Surveys
International Organisations	All foreign governments and international agencies publish regular reports of international significance. These reports are regularly published by agencies like: ■ United Nations Organisation ■ World Health Organisation ■ International Labour Organisation ■ Food and Agriculture Organisation ■ International Bank for Reconstruction and Development ■ World Meteorological Organisation

Sources	Description of Sources
Semi Government Organisations	Semi-government organisations include Municipalities and District Boards, while others also publish reports in respect of birth, death and education, sanitation and many other related fields.
Newspapers and Magazines	Various newspapers and magazines also collect data in respect of many social and economic aspects. They include: ■ Sunday Times ■ Daily Sun ■ Rapport ■ Sunday Sun ■ Sunday World ■ City Press ■ Isolezwe ■ Ilanga ■ The Sowetan
Research Scholars:	Individual research scholars collect data to complete their research work which is further published with their research papers.

Source: Victor (2017)

Besides the ordinary and mainstream research sources typically used as secondary sources, the following emerging sources can also be used.

Table 0.3

Other Emerging Data Sources

Data Types	Data Description
Geo-Spatial Data	This includes data from traditional satellites, micro- and nano-satellites, and unaccompanied aerial vehicles (UAVs, e.g. drones).
Remote Sensing	This includes all data collected by sensors and through the Internet of Things (IoT).
Telecom Data	This includes call detail records, social media data, and web-scraping.

Crowd-sourced Data	This includes all data collected by crowd-sourcing, often through social media or mobile apps.

Source: Victor (2017)

3.4 QS University Ranking Secondary Data Collection

Secondary research data can be referred to as information found in resources (primary and secondary) that already exist (Babbie & Mouton, 2007). Kalu et al. (2018) further stated that these sets of data/information have been collated and gathered by institutions, agencies or individuals other than the investigator. For the present study, the data was derived from Quacquarelli Symonds World University Rankings.

The QS World University Rankings are the most widely read university rankings in the world. Under the same grouping, QS also produces the following: Graduate Employability Rankings, Best Student Cities, Higher Education System Strength Rankings, Rankings by Location, and the suite of Business School Rankings including Global MBA, EMBA, and Online MBA.

Apart from the aforementioned, Kiraka et al. (2020) pointed out that the keynotes on the QS ranking system are highly adopted, respected, and accepted across universities in Africa. Apart from being accepted in Africa, QS World University Rankings is well established and accepted worldwide. Government officials and policymakers worldwide are keen users of the QS Rankings. In several countries, governments have established specific objectives for developing their higher education systems based on QS rankings (Williamson, 2019). The QS World University Rankings have become the most widely used basis for comparing universities worldwide (Polyakov et al., 2022).
Furthermore, QS world university ranking helps universities make strategic planning, benchmarking, measuring quality, international recognition, and brand awareness (Estrada-Real & Cantu-Ortiz, 2022).

One of the reasons the researcher opted for QS ranking was the fact that while QS world university rankings share similar philosophies and objectives with other ranking agencies in measuring the performance of universities, the main difference is the

weighting attached to each indicator. The QS world ranking prides itself on assessing the performance of HEIs across teaching, employability, research, and internationalisation using specific metrics. The researcher is of the opinion that the QS ranking would offer the ability to conduct a comparative analysis that would assist in the study.

Table 3.4 shows the organisation's measuring indices.

Table0.4: **Quacquarelli Symonds World University Rankings, indicators, and weighting**

Ranking Organisation	Benchmark	Ranking
QS World University Rankings	Academic peer review	40%
	Faculty/Student ratio	20%
	Citations per faculty	20%
	Employer reputation	10%
	International student ratio	5%
	International staff ratio	5%
	Citations – research influence	32.5%

Source: QS World University Rankings methodology. Laura (2022)

The researcher analysed indicators used by Quacquarelli Symonds World University Rankings to conclude their implications for the quality of higher education in South Africa. Information previously gathered by persons, agencies, or organisations other

than the researcher, i.e. data contained in primary and secondary resources that already exist is defined as secondary research data (Babbie & Mouton, 2007). For the present study, the data was derived from Quacquarelli Symonds World University Rankings. The QS (Quacquarelli Symonds) World Ranking of Universities uses a weighted system and assesses universities using six (6) performance indicators (Laura, 2022). The QS world ranking prides itself on assessing the performance of HEIs across teaching, employability, research and internationalisation using specific metrics: academic reputation (with a weight of 40%), citations per faculty (20%), student-to-faculty ratio (20%), employer reputation (10%), international faculty ratio (5%) and international student ratio (5%) (Laura, 2022). These indicators and weightings were evaluated and analysed to understand their implication for higher education, especially in South Africa.

3.5 Desk Research

For the present study, the researcher utilised desk research to gather information. Martins (2018) referred to desk research as the technique that utilises secondary data or information already in existence. If we want to better use the information we already have, we need to summarise and compile it (Bhat, 2019).

According to Bhat (2019), survey research is assessing a known population's opinions, attitudes, beliefs and current status through questionnaires. Cohen, Manion, & Morrison (2017) assert that surveys "set out to describe and interpret what is". This is precisely what the researcher set to achieve in the investigation. In the present study, the correlation between the application of administrative law and service provision can be determined through existing public domain documents that elicit observed public officials' characteristics during service delivery. Bhat (2019), provides insight into some of the purposes served by quantitative research, which include: describing, comparing and attributing causality. Cohen, Manion, & Morrison (2017) further explain that data collected at any particular point to draw comparisons between certain variables or phenomena and their underlying standards can be compared. The descriptive design is the most appropriate research design that can better expose the underlying trends and allow the prediction of the probable status quo (Sharma, 2018). A desktop study using secondary data sources was employed for data collection (Martins, 2018).

The researcher used desk research to gather information for this study. Desk research is referred to as a technique that utilises secondary data or information that is already in existence (Martins, 2018). The researcher analysed the data already provided by the Quacquarelli Symonds World University Rankings. The researcher chose this research method because the information needed for this study already exists, and it has been captured by institutions that have experience and are renowned in ranking higher education.

QS World University ranking used criteria and weighting used in ranking higher education institutions. They are measured in terms of the quality of research produced, quality of teaching, international outlook and graduate employability (Laura, 2022). These indicators are analysed and evaluated using statistical inference to understand their implication for quality.

Table 0.5

QS ranking criteria and weights used for ranking higher education institutions

Ranking Criteria & Weights

Criteria	Indicator	Brief Description	Weight*
Research Quality	Peer Review	Composite score drawn from peer review (which is divided into five subject areas). 3,703 responses.	40%
	Citations per Faculty	Score based on research performance factored against the size of the research body	20%
Graduate Employability	Recruiter Review	Score based on responses to recruiter survey. 738 responses	10%
International Outlook	International Faculty	Score based on proportion of international faculty	5%
	International Students	Score based on proportion of international students	5%
Teaching Quality	Student Faculty	Score based on student/faculty ratio	20%

Source: QS (2008)

This study deals with the ranking of universities in South Africa, and as such, the use of desk research seems relevant. The researcher analysed the data already provided by one ranking agency, namely Quacquarelli Symonds (QS).

The researcher chose this research method because the information needed for this study already exists, and it is captured by institutions that have experience and are renowned in ranking higher education. The Quacquarelli Symonds (QS) data was

used. The data covered the period of 2012 to 2020 (8 years) in evaluating and analysing the indicators used for ranking higher education institutions in South Africa (Laura, 2022).

3.6 Research Design

The research design for this study is quantitative. The quantitative design measures trends and analyses their implications for rankings and the quality of higher education in South Africa.

3.6.1 Descriptive statistics

This study first described data for verification of the series characteristics. The data on indicators, weighting and ranking of South African higher education institutions between 2012 and 2020 was presented using descriptive statistics such as mean, standard deviation, skewness, kurtosis, the Jarque-Beta test and probability.

3.6.2 Model Specification

The model specification was adopted from the study of McAleer et al. (2019), where the ordinary least squares (OLS) are expressed as:

$$Yobj1_{it} = \alpha_i + \alpha_{i1} X_{it} + \varepsilon_{1i} \quad (1)$$

Where $Yobj1_{it}$ denotes the indicator of universities ranking (each of the indicators), X_{it} the matrix of academic ranking, $\alpha_i$is a constant or intercept, α_{i1} is the parameter of regression and ε_{1i} is the error term. While *i* is the individual organisation and *t* is the time variable.

Further, to estimate the objective of the study on the relationship between the indicators and higher education institutions' performance in South Africa, the study specified the model below:

$$Yobj2_{it} = \beta_i + \beta_{i2} Z_{it} + \varepsilon_{2i} \quad (2)$$

Where $Yobj2_{it}$denotes the overall score, $Z_{it}$is the indicator of universities ranking, β_i is a constant or intercept, β_{i2} denotes coefficient of covariates and ε_{2i} is the error term.

To estimate the effect of the independent variables on the dependent variable and to eliminate time invariance factors, the study developed the model below.

$$Yobj1_{it} = \alpha_i + \alpha_{i1}X_{it} + \varepsilon_{1i} \qquad t = 1, 2, 3..T \qquad (3)$$

$$Yobj2_{it} = \beta_i + \beta_{i2}Z_{it} + \varepsilon_{2i} \qquad t = 1, 2, 3..T \qquad (4)$$

3.7 Data Analysis

Data analysis is the process through which raw information, such as text and images, is transformed into meaningful information (Creswell 2017). Preparing data for analysis, running several analyses, and getting an innate understanding of the data are all part of the process. The researcher used statistical procedures for this investigation.

3.7.1 ***Statistical Tests***

When presented with a dataset, several statistical tests can be done to ensure that the collected data can achieve the set research objectives (Syed, 2016). For this study, the tests set out below were done.

The first test that was done was descriptive statistics. This looked at the minimum, maximum and mean ranges of the data as well as the skewness and standard deviation. These tests collectively confirm the collected data's reliability and ensure that there are no errors or extreme values which can skew the results. The second test was that of frequencies. This test determined the frequency with which a certain response is picked, with the total number expressed as a percentage of the total number of respondents. The results of these tests were presented graphically.

The third test was that of chi-squares. These are tests of association. They serve to determine if there is a link between two variables. The level of significance of the

association is expressed as the “p-value”. For example, the chi-square tests were used to determine if there is a correlation between the indicators of ranking and the perceived quality of education at the universities.

The fourth test that was conducted was Cronbach’s Alpha test. This test was used to determine the reliability of the studies. This is done by echoing the internal consistencies of the results. The test works on the assumption that during responding to a questionnaire, the answers need to be “consistent” to show that they are true and not random responses. It is this consistency that is measured the Cronbach’s Alpha. A reliability coefficient of .7 will be accepted as a minimum to ensure the reliability of the data.

3.8 Ethical Considerations

Polit and Beck (2010) define ethics as the moral principles governing the extent to which research processes comply with various social and professional requirements. Israel and Hay (2006) argue that researchers should ensure the safety of their research participants; create relationships with them that are based on mutually assured respect and trust while also promoting the integrity of research; prevent instances of gross impropriety and misconduct that might later project their institutions or organisation in a bad light, and the ability to cope with new challenges. Ethical issues in terms of permission, ownership of data and confidentiality are been discussed below.

3.8.1 ***Permission***

Ethics are largely the beliefs about good or bad, appropriate or inappropriate, legal or illegal (Israel and Hay, 2006). For the present study, the researcher formally applied for an ethical clearance certificate from the University of Pretoria. The researcher indicated that the study would be utilising secondary data and no human participants would be involved. As a result, ethical clearance and a certificate were obtained for the research.

3.8.2 ***Ownership of Data***

This data used for this study is already available in the public domain and the researcher does not claim ownership of the data. However, a copy of the data will be

sent to the Department of Education Management and Policy Studies at the University of Pretoria for storage.

3.8.3 ***Confidentiality***

Confidentiality is the practice of handling sensitive information to prevent unauthorised access or disclosure. According to Cohen, Manion, & Morrison (2017), "confidentiality relates to agreements between individuals that restrict the access of other persons to personal information". Keeping knowledge secret is "the researcher's obligation" (Brink and Van der Walt, 2002). All the data used is available in the public domain and is secondary information accessible to the public. However, the research maintains the confidentiality of institutions reflected in the data.

3.8.4 ***Writing and Disseminating Research***

Creswell (2017), argues that similar ethical dilemmas might arise when writing up research, with the researchers hiding, distorting, or fabricating data to fit their perceptions. The researcher did not engage in such practices as it amounts to fraudulent practices.

3.8.5 ***Transferability of the Study***

Transferability of the study refers to the extent to which the study findings are applicable in other instances (Theofanidis & Fountouki, 2019). Consequently, for this study, the delimitation of the study is the research finding on the significance of university ranking on educational institutions in South Africa. The research findings only apply in this specific country in the explicit context outlined within the research methodology. As a result, the result cannot be extrapolated to infer other regions or countries (Goundar, 2012). Additionally, the research findings are only specific to the period in which the research was undertaken, which was 2020 and the period observed by the study, which focused on the period between 2012 and 2020.

3.9 Conclusion

The chapter outlined positivism as the research paradigm used in the study. This was chosen because a desktop study methodology was used in the study. The sources of information were also discussed, as well as the collection of the information, how it will be analysed, and how the analysis results will be presented. Additionally, all the research ethics observed during the research have been outlined. The chapter

outlined the various sources of information used to collect secondary data. The next chapter discusses the data presentation, data analysis and interpretation.

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CHAPTER 4
DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents the summary statistics, results, interpretations, and the discussion of all relevant estimations conducted in this study. This study uses an annual dataset from 2012 to 2020 sourced from Quacquarrelli Symonds (QS) World University rankings reports. The study encounters one of the common problems in the time series analysis, which is omitted data. However, the study employs interpolation with a forward and backward option to complete the omitted data.

4.2 Summary of Statistics

Table 4.1 summarises the statistics of key variables. The total number of observations is 63. While metrics consisting of variables such as size, focus, research and status are ordered categorical, indicators of higher institution rankings are continuous variables. The universities selected are in the first 1000 in the classical world ranking. The selection includes several South African universities, namely the University of Cape Town, the University of the Witwatersrand, Stellenbosch University, the University of Pretoria, the University of Kwazulu-Natal, Rhodes University, and North-West University. The academic reputation scores are a minimum of 3.59 and a maximum of 3.92.

