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An Analysis of the Financial Sustainability of Public Universities in South Africa

Khumalo, Lungelo Mjabulisi North-West University
Schutte, Daniel North-West University, e-mail: danie.schutte@nwu.ac.za

SUMMARY

Purpose of the study: The purpose of this study is to analyse the financial sustainability of South African public universities from 2017 to 2021. The paper, therefore, seeks to analyse how these universities manage their resources amidst increasing student enrolment, increased costs, and limited state support.

Design/methodology/approach: The study follows a qualitative methodology. The research paper uses calculated and analysed financial ratios to analyse various aspects of financial sustainability, together with a methodical assessment of existing literature and a content analysis of the annual audited financial statements of 23 different public universities.

Findings: The research indicates that while several public universities have improved their financial stability over time, the extent of this improvement varies among universities. While some universities exhibit a high level of financial management, at the same time, others are exposed to financial risks. The improvement in reserve ratios also points towards better financial planning; however, the increasing operational costs, specifically those of personnel, are a cause for concern. The complex relationship between state support, own funding, and operational efficiency has been highlighted, besides pointing to an orientation towards innovative funding solutions for enhancing financial sustainability and education quality.

Recommendations/value: To secure financial sustainability, universities must adopt robust risk management strategies, improve liquidity by managing debt more effectively, and shift towards more diversified funding sources. Additionally, aligning financial strategies with operational efficiency will be crucial in maintaining educational quality amid growing fiscal pressures.

Managerial implications: The findings of this study have significant managerial implications for the contemporary field of higher education management. The findings underscore the urgent need for national policy reforms to ensure predictable and equitable funding allocations. Government should reassess the sustainability of current NSFAS funding models. Furthermore, policies promoting third-stream income generation such as research commercialisation and public-private partnerships should be prioritised to reduce reliance on government grants. Strategic policy alignment is essential to ensure that higher education institutions remain financially viable while fulfilling their social mandate of access and quality education

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1. Introduction

In the rapidly-changing landscape of Higher Education (HE) in South Africa, rising enrolment pressures and fiscal stringency create the most challenging environment for the financial sustainability of public universities. Section 29 of South Africa's 1996 Constitution guarantees the right to HE and mandates governmental action to facilitate access for all. In accordance with this constitutional mandate, the government established the National Student Financial Aid Scheme (NSFAS) to offer financial assistance to students from impoverished and working-class families. The primary objective of NSFAS, as outlined in the 1999 NSFAS framework, is to operate as an efficient and well-managed distributor of financial aid, thereby enhancing entrance to and success in higher and further education and training. This is a critical initiative for grasping the financial sustainability of public universities in South Africa, which impacts the enrolment and retention rates of students through the mitigation of financial barriers to HE. Public HE comprises 26 universities with 1,068,046 students in 2021 (DHET, 2021). This is a ground-breaking increase of 230,270 (27.5%) more students over the 13 years from 2009 to 2021, reflecting a net annual increase in student enrolment throughout the public HE sector. The demonstrated need for such growth necessitates a comprehensive approach to managing HE's financial mechanisms, including funding and expenditure. According to Arumugam (2019), these financial streams must be effectively coordinated to maintain the growth of enrolment and the sustainability of public universities in South Africa.

In South African economic development, public universities emerge as some of the most pivotal institutions, fostering educational progress and significantly contributing to the national economy. Researchers have identified these universities as significant economic contributors, contributing approximately R513 billion annually (Bawa & Pouris, 2023). This contribution is equivalent to major industries such as gold mining, beverages, and tobacco, making HE an essential sector of the economy. In addition to general academic literature, education and openness to trade largely propel economic growth (Akinwale & Grobler, 2019). As a result, South Africa's public universities serve educational purposes. They are instrumental in the region's economic integration and development, promoting knowledge economies that underpin immediate financial benefits and long-term developmental strategies.

Overall, the funding models of public universities in South Africa are closely tied to the country's broader economic conditions; therefore, it is crucial to address concerns about maintaining financial sustainability while ensuring quality education. Economic constraints over time have pushed most public universities to diversify their funding sources beyond reducing state subsidies. Often, this results in increasing tuition fees, which may deny poor students an opportunity for education and increase further educational inequalities (Ayuk & Koma, 2019). Furthermore, Ayuk and Koma (2019) state that the financial sustainability of these institutions is continuously challenged by economic stagnation, which strains both public resources and household incomes, impacting the affordability of HE. At the same time, research such as that done by Naidoo and McKay (2018) suggests that the financial constraints and effectiveness of existing funding models, like NSFAS, do not correlate straightforwardly with improved academic outcomes, underscoring the complexity of the impact that financial aid mechanisms can have on student success. This, therefore, is a call for innovative funding solutions that, in addition to stabilising the financial environment of HEIs, will also increase access and improve quality in line with national development goals and global standards of competitiveness. It is, therefore, a time when comprehensive rethinking of funding models should be on the horizon to develop mechanisms that are sustainable at high levels of educational standards, both economically and socially.

Despite increases in HE spending from 0.7 per cent in 2012 to 1.3 per cent in 2021, as reported by Khuluvhe and Netshifhefhe (2021), this increase is still modest compared to more successful HE systems around the globe. Ironically, the #FeesMustFall campaign, which has been lauded for achieving huge concessions for students over the course of 2015/16, placed enormous financial pressure on a severely under-resourced university sector (USAf, 2016). Further complicating matters, in 2017, former President Zuma announced fee-free HE; this was contrary to the recommendations made by the Zuma Commission report, which declared the move fiscally unviable. This statement added another layer to the debate over funding (Moolman & Jacobs, 2019). According to Cloete (2015), "free higher education", as a powerful slogan, is fiscally impractical for a developing nation like South Africa. Jacobs et al. (2019) placed this on a scale of impracticality, estimating that fee-free education would have required approximately R54.4 billion in 2016, a figure exclusive of other necessities, such as infrastructure and accommodations for students. This would need to be financed by GDP growth equal to R2.88 trillion if this policy were to be sustained, something impossible given the current economic climate (Langa et al., 2017; Jacobs et al., 2019).

Recently, the financial sustainability of HEIs has been flagged as one of the top concerns for policymakers and academic administrators. Since the operational costs are rising faster than the funding offered by government grants in this growing sector, it puts significant pressure on the budget (Ahmad et al., 2019). This eventually compelled public universities worldwide to seek additional income and explore mechanisms to reduce costs to diminish any probability of falling short of money. In addition, fuzzy subsidies complicate matters since universities have no choice but to seek alternative sources of funding that will keep them in business (Ngcobo, 2021). Although the "Fees Must Fall" protest in 2015–2016 was a call for free education, this caused NSFAS to give more financial support, but the funding is still inadequate. In addition, the economic challenges of high unemployment and slow economic growth will not likely allow students to pay school fees.

