A Critical Analysis of 10 Financial Sustainability Indicators Applicable to Public Universities in South Africa

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Abstract

I ideated this paper from a realisation that no coherent approach has yet arisen in the analysis of financial sustainability for public universities, particularly in South Africa. The paper originates from a study conducted amongst the 26 public universities in South Africa. The study follows a secondary data analysis approach whereby I analysed annual financial statements of the 26 public universities over the period 2015–2020. I calculated and scrutinised 10 financial sustainability indicators for each of the 26 universities. The main research objective was to determine the impact of funding sources on the financial sustainability of these institutions. Additionally, I determined the impact of university size, location, historic roots and university type on the financial sustainability of the 26 public universities. The findings of the study reveal that government funding, supported by a diverse range of funding sources, plays a positive significant impact on the financial sustainability of South Africa's public universities.

Keywords: financial sustainability, funding model, government funding, universities, South Africa

1. Introduction

Universities throughout the world face consistent challenges with regards to generating income for the effectiveness of their operations. Declining government funding (GF) and the inability of students from working-class households to afford rising tuition fees compound these challenges. In this regard, Sazonov et al. (2015) insisted that those institutions with sound financial structures and stable income sources would be able to remain financially sustainable. Carlo et al. (2019) further noted that financial sustainability is a more critical challenge for public universities, particularly in those countries with cutbacks in public spending. In South Africa, the financial sustainability of public universities is a topic of much interest. South Africa's public universities are a hybrid model comprising both private and public sector features, frequently complicating the application of private sector measurements in the assessment of these institutions' financial sustainability (Bunting, 2020).

Although the critical ratios measuring the financial health of profit-making entities are liquidity, solvency, profitability and efficiency, no consensus yet exists on the specific ratios that measure financial sustainability for not-for-profit organisations and universities in particularly (Bunting, 2020; McLaren & Struwig, 2019; Tran et al., 2025). One of the earliest studies on the critical ratios measuring the financial sustainability of not-for-profit entities is by Abraham (2003). This author approached financial sustainability of nonprofits through four critical components of the financial statements: (i) equity balances (ratio of equity to revenue), (ii) revenue concentration (multiple revenue sources), (iii) administrative cost and (iv) operating margins. Sazonov et al. (2015) provided a simplified assessment of financial sustainability for universities based on a study conducted in higher education institutions in Russia.

Those researchers identified four types of financial sustainability: (i) absolute financial sustainability – where the sources covering expenses should come from working capital, (ii) normal financial sustainability – working capital and long-term debts become sources covering expenses, (iii) unstable financial sustainability – expenses are covered by working capital, long-term debt and current debts and (iv) critical financial sustainability – where the institution is almost bankrupt. In the South African context, McLaren and Struwig (2019) suggested a framework of five financial ratios that researchers could use to measure the financial sustainability of South African universities: (i) liquidity ratios (current and cash ratio [CashR]), (ii) debt management ratios (solvency ratio [SR]), (iii) asset management (student–debtor ratio [SDR]), (iv) positive reserves and (v) financial performance (income streams ratios, surplus ratios and optimal personnel cost). McLaren and Struwig (2019) empirically tested the framework in a selected South African university and found it an appropriate measure of financial sustainability. Further, in a study of 23 public universities in South Africa, Bunting (2020) suggested additional indicators for the measurement of financial sustainability. One may trace some of the indicators used in that study, such as the ratio of equity to revenue and revenue concentrations, as far back as Abraham's 2003 model on financial sustainability. The study covered a period of 10 years from 01 January 2007 to 31 December 2016. One of the critical findings from that study was the difficulty of implementing private sector financial sustainability indicators for the public universities in South Africa due to the uniqueness of terminology used for some items in their financial statements.

Recent researchers (Hong, 2023; Ngcobo et al., 2024; Pruvot et al., 2025; Tran et al., 2025) considered financial sustainability of public universities in terms of indicators of liquidity, sound asset quality, efficient expenditure management, long-term solvency and revenue sources diversification. Therefore, the purpose of this study was to investigate how financial sustainability of the 26 public universities in South Africa (as measured in terms of a comprehensive list of 10 indicators) was being impacted by their various revenue sources. One highly related study was by Kathomi et al. (2022) in the Kenyan public university sector. The authors analysed the influence of government grants, student fees, internally generated revenue and endowment funds (donor funding) on the financial sustainability (as measured by the current ratio [CR]) of 31 universities in Kenya. The researchers enhanced their investigation by adapting and incorporating nine additional indicators applied in previous research (Bunting, 2020; McLaren & Struwing, 2019).