Table 0.1

Descriptive Statistics

Variables	Min	Max	Mean	Sd	skewness	Kurtosis	N
Size	0	3	2.079365	0.7470714	-1.063376	4.753597	63
Focus	2	3	2.555556	0.5008953	-0.2236068	1.05	63
Research	1	2	1.31746	0.4692271	0.7842935	1.615116	63
Age	1	5	3.904762	1.36446	-0.7486173	2.010299	63
Status	1	2	1.888889	0.316794	-2.474874	7.125	63
Academic Reputation Score	3.59292	3.92658	3.758213	0.1437039	-0.0551089	1.212687	63
Faculty Student Score	2.81341	3.19765	3.017788	0.1341553	-0.4671079	1.849643	63
Citations per Faculty Score	3.41162	3.7095	3.586956	0.1118953	-0.6759852	1.791463	63
International Faculty Score	3.821	4.38036	4.083541	0.1953431	0.2347336	1.784703	63
International Students Score	3.23344	3.64021	3.432974	0.1447883	-0.0019311	1.558083	63
Overall Score	3.05138	3.79538	3.515567	0.3004828	-0.8358313	1.854526	63

Note: Size comprises extra-large (XL), large (L), medium (M), and small (S), which has been recoded as 3, 2, 1, and 0. The focus consists of FC = Fully Comprehensive, CO = Comprehensive, FO = Focused, and is recoded as 3, 2, 1, and 0, respectively. Research denotes VH = Very High, HI = High and MD = Medium, which is equal to 2, 1 and 0, respectively. Status represent A = Public and B = Private, recoded as A =1 and B = 2.

The study selected only South African universities that appear in the first 1000 of the QS world ranking for the years in review.

Table 4.2

Focus

The focus is the subject range of the institution. This covers the provision of programmes in the five broad faculty areas used in the university rankings.

FC	Fully Comprehensive	All 5 faculty Areas+ Medical School
CO	Comprehensive	All 5 faculty Areas
FO	Focused	3 or 4 Faculty Areas
SP	Specialist	2 or Fewer Faculty Areas

Table 4.3

Size

This based on the full time equivalent of students in the Higher Education Institutions.

	Size	**Students**
XL	Extra Large	More than 30,000
L	Large	>=12,000
M	Medium	>=5,000
S	Small	Fewer than 5,000

Table 4.4

Age

Age refers to the years the institutions have been in existence.

	Classification	**Age**
5	Historic	100 years old and more
4	Mature	50-99 years old
3	Established	25-49 years old
2	Young	10-24 years old
1	New	Less than 10 years old

Table 4.5

Research Intensity

Here there are four levels of research activity evaluated based on the number of documents retrievable from Scopus.

	Research Intensity
VH	Very High
HI	High
MD	Medium
LO	Low

Graphical Data Representation

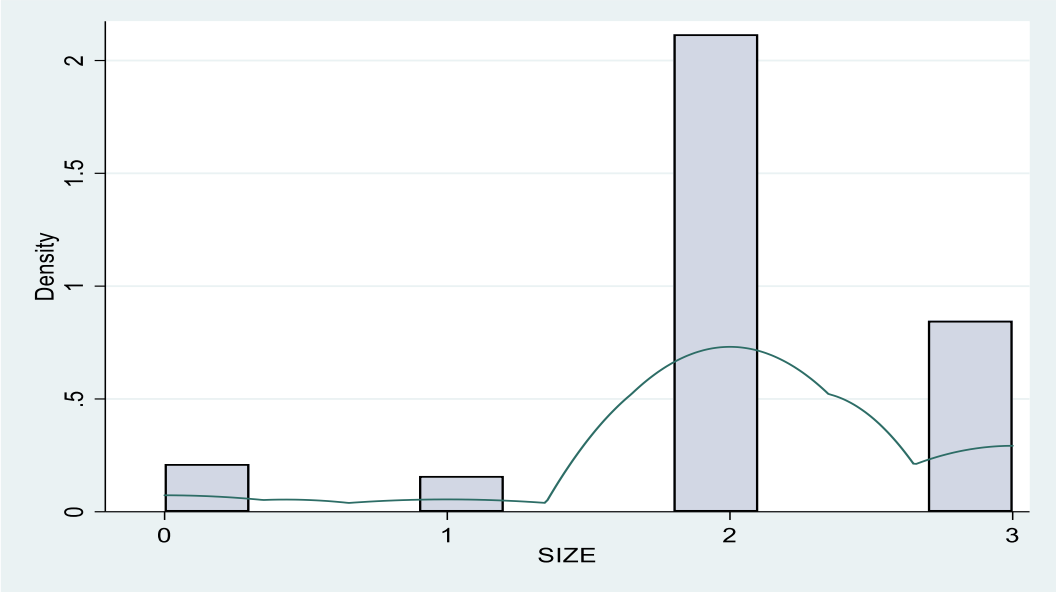

Figure 3.1 : Histogram of the universities size

Figure 3.1 displays the histogram of size of universities, which appear to not be normal. This further suggested that the dataset is not normally distributed.

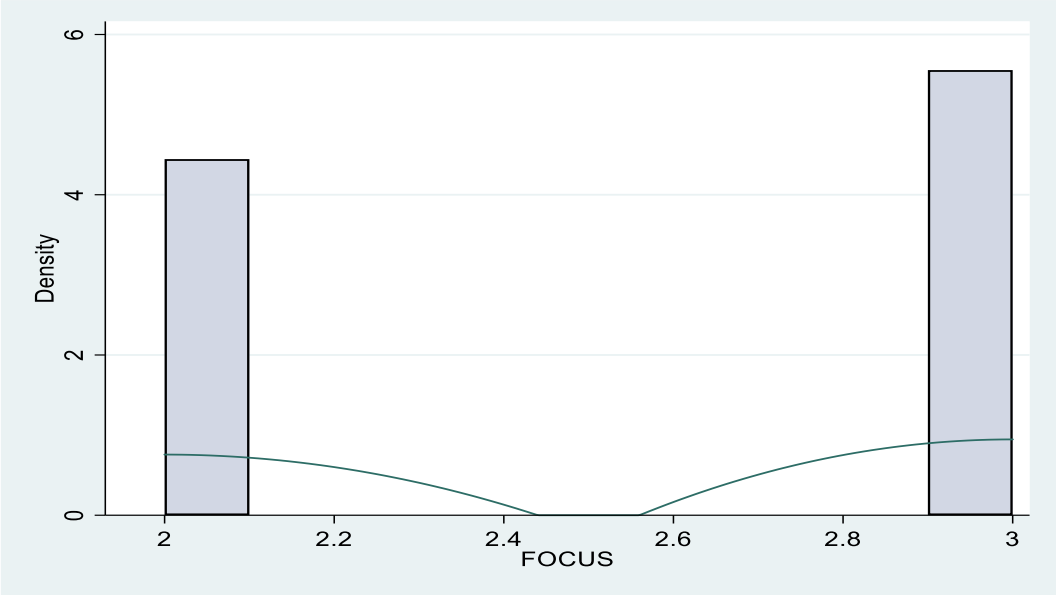

Figure 4.1: Histogram of the focus of universities

Figure 4.1 displays the histogram of focus of universities, which appear to not be normal. This further suggested that the dataset is not normally distributed. Thus, the analysis follows nonparametric statistics because normality is not required.

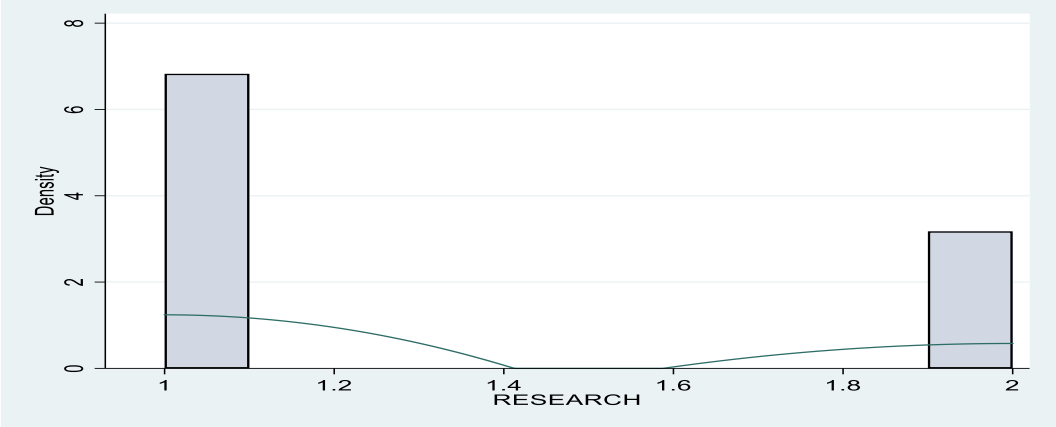

Figure 5.1: Histogram for research of the universities

Figure 5.1 displays the histogram of research of the universities, which appear not to be normal. This further suggested that the dataset is not normally distributed. As a result, nonparametric statistics is appropriate for the analysis.

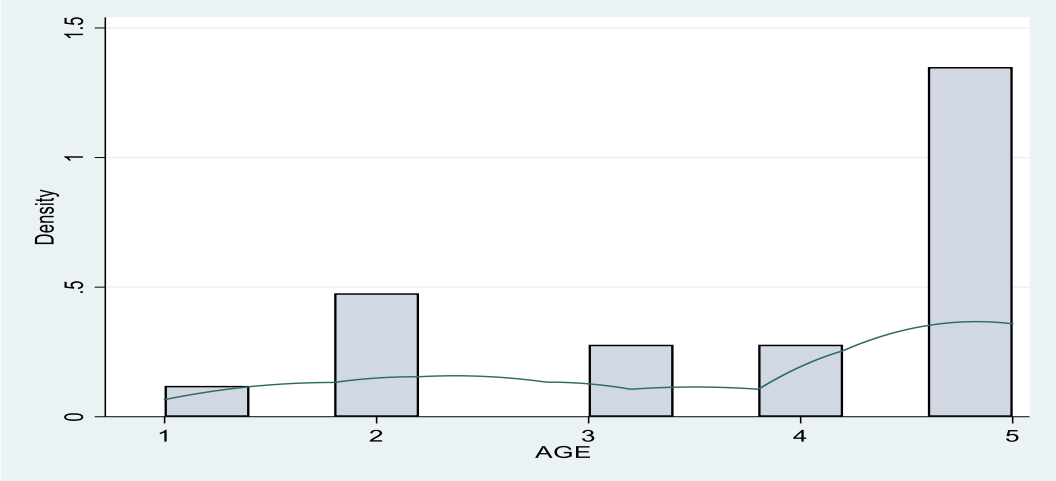

Figure 6.1: Histogram of the age of the universities

Figure 6.1 display histogram of age of the universities, which appear not to be normal. This further suggested that the dataset is not normally distributed. Therefore, nonparametric statistics are followed for the analysis.

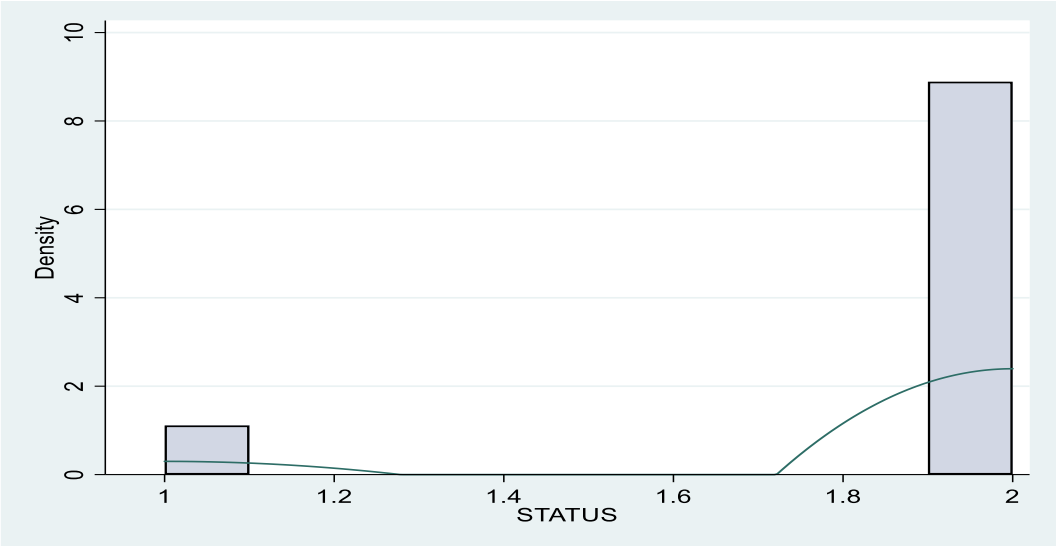

Figure 7.1: Histogram of the status of the universities

Figure 7.1 displays histogram of the status of the universities, which appear not to be normal. This further suggested that the dataset is not normally distributed.

The normal skewness is zero, some variables are less than one (<1), which implies that they are normally skewed. While some variables are negatively skewed to the extreme left of the tail. The kurtosis measured the peakiness of the variables and some variables are platykurtic as they are lesser than 3. Notwithstanding, some

variables are leptokurtic because they are greater than 3. Conclusively, the summary statistics suggested that the dataset is not normally distributed.

The faculty-student score ranges from 2.81 to 3.19. Furthermore, the citations per faculty score has a minimum of 3.41 and a maximum of 3.71. The overall score ranges from 3.05 to 3.79 as the maximum. The normal skewness is zero; however, negatively skewed variables are at the extreme left tail. The kurtosis measures the variables' peakiness; some variables are platykurtic as they are less than three. According to Kallner (2017), kurtosis is defined as the measure of the level of “tail” of the probability distribution. In statistics, normal distributions have a kurtosis of 3 and this is recognized as mesokurtic. Kurtosis that is greater than 3 is recognised as leptokurtic whereas a kurtosis that is less than 3 is platykurtic.

According to Chen (2023), skewness can be referred to as the measurement of the level of distortion of symmetrical or asymmetry distribution in a set of data. This is a tool in statistics used to determine if a set of data is modelled for normal distribution. If skewness is less than -1 or greater than 1, the distribution is highly skewed while skewness between -1 and -0.5 or between 0.5 and 1, indicates that the distribution is moderately skewed, finally, if the skewness is between -0.5 and 0.5, the distribution is more or less symmetric.