Meanwhile, costs have increased, while services' revenues, such as student housing, have fallen due to the COVID-19 pandemic.

2. LITERATURE REVIEW

The history of the financial operations of public South African universities has arguably been significantly influenced by legislation and policies aimed at redressing past disparities and fostering an equitable allocation of resources. Notable legislative reforms include enacting the Higher Education Act of 1997 and the National Plan for Higher Education of 2001 However, universities are under fiscal stress due to increased student enrolment and a decrease in state support in real terms (Ntshoe & De Villiers, 2013). To cope with these constraints, universities have increasingly begun to rely on student fees and third-stream income, but these are inadequate to cover the funding shortfall (Bunting & Cloete, 2010). Additionally, economic challenges such as high unemployment, slow economic growth, and the COVID-19 pandemic have further strained financial resources and increased costs (Langa et al., 2017).

Financial sustainability in HE aims to ensure that the institutions function and remain viable in future operations while delivering quality education. Sazonov et al. (2015) further define financial sustainability as being concerned with how effectively Higher Education Institutions (HEIs) can manage their resources so that they remain financially stable. Financial sustainability is also focused on ensuring that a university can achieve its goals by generating sufficient income to invest in its academic programmes and future research activities (Sazonov et al., 2015). As enumerated by Afriyie (2015), key factors impact financial sustainability; they include funding sources, cost management, and income diversification. Thus, economic, political, and social factors determine the financial stability of public universities in South Africa. Economic conditions, such as recessions and governmental funding shifts, have much to say about university budget operations. According to Johnstone and Marcucci (2007), universities worldwide have become even more dependent on tuition fees and other private support. In South Africa, which is not an exception, Zusman (2005) notes that the pressure from increasing student enrolment tends to stretch resources and infrastructure.

State support, specifically through the NSFAS, significantly impacts South African university finances. NSFAS's disbursement of financial aid to financially disadvantaged students considerably impacts the number of students who may access university education, hence determining the financial stability of the universities (DHET, 2020). By easing students' financial constraints, NSFAS attracts large numbers of enrolments and contributions to the universities' revenue streams. However, reliance on state support also creates risks, as government budgets and policies can change, directly affecting the universities' financial sustainability (De Jager & Bitzer, 2018). An increase in operational costs such as personnel, maintenance, and technology upgrades contributes to the university budget's constraints. Badat (2004) states the importance of generating new income sources while operational costs increase to maintain financial sustainability. To ensure financial sustainability, universities should investigate ways to diversify their income, such as raising tuition fees, obtaining private funding, or even opening to commercial operations, such as research commercialisation, as is happening today, and offering courses online (Webb, 2014).

The term "financial sustainability" is used to describe an organisation's capacity to produce income and keep its productive operations going at a constant or growing rate to fulfil its mission and achieve its goals and objectives. In other words, the fundamental goal is the outcome that the organisation hopes to attain (Leon, 2001). McLaren and Struwig (2019) assert that the institution manages itself in a financially sustainable manner to achieve its goals and objectives through four key elements: strategy, investments, operating sustainability, and risk management. Sazonov et al. (2015) further emphasise that financial sustainability enables a university to meet its objectives by generating sufficient income to invest in future academic and research activities. The financial sustainability of HEIs has become a growing concern as the sector expands and state support becomes constrained (McLaren & Struwig, 2019). Ahmad et al. (2019) note that HE spending has been exponential, surpassing government grants. This has forced public universities globally to have alternative sources of income and adopt strategies to curb financial shortages (Deloitte, 2015). Ngcobo (2021) accentuates that, with limited resources and inconsistent government subsidies, universities must realise sustainability goals, thereby forcing the institution to use other means to get finances.

Financial sustainability is a core element of assessing an institution's financial soundness and will be one of the most pertinent concerns for universities over the next decade. Sazonov et al. (2015) assert that only institutions with robust financial structures and reliable income streams can effectively meet their broad responsibilities and adapt to increasingly complex and global challenges. Ahmed Bawa, the head of Universities South Africa (USAf), highlights the long-term sustainability of NSFAS as a significant challenge for the university sector (van der Merwe, 2021). Furthermore, Higher Education and Training Minister Blade Nzimande has expressed concerns over growing student debt, which compromises the future sustainability of HE and delays infrastructure development, with the debt reaching R16.5 billion (Bhengu, 2023).

3. RESEARCH METHODOLOGY

This research explores the financial sustainability of public universities in South Africa, a subject that, to date, has attracted limited empirical research. In adopting a qualitative methodology, this research utilises a comprehensive literature review and a detailed content analysis of audited annual financial statements for the five years from 2017 to 2021. Such an approach enables a nuanced exploration of complex financial issues within the HE sector, focusing on interpreting the narratives derived from these documents rather than quantifying data through numerical analysis. The study by Dai (2016) used a qualitative approach involving informal interviews and content analysis to find out about financial performance in small-medium enterprises, focusing on the use of profitability ratios to interpret financial health. Similarly, Al Qtaish and Makhloufi (2024) used financial ratios in qualitative analysis in order to enhance the quality of financial reports, giving insight into the assessment of financial performance. These studies reveal much support for using qualitative methodologies in analysing the financial sustainability of HEIs.

According to the USAf website (USAf, 2016), South Africa has 26 public universities. For this study, secondary data comprising audited financial statements from these universities was employed, specifically selecting those that are publicly available. Out of the 26, only 23 universities had consistently published audited statements over the five-year period and were thus included in the analysis. The reliability and credibility of the data analysed are taken care of by the assurance provided using audited financial statements. The audited financial statements of the public universities for the five-year period were carefully analysed through financial ratios as detailed in Table 1 Statistical analysis was conducted, which facilitated the computation of means, standard deviations, minimums, maximums, and variances of all financial ratios. This not only enhances our understanding of financial sustainability but also complements the qualitative insights from the content analysis of the audited financial statements.

The audited annual financial statements from HEIs were used to analyse the financial sustainability of public universities in South Africa. This analysis was conducted using a theoretical framework that was developed by McLaren and Struwig (2019). We have adopted this framework, which identifies specific financial ratios crucial for assessing financial sustainability within HEIs. According to this framework, the financial ratios listed in Table 1 are essential indicators of financial sustainability.