The 10 financial sustainability indicators adapted and adopted for this study were: (i) CR, (ii) CashR, (iii) SR, (iv) SDR, (v) surplus sufficiency to total assets (SSTA), (vi) reserve ratio (RR), (vii) personnel cost as percentage of total income (PCTI), (viii) personnel cost as percentage of total expenditure (PCTE), (ix) surplus sufficiency to total revenue (SSTR) and (x) investment source revenue (ISR) ratio. Mbhalati (2024) investigated and confirmed the various sources of funding for public universities of South Africa in a previous study. These are GF, student fees, donations and gifts (D/G), universities' own commercial income (CI) and National Student Financial Aid Scheme (NSFAS) funding, also confirmed in other studies (Matyana et al., 2023; Ngcobo et al., 2024).

For the study, I was therefore guided by the following research question:

(1) How are the various funding sources for the public universities in South Africa affecting these institutions' financial sustainability, and what additional factors are important in these institutions' financial sustainability?

In answering the aforementioned research question, I formulated the following research objectives:

(1) To determine the relationship between the key funding sources and the financial sustainability of public universities of South Africa.

(2) To test the impact of university-specific factors (size of university [SU], location [Loc], historic roots of university [HRU], age and type) on the financial sustainability of public universities of South Africa.

2. Methodology

I followed a secondary data analysis approach involving an analysis of 10 ratios for the 26 public universities in South Africa. Because the study covered the period 2015–2020, I collected and analysed panel data. I collected the research data from the audited annual reports of the public universities of South Africa. I accessed these reports from the websites of the 26 public universities. In certain instances, I collected some reports directly through special requests from these universities. The first step in the data analysis involved calculating the 10 financial sustainability indicators, collating the data in Excel format and coding the data. I then sent the coded data through the SPSS software, whereby I ran the descriptive statistics and generalised method of moments (GMM) statistics. I found the GMM to be a reliable estimator for estimating the relationship between or amongst variables involving a panel data model, particularly because the data had a lagged dependent variable as a regressor (Cheng & Bang, 2019). I deemed the GMM suitable for the study because the nature of the relationship between the various sources of funding and financial sustainability could be described as dynamic given current year financial sustainability tends to be affected by prior year values (Ullah et al., 2017). I formulated the GMM regression model as follows:

$$FS_{it} = \beta 0 + \beta_1 FS_{it-1} + \beta_2 GF_{it} + \beta_3 SF_{it} + \beta_4 ISI_{it} + \beta_5 NSFAS_{it} + \beta_6 CI_{it} + \beta_7 D/G_{it} + X_{it} + \mu i + \mathcal{E}_{it} \quad (1)$$

The FS_{it} represents financial sustainability, which is measured in terms of the 10 indicators. Based on the formulated GMM model, financial sustainability is the dependent variable. Thus, in the regression analysis, FS_{it} is replaced by each of the 10 financial sustainability ratios. The $\beta_1 FS_{it-1}$ in the model is the lagged (previous year) financial sustainability, and the $\beta_2 GF_{it} + \beta_3 SF_{it} + \beta_4 ISI_{it} + \beta_5 NSFAS_{it} + \beta_6 CI_{it} + \beta_7 D/G_{it}$ are the variables denoting the various funding sources. The GF_{it} in the model represents government grants, SF_{it} denotes student fees, ISI_{it} refers to investment-source income (ISI), $NSFAS_{it}$ denotes NSFAS funding, CI_{it} represents income from universities' own commercial activities and D/G_{it} relates to donations and gifts. These are the independent variables in the regression model. Then, the X_{it} represents the control variable, μi are university-specific factors and $\mathcal{E}_{it}$ represents the error term. University-specific factors (μi) tested in the model included SU, Loc, HRU, age and university type.

2.1 Reliability and Validity of Model Specification Tests

In GMM, it is imperative to test if the model specifications and variables are legitimate so that a conclusion could be made on the reliability and validity of the regression estimators. Part of these tests included the Arellano-Bond test for AR(2) and the Sargan and Hansen tests of overidentification. The criteria for deciding that the instruments used in the estimation were valid and there was no overidentification were Prob > $chi^2 \geq 0.05$ on the Sargan test and an optimal probability of $0.1 \leq (x^2) < 0.25$ on the Hansen test. Nevertheless, Kiviet et al. (2021) insisted that, to ensure validity of instruments, higher p-values for the Sargan and Hansen tests should be preferred. It should be noted that the most appropriate regressors are defined when autocorrelation does not exist. This is possible when the Arellano-Bond test for AR(2) registers $Pr > z > 0.05$.