Notwithstanding, variables such as size and status are leptokurtic because they are greater than three. The summary statistics, such as size and status, suggest that the dataset may not be normally distributed. The behaviour of the variables follows an irregular pattern, which suggests a mixture of inconsistencies with the ranking of South African universities selected. The inconsistency might be the lingering effect of apartheid, which deposited inequality in South African education.

While considering the academic reputation score of the aforementioned South African universities using the minimum and maximum, it could be deduced that the differences between the maximum and minimum score (also known as range) is low, which shows that the differences in the academic reputation of the seven ranked South African universities is small. Although these results have not been verified by independent research, they are evidenced in the 2021 QS World University Rankings,

which show the differences in the South African university ranking (Shipanga, 2021), Similarly, the faculty-student score also shows the differences in the minimum and maximum scores to be small. This score shows the number of students who attend the universities divided by the number of lecturers in the universities (QS, 2022). The differences in the minimum and maximum scores revealed that the seven ranked South African universities have almost the same number of students and lecturers. This result is new in academic literature as it shows that the universities are competing as they all attract a number of local and international students (Shipanga, 2021).

Also, the differences in citation per faculty scores using the minimum and maximum scores (the range) are small. This shows the differences in the total number of citations received by all papers produced by the seven universities over five years by the number of faculty members at the universities (Laura, 2022). Although top ranked South African Universities have a good citation per faculty score (Laura, 2022) this result is also new because it reveals there are only small differences between the universities in their citations per faculty scores.

In addition, the International Faculty Scores also show a minimum of 3.82 and a maximum of 4.38, revealing that the differences in the maximum and minimum scores are low. This made us understand that the gap among the seven ranked universities pertaining to the international faculty score is low, which also means they all have almost the same international faculty scores (Haidar, 2016).

Similarly, the international student score also shows a minimum of 3.23 and a maximum of 3.64. Calculating the range shows a total difference of 0.41 in the international student score between the lowest and highest-ranked South Africa University. Moreover, Haidar (2016) reveals that all seven ranked universities scored well in international student scores. Therefore this justifies the 0.41 difference in the international student score per each university. This result is also new because it revealed the universities have an 0.41 difference in their international student score.

The overall score from the result of the analysis shows a minimum of 3.05 and a maximum of 3.79 with a range of 0.74, which generally shows an overall difference in the variables. Also, the skewness shows all variables to be negative except the

research variable, which is positive, similar to kurtosis, which shows all variables to be positive. These findings suggest that the dataset used for the analysis is normally distributed.

Variables such as age, research and focus also show little difference between the minimum and maximum scores, confirming that the seven ranked universities have almost the same mix of age, research and focus. The skewness and kurtosis also show that the data is normally distributed.

Unfortunately, variables such as size and status are not normally distributed. This could result from inconsistency with the ranking of the selected South African universities, which might be due to the lingering effect of apartheid. According to Bunting (2006), higher education in apartheid-era South Africa was systematically structured to benefit the country's white minority elite. In a similar vein, Ocampo (2004) argued that openly racist practices enacted by the apartheid regime caused disparities in the quality of education available to different groups. The disparity in spending on education was also noticeable.

According to Habib (2016), the reality at some historically disadvantaged HEIs is related to a financial and managerial crisis resulting from staff and student protests. He further argued that South Africa's historically advantaged universities are generally in a better position to produce more post-graduate students making greater contributions to high level research. According to Habib (2016), despite this fact, the historically disadvantaged still aspire to compete in the ranking tables and transform themselves into research-intensive institutions. The consequences of apartheid are still very evident in South Africa's Higher Education Institutions today. Since there were many Departments of Education, each for a different racial group, the Bantu Education Act allocated less financing to black schools while increasing funds for white schools (Ocampo, 2004). Ocampo (2004) is of the view that the South African government has taken many steps to equalise education across races since the end of the apartheid era. However, many racially neutral policies still have a detrimental impact on blacks and coloureds.

The overall summary of the analysis reveals that the result of the analysis is new and contributes to the current research in that there are only minor variations across the top seven institutions in South Africa. The importance placed on university rankings and the government's view of universities and colleges as marketplaces through which to generate fiscal resources is consistent with neoliberalism, as shown in the outcome of the following descriptive study. In addition, the neoliberal period has institutionalised the logic of rating, assessing, and evaluating universities and has supported the rivalry among them. It has become commonplace to use such metrics to rank intangible cultural activities like those involved in education, research, and the creation of new knowledge (Gonzales & Núñez, 2014).

4.3 Correlation Analysis

The study has an unbalanced panel and runs a correlation analysis. Table 4.2 shows a correlation between the explanatory and the outcome variables. The correlation suggests that the log of the overall ranking and academic reputation score (r=0.80), as well as citations per faculty score (r=0.92), are strongly correlated. Also, overall ranking and the international students' score are correlated (r=0.61). Similarly, the academic reputation score and labour with the faculty-student score are correlated (r=0.66). The international students' score and the academic reputation score are correlated (r=0.69). In addition, focus and age are correlated (r = 50).

On the other hand, the international faculty and faculty student scores are negatively correlated (r= - 0.96). The international faculty score correlates negatively (r = - .10) with the overall ranking score. The research and the overall ranking score are negatively correlated (r = -0.34). Although it is expected that research should influence the overall ranking score, some researchers in some universities might not pay serious attention to publishing strictly in accredited journals, or perhaps, their research output may be below par.

Table 0.2

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Overall Score	1.000										
(2) Academic Reputation Score	0.799	1.000									
(3) Faculty Student Score	0.070	0.552	1.000								
(4) Citations per Faculty Score	0.919	0.564	-0.288	1.000							
(5) International Faculty Score	-0.102	-0.611	-0.957	0.258	1.000						
(6) International Students Score	0.612	0.692	0.657	0.310	-0.643	1.000					
(7) Size	-0.124	-0.092	-0.018	-0.106	0.021	-0.096	1.000				
(8) Focus	0.000	-0.000	0.000	0.000	-0.000	0.000	0.268	1.000			
(9) Research	-0.339	-0.292	-0.044	-0.309	0.048	-0.215	-0.533	0.061	1.000		
(10) Age	0.027	0.001	-0.032	0.036	0.041	-0.023	-0.309	0.503	0.325	1.000	
(11) Status	0.551	0.381	-0.013	0.508	0.100	0.141	0.038	-0.011	-0.301	0.05	1.00

0 0

Table 0.3

Variance Inflationary Factor

Variable	VIF	1/VIF
Size	2.00	0.500206
Age	1.91	0.523934
Focus	1.88	0.533095
Research	1.70	0.589144
Status	1.15	0.869583
Mean VIF	1.73	

Table 4.3 presents the variance inflationary factor result. The rule of thumb of variance inflationary factors states that VIFs must not be greater than ten; otherwise, they should be treated with caution to reduce collinearity. Hence, the VIFs show that there will be no multicollinearity in the estimation; thus, the independent variables are moderately correlated.

VIF is a common technique that is used to identify whether or not multicollinearity is present in regression model (Akinwande, Dikko & Samson, 2015). It is used to measure how much the standard error of the estimated regression coefficient is inflated due to collinearity (Akinwande, Dikko & Samson, 2015). VIF is done to check whether there is a variable that should not be added. When doing this, the outcome variable is not always included in the inflationary output.

Similarly, the citation per faculty score and research are negatively correlated (r = - .31). This points to the impact of research output. If it is reduced, it would eventually reduce the academic citations. The international faculty score and academic reputation score are negatively correlated (r = -.61). This implies that some universities may be understaffed in respect of international faculty members, which could underestimate their academic reputation scores. Similarly, international faculty scores and faculty-student scores are negatively correlated (r = -0.96).

The results from Table 4.2 above shows a strong positive relationship between overall ranking and academic reputation score. This could result from academic reputation having the highest weighting of 40 per cent compared to other indicators, all having below 40%. This also corroborates Collier's (2021) report, where she confirmed that

the seven ranked South African universities have high academic reputations (among the top 1000 universities in the world).

Similarly, Table 4.2 also shows a strong positive relationship between overall ranking and citation per faculty score. Since the citation per faculty score contributes 20 per cent to the overall ranking score, the seven ranked South African universities all have a good citation score in relation to other universities in Africa (Ellie, 2015), but a lower citation score concerning world universities (Kpolovie & Dorgu, 2019). Nevertheless, the 20 per cent citation per faculty contribution to the overall ranking score justifies Collier (2021) and Ellie's (2015) studies which show the citation score of each university.

It was also shown that the international students' scores match with both overall ranking and international student scores. This indicates that the seven rated South African institutions have a good worldwide reputation and attract students from everywhere around the globe. It also suggests a worldwide perspective, which is especially important for universities in today's increasingly globalised academic environment. It creates a global community where students from different cultures may interact and share ideas. As a result, students get the soft skills—international empathy and global awareness—that are in high demand by today's businesses. In a nutshell, according to Hasna's (2016) report, all seven ranked South African universities have good scores regarding the international student score.

Also, there is a strong positive relationship between the academic reputation score and the faculty student score. This could be a result of the number of PhD holders each university has. Research by Goolam (2022), confirmed that South Africa produced only 28 Ph.D. graduates per million population per year, a figure considered very low by international standards, the NDP set a target of 100 by 2030. This would result in an increase in Ph.D. graduate output per year from 1,421 in 2010 to 5,000 in 2030 (Nico, Charles, and Tracy, 2015). By 2017, the figures had already increased significantly. The number of Ph.D. graduates per million of the population had increased to 54; the number of doctoral graduates produced per year had more than doubled to 3,057; and the proportion of academics having a Ph.D. had reached 46% (Goolam, 2022). Also indicated is a positive relationship between the international

students score and academic reputation scores. This is true because the seven ranked universities in South Africa have good reputations that attract many international students to the universities. This finding corroborates Goolam (2022) report, where she listed the academic reputation of each university (Shipanga, 2021) and justified it with the universities being the most sought-after in Africa.

Similarly, the table shows that the International faculty score and faculty-student scores are negatively correlated. This could be a result of the percentage score allocated to each of the indicators. The result shows that there is a negative relationship between international faculty scores and faculty-student scores which could be a result of the lack of a tangible number of international academic staff in South Africa universities. Research confirms that although South African universities may have a lot of international students they are lacking in international lecturers but all the same there is a gradual increment in the number of international lecturers across the universities in South Africa (Jeannin, 2017). While 20 per cent is allocated to faculty students, five per cent is allocated to the international faculty (Laura, 2022). Moreover, the international faculty score looks at the ratio of international faculty staff to overall staff while the faculty-student score act as a proxy for the learning and teaching environment of the institution. These results show that no relationship exists between these two indicators, which was evident in the analysis carried out in Table 4.2.

Table 4.2 also revealed that the international faculty score negatively correlates with the overall ranking score. This is because the indicator only looks at the ratio of international faculty staff to the overall staff, which means the seven ranked South African universities are not attracting a sizeable number of overseas staff. Only the University of Cape Town, the University of KwaZulu-Natal and the University of Johannesburg attract a sizeable number of overseas staff, as stated by Hasna (2016). This could also be as a result of the low ratio (five per cent) allocated to the indicator as mentioned by Laura (2022).

Similarly, the research and the overall ranking score are negatively correlated. This could be because researchers in some universities are not paying serious attention to publishing strictly in accredited journals, or their research outputs may be below

standard, or they are publishing research for the money they receive for each paper rather than the quality of the paper being published. This was justified by Hedding's (2019) report, which mentioned that South African researchers rely heavily on journals that do little or nothing to ensure quality. In 2005, the South African government introduced a subsidy system that provides around R100,000 for each research article published in a reputable publication (Sarah, 2017). Despite these attempts, the issue remained (Hedding, 2019). The distribution of the research subsidy cash is another issue related to the negative association between research and overall ranking. Another problem associated with the negative correlation between research and the overall ranking score is how the subsidy fund for research is disbursed. According to David (2019), he explained that the subsidies are split on the basis of the number of authors from each institution which discourages collaboration with researchers from different institutions and countries and has a negative impact on the dissemination of the resulting research. Furthermore, David (2019) revealed that if South Africa hopes to drive quality and innovation, it must stop publication subsidies because, according to him, it is an enemy of research quality. Hedding (2019) explains that the subsidy distribution inhibits academics from various institutions and nations from working together and has a detrimental effect on disseminating the ensuing research since it is based on the number of authors from each institution.

Also, the research and citation per faculty are negatively correlated. This is true because research output has a significant impact on citation per faculty (Nadar, 2013). Therefore, if the research output is low, the citation output is also low. This result corroborates Hedding's (2019) report, where he stated that researchers rely heavily on journals that do little or nothing to ensure quality, affecting the university's citation per faculty.

Similarly, the international faculty and academic reputation scores are negatively correlated, which implies that some universities may be understaffed in respect of international faculty members, which could underestimate their academic reputation scores. Jeaninin's (2019) study also justifies this result by stating that South African institutions do not always have adequate organisational processes to facilitate host

and international staff collaboration, which can affect their academic reputation scores.

Finally, the overall correlation results among the variables depict a sense of managerialism theory. It demonstrates that managerialism is advocated as a theoretical framework for making colleges and universities better at meeting a wider variety of requirements more efficiently. Davis et al. (2014) found evidence of a considerable push toward inspecting the quality of teaching and research, establishing performance indicators and targets, and holding professors and other academics tightly accountable to their funders. The study by Davis et al. (2014), found evidence of a substantial drive towards teaching and research quality inspection, performance indicators and target setting, and significant accountability of academics to their employers. Hence, managerialism represents a distinctive discourse based upon a set of values that justify the assumed right of one group to monitor and control the activities of others (Kolsaker, 2008). Although these managerial practices are considered useful, there is also evidence of detrimental effects on the primary tasks of universities. Henkel (2004) argues that previously taken-for-granted academic ideologies now compete with those of managerialism and neo-liberalism in the university as a corporate enterprise. The result of the study means that South African universities are treated as markets by governments, and associate ranking regime conformity as a way to generate fiscal resources.