Table 1

Theoretical framework

Financial ratio category	Financial ratio measured	Financial ratio formula	Elements of financial sustainability	Definition of the financial ratio	Recommended
1. Financial performance	Income stream	State support income as a percentage of total recurrent income (council-controlled)	Strategy	Represent the percentage of funding provided by the government in the total revenue of universities.	A lower percentage indicates less reliance on the state support.
		Own funding (total income less state support income) as a percentage of total recurrent income (council-controlled)	Strategy	Represent the proportion of the universities' overall revenue that is derived from their own funding.	A higher percentage indicates a greater proportion of funding by the university.
	Personnel costs	Staff cost as a percentage of total recurrent income (council-controlled)	Operating sustainability	Display the staff expenditures as a proportion of the overall recurring revenue.	58% - 62% Government Gazette (2009:8).
	Total operation surplus	Council-controlled operating surplus ratio (excluding interest income)	Strategy, operating sustainability, and investment	The university historical record of surpluses and deficits, excluding any income from interest.	Surplus = positive and recommended.

Financial ratio category	Financial ratio measured	Financial ratio formula	Elements of financial sustainability	Definition of the financial ratio	Recommended
		Council-controlled operating surplus ratio (including interest income)	Strategy, operating sustainability, and investment	The university historical record of surpluses and deficits, including any income from interest.	Surplus = positive and recommended.
2. Liquidity	Current ratio	Current assets: Current liabilities	Risk management	Measures the university's ability to cover its short-term obligations with its current assets.	> 1 is recommended.
	Quick ratio	Current assets (excluding stock and student debtors): Current liabilities		Measures the university's ability to cover its short-term obligations with its current assets excluding stock and student debtors.	0.3 to 1 is recommended (Cernostana, 2017).
3. Debt management	Solvency ratio	Total assets (excluding PPE): Total liabilities	Risk management	Indicates the university's ability to cover liabilities by utilising its assets. In most cases, the PPE of universities consists mainly of buildings. PPE is not included in the assets as PPEs are not liquid.	Higher than 1 is recommended.
4. Asset management	Student debt	Student debtors before provision for doubtful debt as a percentage of total tuition and other fees	Risk management	Reflects the ability of the university to manage student debts.	Lower percentage is recommended.
5. Reserves	Council-controlled reserves	Unrestricted use funds (council-controlled reserves): Annual recurrent expenditure (council-controlled)	Investment	Assess the ability of the university to sustain its primary operations without new funding in the year to come.	Higher is recommended.
	Total reserves	Total reserves: Total recurrent expenditure			

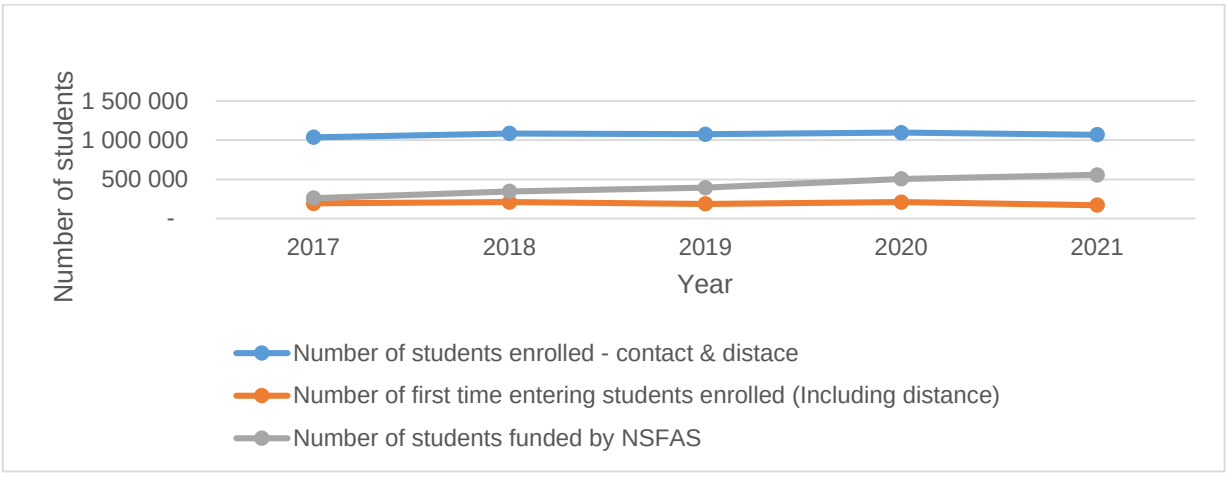
Source: McLaren and Struwig (2019) and original synthesis

4. FINDINGS AND DISCUSSION

This study analyses the financial sustainability of South African public universities, presenting its findings and discussions across three sections. The first section reviews demographic data from public universities between 2017 and 2021. The second section discusses the results of a financial ratio analysis to assess financial sustainability. Finally, the third section explores the findings in relation to risk management, investment strategy, and operational sustainability, incorporating the financial ratios discussed in the second section.

4.1. Demographics of public universities in South Africa

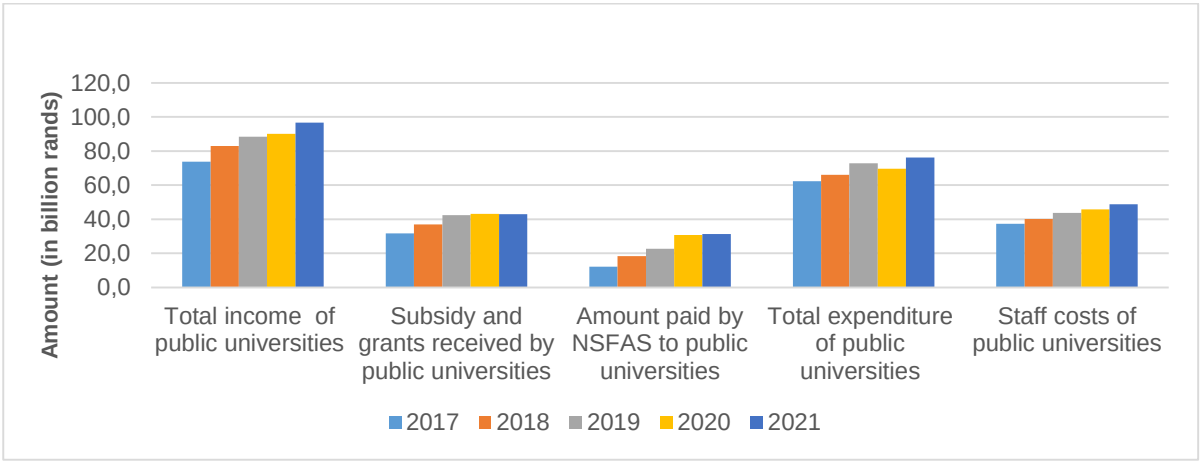
According to DHET (2021), there are 26 public universities in South Africa. As indicated in Figure 1 below, the combined total number of students enrolled in these institutions in 2017 was 1 036 984, showed a gradual increase to 1 094 808 in 2020, and then slightly decreased in 2021 to 1 068 046. Similarly, the number of first-time entering students depicts a positive trend, starting at 193 282 in 2017, increasing to 209 522 in 2020, and then decreasing to 169 675 in 2021. On the other hand, the number of students with funding through the NSFAS depicts a positive increasing trend in that it has risen from 260,002 in 2017 to 555 950 by 2021. This rising trend has been an indication of more commitment in terms of the provision of financial aid to students within the reviewed period.