To complete the tests on model specifications and variables legitimacy, I also ran the Wald test. Higher Wald test values indicate that the independent variables are better predictors of the dependent variable. I categorised these tests as model specification tests as presented in the research results. A complementary analysis to the Wald test was the multicollinearity analysis. Multicollinearity is when the independent variables (predictors) in a regression model are strongly correlated with one another, thereby distorting the relationship between the independent and dependent variables (Daoud, 2017). The presence of multicollinearity makes the regression model unstable. Scholars such as Marimuthu (2019) and Nguyen and Do (2020) acknowledged that multicollinearity existence is denoted when the correlation coefficient is 0.8 or more. However, Grewal et al. (2004) insisted that p-values higher than 0.75 were indicators of higher correlation. Therefore, the threshold for deciding multicollinearity existence in this study was a p-value of 0.7 and higher. I present the multicollinearity analysis in Table 1 as follows.

Table 1. Multicollinearity Analysis

	GF	SF	CI	D/G	ISI	NSFAS	SU	LOC	HRU	AGE	TYPE
GF	1.0000										
SF	0.1348*	1.0000									
CI	-0.3139***	-0.1415*	1.0000								
D/G	-0.1878**	-0.1147	0.1420*	1.0000							
ISI	-0.0881	0.0367*	0.2103***	0.3282***	1.0000						
NSFAS	0.3326***	0.0009	-0.3956***	-0.3110***	-0.1697**	1.0000					
SU	-0.1028	0.3182***	-0.0592	-0.0442	0.0660	-0.2194***	1.0000				
LOC	-0.0183	-0.1003	0.0468	0.2924***	0.3493***	-0.4082***	0.2372***	1.0000			
HRU	0.1429*	-0.2938***	0.1133	0.3226***	0.3405***	-0.3233***	0.1314	0.5957***	1.0000		
Age	-0.4246***	0.1391*	0.5277***	0.2234***	0.3350***	-0.5082***	0.3629***	0.1791**	0.2265***	1.0000	
Type	-0.1069	-0.0443	-0.0962	-0.2520***	-0.3582***	0.0803	-0.0979	0.0422	-0.5060***	-0.3676***	1.0000

Notes: *** means significance level is less than 0.01; ** means significance level is less than 0.05; * means significance level less than 0;1; and where significance level is more than 0.1, there is no asterisk.

Source: analysed by the researcher.

As illustrated in Table 1, multicollinearity did not exist for the independent variables because none of the estimators recorded a correlation coefficient of 0.7 or higher. In fact, the p-values for all the indicators range from 0.000 to 0.5277, and some variables recorded negative correlation. In the absence of multicollinearity, the coefficients and p-values can be appropriately estimated and estimation accuracy increases. Thus, one can conclude that the GMM regression model adopted for this study was stable.

3. Research Results

I present the analysis of the secondary data in the form of a GMM regression equation for each of the 10 ratios. The key statistics in the regression analysis were the regression coefficients and the p-values. A positive regression coefficient indicates that an increase in the independent variable causes an increase in the dependent variable. A negative regression coefficient suggests the contrary. Besides the GMM regression analysis models, I ran descriptive statistics on the coded secondary data. In the presentation of the research results, each of the 10 financial sustainability indicator is denoted by a GMM regression model. The detailed statistics from which I drew the regression models are highlighted separately in table format. These tables are reflected as regression results tables. They range from Table 3 (regression results for CR) to Table 12 (regression results for ISR indicator). The research results are further enriched by a synopsis of the status of the model specifications test [AR(2), Sargan, Hansen and Wald tests].