A sense of management theory can be gathered from the general correlational findings among the variables. The outcome demonstrates that there is efficiency towards performance in regard to South African universities. As was just indicated, there are around seven South Africa universities in Africa that are rated higher. Managerialism is being practised successfully in this setting as a result of the responsiveness of university administration in South Africa to ensure that universities meet a wider variety of requirements in a manner that is more effective. This was made abundantly clear in the research conducted by Davis et al. (2014), in which the author found evidence of a significant push towards the quality inspection of teaching and research, the establishment of performance indicators and targets, and a significant increase in the accountability of academics to the institutions for whom they work. These administrative approaches are thought to be beneficial; yet, there is

evidence that they have harmful consequences on the fundamental duties that universities are responsible for. According to Henkel (2004), academic ideas that were formerly taken for granted now fight with those of managerialism and neo-liberalism in the university as a business operation. According to the findings of this research (Davis et al. 2014; Henkel, 2004), the governments of South Africa perceives universities as marketplaces and associate ranking regime conformance as a strategy to create fiscal resources.

Despite the widespread acceptance of these management techniques, there is mounting evidence that they negatively impact on the core functions of universities. According to Henkel (2004), managerialism and neo-liberalism have become rival ideologies at the universities as business enterprises, challenging more traditional academic principles. The result of the study means that South African HEIs are seen by the government as a market commodity and then treated as such with the end goal of generating financial resources. This is evidenced by research conducted by (Komljenovic, 2022; Ball, 2012) which also showed that South African HEIs are operated and treated with the end goal of generating financial resources. According to Ball (2012), universities have been transformed into powerful consumer-oriented corporate networks, where public-interest values are seriously challenged. The factors that have contributed to corporatisation and commercialisation are notable, not only in and of themselves, but also because of how they have reframed the orientation and purposes of higher education.

4.4 Main Research Question

The main research question is: *What is the relationship between the metrics and the indicators used in ranking Higher Education in South Africa?*

The regression result is partitioned into six. The partition presents a relationship between the matrix of academic ranking (such as size, focus, research, age, and status) and academic reputation score (see Table 4.4). In the estimation, the study includes ordinary least squares (OLS), fixed and random effects, and the techniques were applied in all the estimations. Ordinary Least Square (OLS) is used to describe the relationship between one or more independent variable and a dependent quantitative variable (Kumar, Kumar, Meena, & Kumar, 2023). Secondly, the study

analyses the relationship between the matrix of academic ranking and the Faculty Student Score (see Table 4.5). Thirdly, the study shows the analysis of the metrics of universities' academic ranking and citations per faculty score (see Table 4.6). Fourthly, Table 4.7 presents the relationship of the metrics on international faculty scores. Fifthly, Table 4.8 presents the relationship of metrics on international students' scores.

Table 0.4

Matrix of academic ranking and reputation score

	(1) OLS	(2) Fixed effect	(3) Random effect
Variables	Academic Reputation Score	Academic Reputation Score	Academic Reputation Score
Size	-0.0752**	-0.199**	-0.0752**
	(0.0310)	(0.0807)	(0.0310)
Focus	0.0518		0.0518
	(0.0448)		(0.0448)
Research	-0.121**	-0.187***	-0.121***
	(0.0455)	(0.0588)	(0.0455)
Age	-0.0101	-0.00594	-0.0101
	(0.0166)	(0.0455)	(0.0166)
Status	0.129**	0.0720	0.129**
	(0.0554)	(0.0653)	(0.0554)
o.Focus		-	
Constant	3.738***	4.306***	3.738***
	(0.169)	(0.289)	(0.169)
Observations	63	63	63
R-squared	0.259	0.334	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 4.4 Column (1) presents the analysis of the relationship between the matrix and academic reputation score using OLS. The finding shows that size significantly negatively impacts academic reputation scores. This implies that the size of a university may not contribute to its academic reputation. This is a new piece of

evidence contrary to the study of Nurdiniah, and Pradika (2017), which suggests that size is likely to influence academic quality. While the finding shows that a unit reduction in size, and research is likely to increase the academic reputation. The university status is likely to increase the academic reputation by 13%. The size of a university may contribute to its academic reputation. As reported by Ake-Little et al. (2020), university size relates to student achievement, teaching, and learning which the reputation of a university are basically. Similarly, whereas status has a significant positive relationship with academic reputation, Jamison (2015) study suggests that status influences higher academic achievement.

Table 4.4 shows that size significantly negatively impacts academic reputation scores. This result implies that the size of a university may not contribute to its academic reputation. This is a piece of new evidence, and it is contrary to the study of Nurdiniah and Pradika (2017), and Jašarević et al. (2011), which suggest that size is likely to influence the quality. Upon reflection, size is not likely to determine the academic quality of universities; instead, the intellectual capacity output of quality members is likely to influence the academic reputation.

Also, Table 4.4 shows that focus has a significant positive relationship with academic reputation scores. This result implies that the focus of a university may contribute to its academic reputation. This is not new evidence as some studies justify these findings, e.g. Mahmut and Remzi's (2014) study, where the researcher stated that some higher education institutions focus on examinations and make them a basic element of the school's reputation. These findings show that irrespectively the university's focus will contribute either positively or negatively to academic reputation.

The results depicted in Table 4.4 show that result implies that a university's research may not contribute to the academic reputation score. This is new evidence contradicting the study of the National Research Council of the National Academics (2022), which stated that university research has contributed to discovery and progress. The reasons for research not contributing to the academic reputation of South African universities may be because South African researchers are relying too much on journals that do little or nothing to ensure quality, according to Hedding (2019).

Similarly, the results from Table 4.4 show that age has a significant negative relationship with academic reputation. This result implies that the age of a university may not contribute to the academic reputation score. This is new evidence consistent with the findings of Umultirank's (2022) research, which found that although established institutions tend to have better reputations, it is not always the case, and age alone is not always indicative of quality.

Also, the results from Table 4.4 show that status has a significant positive relationship with academic reputation. This result implies that the status of a university may contribute to its academic reputation. This is not new evidence, as some studies justify these findings, such as Jamison et al. (2015) and Ritu and Shaik's (2013) study, which suggest that status influences higher academic achievement. These findings show that irrespective of the university's status, it will contribute to its academic reputation.

The results of the study also corroborate the theory used in the present study. According to Collins and Park (2016), since neoliberalism and managerialism are politically and performance-driven systems, rankings are intended to guarantee the alignment of higher education institutions with the prevailing market values through rigorous auditing systems. Rindova et al. (2018) stated that rankings are seen nowadays as some sort of customer product-ratings arrangement competition wherein unlisted or low rated institutions do not have the capacity to launch themselves, in a meaningful way, as leading institutions of higher education. New players can never successfully enter the contest if reputation is weighted seriously towards historically conventional prestige, money and power. If they attempt to enter the contest, such institutions must compete and enter on an equal footing, not of their making, and they can never succeed (Berg et al., 2016). Rankings are about power, profit, and negotiation. In other words, the higher universities are ranked globally, the more research funding they attract, which in turn attracts students who further enhance the university's reputation, thereby creating a self-perpetuating virtuous cycle.

Table 0.5

Matrix of academic ranking and Faculty Student Score

Variables	(1) OLS Faculty Student Score	(2) Fixed effect Faculty Student Score	(3) Random effect Faculty Student Score
Size	-0.0186	-0.0481	-0.0186
	(0.0335)	(0.0913)	(0.0335)
Focus	0.0178		0.0178
	(0.0484)		(0.0484)
Research	-0.0264	-0.0355	-0.0264
	(0.0491)	(0.0665)	(0.0491)
Age	-0.00649	-0.0334	-0.00649
	(0.0179)	(0.0515)	(0.0179)
Status	-0.0141	-0.0170	-0.0141
	(0.0599)	(0.0739)	(0.0599)
o.Focus		-	
Constant	3.098***	3.327***	3.098***
	(0.183)	(0.327)	(0.183)
Observations	63	63	63
R-squared	0.009	0.022	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 4.5 Column (1) shows a negative relationship between size and faculty students. Also, research has a negative relationship with faculty students in South Africa. Specifically, a unit increase in the research will likely reduce faculty students by 2.6%. Similarly, age and status have a negative relationship with faculty students. However, it is not statistically significant. Hence, it is inconclusive.

Table 4.5 revealed that size significantly negatively affected faculty-student scores. This result corroborates the findings of Collins and Park (2016), who stated that some researchers focus their time and energy on research and ignore the needs of

students. This implies that the size of a university may not contribute to the number of faculty students. This is new evidence that contradicts the study of Ayeni and Olowe (2016), which suggests that the increase in population in a school affects class sizes. Class size is synonymous with the number of students in a faculty. (Oriana, Valentino, & Imran, 2009). Upon reflection, size is not likely to determine faculty-student scores; instead, the quality of the academic staff in the university is likely to influence the faculty-student scores. This is similar to the study conducted by Jamison et al. (2015), which showed that teacher quality is central to student performance. The most important question arising on teacher characteristics is what kind of teacher attribute improves student quality. This question was explored by researchers such as Darling-Hammond, 2000); Milanowski, (2014); Rockoff, (2004); Dobbie (2011); Rivkin, Hanushek & Kain, (2005); Kane, Rockoff, Staiger, (2008). All of these studies had the same findings that teacher characteristics significantly affect student performance. Academic staff characteristics such as educational background, experience, certificate status, leadership experience, perseverance, teacher evaluation score, and coursework preparedness are the variables that scholars pay attention to in relation to student achievement. However, the method of assessing academic staff quality in delivering teaching in the classroom is still being debated among researchers.

Table 4.5 also revealed that focus has a significant positive relationship with faculty-student scores. This result implies that the focus of a university may contribute to the number of faculty students. This is expected because a university may decide or prefer to focus on recruiting several students into a faculty, or a university may decide not to–it is a matter of choice. Similarly, age has a negative relationship with faculty students. This implies that the age of a university does not contribute to the faculty-student scores. This is a piece of new evidence.

In addition, status has a negative relationship with faculty students. This implies that the status of a university does not contribute to the number of students on the faculty. This is a piece of new evidence contrary to the study of Haley (2008), which found that a college or university's physical setting influences its ability to attract high-achieving students and professors.

Table 0.6

Matrix of academic ranking and citations per faculty score

Variables	(1) OLS Citations per Faculty Score	(2) Fixed effect Citations per Faculty Score	(3) Random effect Citations per Faculty Score
Size	-0.0579**	-0.163***	-0.0579***
	(0.0223)	(0.0574)	(0.0223)
Focus	0.0363		0.0363
	(0.0323)		(0.0323)
Research	-0.0908***	-0.145***	-0.0908***
	(0.0328)	(0.0418)	(0.0328)
Age	-0.00506	0.0225	-0.00506
	(0.0120)	(0.0324)	(0.0120)
Status	0.146***	0.0911*	0.146***
	(0.0400)	(0.0465)	(0.0400)
o.Focus		-	
Constant	3.479***	3.858***	3.479***
	(0.122)	(0.206)	(0.122)
Observations	63	63	63
R-squared	0.366	0.444	
Number of Unicode		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 4.6 Column (1) presents the analysis of the relationship between matrix and citations per faculty using OLS. The finding shows that size has a significant negative relationship with citations per faculty. It is expected that the size of a university may not contribute to the citations per faculty. The size of a university may not determine the citations per faculty because the important outcome is the intellectual capacity output of quality and not the physical quantity. Similarly, research has a significant negative relationship with citation per faculty. This implies that research output is likely

to be low. The finding shows that a unit reduction in size, and research are likely to increase the academic reputation. Whereas the university status is likely to increase the academic reputation by 15%.

Table 4.6 reveals that size has a significant negative relationship with citations per faculty. This result implies that the size of a university may not contribute to the citation per faculty of a South African university. This is true because a university's size cannot determine citation per faculty but rather the research quality that emanates from the university determines the citation per faculty. Therefore, this is a new piece of evidence.

Also, research has a significant negative relationship with citation per faculty. This implies that a university's research output may not contribute to the citation per faculty of a South African university. This is true because most South African universities' research quality is low. This was evident in Hedding's (2019) report where it was stated that South African researchers rely too much on journals that do little or nothing to ensure quality. Similarly, age has a significant negative relationship with citation per faculty. This implies that the age of a university may not contribute to the citation per faculty score of a South African university, which means that the age of a university does not determine its research quality. This is a new piece of evidence as it corroborates Umultirank's (2022) report where it was stated that age itself is not a sign of quality.

Focus has a significant positive relationship with citation per faculty. This finding implies that the focus of a university may contribute to its citation per faculty score, which simply means that a university's focus determines its research quality. This is new evidence as the report shows that the South African Department of Higher Education has focused on boosting academic productivity by awarding roughly US $ 7,000 for each research paper published in an accredited journal (Hedding, 2019). This is already yielding positive results as the analysis in Table 4.6 justifies the result.

Similarly, status has a significant positive relationship with citation per faculty. This implies that the status of a university may contribute to its citation per faculty score,

which simply means that a university's status determines its research quality. This is a new piece of evidence because the seven South African universities rank much higher than the other African universities (Collier, 2021), which shows that they have good research quality.

Table 0.7

Matrix of academic ranking and international faculty score

Variables	(1) OLS International Faculty Score	(2) Fixed effect International Faculty Score	(3) Random effect International Faculty Score
Size	0.0350	0.120	0.0350
	(0.0483)	(0.131)	(0.0483)
Focus	-0.0303		-0.0303
	(0.0698)		(0.0698)
Research	0.0590	0.0869	0.0590
	(0.0709)	(0.0955)	(0.0709)
Age	0.00984	0.0439	0.00984
	(0.0259)	(0.0739)	(0.0259)
Status	0.0820	0.105	0.0820
	(0.0865)	(0.106)	(0.0865)
o.Focus		-	
Constant	3.817***	3.349***	3.817***
	(0.264)	(0.469)	(0.264)
Observations	63	63	63
R-squared	0.026	0.049	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 4.7 Column (1) presents the analysis of the relationship between the matrix and academic reputation score using OLS. The finding shows that size positively affects international faculty, but it is insignificant. A unit increase in the research will likely increase the international faculty by 5.9%. Also the status of the university contributes

marginally to the international faculty. The status has a positive relationship with international faculty, but it is insignificant. However, the focus has a negative relationship with international faculty.

The result from Table 4.7 from the OLS column revealed that size has a positive relationship with international faculty but is insignificant, which means a unit increase in the research is likely to increase the international faculty by 5.9%. This is a new piece of evidence because it shows that a university's size may likely increase its international faculty.

Similarly, it was revealed that the age of the university contributes marginally to international faculty. This implies that the age of a university may slightly, or only to a limited extent, attract faculty from across the world. This might be true considering the report of Umultirank (2022) that says that the age of a university itself is not a sign of quality which means it cannot attract faculty worldwide. This report supports the result of this finding.