Source: Department of Higher Education and Training and National Student Financial Aid Scheme

Figure 1: Student enrolled and funded by NSFAS

Figure 2 shows a consistent increase in total income from 2017 to 2021, which indicates that one part of the revenue streams is increasing for public universities in South Africa. Also, the subsidies and grants received by public universities have increased consistently over the years. On the other hand, the amount received by public universities in South Africa from NSFAS increased; a significant increase was noted from 2019 to 2020. The trend in total expenditure mirrors that of total income, with an overall increase throughout the period; however, there is a slight decrease from 2019 to 2020 before it rises again in 2021. The decrease in total expenditure might be due to the COVID-19 pandemic in 2020. The personnel costs have been increasing steadily every year, as depicted in Figure 2. It is also observed that subsidies and grants received from 2019 to 2021 marginally increased, whereas total expenditure, including personnel costs, increased significantly.



Source: Statistics South Africa and National Student Financial Aid Scheme

Figure 2: Financial overview of public universities

4.2. Financial ratio analysis for assessing financial sustainability

This study analyses the financial sustainability of public universities in South Africa from 2017 to 2021. Such a period allows for identifying and analysing trends in the realisation of a comprehensive understanding of financial sustainability, which would otherwise have aberrations for a shorter period, leading to adequate conclusions. The financial ratios analysed are derived from a theoretical framework detailed in Section 3, which groups these ratios into five distinct groups. The data relating to these financial ratios for the selected universities are systematically analysed and presented in Tables 2–6, each table corresponding to a specific category.

4.2.1. Financial performance ratios

Table 2 delineates the outcome of the financial ratios employed to evaluate the financial performance of universities. An examination of Table 2 reveals temporal fluctuations in state support income as a percentage of total recurrent income, manifesting an initial augmentation followed by a modest diminution. This fluctuation attests to a difference in dependency on state support income between the universities over the period delineated. The standard deviation values show the presence of variability in these ratios across the institutions but relative consistency through the years, suggesting a stable dispersion around the mean. The other is the range, or the difference between maximum and minimum values, which underlines the variety in the extent to which different universities depend on state support. An extensive range of these values infers that while certain universities strongly rely on state support, others demonstrate minimal dependence.

The analysis further reveals that other than a marginal decline in the mean across universities from 2017 to 2020, the trend in own funding as a proportion of total recurrent income is towards a decrease before a marginal rise in 2021. This trend may reflect an escalating reliance on state support or alterations in the total income composition over the scrutinised years. The standard deviation remains relatively uniform, suggesting that the dispersion of the ratio values around the mean is stable over time. Such stability implies that although the absolute level of own funding varies, the relative variability among universities does not undergo significant changes. The incremental increase in minimum values and a decrement in maximum values, particularly noticeable from 2019 to 2020, denote a narrowing range. The mean personnel cost ratio shows minor variations throughout the observation period, with a noticeable decrease from 2017 to 2019, a rise in 2020, and a slight decrease again in 2021. The indicated pattern allows one to observe changes over time in the proportion of staffing costs to total recurrent income. Standard deviation values are relatively stable over the years; therefore, the dispersion of staff cost ratios is also close for universities. This consistency suggests that, despite fluctuations in the mean, the relative variability among universities remains unchanged. However, these calculations reveal yearly variations in the maximum and minimum values of staff cost ratios across universities.

The net operating surplus or deficit ratio, exclusive of interest, shows a trend of average enhancement in operational surpluses among the universities, which indicates augmented financial stability and operational efficiency. Most universities transitioned from a deficit in 2017 to a surplus in 2021, showing substantial improvement. In contrast, one university faced continuous deficits, from-3.26 per cent in 2017 to-2.37 per cent in 2021. Nonetheless, the increase in both standard deviation and variance suggests that this improvement is not uniformly distributed among the universities. The expanding range between the minimum and maximum values, particularly the significant elevation of the maximum value in 2021, underscores considerable disparities in financial performance and operational efficiency among the universities. This discrepancy in the results suggests that some universities had implemented successful financial policies or operated in a conducive environment, but this did not apply to others. The high percentage of the negative minimum values realised across the span clearly indicates that universities within the sectors still operate in deficits, revealing areas of potential concern and calling for specific improvements in financial management and operational efficiency.

Bringing interest income into the operating surplus ratio would better reflect the financial health of universities, showing a positive direction towards performance improvement. For instance, there were six universities with a significant improvement from a deficit in 2017 to a surplus in 2021. However, on the downside, three universities had deficits from 2018 to 2020. All other universities showed a consistent surplus from 2017 to 2021. The standard deviation variability of the data shows relative stability during the latter two years. This indicates that the variation in performance among universities is considerable but similar in range over time. The discrepancy between the minimum and maximum values emphasises that the universities perform differently. Notably, the shift of the minimum value from negative to positive between 2017 and 2021 shows that the number of universities that operated with a deficit decreased when accounting for interest income.