3.1 Descriptive Statistics

The critical statistics in descriptive statistics are the mean that reflects the average values for each variable. The standard deviation links to the mean because it shows how observed values for each variable disperse away from the mean. I summarise a complete reflection of the descriptive statistics computed for the study in Table 2.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CR	156	2.717443	2.144343	0	11.58617
CashR	156	2.292052	2.023006	0	10.40374
SR	156	1.807032	1.430174	0	5.890843
SDR	156	0.4870194	0.3555786	0	1.752527
SSTA	156	0.0438746	0.0600305	-0.1079482	0.3918497
RR	156	1.234931	0.7221685	0	2.995578
PCTI	156	0.4898282	0.1169548	0	0.7718428
PCTE	156	0.5242219	0.1135171	0	0.7130326
SSTR	156	0.0872915	0.0957787	-0.2357985	0.5509358
ISR	156	0.0459231	0.0352022	-0.1013678	0.1815585
GF	156	0.4623905	0.1335149	0	0.7967027
SF	156	0.3386883	0.1023457	0	0.5296787
CI	156	0.0932552	0.082291	0	0.3214959
D/G	156	0.0252284	0.03764	0	0.1851972
ISI	156	0.0470777	0.0302824	0	0.1815585
NSFAS	156	0.3910489	0.2338706	0	0.9798137
SU	156	39341.07	65416.8	0	389876
Loc	156	2.269231	0.8139601	1	3
HRU	156	1.583333	0.6320304	1	3
Age	156	75.30769	49.76041	2	191
Type	155	1.232258	0.4236415	1	2

Source: analysed by the researcher.

As reflected in the analysis of the descriptive statistics for this study, both indicators of liquidity, namely CR and CashR, recorded higher mean values of 2.72 and 2.29 respectively. The norm in the private sector is for a CR of 2.1 and CashR of 0.75 (Buddy, 1999; Correira, 2019). Thus, the public universities in South Africa could be described as denoting higher liquidity ratios. Similarly, the mean score for the SR was higher at 1.81, demonstrating that expendable assets are on average 1.81 times higher than total liabilities. In fact, Bunting (2020) recommended a higher SR. In the two ratios measuring the efficiency in managing assets, it is interesting to note that the SDR recorded a mean value below 50% at 48.7% (0.487). However, the SSTA was lower at a mean of 4.4% (0.0439).

Meanwhile, the RR recorded a mean of 1.23. The three financial performance ratios, namely PCTI, PCTE and SSTR, were also within the financial sustainability safe zone. The PCTI ratio returned a mean of 49% (0.4898), which was closer to the 54.7% established as acceptable for public universities in South Africa (Bunting, 2020) and the 52%–60% acceptable range for universities in Scotland (Scottish Funding Council, 2022). Though there is no established benchmark for the PCTE ratio, the mean score of 52.4% should be considered acceptable because the total expenditure in the ratio includes staff costs, which are a critical expenditure in universities. Further, McLaren and Struwig (2019) noted in their study of financial sustainability at one of the universities in South Africa that staff costs accounted for around 56% of total expenditure. The SSTR recorded a mean of 0.0873 (8.7%), which was closer to the 10% benchmark for profit-oriented entities (Parker, 2022).

The descriptive statistics revealed the mean value for ISR as 4.6% (0.0459). In fact, Minyoso (2020) believed that financial investments offer an entity the opportunity to generate more income. GF assumed a higher mean value of 46.2%, followed by student funding (SF) at 33.9%, with CI at an average of 9.3%, ISI at 4.7% and D/G at 2.5%. The mean score for NSFAS funding was 39.1%, which supported the notion of a large missing middle group of students in South Africa's higher education landscape (Garrod & Wildschut, 2021).

3.2 GMM Regression Analysis

I ran an analysis of the calculated 10 financial sustainability indicators through a GMM analysis to reflect a GMM regression model (equation) for these indicators. I reflected the equations based on the regression coefficients, whereas I analysed the significance of the model estimators using the p-values. Any negative regression coefficients denoted an inverse relationship between the regressor and the dependent variable. P-values greater than 0.05 imply no significant impact.

3.2.1 GMM Regression Model for CR

I express the CR as a ratio of current assets to current liabilities. Based on the regression coefficients, I developed the GMM regression model for the estimators of the CR as follows:

$$CR_{it} = 1.6505 + 0.3522CR_{it-1} + 27.0771GF_{it} + 3.4307SF_{it} – 1.4086NSFAS_{it} – 1.5554CI_{it} + 8.9439D/G_{it} + 0.0272\ ISI_{it} + 5.0306SU_{it} – 4.7384Loc_{it} + 2.2720HRU_{it} – 0.0192\ Age_{it} + 2.5594\ Type + \varepsilon_{it} \quad (2)$$

I capture the detailed GMM statistics for the CR model in Table 3.