Also, it was revealed that the status of a university has a positive relationship with international faculty, but it is insignificant. This implies that the status of a university insignificantly contributes to international faculty. This is a new piece of evidence as it shows that a university's status may influence the international faculty but insignificantly. Similarly, focus has a negative relationship with international faculty. This implies that focus may not contribute to the international faculty of a university. This is new evidence because it shows that different universities can have different focuses, and all university's focuses may not be towards their international faculties.

The result also corresponds to the globalisation of ranking in academic literature, where Robertson and Olds (2016) contend that globalisation has resulted in unprecedented moves of academics and students worldwide. In South Africa, globalisation entails higher education institutions receiving scholars from foreign nations as well as sending scholars to foreign institutions of higher education, engaging in intercontinental research, and doubling cross-border technical collaboration in the last twenty (20) years (Robertson & Olds, 2016). Globalisation has led to internationalisation and global competitiveness since it facilitates

participation in international scientific endeavours. The OECD (2019) reports that nations with many international students benefit from the students' contributions to local R&D (research & development), while nations with low records of international students find it difficult to take advantage of such external contributions to the national production of human capital.

Table 0.8

Matrix of academic ranking and International Students Score

Variables	*(1)* OLS International Students Score	*(2)* Fixed effect International Students Score	*(3)* Random effect International Students Score
Size	-0.0746**	-0.259***	-0.0746**
	(0.0339)	(0.0867)	(0.0339)
Focus	0.0532		0.0532
	(0.0490)		(0.0490)
Research	-0.117**	-0.184***	-0.117**
	(0.0497)	(0.0631)	(0.0497)
Age	-0.0120	-0.00979	-0.0120
	(0.0181)	(0.0489)	(0.0181)
Status	0.0225	-0.0509	0.0225
	(0.0606)	(0.0702)	(0.0606)
o.Focus		-	
Constant	3.611***	4.350***	3.611***
	(0.185)	(0.310)	(0.185)
Observations	63	63	63
R-squared	0.128	0.243	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 4.8 Column (1) presents the analysis of the relationship between the matrix and academic reputation score using OLS. The finding shows that size has a significant negative relationship with international students. Similarly, research has a significant

negative relationship with international students. Also, age has a negative but insignificant relationship with international students. In contrast, research has a positive relationship with international students. The finding shows that a unit reduction of the size, research and age is likely to increase the academic reputation.

The results from Table 4.8 from the OLS column revealed that size has a significant negative relationship with international students. This implies that size may not contribute to international students in a university. This is a new piece of evidence contrary to the report “International Student Guide to Choosing Your Perfect School” (International student, 2022), which says that university size is an important factor in the college-choosing process for international students. Upon reflection, size is not likely to determine the preference of international students in a university but a high global outlook could.

Similarly, research has a significant negative relationship with international students. This implies that research may not contribute to international students in a university. This is a new piece of evidence which does not exist anywhere in academic literature. According to some research literature, South African universities’ research is of low quality since their researchers rely on journals that do little or nothing to ensure quality (Hedding, 2019).

Age also has a negative but insignificant relationship with international students. This implies that a university’s age may not attract international students. This is new evidence since it was already stated in Umultirank (2022) that age is not a sign of quality. Therefore, the age of a university is not a factor for international students when choosing a university.

The results show that focus has a positive relationship with international students. This result implies that the focus of a university may attract international students. This is new evidence in the academic literature that corroborates the findings of Popoola (2021), who stated that universities focus on attracting international students by understanding how cultural factors influence international students.

4.5 Response to Research Sub-Question 1

Research Sub-question 1 was: *What is the relationship between the indicators and Higher Education performance in South Africa?*

Table 4.9 below reveals the relationship between the indicators and higher education performance in South Africa.

Table 0.9

Indicator of universities ranking on the overall score

	(1)	(2)	(3)
	OLS	Fixed effect	Random effect
Variables	Overall Score	Overall Score	Overall Score
Academic Reputation	0.727***	0.727***	0.727***
	(0.141)	(0.152)	(0.141)
Faculty Student	-0.0691	-0.0691	-0.0691
	(0.134)	(0.145)	(0.134)
Citations per Faculty	1.633***	1.633***	1.633***
	(0.173)	(0.187)	(0.173)
International faculty	0.144	0.144	0.144
	(0.120)	(0.130)	(0.120)
International Students	0.547***	0.547***	0.547***
	(0.0676)	(0.0729)	(0.0676)
Constant	-7.332***	-7.332***	-7.332***
	(0.814)	(0.878)	(0.814)
Observations	63	63	63
R-squared	0.986	0.986	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 4.9 Column (1) presents the analysis of the relationship between the ranking indicator and overall universities' ranking using OLS. The academic reputation significantly impacts the overall ranking score. Similarly, citation per faculty has a

significant positive relationship with overall university ranking in South Africa. Also, an international student has a significant positive relationship with the overall university ranking. The international faculty has a positive relationship with the overall ranking of universities in South Africa. However, faculty-student ranking indicator has a negative relationship with an overall ranking. While the findings show that a unit increase in the academic reputation is likely to increase the overall score of the universities. Similarly, increase in citation per faculty is likely to improve the universities overall score.

The result of the Breusch-Pagan test (0.0782) for heteroscedasticity shows that the p-value is statistically significant; hence, the null hypothesis that variance is constant is rejected. The Hausman test is an asymptotic chi-square test that suggests accepting fixed or random effects. The present study performed the Hausman test (Prob>x^2 = 1.000). The Hausman test showed that the chi-2 (x^2) measure is not statistically significant. This is the probability of chi square. This shows that there is no variation in the data set. This is likely because the variables are constant. This is expected because all the universities in the data set are public institutions and the value for them is constant over time.

Thus, the random effect is preferred for the present study of the South African higher institution ranking. According to Virenrehal (2022), under the null hypothesis, the coefficients of both the fixed effects and random effects models are consistent. However, only the coefficients of the random effects model are efficient. In essence, if the null hypothesis cannot be rejected using the Hausman test, it is best to use random effects. Null hypothesis shows that there is no variation in the data set. The null hypothesis in Breusch-Pagan is to show that there is no variation. This is the post estimation for ordinary least square.

Column (2) shows that academic reputation significantly positively affects the overall ranking score of universities in South Africa using fixed effect. Also, citations per faculty have a significant impact on the overall ranking score. Similarly, the variable international students has a significant positive impact on the overall university ranking in South Africa. The results in Column (3) indicate that size significantly impacts the university's overall ranking using a random-effect model. The results are

similar to those of column (1). Also, citations per faculty have a significant impact on the overall ranking score. Furthermore, international students have a significant positive impact on the overall university ranking in South Africa. However, the faculty-student ranking indicator has a negative relationship with the overall ranking.

The results from Table 4.9 from the OLS column revealed that academic reputation significantly impacts the overall ranking score. This implies that South African universities' academic reputation significantly impacts their overall ranking score. This could be a result of the 40 per cent score allocated to academic reputation on the QS World University Rankings, which greatly impacts the overall ranking score. Also, Larsen (2003) justified the impact of academic reputation by saying that the factor of academic reputation continues to have the most significant impact on the overall ranking. This shows this evidence to be significant, as Collier (2021) confirmed in her report that the seven ranked South African universities have high academic reputations (among the top 1000 universities in the world).

Similarly, citation per faculty has a significant positive relationship with the overall university ranking in South Africa. This implies that the citations per faculty of South African universities positively correlates with the overall ranking. This could be due to the awards programme (Hedding, 2019) which more than doubled all South African publications listed in the Scopus database, as confirmed by Mouton and Valentine’s (2017) study.

Also, international students and faculty positively correlate with the overall university rankings. This correlation implies that South African universities attract faculty and students from around the world, which suggests they possess a strong international brand. This outcome is also evident in Collier's (2021) report.

However, faculty-student has a negative relationship with the overall ranking. This implies that South African universities’ faculty-student ranking indicator has a negative relationship with an overall ranking. This could be due to the low teaching quality of most South African universities (Murray, 2016; Tewari & Ilesanmi, 2020). Nevertheless, the overall analysis showed a significant positive relationship between the indicators and university performance in South Africa.

4.6 Response to Research Sub-Question 2

Research Sub-Question 2 was: What is the validity of the indices used in the ranking?

The tables below, comprising Tables 4.10, 4.11, 4.12, 4.13 & 4.14, show the validity of the indices used in the ranking (such as size, focus, research, age and status), which was tested using the Breusch-Pagan test.

Table 0.10

Matrix of academic ranking and academic reputation score

Variables	(1) OLS Academic Reputation Score	(2) Fixed effect Academic Reputation Score	(3) Random effect Academic Reputation Score
Size	-0.0752**	-0.199**	-0.0752**
	(0.0310)	(0.0807)	(0.0310)
Focus	0.0518		0.0518
	(0.0448)		(0.0448)
Research	-0.121**	-0.187***	-0.121***
	(0.0455)	(0.0588)	(0.0455)
Age	-0.0101	-0.00594	-0.0101
	(0.0166)	(0.0455)	(0.0166)
Status	0.129**	0.0720	0.129**
	(0.0554)	(0.0653)	(0.0554)
o.Focus		-	
Constant	3.738***	4.306***	3.738***
	(0.169)	(0.289)	(0.169)
Observations	63	63	63
R-squared	0.259	0.334	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The Breusch-Pagan test (0.4418) for heteroscedasticity shows in Table 4.10 that the p-value is not statistically significant; hence, the null hypothesis is accepted that variance is constant and anticipates homoscedasticity. This test investigates the validity of the metrics used in the regression. The independent variable's metrics tell us that the error in the equation does not depend on the independent variables.

Table 0.11: Matrix of academic ranking and faculty-student score

Variables	(1) OLS Faculty Student Score	(2) Fixed effect Faculty Student Score	(3) Random effect Faculty Student Score
Size	-0.0186	-0.0481	-0.0186
	(0.0335)	(0.0913)	(0.0335)
Focus	0.0178		0.0178
	(0.0484)		(0.0484)
Research	-0.0264	-0.0355	-0.0264
	(0.0491)	(0.0665)	(0.0491)
Age	-0.00649	-0.0334	-0.00649
	(0.0179)	(0.0515)	(0.0179)
Status	-0.0141	-0.0170	-0.0141
	(0.0599)	(0.0739)	(0.0599)
o.Focus		-	
Constant	3.098***	3.327***	3.098***
	(0.183)	(0.327)	(0.183)
Observations	63	63	63
R-squared	0.009	0.022	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The Breusch-Pagan test (0.7548) for heteroscedasticity shows that the p-value is not statistically significant; hence, the null hypothesis is accepted that the variance is constant and anticipates homoscedasticity. This test investigates the validity of the

metrics used in the regression. Breusch-Pagan test is a statistical test used to determine the presence of heteroscedasticity in a regression model (Andriani, Ali, & Mastrogiorgio, 2017). According to Halunga, Orme, & Yamagata (2017), Heteroscedasticity refers to a situation where the variability of the error term (residuals) in a regression model is not constant across all levels of the independent variables. The study estimates the regression model for Table 4.11. For instance, the dependent variable (overall score) and more independent variables (academic ranking, employer reputation ranking, faculty student ranking, citations per faculty rank, international faculty ranking, and international students Ranking). The study computes the squared residuals from the regression model. These are the differences between the observed values of the dependent variable and the predicted values from the regression equation, squared. Finally, compare the calculated test statistic to the critical value from the chi-square distribution with the appropriate degrees of freedom to determine the significance of heteroscedasticity. If the test statistic is larger than the critical value, it suggests the presence of heteroscedasticity in the regression model.

The Breusch-Pagan test also helps identify cases where the assumption of constant variance (homoscedasticity) is violated. If heteroscedasticity is present, it can lead to inefficient and biased coefficient estimates, misleading hypothesis tests, and unreliable statistical inferences. In such cases, appropriate corrective measures, such as using weighted least squares or robust standard errors, may be necessary to account for the heteroscedasticity in the regression analysis (Halunga et al. 2017; Andriani et al., 2017). The metrics of the independent tells us that the error in the equation does not depend on the independent variable.

Table 0.12: *Matrix of academic ranking and citations per faculty score*

	(1)	(2)	(3)
	OLS	Fixed effect	Random effect
Variables	Citations per Faculty Score	Citations per Faculty Score	Citations per Faculty Score
Size	-0.0579**	-0.163***	-0.0579***
	(0.0223)	(0.0574)	(0.0223)
Focus	0.0363		0.0363

Variables	(1) OLS Citations per Faculty Score	(2) Fixed effect Citations per Faculty Score	(3) Random effect Citations per Faculty Score
	(0.0323)		(0.0323)
Research	-0.0908***	-0.145***	-0.0908***
	(0.0328)	(0.0418)	(0.0328)
Age	-0.00506	0.0225	-0.00506
	(0.0120)	(0.0324)	(0.0120)
Status	0.146***	0.0911*	0.146***
	(0.0400)	(0.0465)	(0.0400)
o.Focus		-	
Constant	3.479***	3.858***	3.479***
	(0.122)	(0.206)	(0.122)
Observations	63	63	63
R-squared	0.366	0.444	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The Breusch-Pagan test (0.5640) for heteroscedasticity shows that the p-value is not statistically significant; hence, the null hypothesis is accepted that the variance is constant and anticipates homoscedasticity. This test investigates the validity of the metrics used in the regression. The metrics of the independent variable tells us that the error in the equation does not depend on the independent variable.

Table 0.13:

Matrix of academic ranking and international faculty score

Variables	(1) OLS International Faculty Score	(2) Fixed effect International Faculty Score	(3) Random effect International Faculty Score
Size	0.0350	0.120	0.0350

Variables	(1) OLS International Faculty Score	(2) Fixed effect International Faculty Score	(3) Random effect International Faculty Score
	(0.0483)	(0.131)	(0.0483)
Focus	-0.0303		-0.0303
	(0.0698)		(0.0698)
Research	0.0590	0.0869	0.0590
	(0.0709)	(0.0955)	(0.0709)
Age	0.00984	0.0439	0.00984
	(0.0259)	(0.0739)	(0.0259)
Status	0.0820	0.105	0.0820
	(0.0865)	(0.106)	(0.0865)
o.Focus		-	
Constant	3.817***	3.349***	3.817***
	(0.264)	(0.469)	(0.264)
Observations	63	63	63
R-squared	0.026	0.049	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The Breusch-Pagan test (0.5176) for heteroscedasticity shows that the p-value is not statistically significant; hence, the null hypothesis is accepted that variance is constant and anticipates homoscedasticity. This test investigates the validity of the metrics used in the regression. The metrics of the independent variable tell us that the error in the equation does not depend on the independent variable.