Table 2

Financial performance ratios

Financial ratio measured	Formula	Year	Mean	Standard deviation	Variance	Min.	Max.
Income stream (State support income) ratio	State support income / Total recurrent income (council-controlled)	2017	52.09%	8.47%	0.72%	38.90%	76.45%
		2018	54.74%	9.31%	0.87%	39.96%	75.51%
		2019	56.36%	9.02%	0.81%	39.29%	79.24%
		2020	58.29%	9.54%	0.91%	41.28%	79.07%
		2021	55.42%	9.38%	0.88%	40.04%	76.13%
Income stream (Own funding) ratio	Own funding (total income less state support income) / Total recurrent income (council-controlled)	2017	47.91%	8.47%	0.72%	23.55%	61.10%
		2018	45.26%	9.31%	0.87%	24.49%	60.04%
		2019	43.64%	9.02%	0.81%	20.76%	60.71%
		2020	41.71%	9.54%	0.91%	20.93%	58.72%
		2021	44.58%	9.38%	0.88%	23.87%	59.96%
Personnel cost ratio	Staff costs / Total recurrent income (council-controlled)	2017	59.17%	8.08%	0.65%	45.25%	77.20%
		2018	57.46%	7.01%	0.49%	47.37%	70.23%
		2019	56.93%	7.33%	0.54%	41.91%	68.99%
		2020	59.26%	7.39%	0.55%	43.69%	74.59%
		2021	57.34%	7.28%	0.53%	47.09%	72.07%
Total operation surplus (Excluding interest income)	Total net surplus (Deficit) less Interest income / Total recurrent income	2017	-1.56%	12.56%	1.58%	-42.77%	16.09%
		2018	4.81%	8.33%	0.69%	-12.95%	23.05%
		2019	5.68%	9.86%	0.97%	-13.04%	27.15%
		2020	6.34%	10.23%	1.05%	-10.69%	25.74%
		2021	13.06%	12.35%	1.52%	-2.37%	56.80%
Total operation surplus (Including interest income)	Total net surplus (Deficit) / Total recurrent income	2017	3.90%	13.20%	1.74%	-38.82%	22.70%
		2018	9.80%	8.39%	0.70%	-4.38%	28.69%
		2019	10.97%	10.50%	1.10%	-12.22%	34.51%
		2020	10.89%	10.54%	1.11%	-5.58%	31.38%
		2021	17.29%	13.25%	1.76%	3.55%	64.31%

Source: original synthesis

4.2.2. Liquidity management ratios

Table 3 presents the results of the ratios used to gauge the university's liquidity position. This ratio reflects a company's ability to cover its short-term obligations utilising current assets (Bordeianu & Radu, 2020). Cernostana (2017) said that liquidity ratios assess the business's ability to fulfil financial commitments and sustain operations. Table 3 illustrates a variation in the current ratio of public universities from one to the other between 2017 and 2021, whereby some remain stable in terms of their liquidity and others fluctuate. This indicates different financial strategies or operational conditions among universities. The mean current ratio fluctuated over the years, suggesting different levels of management or consistency in maintaining liquidity. Differences in standard deviation and variance across universities also explain financial stability and strategy differences. Similar variation is demonstrated in quick ratios, a more stringent liquidity measure. The quick ratio comprises current assets, excluding stock and student debtors, as a percentage of current liabilities. It can also be said that the quick ratio testifies to how well universities can pay off their obligations at any time. The mean quick ratio also fluctuated, with changes in the standard deviation and variance highlighting the diversity in how universities manage their most liquid assets.

The range between the minimum and maximum values for both ratios across the years underscores the diversity in liquidity management among universities. Universities with ratios close to or below 1, especially in the quick ratio, might be at risk of liquidity stress but could also be leveraging their assets more aggressively to pursue growth or operational expansion.

Table 3

Liquidity management ratios

Financial ratio measured	Formula	Year	Mean	Standard deviation	Variance	Min.	Max.
Current ratio	Current assets: Current liabilities	2017	2.71	2.12	4.48	0.72	8.28
		2018	3.14	2.31	5.33	0.71	10.23
		2019	3.09	2.63	6.93	0.75	11.59
		2020	2.89	2.01	4.04	0.65	8.94
		2021	3.01	2.23	4.96	0.62	10.21
Quick ratio	Current assets (excluding stock and student debtors): Current liabilities	2017	2.08	2.13	4.55	-0.36	7.80
		2018	2.48	2.27	5.14	0.52	9.58
		2019	2.44	2.45	6.01	-0.24	9.60
		2020	2.28	1.86	3.46	-0.28	7.12
		2021	2.40	2.11	4.44	0.06	8.77

Source: Original synthesis

4.2.3. Debt management ratio

Table 4 analyses solvency ratios at public universities. The average solvency ratio across all universities has been increasing from 2017 to 2021, suggesting a general trend of improving financial stability among public universities. Specifically, the mean ratio increased from 1.97 in 2017 to 2.21 in 2021. There is a standard deviation and variance fluctuation across the years, with a notable increase in 2021. This suggests that while the average solvency ratio has increased, the dispersion or spread of ratios among the universities has also widened, indicating differing financial stability statuses among public universities. Each year, the range between the minimum and maximum ratios indicates a significant disparity among the universities. For instance, the gap between the least solvent and the most solvent university has varied, with the minimum

ratio being 0.31 in 2017 and slightly improving to 0.34 in 2021, whereas the maximum ratio saw an increase from 5.30 in 2017 to 5.12 in 2021.

The continued upward movement in the mean ratio suggests sector-wide financial reinforcement, yet the increasing variance indicates growing disparity in financial resilience among institutions. his divergence is concerning, as highlighted in McLaren and Struwig (2019), who emphasise that solvency is critical for long-term financial sustainability, especially under fiscal constraint. The widening spread, evidenced by standard deviation and the consistent difference between minimum and maximum values, signals that while some institutions have made gains in financial stability, others remain at risk. The relatively stagnant improvement of the minimum values implies persistent solvency pressures on less financially robust universities.

Universities with weaker solvency may need to prioritise asset reallocation, debt restructuring, or improved operating efficiency to avoid risk exposure. At the same time, more solvent universities may need to plan how best to reinvest surplus capacity into strategic growth or infrastructure.

Table 4

Debt management ratio

Financial ratio measured	Formula	Year	Mean	Standard deviation	Variance	Min.	Max.
Solvency ratio	Total asset (excluding PPE): Total liabilities	2017	1.97	1.47	2.17	0.31	5.30
		2018	1.85	1.26	1.58	0.37	4.63
		2019	1.96	1.30	1.70	0.39	4.47
		2020	2.04	1.28	1.65	0.40	4.58
		2021	2.21	1.54	2.38	0.34	5.12

Source: Original synthesis

4.2.4. Asset management ratio

Table 5 presents an analysis of student debt before provision for doubtful debt as a percentage of total tuition and other fees across 23 public universities from 2017 to 2021. It is observed that, as of 2020, there has been a significant increase in the mean due to the substantial rise in the average per cent share of student debtors in total tuition and other fees. The 2020 increase and the standard deviation reflecting a similar mean increase show variability in the proportion of student debtors found across the universities analysed, which points to a diversified impact of financial strains on these universities. Further variance within the data follows suit in 2020: the gap in student debt ratios to total tuition and fees widens for public universities. On the other hand, the minimum ratio does not fluctuate markedly through the years, suggesting that the universities with the lowest percentages of student debt to total tuition and fees have not experienced significant annual changes. The maximum ratio increases significantly in 2020, reaching its peak, which implies that at least one university has a growing proportion of student debtors. This confirms the complex and diversified effects of financial challenges across the studied public universities during the examined period.