Table 3. Regression Results for CR

CR	Regression Coefficient.	Std. Err.	Z (t-Statistics)	p-Value (Significance)
L1.CR	0.3521858	0.1406846	2.50	0.012
SF	3.430749	0.120211	28.53	0.000
CI	-1.555361	4.953102	-0.31	0.754
D/G	8.943941	8.338954	1.07	0.283
ISI	0.027222	0.012994	2.095	0.0462
GF	27.07709	16.15415	1.68	0.094
NSFAS	-1.408615	0.09211007	-15.3	0.126
SU	5.0306	0.000021	0.24	0.810
Loc	-4.738422	0.09580172	-4.95	0.007
HRU	2.272023	1.092634	2.08	0.045
Age	-0.0191833	0.0160292	-1.20	0.231
Type	2.5593836	0.955092	2.68	0.018
_cons	1.650553	6.370361	0.26	0.796

Note: p-value < 0.05 (5%) means significant impact, and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

The model shows that the regression coefficients of prior year CR, GF, student fees, D/G, ISI, SU, HRU and type of university were positive. The p-value analysis showed that the positive impact of student fees on CR was highly significant at p-values less than 0.01 (1%). The positive impact of prior year CR, ISI, HRU and university type was significant at p-values less than 0.05 (5%), whereas the positive impact of D/G, GF and SU was not significant (p-values > 0.05).

In a study amongst 31 public universities in Kenya, Kathomi et al. (2022) concluded that a university with a larger government grant and sizeable student fee income tends to have a higher CR. Contrastingly, the authors found that the SU negatively impacted CR. The regression coefficient for SU, taken together with the p-value of 0.810, implies that size had a positive but not significant effect on the CR. Meanwhile, at p-value of 0.007 and a negative coefficient (-4.7384) for Loc, the implication was that there was an inverse and highly significant relationship between university Loc and CR. Conversely, CI, NSFAS funding and age of university could be described as having a negative but not significant relationship with the CR. In a study conducted in Malaysian public higher education institutions, Ahmad et al. (2015) noted that newer universities were not generating as much CI compared to established universities.

Arising from these results, the model specification tests revealed no negative issues with regards to the validity of the model. The Sargan test registered Prob > chi^2 = 0.1639, the Hansen test score was Prob > chi^2 = 0.0772 and AR(2) was greater than 0.05 at Pr > z =0.212. These tests were within the acceptable level, and one could conclude that there was no overidentification. The Wald test was positive and higher at 80.31.

3.2.2 GMM Regression Model for CashR

The CashR measures the ability of an entity to pay off its short-term obligations without relying on sale of its inventory and collection of debt. I formulated the CashR GMM regression equation as follows:

$$CashR_{it} = 6.7956 + 0.2840CashR_{it-1} + 18.6376GF_{it} – 0.5842SF_{it} – 2.2971NSFAS_{it} + 0.1260CI_{it} + 14.4739D/G_{it} + 0.1477ISI_{it} + 0.00002SU_{it} – 2.1752Loc_{it} + 1.4726HRU_{it} – 0.0251Age_{it} – 0.9704Type + \varepsilon_{it} \quad (3)$$

I capture the detailed statistics used to generate the CashR regression model in Table 4.

Table 4. Regression Results for CashR

CashR	Regression Coefficient.	Std. Err.	Z (t-Statistics)	p-Value (Significance)
L1. CashR	0.2840328	0.1529172	1.86	0.063
SF	-0.5842249	2.994967	-0.20	0.845
CI	0.1260129	3.931434	0.03	0.974
D/G	14.47389	6.246144	2.32	0.020
ISI	0.1477483	0.072782	2.03	0.045
GF	18.6376	15.51951	1.20	0.230
NSFAS	-2.297149	1.149668	-2.00	0.046
SU	0.0000158	0.0000157	1.01	0.312
Loc	-2.175247	0.9005892	-2.42	0.016
HRU	1.472566	0.7213591	2.04	0.041
Age	-0.0251492	0.0139845	-1.80	0.072
Type	-0.9704173	1.150246	-0.84	0.399
_cons	6.795619	2.538879	2.68	0.007

Note: p-value < 0.05 (5%) means significant impact and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

The model shows that the prior year CashR had a positive coefficient of 0.2840. Taken together with the p-value of 0.063, the implication was that the CashR of the previous year caused an increase in the CashR of the current year, albeit not significantly. Similarly, GF, CI, D/G, ISI, SU and HRU had a positive impact on CashR. The positive relationship between D/G and CashR could be described as significant (p-value < 0.05). The findings on GF, CI, D/G and ISI were consistent with those by Cernostana (2017), Kathomi et al. (2022) and Minyoso (2020). Notably, student fees, NSFAS funding, Loc, age of university and university type demonstrated an inverse relationship with the CashR. The finding on the negative impact of student fees on CashR is contrary to that of Cernostana (2017), who observed that student fees positively impact the key liquidity ratios such as CR and CashR.