Table 0.14: *Matrix of academic ranking and International Students Score*

Variables	*(1)* OLS International Students Score	*(2)* Fixed effect International Students Score	*(3)* Random effect International Students Score
Size	-0.0746**	-0.259***	-0.0746**
	(0.0339)	(0.0867)	(0.0339)
Focus	0.0532		0.0532
	(0.0490)		(0.0490)
Research	-0.117**	-0.184***	-0.117**
	(0.0497)	(0.0631)	(0.0497)
Age	-0.0120	-0.00979	-0.0120
	(0.0181)	(0.0489)	(0.0181)
Status	0.0225	-0.0509	0.0225
	(0.0606)	(0.0702)	(0.0606)
o.Focus		-	
Constant	3.611***	4.350***	3.611***
	(0.185)	(0.310)	(0.185)
Observations	63	63	63
R-squared	0.128	0.243	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The Breusch-Pagan test (0.1911) for heteroscedasticity shows that the p-value is not statistically significant; hence, the null hypothesis is accepted that variance is constant and anticipates homoscedasticity. This matrix investigates the validity of the metrics used in the regression. The metrics of the independent variable tell us that the error in the equation does not depend on the independent variable.

The results of the analysis above are similar to the study of Bastedo and Bowman (2011). They observed that it was inevitable that university rankings are intrinsically

bound to the institution's reputation. This is corroborated by the empirical evidence that the authors collected in their interactions with college heads. For example, 76% of the institution heads who were interviewed observed that they constantly monitor the performance of their peer institutions in the country, and 50% admitted that they continuously monitor their international peers. A further 57% noted that their collaborations and joint research exercises were influenced by the need to improve the institution's ranking. This prioritisation of rankings when collaborating and having joint research exercises has been confirmed by Holm and Malete (2010), who note that universities are usually reluctant to enter into partnerships with lower-ranked institutions as they feel that this will adversely affect their rankings.

Hazelkorn (2011b) observes that since rankings are bound to an institution's reputation, this has also affected hiring practices as employers increasingly tend to prefer staff members coming from more reputable institutions. According to Wapman Zhang, Clauset (2022), it was revealed that no university would hire a graduate from a university less prestigious because it can affect the reputation of a university. According to DiRamio (2009), this has been happening for a while, even before ranking systems actually existed. Additionally, when it comes to partnerships between industry and academia, the author also notes a tendency to favour the more reputable and higher ranked institutions rather than the ordinary ones which could benefit from the partnership. The author cites examples from the Employers' Association in Germany, which admitted to being inclined to partner with higher-ranked institutions. Similarly, Boeing revealed that they use performance data in the form of rankings to determine the partners they can work with in research. The inputs all support the assertion that rankings are a key determinant in research partnerships and collaborations, even outside academia.

4.7 Response to Research Sub-Question 3

Research Sub-Question 3 was: How does the concept of ranking contribute to the quality of ranking in South African Universities?

This section, which comprises Tables 4.15, 4.16, 4.17, 4.18 & 4.19, reveals how ranking contributes to ranking quality in South African Universities using the Hausman test.

Table 0.15: ***Matrix of academic ranking and academic reputation score***

Variables	(1) OLS Academic Reputation Score	(2) Fixed effect Academic Reputation Score	(3) Random effect Academic Reputation Score
Size	-0.0752**	-0.199**	-0.0752**
	(0.0310)	(0.0807)	(0.0310)
Focus	0.0518		0.0518
	(0.0448)		(0.0448)
Research	-0.121**	-0.187***	-0.121***
	(0.0455)	(0.0588)	(0.0455)
Age	-0.0101	-0.00594	-0.0101
	(0.0166)	(0.0455)	(0.0166)
Status	0.129**	0.0720	0.129**
	(0.0554)	(0.0653)	(0.0554)
o.Focus		-	
Constant	3.738***	4.306***	3.738***
	(0.169)	(0.289)	(0.169)
Observations	63	63	63
R-squared	0.259	0.334	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The study performed the Hausman test (Prob>chi2 = 0.2523), which revealed that random effect is a suitable model for this analysis. Column (2) shows that size significantly positively affects academic reputation using fixed effect. Most of the results are similar to each other.

The result from Table 4.15 shows that size significantly positively affects academic reputation using fixed effect. This implies that size contributes to the academic reputation of a university using a fixed effect. This is new evidence as Nurdiniah and Pradika's (2017) and Jašarević et al.'s (2011) studies justify that size is likely to influence quality. Upon reflection, size is not likely to determine the academic quality of universities: instead, the intellectual capacity output of quality members is likely to influence the academic reputation. In Column (3), the study applies random effect. The findings shown are similar to those of column (1). The size and status have a significant negative influence on academic reputation.

Also, the results from Table 4.15 show that size has a significant negative relationship with academic reputation scores using random effect. This result implies that the size of a university may not contribute to its academic reputation.
Also, the results from Table 4.16 show that status significantly negatively influences academic reputation on random effect. This implies that status may not contribute to the quality of ranking in South African Universities. This is new evidence in academic literature as other evidence shows that status influences higher education achievement and reputation (Jamison et al., 2015; Ritu & Shaik, 2013).

Table 0.16

Matrix of academic ranking and faculty-student score

Variables	(1) OLS Faculty Student Score	(2) Fixed effect Faculty Student Score	(3) Random effect Faculty Student Score
Size	-0.0186	-0.0481	-0.0186
	(0.0335)	(0.0913)	(0.0335)
Focus	0.0178		0.0178
	(0.0484)		(0.0484)
Research	-0.0264	-0.0355	-0.0264
	(0.0491)	(0.0665)	(0.0491)
Age	-0.00649	-0.0334	-0.00649
	(0.0179)	(0.0515)	(0.0179)
Status	-0.0141	-0.0170	-0.0141
	(0.0599)	(0.0739)	(0.0599)
o.Focus		-	
Constant	3.098***	3.327***	3.098***
	(0.183)	(0.327)	(0.183)
Observations	63	63	63
R-squared	0.009	0.022	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The study performed the Hausman test (Prob>chi2 = 0.9593), which revealed that the random effect is a suitable model for this analysis. Column (2) shows that size negatively influences faculty students using fixed effect. Table 4.16 above revealed that size significantly negatively influences faculty-student scores using fixed effect. This implies that the size of a university may not contribute to the number of faculty students. This is new evidence that contradicts the study of Ayeni and Olowe (2016), who suggest that the increase in population in a school affects the class sizes. Class size is synonymous with the number of students in a faculty (Oriana, Valentino, &

Imran, 2009). Upon reflection, size is not likely to determine faculty student score, rather, the quality of the academic staff in the university is likely to contribute to the faculty student score. Column (3) presents a similar result to column (1). The finding shows that size, age and status have a negative influence on faculty students using random effect techniques.

Similarly, Table 4.16 above revealed that size has a significant negative influence on faculty-student scores using random effect. This implies that a university's size may not contribute to the number of faculty students. This is new evidence that is contrary to the study of Ayeni and Olowe (2016), where they suggest that the increase in population in a school affects the class sizes. Class size is synonymous with the number of students in a faculty (Oriana et al., 2009). Upon reflection, size is not likely to determine faculty-student scores; instead, the university's academic staff's quality is likely to contribute to the faculty-student scores.

Also, Table 4.16 above revealed that age significantly negatively influences faculty-student scores using random effect. This result implies that the age of a university may not contribute to the number of faculty students, which is true because the age of a university does not determine the number of faculty students. This result is new evidence in the academic literature.

Similarly, Table 4.16 above revealed that status significantly negatively influences faculty-student scores using random effect. This implies that the status of a university does not contribute to the number of students on the faculty. This is a piece of new evidence that contradicts the study of Haley (2008), where it was stated that the physical environment of a university or college campus affects the recruitment of both the best and the brightest students and faculty.

Table 0.17: *Matrix of academic ranking and Citations per Faculty Score*

Variables	(1) OLS Citations per Faculty Score	(2) Fixed effect Citations per Faculty Score	(3) Random effect Citations per Faculty Score
Size	-0.0579**	-0.163***	-0.0579***
	(0.0223)	(0.0574)	(0.0223)
Focus	0.0363		0.0363
	(0.0323)		(0.0323)
Research	-0.0908***	-0.145***	-0.0908***
	(0.0328)	(0.0418)	(0.0328)
Age	-0.00506	0.0225	-0.00506
	(0.0120)	(0.0324)	(0.0120)
Status	0.146***	0.0911*	0.146***
	(0.0400)	(0.0465)	(0.0400)
o.Focus		-	
Constant	3.479***	3.858***	3.479***
	(0.122)	(0.206)	(0.122)
Observations	63	63	63
R-squared	0.366	0.444	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The study performed the Hausman test (Prob>chi2 = 0.1299), which revealed that random effect is a suitable model for this analysis. Column (2) shows that size significantly negatively affects citations per faculty using fixed effect. The result from Table 4.17 reveals that size has a significant negative relationship with citations per faculty using fixed effect. This result implies that the size of a university may not contribute to the citation per faculty of a South African university. This is true because a university's size cannot determine the citations per faculty but the research quality

that emanates from the university determines the citation per faculty. Therefore, this is a new piece of evidence.

Column (3) presents the finding that size, research and status significantly negatively impact citation per faculty, and the result is similar to that of column (1). Similarly, it was revealed that size has a significant negative relationship with citations per faculty using random effect. This result implies that the size of a university may not contribute to the citations per faculty of a South African university. This is true because a university's size cannot determine citations per faculty, but the research quality that emanates from the university determines the citation per faculty. Therefore, this is a new piece of evidence.

Also, research has a significant negative impact on citation per faculty. This implies that a university's research output may not contribute to the citations per faculty of a South African university. This is true because, according to the literature, most South African universities' research quality is low. This was evident in Hedding's (2019) report, where it was stated that South African researchers rely too much on journals that do little or nothing to ensure quality.

Similarly, status has a significant negative impact on citations per faculty. This implies that the status of a university may not contribute to its citations per faculty score which simply means that the status of a university does not determine the university's research quality. This was evident in the AAFP (2020) report, stating that status does not determine quality. This means that a university's status may negatively impact research quality.

Table 0.18

Matrix of academic ranking and international faculty score

	(1)	**(2)**	**(3)**
Variables	OLS International Faculty Score	Fixed effect International Faculty Score	Random effect International Faculty Score
Size	0.0350	0.120	0.0350

	(0.0483)	(0.131)	(0.0483)
Focus	-0.0303		-0.0303
	(0.0698)		(0.0698)
Research	0.0590	0.0869	0.0590
	(0.0709)	(0.0955)	(0.0709)
Age	0.00984	0.0439	0.00984
	(0.0259)	(0.0739)	(0.0259)
Status	0.0820	0.105	0.0820
	(0.0865)	(0.106)	(0.0865)
o.Focus		-	
Constant	3.817***	3.349***	3.817***
	(0.264)	(0.469)	(0.264)
Observations	63	63	63
R-squared	0.026	0.049	
Number of Uni_code		9	9

*Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1*

The present study performed the Hausman test (Prob>chi2 = 0.8859), which revealed that the random effect was a suitable model for this analysis. Column (2) presents that size positively affects international faculty using fixed effect. Also, the research has a positive influence on the international faculty. Similarly, age and status have a positive impact on the international faculty.

Size has a positive effect on international faculty using fixed effect. This is new evidence contrary to Smeby & Try's (2005) study, which stated that size has no positive impact on international faculty.

Similarly, research has a positive effect on international faculty using fixed effect. The study's results corroborate Hedding's (2019) study, where they stated that universities recruiting and retaining the best scholars for research enhances the contribution of international faculty.

Similarly, it was revealed that the university's age positively impacts international faculty using fixed effect. This implies that the age of a university may slightly or only to a limited extent attract faculty from across the world. This might be true considering the report of Umultirank (2022) that says that the age of a university itself is not a sign of quality which means it cannot attract faculty worldwide. This report confirms the result of this finding which is new academic literature evidence.

The results also revealed that a university's status positively impacts international faculty using fixed effect. This implies that the status of a university significantly contributes to international faculty. This is a new piece of evidence as it shows that a university's status may contribute to its international faculty.

In Column (3), the study applies random effect; the findings present that size, research, age, and status positively impact international faculty. Size has a positive effect on international faculty using random effect. This is a new piece of evidence contrary to Smeby & Try's (2005) study where they stated that size had no positive impact on international faculty. Similarly, research has a positive effect on international faculty using random effect. The result of the study corroborates Kim's (2011) findings, which stated that when universities recruit and retain the best scholars for research, it enhances the contribution of international faculty.

Similarly, it was revealed that the university's age positively impacts international faculty using random effect. This implies that the age of a university may slightly, or only to a limited extent, attract faculty from across the world. This might be true considering the report of Umultirank (2022) that says that the age of a university in itself is not a sign of quality which means it cannot attract faculty from across the world. This report confirms the findings, which are new academic literature evidence.

The results also revealed that a university's status positively impacts international faculty using random effect. This implies that the university's status significantly contributes to international faculty. This is a new piece of evidence as it shows that the status of a university may contribute to an international faculty.

Table 0.19: *Matrix of academic ranking and International Students Score*

Variables	(1) OLS International Students Score	(2) Fixed effect International Students Score	(3) Random effect International Students Score
Size	-0.0746**	-0.259***	-0.0746**
	(0.0339)	(0.0867)	(0.0339)
Focus	0.0532		0.0532
	(0.0490)		(0.0490)
Research	-0.117**	-0.184***	-0.117**
	(0.0497)	(0.0631)	(0.0497)
Age	-0.0120	-0.00979	-0.0120
	(0.0181)	(0.0489)	(0.0181)
Status	0.0225	-0.0509	0.0225
	(0.0606)	(0.0702)	(0.0606)
o.Focus		-	
Constant	3.611***	4.350***	3.611***
	(0.185)	(0.310)	(0.185)
Observations	63	63	63
R-squared	0.128	0.243	
Number of Uni_code		9	9

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The present study performed the Hausman test (Prob>chi2 = 0.1410), which revealed that random effect is a suitable model for this analysis.