High student debt ratios are indicative of potential cash flow constraints for universities that rely heavily on tuition revenue. These ratios reflect delayed or defaulted student payments, which can significantly disrupt financial planning and operational sustainability. for institutions heavily reliant on tuition income. As noted by McLaren and Struwig (2019), poor debt management can undermine financial sustainability by constraining operational flexibility. The increase in 2020 coincides with the COVID-19 pandemic, which likely disrupted students' ability to pay fees and contributed to the sudden divergence in debt burdens across universities.

The consistently low minimum values suggest that certain universities have adopted effective debt recovery mechanisms or serve student populations less prone to financial default. Conversely, the substantial rise in maximum values particularly in 2020 points to increasing financial vulnerability among institutions serving more economically constrained students or with weaker debt collection practices.

Table 5

Asset management ratio

Financial ratio measured	Formula	Year	Mean	Standard deviation	Variance	Min.	Max.
Student debt ratio	Student Debt before provision for doubtful debt / Total tuition and other fees	2017	48.70%	37.49%	14.05%	10.40%	146.38%
		2018	48.41%	38.60%	14.90%	13.15%	155.35%
		2019	50.20%	40.32%	16.26%	11.04%	175.25%
		2020	66.20%	59.22%	35.07%	14.21%	279.77%
		2021	53.45%	38.38%	14.73%	14.29%	170.78%

Source: Original synthesis

4.2.5. Reserve ratios

Table 6 elaborates on the council-controlled reserves and total reserve ratios. In both cases, the mean has continuously increased over the years, reflecting an overall growth in the council-controlled reserves ratio. In addition to these reserves, the ratio of total reserves is also growing. These indexes of variability and dispersion are relatively constant, meaning that although the mean ratio is on an increasing trend, the spread of the data around the mean remains relatively constant for both ratios. The total reserves show a higher mean ratio and variability than the council-controlled reserves. The continuous increase in both types of reserves may indicate a general trend towards improved financial stability in reserve funds across universities. The minimum and maximum values make it clear that an extensive range is covered in the data and show significant differences in reserve ratio from one university to another.

The upward trajectory of reserve ratios between 2017 and 2021 further signals enhanced financial resilience. The council-controlled reserves increased from a mean of 0.57 in 2017 to 0.99 in 2021, while total reserves rose from 1.19 to 1.66. Despite this progress, the standard deviation for council-controlled reserves also increased from 0.56 to 0.67, suggesting growing divergence in reserve accumulation across institutions. This variance implies that some universities are significantly improving their reserve base while others lag behind.

Negative minimum values, such as-0.35 in 2017 and-0.57 in 2021, reveal that certain institutions are operating with reserve deficits, which is a potential signal of financial distress. In contrast, maximum values above 2.0 suggest that other universities are in a much stronger position to withstand financial shocks or make long-term investments.

Table 6

Reserve ratios

Financial ratio measured	Formula	Year	Mean	Standard deviation	Variance	Min.	Max.
Council-controlled reserves	Unrestricted use funds (council-controlled reserves): Annual recurrent expenditure (council-controlled)	2017	0.57	0.56	0.31	-0.35	2.08
		2018	0.68	0.55	0.30	-0.42	1.99
		2019	0.75	0.53	0.28	-0.34	1.80
		2020	0.86	0.57	0.32	-0.39	1.96
		2021	0.99	0.67	0.44	-0.57	2.51
Total reserves	Total reserves: Total recurrent expenditure	2017	1.19	0.69	0.48	-0.05	2.68
		2018	1.26	0.69	0.48	0.02	2.69
		2019	1.30	0.71	0.51	0.13	3.09
		2020	1.44	0.75	0.56	0.19	2.98
		2021	1.66	0.90	0.81	0.23	3.42

Source: Original synthesis

4.3. Financial sustainability analysis

4.3.1. Risk-management-related ratios

Tables 3, 4, and 5 analyse financial ratios that are important for risk management in public universities because they provide insights into the financial health, efficiency, and sustainability of these universities. These ratios provide a complete picture of the universities' liquidity, solvency, and asset management and attempt to rationalise the validity of risk management policies adopted for securing financial sustainability by identifying the two given ratios. The liquidity ratios assist in ascertaining the extent to which a university is prepared to settle its short-term obligations. The current and quick ratios are the two significant measures used. The above data clearly shows that the current ratio does not remain steady year after year. It means that the degree of liquidity management varies over time. Universities with current ratios close to or below one will struggle to meet their short-term obligations, putting them in a liquidity risk zone. The quick ratio is much tighter because it only considers cash as an asset to cover short-term liabilities. Similar to the current ratio, the variability will be high in a liquidity crisis scenario, with negative values.

Solvency ratios assess the long-term stability and capacity to cover all obligations with total assets, excluding property, plant, and equipment. The mean increasing trend from 1.97 in 2017 to 2.21 in 2021 suggests an overall improvement in financial stability. However, the growing dispersion variance and standard deviation indicate a widening gap in financial stability between the most and least solvent universities, which points to differing financial management strategies and potential risks for less solvent institutions. To evaluate asset management, we look at the ratio of student debt to tuition and other fees. This measures the proportion of student debt to total tuition fees, providing insight into how much of the university's revenue might be at risk due to unpaid student fees. The noticeable increase in this ratio, particularly in 2020, along with increased variability, suggests a significant financial strain during that period. This ratio increased dramatically, especially in 2020, and showed variability, indicating extremely high financial stress during that period. This increase means that at least one university experienced a rise in student debt in 2020, compromising its financial sustainability.

The differences in risk-management-related ratios between different universities indicate that, on the one hand, some institutions maintain very stable and healthy ratios. On the other hand, some face huge risks that might eventually impact long-term sustainability. In this regard, proper risk management would require universities to follow such ratios closely and take measures that could mitigate those associated with liquidity, solvency, and student debt growth. Some specific strategies include increasing cash reserves, diversifying revenue, and improving mechanisms for debt collection.

4.3.2. Investment-related ratios

Tables 2 and 5 above deal with investment-related ratios: the total operating surplus and reserve ratios. The ability of universities to generate a net operating surplus, both without and with interest income, and trends in these ratios are critical for their ability to reinvest surpluses in maintaining or expanding productive capacity. The rising trend in these ratios, specifically the increase in 2021, indicates that universities are improving their ability to generate operational surpluses. This is crucial for financing capital investments without relying on external funding. However, the variability and differences between universities suggest that even though some universities appear well-positioned to finance their investments, others may not do so without other financial management strategies. Council-controlled reserves and total reserve ratios measure the funds available that are not earmarked for specific purposes but can be used for new investments. These have shown an upward trend, further supporting greater financial resilience and the accumulation of reserves as a base to plan future strategic capital investment. This suggests different potentials for financing investments from internal resources.