It would not be surprising to find a negative impact of student fees on CashR given most public universities in South Africa had their student fees tied in high student debt (Naidoo & Mckay, 2018). A run of the model specification tests demonstrated that the independent variables were appropriate for the CashR model. The Arellano-Bond test for AR(2) recorded a score of $Pr > z=0.341$, which was within the acceptable level of $Pr > z > 0.05$. This was an indication that there was no density of serial correlation problems, thus the regressors were appropriate. Similarly, the Sargan and Hansen tests of overidentification were within the acceptable ranges because they were greater than 0.05 at $Prob > chi^2 = 0.694$ and $Prob > chi^2 = 0.691$ respectively, indicating that the instruments were valid. Although the Hansen test value was higher than the optimal level of $0.1 \leq (x^2) < 0.25$, the full instruments set could be described as valid because higher Hansen test scores were preferable. The Wald test was positive at 85.70, denoting that the independent variables were collectively significant for the model.

3.2.3 GMM Regression Model for SR

The SR measures an institution’s ability to service its debts (Kharusi & Murphy, 2017). The GMM regression model for the SR reflects as follows:

$$SR_{it} = -0.8568 + 0.8507SR_{it-1} + 2.2422GF_{it} + 1.0949SF_{it} + 3.3102NSFAS_{it} + 1.1220CI_{it} - 1.2660D/G_{it} + 0.1752ISI_{it} - 1.9906SU_{it} + 0.3539Loc_{it} - 0.1932HRU_{it} + 0.0102Age_{it} - 1.0835Type + \varepsilon_{it} \quad (4)$$

I capture the detailed model statistics for the SR regression model in Table 5.

Table 5. Regression Results for SR

SR	Regression Coefficient.	Std. Err.	Z (t-Statistics)	p-Value (Significance)
L1.SR	0.850681	0.2359177	3.61	0.000
SF	1.094906	0.8185095	1.34	0.181
CI	1.121968	0.492312	2.28	0.03
D/G	-1.266022	2.946092	-0.43	0.667
ISI	0.175247	.9005892	2.42	0.016
GF	2.2422	3.428915	0.65	0.513
NSFAS	3.3101921	0.4007067	8.26	0.000
SU	-1.9906	7.9306	-0.25	0.802
Loc	0.3538507	0.4958212	0.71	0.475
HRU	-0.1932627	0.4247736	-0.45	0.649
Age	0.01015653	0.0033145	3.06	0.019
Type	-1.0835121	0.5059688	-2.14	0.037
_cons	-0.8567596	0.09385098	-9.13	0.000

Note: p-value < 0.05 (5%) means significant impact and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

The model illustrates that the prior year SR, GF, student fees, NSFAS funding, CI, ISI, Loc and age of university had a positive impact on the ratio. In fact, prior year SR and NSFAS funding had a highly significant positive relationship with SR when analysing their p-values of 0.000 respectively. D/G recorded a coefficient of -1.2660, implying their negative impact on the SR. Nevertheless, the p-value for D/G was higher than 0.05 at 0.667, signifying that the inverse relationship was not significant. These results are consistent with those of Aziz and Rahman (2017), who positively linked the ability to generate more income from diverse sources to a low debt burden. The regression results also showed that university size and HRU had an inverse but not significant impact on the SR, whereas university type could be categorised as having a significant inverse impact on the ratio. The model specification tests for the SR confirm that regressors for the model were valid. The AR(2) recorded $Pr > z=0.257$, which was within the acceptable range of Pr > z > 0.05. Further, the Sargan test at Prob > chi^2 = 0.920 and Hansen test at Prob > chi^2 = 0.349 were within the acceptable levels. Notably, the Walt test at 1496.91 was positive and higher, signifying that the independent variables were collectively significant for the model.