Column (2) shows that size and research significantly influence the international student reputation using fixed effect. Also, status negatively impacts international students. It was revealed that size has a significant negative influence on the international student's reputation using the fixed effect. This is a new piece of evidence contrary to the report "International Student Guide to Choosing Your Perfect School" (Internationalstudent, 2022), which says that a university's size is an

important factor in the college-choosing process for international students. Upon reflection, size is not likely to determine the preference of international students for a university but a high global outlook is.

Similarly, research significantly negatively influences international students using fixed effect. This implies that research may not contribute to international students in a university. This is a new piece of evidence which does not exist anywhere in academic literature. According to the literature, South African universities' research does appear to be of low quality since many researchers rely too much on journals that do little or nothing to ensure quality (Hedding, 2019). In Column (3), the study applies random effect. The finding reveals that size and research significantly negatively influence international students. The result implies that the size of a university may not influence international students; instead the status of the school might influence international students. It was revealed that size significantly negatively influences the international student's reputation using random effect. This is a new piece of evidence contrary to the report "International Student Guide to Choosing Your Perfect School" (Internationalstudent, 2022), which says that university size is an important factor in the college-choosing process for international students. Upon reflection, size is not likely to determine the preference of international students for a university, but a high global outlook might determine the preference of international students. Similarly, research significantly negatively influences international students using random effects. This implies that research may not contribute to an international student in a university. This is new evidence that does not exist anywhere in academic literature. According to the literature, it does appear that research conducted in South African Universities is of low quality, as researchers tend to rely too much on journals that do little or nothing to ensure quality (Hedding, 2019).

Studies from academic literature also contribute factors to the result question above according to Brusoni et al.'s (2014) study. They identified learning factors including the quality of the academic curriculum, the quality of the research curriculum and its process and the quality of the learning facilities. They also consider the lecture theatre and access to other platforms that will aid the learning process of the students, which include virtual libraries and offline libraries where students can access information to

meet their learning needs. Bradley et al. (2015) stated that teaching factors include the qualification and expertise of the teaching faculty and the quality of the teaching aids used by the teaching faculty to communicate the crux of each curriculum and improve the learning experience of the students.

4.8 Conclusion

Based on the interpretation of data, some findings emerged. A major finding from the data is that the size of a university may not contribute to its academic reputation. This is a piece of new evidence. This is contrary to earlier studies that suggest that size is likely to influence the quality. The data also revealed that rather than size influencing academic reputation, the intellectual capacity output of quality members is likely to influence the academic reputation.

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CHAPTER 5
SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter of the case study presents the discussion, conclusions, and recommendations based on the findings presented in Chapter 4 above. The study had the following four research objectives, with the overall objective being to determine the relationship between the metrics and the indicators in ranking Higher Education Institutions in South Africa. The sub-objectives are listed below:

- To determine the relationship between the indicators and Higher Education Institutions' performance in South Africa;
- To determine the validity of the indices used in the ranking; and
- To determine how ranking contributes to the quality of ranking in South African Universities.

5.2 Discussion

5.2.1 *The Relationship Between the Metrics and the Indicators in Ranking Higher Education*

The relationship between the metrics of academic ranking (such as size, focus, research, age, and status) and academic reputation score was analysed to evaluate the indicators used in ranking South African universities. The regression result was partitioned into six sections, one for each higher education ranking indicator, such as academic reputation score, faculty-student score, citations per faculty score, international faculty score, and international students score.

The relationship between the metrics and academic reputation score was well analysed. It was revealed that size, research and age have significant negative relationships with academic reputation scores. In contrast, both focus and status have significant positive relationships with academic reputation scores. It can be deduced that each academic ranking matrix has a significant relationship with academic reputation scores. Since the reputation score reflects a school's academic strength in

the eyes of other academic professionals, it is valid to say South African universities have good reputations.

Similarly, the relationship between the matrix and faculty-student score was also analysed. It was revealed that size has a significant negative relationship with faculty-student scores, while research and status have negative relationships with the faculty-student score. On the other hand, focus has a significant positive relationship with the faculty-student score. It can be deduced that each academic ranking matrix has a significant relationship with the faculty-student score.

The relationship between the matrix and citations per faculty score was also analysed. It was revealed that size, research and age have significant negative relationships with citations per faculty. On the other hand, focus and status have significant positive relationships with citations per faculty. It can be deduced that each academic ranking matrix has a significant relationship with academic citations per faculty.

The relationship between the metrics and international faculty scores was also analysed. It was revealed that size correlates positively with international faculty scores, but is not significant. Age and focus have negative relationships with international faculty scores. Only the status of a university has a positive relationship with the international faculty score. It can be deduced that a relationship exists between each metric and the international faculty score, but some are not significant. Finally, the relationship between the metrics and international students' score was analysed. It was revealed that size and research have significant negative relationships with international student scores. Age has a negative relationship with international student scores but is not significant. On the other hand, focus has a positive relationship with the international student score.

It can be deduced that there is a relationship between each metric and the international student score. While some are significant, others are not.

5.2.2 *The Relationship Between the Indicators and Higher Education Institution Performance in South Africa*

The relationship between the indicator variables such as academic reputation score, faculty-student score, citation per faculty, international faculty, and international student against the higher education performances (Overall score) in South Africa was analysed to evaluate the indicators used in ranking South African universities. This was presented in an OLS.

It was revealed that using fixed effect, academic reputation has a significant positive effect on the overall ranking score of universities in South Africa. Also, citations per faculty have a significant impact on the overall ranking score. Similarly, international students have a significant positive impact on the overall university ranking in South Africa. While using random effect, size has a significant positive impact on the university's overall ranking. Also, citations per faculty and international students have a significant impact on the overall ranking score in South Africa. However, faculty-student has a negative relationship with the overall ranking. The result of the analyses was able to justify the relationship between the indicators and Higher Education Institutions' performance except for faculty-student, which has a negative relationship with the overall ranking, which could be a result of the low teaching quality of most South African universities.

5.2.3 *The validity of the indices used in the ranking*

The validity of the indices used in the ranking was tested to evaluate the indicators used in ranking South African universities. The validity of the metrics of academic ranking was tested, as were the faculty-student score and the academic reputation score. The validity of the metrics of academic ranking and citations per faculty score was also tested. The validity of academic ranking and international faculty score was tested. Finally, the validity of academic ranking and International Students' Score was tested. The Breusch-Pagan test was used for the overall indices used in the ranking. It was revealed that homoscedasticity was anticipated in the Breusch-Pagan test carried out, which describes that the relationship between the independent and dependent variables was the same across all values of the independent variables. Analsying the metrics of academic ranking (the dependent value) and the independent values (the academic reputation score, the faculty-student score, the

citations per faculty score, the international faculty score, and international student score) show that in all cases the p-value is not statistically significant; hence, the null hypothesis is accepted that variance is constant and anticipates homoscedasticity.

Heteroscedasticity is represented by these scenarios because this changes depending on the value of the independent variable. According to Knaub (2018), Heteroscedasticity is when the standard deviations of a predicted variable of an independent variable or as related to previous time periods are non-constant. In other words, Heteroscedasticity is when the variance of the errors is not constant across observations.

Therefore, this demonstrates that the validity of university ranking indices is extremely important because it will enable South African universities to play significantly higher in terms of ranking while simultaneously utilising their resources to significantly improve their brand name and ranking indices, which are based on a university's research output, internationalisation, reputation, and general globalisation.

5.2.4 *How Does Ranking Contribute to the Quality of Ranking in South African Universities*

The influence of ranking on the quality of ranking in South African universities was analysed to evaluate the indicators used in ranking South African universities. The regression result was partitioned into six, one for each higher education ranking indicator such as academic reputation score, faculty-student score, citations per faculty score, international faculty score and international students score.

The influence between the metrics and academic reputation score was well analysed. It was revealed that size has a significant positive effect on academic reputation using a fixed effect. The size and status have a significant negative influence on academic reputation using random effect. Also, with regards to the influence between the metrics of academic ranking and faculty-student score, it was revealed that size has a significant negative influence on faculty-student scores using a fixed effect. Size, age, and status negatively influence faculty students using random effect techniques. Similarly, with regard to the influence of the metrics of academic ranking and citations per faculty score, it was revealed that size has a significant negative effect on citation per faculty using a fixed effect. It was also revealed that size, research, and status

have a significant negative influence on citation per faculty using random effect. Also, on the influence of the metrics of academic ranking and international faculty score, it was revealed that size, research, and status have a positive effect on international faculty using a fixed effect. While using random effect, size, research, age, and status have a positive effect on international faculty using random effect. Finally, the influence of the metric of academic ranking and international students' scores were analysed, and it was revealed that size and research have a significant negative influence on the international student reputation using a fixed effect. Also, size and research have a significant negative influence on the international student reputation using random effect. In summary, there is a significant influence of ranking on South African Universities.

There is evidence to suggest that ranking systems have had a considerable influence on higher education institutions, either individually or as a group. This may be said about the institutions themselves or higher education as a whole. These pieces of evidence, whether anecdotal or factual, have offered ample indication of how ranking systems have altered the landscape of higher education.

The proliferation of ranking systems has had a detrimental effect on the credibility of many establishments, as well as the senior management that works inside these establishments. For instance, as a result of definitional revisions, the University of Malaya, which is Malaysia's oldest and one of the best institutions, fell 80 places in the THES rankings even though it did not see any fall in the actual performance of its students. This led to the resignation of the Vice-Chancellor and brought the institution into disgrace since it had said in advertising published two months before the release of the 2005 THES results that it aspired to be one of the top 50 universities in the world by the year 2020. (Alfan and Othman, 2005). The rankings have impacted national governments, notably concerning the distribution of funds to institutions in South Africa. For instance, as a result of an increase in the number of competing new priorities for the financing of South Africa's public institutions, the imposition of tuition fees and the use of student loans as a supplement to the government's appropriations have become essential (Ntshoe & De Villiers, 2013).

Numerous experts on rankings and administrators of universities agree that the quality of a ranking's contribution to a university system influences student choice when picking an institution. This is the consensus among ranking researchers (Bhandari, 2006). Additionally, the quality contribution that rankings make to universities may affect how people perceive the contributions that universities make to their local communities, countries, and, increasingly, the global community as a whole (The Washington Monthly College Rankings, 2006). Despite the many objections raised about the procedures used in ranking systems, these systems nevertheless seem to be influencing the actions of institutions (OECD, 2006). The planning and decision-making processes inside higher education institutions are being impacted by rankings (Marginson, 2007). According to the indicators and metrics used in the research, there is no question that this finding conforms to the conclusion that ranking adds to the quality of ranking at institutions located in South Africa.

5.2.5 ***Contribution to Theory***

In the present research study, two theories are adopted for the study: the managerialism theory and neoliberalism theory. The study contributed to the existing theory because it explains how managerialism and neoliberalism are used as regulatory frameworks within South Africa's higher education. The research was useful since it shed light on the implementation of managerialism and neoliberal pedagogical tenets at South African universities. These concepts are based on accountability, transparency, reporting, audit, and performance cultures, as stated by Van der Walt (2017). This research will help improve management theory and the metrics used to rank and evaluate higher education in South Africa. Similarly, this research will contribute to neoliberalism by elucidating the criteria used to rank higher education in South Africa. Neoliberalism mandated that universities and colleges be viewed as markets by governments and that governments use compliance with ranking regimes to generate financial resources.

According to Van der Walt (2017), these regulations are located around accountability, transparency, reporting, audit and performance cultures. This study will contribute to performance indicators and rankings used in South African universities in terms of managerialism theory. Also, this research will add to our understanding of

neoliberalism by delving into the rationale behind South Africa's ranking system for higher education institutions, given that neoliberalism mandates that universities and colleges be managed like businesses to maximise revenue.

*5.2.6 **Contribution to Practice***

Globally, rankings are utilised by policy and decision-makers of HEIs, government agencies, and stakeholders such as donors, the media, parents/guardians and students (Thoenig & Paradeise, 2018). More than 18 thousand colleges and universities may be found in different parts of the globe. Those in the top 500 would represent the top three per cent of achievers globally (Simon & Marijk, 2007). Nonetheless, rankings have caused the public, politicians, and stakeholders to believe that only those among the top 20, 50, or 100 deserve the label of "great," which is a result of faulty logic (Simon & Marijk, 2007).

According to popular belief, a global rivalry driven by rankings is draining the world's scarce resources. However, it is also obvious that there is little value to society or all students by focusing on the best colleges, sometimes referred to as world-class. Although rankings have been criticised for being flawed in terms of methodology, data sources, and even the very concept itself, their impact and relevance continue to grow well beyond the realm of higher education due to the information they provide about national and institutional competitiveness as well as the shifting geopolitical and knowledge landscapes. The endurance of these groups is linked to their veneration of supposedly superior people in a global economy where the ability to attract and retain highly skilled workers, access to capital, and control over commercial and political networks are all crucial for survival (Simon & Marijk, 2007). This study will contribute to the practice of ranking in that rankings are only used as part of the overall quality assurance, assessment or benchmarking system.

*5.2.7 **Methodological Contribution***

The methodological contribution made by this study was the application of indicators that were utilised in the South African Ranking System. University rankings and the Internationalisation of rankings are two examples of further methodological contributions. In conclusion, a methodological contribution involves determining whether or not it is permissible to use theoretical notions and theories that were

created in other settings. Studies conducted in the context of the indicators that are used for rating universities in Europe and Africa have raised questions about the application of certain research theories and models that were created in other developed nations. This is because of the contrasts in these regions' political and cultural contexts. The effective use of these theoretical frameworks within the scope of this research contributes to the analysis of ranking indicators for institutions in South Africa. The technique that was used also contributes to the findings of the research in the sense that it sheds light on the performance of South African universities and highlights the areas in which those institutions have room for improvement.

5.3 Recommendations

Regarding institutions' role and functions inside national higher education systems, rankings have a paradoxical and distorting influence. When determining rankings, research is an important factor to consider. This has a chilling effect on institutional diversity. Whatever their circumstances, capabilities, or available resources, all institutions seek to achieve the position of being research-intensive. This has been the most significant obstacle in developing the kind of differentiated system required to meet the requirements for knowledge and skills in South Africa. Differentiation would be based on a continuum of institutional types, with some institutions focusing on providing vocational and technical diplomas, others providing undergraduate formative and professional degrees, and research-intensive institutions concentrating on providing postgraduate degrees and conducting research.