4.3.3. Strategy-related ratios

An analysis based on financial ratios reveals significant information in the university's strategic plan. For example, looking at the trends in funding clearly shows that approximately seven universities had a decreased trend in their own funding as a percentage of total recurrent income up to 2020 and then an increase in 2021. Such a change would indicate the need to adjust the universities' financing mechanisms to provide them with more predictable and stable financial support. Furthermore, the differences among universities' net operating surplus ratios suggest differences in financial and operational efficiencies. Such differences imply that universities should carefully analyse their own financial and operational contexts before embarking on planning strategies. Some crucial ratios include government support income, own funding, and net operating surplus, all explained in Table 2 above. Universities should assess their financial scenarios and formulate ways to improve their operating surpluses. Those with higher net operating surplus ratios should still optimise their operations for better results. Those with lower or fluctuating surpluses may have to adopt stricter financial discipline to stabilise and improve surplus generation.

4.3.4. Operational sustainability-related ratios

Table 2 above shows the operational sustainability financial ratios, total operating surplus with and without interest, and personnel cost ratios. Note that a rising trend in net operating surpluses after removing interest reflects increased operational efficiency and better financial management. The range and standard deviation scores remain high, implying that some universities could be operationalising on deficits and indicating wide disparities in operational performances. A net operating surplus plus interest income better reflects financial sustainability. The fewer universities in the sample now showing deficits indicate better economic stability overall and a positive harbinger of financial health and longevity. This modest decline in the personnel cost ratio in 2021 may indicate some degree of optimisation of staff costs compared with incomes. Building on these sector-level insights, future research could benefit from institution-specific analyses. Financial ratios such as income per full-time equivalent (FTE) student and cost per academic or research staff member can help assess income and cost structures at the individual university level.

5. CONCLUSION

This paper examines the financial sustainability of South African public universities over the period 2017–2021 and brings out the challenges and improvements in the sector. State support, own funding, and rising operational costs significantly impact HEIs. Historically, there has been a heavy reliance on state funding, but it hasn't kept up with the growing needs and enrolment pressures of universities. To bridge this gap, other universities have relied minimal on their own funding sources, such as tuition fees and third-stream income. However, these sources have not been sufficient to cover rising operating costs. Between 2017 and 2021, the financial landscape of South African public universities varied across institutions. Financial ratio analysis showed notable differences in performance, with some universities demonstrating stronger reserve accumulation, higher operating surpluses, and better liquidity positions. Others continued to show signs of financial strain, including persistent deficits and high student debt exposure. These results derived not only from mean values but also from standard deviation, variance, and range highlighted significant institutional differences and revealed that improvements in financial stability have not been uniform. This variability in financial outcomes reflects broader institutional challenges, including operational cost pressures and varying levels of strategic and risk management maturity.

Some financial ratio analyses show the extent to which some universities have greater dependency on state support in comparison to others, which diversify their revenue sources more effectively. The personnel cost ratio represents a very significant portion of the total recurrent income. Although some universities have optimised personnel costs relative to income, others are burdened by inflexible expenditure patterns. The study also demonstrates how universities are progressing towards financial stability, as measured by an increase in reserve ratios and operating surpluses. However, financial stability has not been uniform across all universities; some have demonstrated better financial management and operational efficiency. This really speaks to a broader issue of financial inequality within universities, which could impact their ability to deliver on their education and the state of their infrastructure.

The liquidity and solvency ratios indicate that, although some universities are doing very well in terms of meeting short-term obligations and managing against debt, others are less financially stable and pose a potential long-term risk. An increasing trend in the proportion of student debt relative to fees also raises concerns about increased financial pressure on students and possible effects on university income. It is acknowledged that this study focused on sector-wide trends based on publicly available audited financial statements and did not assess detailed liquidation treatment, individual funding discrepancies, or internal income activities of universities. Future research could incorporate institution-level financial records to explore these dimensions.

The overall financial sustainability of South African public universities remains a complex and multifaceted issue. While progress is evident in several financial dimensions, such as surplus generation and reserve strengthening, challenges remain in aligning financial strategies with institutional capacity and funding adequacy. As the results across financial indicators are mixed, a one-size-fits-all solution would be inappropriate. Instead, universities should adopt context-responsive approaches to planning, guided by continuous financial monitoring and adaptive strategies.

Importantly, this study recommends the following policy considerations: (i) reassess the long-term sustainability of NSFAS and its implications for institutional stability, (ii) support third-stream income growth through enabling frameworks, (iii) incentivise financial efficiency through strategic budget allocation and performance-linked funding, and (iv) establish early warning systems using ratio trends to identify emerging financial stress. These measures may support more balanced and resilient funding models in the future.

Significantly, the study offers a foundation for financing innovations that challenge traditional state support and tuition fees. This includes exploring alternative revenue streams and enhancing operational efficiencies to enable universities to maintain quality despite financial constraints. The findings contribute to the broader discourse on HE funding in South Africa, which is crucial for policymakers, academic leaders, and other stakeholders advocating for a sustainable HE system. Progress in this regard will require collaborative effort, innovative thinking, and adaptive policy implementation. In doing

so, South African public universities can better confront the challenges of financial sustainability and continue contributing to excellence in education and national development.

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Author's contribution

Lungelo Mjabulisi Khumalo's contribution to the paper is 70%. He designed the study and wrote the paper.

Daniel Schutte's contribution to the paper is 30%. He reviewed the paper and provided guidance.

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REFERENCES

Afriyie, A. O. (2015). Financial sustainability factors of higher education institutions: a predictive model. *International Journal of Education Learning and Development*, *2*(3), 17-38.

Ahmad, N. N., Ismail, S., & Siraj, S. A. (2019). Financial sustainability of Malaysian public universities: Officers' perceptions. *International Journal of Educational Management*, *33*(2), 317–334. https://doi.org/10.1108/IJEM-06-2017-0140

Akinwale, Y., & Grobler, W. (2019). Education, openness and economic growth in South Africa: Empirical evidence from VECM analysis. *The Journal of Developing Areas*, *53*(1), 51-64. https://doi.org/10.1353/jda.2019.0003

Al Qtaish, H. F., & Makhlouf, M. H. (2024). The effect of analysis using financial ratios in improving the quality of financial reports. *Financial Technology and Innovation*, *3*(2), 37-47. https://doi.org/10.54216/FinTech-I.030205

Arumugam, P. (2019). *An analysis of higher education funding: Consideration towards a viable model for South Africa* (Doctoral dissertation). University of KwaZulu-Natal, Edgewood.

Ayuk, P., & Koma, S. (2019). Funding, access and quality conundrum in South African higher education. *African Journal of Public Affairs*, *11*(1), 176–195.

Badat, S. (2004). Transforming South African higher education, 1990-2003: Goals, policy initiatives and critical challenges and issues. In N. Cloete, P. Pillay, S. Badat, & T. Moja *National policy and a regional response in South African higher education* (pp. 1–50). James Currey.

Bawa, A. C., & Pouris, A. (2023). An assessment of the economic impact of South Africa's public universities. *South African Journal of Science*, *119*(9–10), 1–7. https://doi.org/10.17159/sajs.2023/14851

Bhengu, C. (2023). *Mounting student debt threatens higher education sustainability – Nzimande*. https://www.news24.com/news24/southafrica/news/mounting-student-debt-threatens-higher-education-sustainability-nzimande-20230124 Date of access: 5 February 2023.

Bordeianu, G.-D., & Radu, F. (2020). Basic types of financial ratios used to measure a company's performance. *Economy Transdisciplinarity Cognition*, *23*(2), 53-58.

Bunting, I., & Cloete, N. (2010). Institutional types in higher education in South Africa. *Pretoria: Centre for Higher Education Transformation.*

Cernostana, Z. (2017). Financial sustainability for private higher education institutions. *Institute of Economic Research Working Papers,* 2017(17). https://www.econstor.eu/handle/10419/219840

Cloete, N. (2015). The flawed ideology of "free higher education". *University World News*, *389*(6).

Dai, R. M. (2016). Analysis of financial performance through profitability approach at culinary center in Cimahi city. *Review of Integrative Business Economics Research,* *5*(2), 364–370. https://sibresearch.org/uploads/3/4/0/9/34097180/riber_xk16-088__364-370_.pdf

De Jager, E., & Bitzer, E. (2018). The views of commerce students regarding "free" Higher Education in South Africa. *South African Journal of Higher Education*, *32*(4), 12–36. https://doi.org/10.20853/32-4-2436

Deloitte, L. L. P. (2015). *Making the grade 2015: The key issues facing the UK higher education sector.* https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/public-sector/deloitte-uk-making-the-grade-2015.pdf Date of access: 14 February 2023.

DHET. (2020). *National Student Financial Aid Scheme (NSFAS) Annual Report.* https://www.dhet.gov.za/Commissions%20Reports/Annual%20Report%202020-2021.pdf Date of access: 26 June 2024

DHET. (2021). *Statistics on Post-School Education and Training in South Africa: 2021.* https://www.dhet.gov.za/DHET%20Statistics%20Publication/Statistics%20on%20Post-School%20Education%20and%20Training%20in%20South%20Africa%202021.pdf Date of access: 15 April 2023.

Jacobs, L., Moolman, A. M., & De Beer, E. (2019). #Feesmustfall and beyond: Towards a sustainable national student loan regulatory framework. *South African Journal of Higher Education*, *33*(1), 127–143. https://doi.org/10.20853/33-1-1336

Johnstone, D. B., & Marcucci, P. N. (2007). Worldwide trends in higher education finance: Cost-sharing, student loans, and the support of academic research. *Commissioned paper V. Lynn Meek and Dianne Davies*, *81*, 1–36.

Khuluvhe, M., & Netshifhefhe, E. (2021). *Funding and expenditure trends in Post-School Education and Training.* Department of Higher Education and Training, Pretoria, South Africa. https://lmi-research.org.za/wp-content/uploads/2022/08/Funding-and-expenditure-trends-in-PSET-Report-FINAL_27June2022_withISBN.pdf

Langa, P., Wangenge-Ouma, G., Jungblut, J., & Cloete, N. (2017). Africa: South Africa and the Illusion of Free Higher Education. In G. Mihut, P. G. Altbach, & H. de Wit (Eds.), *Understanding global higher education: Insights from key global*

publications (pp.61–66). Rotterdam: SensePublishers. (University World News, 26 February 2016, Issue 402) https://doi.org/10.1007/978-94-6351-044-8_13

Leon, P. (2001). *Four Pillars of Financial Sustainability.* The Nature Conservancy, Arlington, Virginia, USA.

McLaren, J., & Struwig, F. (2019). Financial ratios as indicators of financial sustainability at a South African university. *Journal of Contemporary Management*, *16*(2), 68–93. https://doi.org/10.35683/jcm19030.0027

Moolman, A. M., & Jacobs, L. (2019). The Financial Effect of #Feesmustfall on Individual Taxpayers. *International Journal of Economics and Finance Studies*, *11*(1), 17–32. https://doi.org/10.34109/ijefs.201911102

Naidoo, A., & McKay, T. (2018). Student funding and student success: A case study of a South African university. *South African Journal of Higher Education*, *32*(5), 158–172. https://doi.org/10.20853/32-5-2565

Ngcobo, X. M. (2021). *Exploration of revenue sources for financial sustainability of a public university in KwaZulu-Natal: a case study of Durban University of Technology* (Master's Thesis). Durban University of Technology, Durban, South Africa. https://hdl.handle.net/10321/3789

Ntshoe, I., & De Villiers, P. (2013). Funding sources for public higher education in South Africa: Institutional responses. *Perspectives in Education*, *31*(4), 71–84. http://hdl.handle.net/10019.1/92167

Sazonov, S. P., Kharlamova, E. E., Chekhovskaya, I. A., & Polyanskaya, E. A. (2015). Evaluating financial sustainability of higher education institutions. *Asian Social Science*, *11*(20), 34. https://doi.org/10.5539/ass.v11n20p34

USAf. (2016). *Universities funding in South Africa; A fact sheet*. https://www.uct.ac.za/usr/news/downloads/2016/UniversitiesFundingSouthAfrica_FactSheet.pdf Date of access: 11 February 2023.

van der Merwe, C. (2021). *Eight challenges facing South African universities in 2022.* Research Professional News, 9 December 2021. https://researchprofessionalnews.com/rr-news-africa-south-2021-12-eight-challenges-for-south-african-universities-in-2022/ Date of access: 28 February 2023.

Webb, J. C. (2014). *The impact of revenue diversification on the financial and educational outcomes of private colleges and universities during the great recession* (Doctoral dissertation). University of Michigan, Ann Arbor, MI. https://hdl.handle.net/2027.42/107145

Zusman, A. (2005). Challenges facing higher education in the twenty-first century. In P. G. Altbach, R. O. Berdahl, & P. J. Gumport (Eds.), *American Higher Education in the Twenty-First Century: Social, political, and economic challenges*, *2. ed.*, (pp. 115–160). Baltimore and London: Johns Hopkins University Press.

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