In the meanwhile, teaching is considered a lowly profession. The primary sign of success is determining whether or not research output objectives are met. This generates cash and improves ranks at the same time. Senior professors, who are often more prolific in terms of research, are sometimes excused from teaching undergraduate students so that they can concentrate on research instead. This makes the educational experience for the pupils less meaningful. They are not made aware of the innovations that are taking place at the forefront of the topic of study that they have selected, which would arouse their curiosity and enthusiasm.

The factors that are employed in all of the ranking systems, including research outputs and revenue, staff-student ratios, foreign staff and students, staff credentials, and so on, all favour institutions that are located in industrialised countries. And although some emerging nations, like China, are making inroads into the top 100, this is because they have had significant economic development maintained over time. Because of this, significant expenditures on higher education have been made, which are often beyond reach for underdeveloped nations.

It is time for South African colleges to withdraw from participating in this game. One of the recommendations is that their position in international rankings should not determine the purpose of South African institutions. They need to focus on developing a higher education system that is both of high quality and adaptable to the problems South Africa will confront in the 21st century. This necessitates establishing a higher education system that is both varied and distinctive, founded not on the market-driven rivalry that is the outcome of participation in global rankings, but rather on the cooperative efforts of various institutions.

5.4 Limitations of the Study

Ranking universities is a complex, contentious, and a politically charged endeavour. Many of the hundreds of university rating systems available at the national and international levels are at odds with one another. Despite these limitations and with due caution, the researcher assumes that the limitations may not have an adverse impact.

5.5 Conclusion

In South Africa, performance-based assessments and attempts to optimise, frame, and govern the lives of academics are part of the practices of neoliberalism and managerialism used to evaluate higher education institutions. Today, ranking is locking South Africa's higher education into a rival field in which differently situated agents and institutions of higher education compete in an endless struggle to achieve their goals or interests. This field is a competitive field because South Africa's higher education is currently being locked into a rival field by ranking. The discourses of excellence and quality are now supported by output-centred financing, performance metrics, economic value measures, impact and relevance tests, and connections

between funding agencies based on audits, contracts, and accountability. The implications of this finding for the future of higher education in South Africa and the people of that country need to be questioned.

Regarding regulating higher education in South Africa, surveillance politics play an equal role. Quality assurance reigns supreme as the accrediting tool and device used to evaluate compliance. Rankings in higher education are a manifestation of a global battle for excellence in South Africa. They continue to be used to determine the standing of the higher education institutions, measure the quality and performance of such higher education institutions, and gauge their international competitiveness.

The rankings of South Africa's higher education institutions are also a weapon of managerialism, which involves rebuilding the purpose of higher education institutions and the meaning of higher education. Rankings are prevalent as part of various politically energised, performance-driven kings of governance. Their purpose is to ensure, via rigorous auditing systems, that all institutions of higher education in South Africa are aligned with the principles of the market. These are the impressions that worldwide rankings and the bodies that compile them provide on Africa's higher education institutions. It is almost like a game of commerce, in which structural factors that genuinely define quality in those nations are simply ignored; this is also the situation in South Africa. We have been able to analyse each research question under the umbrella of the research title to evaluate the indicators used in ranking higher education in South Africa. The result has shown it is essential to assess the indicators used in ranking, with more of the indicators having more influence on the ranking of higher education in South Africa. This is evident in the study by Santiago & Carvalho (2004) where they stated that managerialism involves rebuilding the purpose of higher education institutions and the meaning of higher education. This result has shown that five “top” selected research-oriented South African universities will be able to compete with other institutions globally, regionally and nationally as long as research performance continues to be used as a sole indicator for all institutions. The result has shown it is essential to assess the indicators used in ranking with more of the indicators having more influence on the ranking of higher education in South Africa. This result has shown that five ‘top’ selected research-oriented South African universities do not have the capacity to be able to compete with other institutions

globally as long as research performance continues to be used as an exclusive indicator for all institutions. Hence, South African universities will continue to be ranked above other universities in Africa.

We should note that higher education rankings are a worldwide phenomenon, tied to the desire for accurate information on the quality of teaching provided and the standing of HEIs delivering it. They are also connected to and further drive rivalry among universities in South Africa. Most systems of rankings tend to accentuate vertical disparities between institutions. At the same time, they mask horizontal disparities, and variances of purpose and kind. Despite the advantages of horizontal variety in higher education, league tables have a strong appeal, independent of veracity problems, the applications to which the data are put, and the implications in system organisation. Rankings are readily remembered, like league tables, and have swiftly become part of a common-sense understanding of the industry. It is projected that greater focus on higher education in South Africa will witness growth in rankings in the future.

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6 Appendices

Appendix A: Data used for the analysis

Appendix A: Data used for the analysis
Source: QS World University Rankings

Year	Uni_code	Position 2020		Position 2019	InstitutionName	country		SIZE	FOCUS	RESEARCH	AGE	STATUS	SCORE	AcademicReputationRANK	AcademicReputationSCORE	EmployerReputationRANK	Faculty studentSCORE	Faculty StudentRANK	CitationsperFacultySCORE	CitationsperFacultyRANK	InternationalFacultySCORE	InternationalfacultyRANK	InternationalStudentsSCORE	InternationalStudentsRANK	OverallScore
2012	1	154		156	UNIVERSITY OF CAPE TOWN	ZA		2	3	1	5	2	60.1	155	65.3	141	33.7	301	55.8	181	69.7	171	63.5	180	55.7
2012	2	363		399	UNIVERSITY OF THE WITWATERSRAND	ZA		2	3	1	5	2	37.2	301	30.6	301	19.3	301	29.9	301	74.6	152	28.9	301	33.29
2012	3	426		426	STELLENBOSCH UNIVERSITY	ZA		2	3	1	5	2	-	-	-	-	13.6	301	31.8	301	26.8	301	21.9	301	
2012	4	626		-	UNIVERSITY OF JOHANNESBURG	ZA		2	2	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2012	5	526		526	UNIVERSITY OF PRETORIA	ZA		3	3	1	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2012	6	576		-	RHODES UNIVERSITY	ZA		0	2	2	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2012	7	576		601	UNIVERSITY OF KWAZULU-	ZA		2	3	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-

					NATAL																			
2012	8	701		701	UNIVERSITY OF THE WESTERN CAPE	ZA		2	2	1	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2012	9	701		701	NORTH-WEST UNIVERSITY	ZA		3	2	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2013	1	145		154	UNIVERSITY OF CAPE TOWN	ZA		2	3	2	5	2	68.7	142	65.5	170	34.2	401	65.4	137	68.8	194	57.2	220	60.5
2013	2	313		363	UNIVERSITY OF THE WITWATERSRAND	ZA		2	3	1	5	2	44.3	262	43.7	349	23.3	401	34	360	84.2	131	26.5	401	39.2
2013	3	387		426	STELLENBOSCH UNIVERSITY	ZA		2	3	1	5	2	42.2	287	43	354	16.8	401	32.4	372	27.8	381	22.8	401	33.7
2013	4	626		-	UNIVERSITY OF JOHANNESBURG	ZA		2	2	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2013	5	476		476	UNIVERSITY OF PRETORIA	ZA		3	3	1	5	2	-	-	-	-	15.1	401	13.4	401	11.7	401	32.8	401	30.3
2013	6	576		-	RHODES UNIVERSITY	ZA		0	2	2	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2013	7	526		576	UNIVERSITY OF KWAZULU-NATAL	ZA		2	3	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-

2013	8	701		701	UNIVERSITY OF THE WESTERN CAPE	ZA		2	2	1	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2013	9	701		701	NORTH-WEST UNIVERSITY	ZA		3	2	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2014	1	141		145	UNIVERSITY OF CAPE TOWN	ZA		2	3	2	5	2	70.5	142	64.4	201	34.4	401	70.4	145	69.3	201	54.9	243	62
2014	2	318		313	UNIVERSITY OF THE WITWATERSRAND	ZA		2	3	1	5	2	46.5	264	46.6	334	28.6	401	29.7	401	74.9	183	31.3	401	40.3
2014	3	390		387	STELLENBOSCH UNIVERSITY	ZA		2	3	1	5	2	43.8	289	40.4	383	19.8	401	38	352	26.7	398	21.8	401	35.6
2014	4	626		626	UNIVERSITY OF JOHANNESBURG	ZA		2	2	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2014	5	476		476	UNIVERSITY OF PRETORIA	ZA		3	3	1	5	2	-	-	-	-	15.1	401	13.4	401	11.7	401	32.8	401	30.3
2014	6	626		576	RHODES UNIVERSITY	ZA		0	2	2	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2014	7	526		526	UNIVERSITY OF KWAZULU-NATAL	ZA		2	3	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
20	8	701		701	UNIVERSITY OF	ZA		2	2	1	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-

14					THE WESTERN CAPE																			
2014	9	701		701	NORTH-WEST UNIVERSITY	ZA		3	2	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2016	1	191		171	UNIVERSITY OF CAPE TOWN	ZA		2	3	2	5	2	58.1	153	48.1	240	26.6	401	42.3	292	69.3	216	51.6	278	48
2016	2	359		331	UNIVERSITY OF THE WITWATERSRAND	ZA		2	3	2	5	2	33.9	303	34.2	359	18.4	401	30.3	395	95.9	111	18.5	401	32.6
2016	3	395		302	STELLENBOSCH UNIVERSITY	ZA		2	3	1	5	2	32.2	323	28.2	401	5	401	44.7	277	74.4	201	20	401	30.5
2016	4	626		626	UNIVERSITY OF JOHANNESBURG	ZA		2	2	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2016	5	576		526	UNIVERSITY OF PRETORIA	ZA		3	3	1	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2016	6	676		526	RHODES UNIVERSITY	ZA		0	2	2	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2016	7	676		576	UNIVERSITY OF KWAZULU-NATAL	ZA		2	3	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2016	8	701		701	UNIVERSITY OF THE WEST	ZA		2	2	1	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-

					ERN CAPE																			
2016	9	701		701	NORTH-WEST UNIVERSITY	ZA		3	2	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2018	1	191		191	UNIVERSITY OF CAPE TOWN	ZA		2	3	2	5	2	60.2	155	55.1	197	32.9	395	35.9	356	59.2	268	49.2	296	48.9
2018	2	364		359	UNIVERSITY OF THE WITWATERSRAND	ZA		2	3	2	5	2	34.7	309	43.6	290	13.9	401	33.7	372	88.3	153	14.6	401	33
2018	3	361		395	STELLENBOSCH UNIVERSITY	ZA		2	3	1	5	2	34.4	312	33.5	393	4.2	401	52.9	207	78.2	203	12.3	401	33.1
2018	4	626		626	UNIVERSITY OF JOHANNESBURG	ZA		2	2	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2018	5	526		576	UNIVERSITY OF PRETORIA	ZA		3	3	1	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2018	6	726		576	RHODES UNIVERSITY	ZA		1	2	1	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2018	7	526		526	UNIVERSITY OF KWAZULU-NATAL	ZA		2	3	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2018	8	901		701	UNIVERSITY OF THE WESTERN CAPE	ZA		2	2	1	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-

2018	9	901		701	NORTH-WEST UNIVERSITY	ZA		3	2	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
2019	1	200		191	UNIVERSITY OF CAPE TOWN	ZA		2	3	2	5	2	45.6	169	47.7	180	31	493	43.8	292	72.1	238	44.8	314	43.9
2019	2	381		364	UNIVERSITY OF THE WITWATERSRAND	ZA		2	3	2	5	2	25.1	328	38.1	241	14.4	601	35.9	355	87.1	181	12.7	601	29
2019	3	405		361	STELLENBOSCH UNIVERSITY	ZA		2	3	2	5	2	25.6	325	28.9	341	5.1	601	50.4	231	57.9	301	13.2	601	27.9
2019	4	556		626	UNIVERSITY OF JOHANNESBURG	ZA		2	2	2	2	2	-	-	26.6	366	34	445	-	-	73.4	233	29.7	430	21.7
2019	5	566		526	UNIVERSITY OF PRETORIA	ZA		3	3	1	5	2	22.7	363	40.4	228	-	-	17.4	588	55.3	315	17	560	21.3
2019	6	901		726	RHODES UNIVERSITY	ZA		1	2	2	5	2	-	-	-	-	-	-	23.9	492		-	51.6	283	10.7
2019	7	776		726	UNIVERSITY OF KWAZULU-NATAL	ZA		3	3	1	3	2	-	-	-	-	-	-	20.1	549	49.2	331	-	-	14.8
2019	8	901		901	UNIVERSITY OF THE WESTERN CAPE	ZA		2	2	1	4	2	-	-	-	-	-	-	20.7	537	34.4	425	14.8	597	10.7
20	9	901		901	NORTH-WEST	ZA		3	2	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	10.7

19					UNIVERSITY																			
2020	1	198		200	UNIVERSITY OF CAPE TOWN	ZA		2	3	2	2	1	47.5	164	47.6	178	28.3	537	44.4	284	71.3	245	40.9	340	44.1
2020	2	400		381	UNIVERSITY OF THE WITWATERSRAND	ZA		2	3	2	5	1	24.9	335	36.9	258	11.7	601	37.4	357	83.5	202	10	601	28.2
2020	3	427		405	STELLENBOSCH UNIVERSITY	ZA		2	3	2	5	1	25.9	325	31	308	4.5	601	50.6	223	38.2	410	11.6	601	27.1
2020	4	506		553	UNIVERSITY OF JOHANNESBURG	ZA		2	2	2	2	1	-	-	27.3	344	37.7	413	-	-	80.1	215	38.5	355	23.8
2020	5	556		561	UNIVERSITY OF PRETORIA	ZA		3	3	1	5	2	22.1	381	41	232	-	-	21.7	532	58.3	303	-	-	21.6
2020	6	901		901	RHODES UNIVERSITY	ZA		1	2	2	5	1	-	-	-	-	-	-	21.8	528		-	45.2	312	11.6
2020	7	901		776	UNIVERSITY OF KWAZULU-NATAL	ZA		3	3	1	3	1	-	-	-	-	-	-	19.2	564	33.3	438	-	-	11.6
2020	8	901		901	UNIVERSITY OF THE WESTERN CAPE	ZA		2	2	1	4	1	-	-	-	-	-	-	20.5	548	28.7	473	-	-	11.6
2020	9	901		901	NORTH-WEST UNIVERSITY	ZA		3	2	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	10.7