3.2.4 GMM Regression Model for SDR

The SDR is an important indicator of the ability of an institution to manage its student debt. A higher SDR indicates problems in managing student debt. Even with NSFAS-funded students, universities in South Africa continue to be hamstrung by historic debt (Wangenge-Ouma, 2021).

I provide a holistic overview of the statistics used in the SDR model in Table 6.

Table 6. Regression Results for SDR

SDR	Regression Coefficient.	Std. Err.	Z (t-Statistics)	p-Value (Significance)
SDR L1.	-0.2061849	0.05980205	-3.54	0.002
SF	-0.2294011	1.53614	-0.15	0.881
CI	-0.0254348	0.00186038	-13.67	0.000
D/G	-2.282445	0.1750536	-13.04	0.000
ISI	0.263784	0.1156947	2.28	0.03
GF	-2.797211	0.52321707	-5.35	0.001
NSFAS	0.1594101	0.6187474	0.26	0.797
SU	-2.1406	2.6506	-0.81	0.419
Loc	0.4229055	0.02916641	14.50	0.000
HRU	-0.6603028	0.4481264	-1.47	0.141
Age	-0.01058	0.0042074	-2.51	0.0083
Type	-0.5340361	0.7321124	-0.73	0.466
_cons	1.667579	0.606925	2.75	0.006

Note: p-value < 0.05 (5%) means significant impact and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

Thus, the regression model for the SDR ratio appears as follows:

$$SDR_{it} = 1.6676 – 0.2062SDR_{it-1} – 2.7972GF_{it} – 0.2294SF_{it} + 0.1594NSFAS_{it} – 0.0254CI_{it} – 2.2824D/G_{it} + 0.2638ISI_{it} – 2.1406SU_{it} + 0.4229Loc_{it} – 0.6603HRU_{it} – 0.0106Age_{it} – 0.5340Type + \varepsilon_{it} \quad (5)$$

In terms of these results, the coefficients of prior year SDR, CI, D/G, GF and age of university were negative and highly significant. Researchers note the impact of decreasing GF on higher student debt in numerous studies (Cloete, 2015; Naidoo & Mckay, 2018). That said, the coefficients of student fees, SU, HRU and university type were also negative but not significant. Only three predictors had positive coefficients. The coefficient of NSFAS funding was positive but not significant. The coefficient of ISI was positive and significant at p-value of 0.03.

Notably, the coefficient of university Loc was positive and could be described as highly significant at p-value of 0.000. The implication being that the better the Loc, the less the SDR. This aligns with findings by Maseko et al. (2020), which revealed that demographic and socioeconomic variables significantly influenced student debt. A run of the model specification tests reflected no density of serial correlation problems, implying that the regressors were appropriate because the AR(2) was within the acceptable range at Pr > z = 0.293. All the other model specification statistics were also within the acceptable range. The Sargan test recorded at Prob > chi^2 = 0.285 and the Hansen test at Prob > chi^2 = 0.685. The positive Wald test of 32.36 implied that independent variables were collectively significant for the model.

3.2.5 GMM Regression Model for SSTA

SSTA reflects the ability of the surplus to finance the replacement of the total assets of an institution. A higher SSTA ratio is viewed favourably. The GMM regression for the model shows as follows:

$$SSTA_t = 0.6120 + 0.5415SSTA_{it-1} – 0.3501GF_{it} + 0.3191SF_{it} – 0.0892NSFAS_{it} – 0.1724CI_{it} – 0.3234D/G_{it} + 0.9465ISI_{it} – 9.1910SU_{it} – 0.0678Loc_{it} + 0.0657HRU_{it} + 0.0036Age_{it} – 0.1855Type + \varepsilon_{it} \quad (6)$$

The coefficients of prior year SSTA, student fees, ISR and HRU were positive and not significant (p-values > 0.05). Notably, the coefficient of age of university was positive and highly significant (p-value of 0.000). There was no conclusive evidence from literature that showed that older universities would record higher levels of surplus. Nevertheless, Gleißner et al. (2022) found that entities with high financial sustainability tend to generate excess income (surplus). CI, NSFAS funding and university Loc had negative but not significant coefficients. Nevertheless, D/G, GF, SU and university type had negative and highly significant regression coefficients. In a study conducted in 20 Malaysian public universities, Jaafar et al. (2021) also found that SU had a negative effect on financial sustainability as measured by the return on assets, the implication being that younger universities were more financially sustainable.

Table 7 holistically captures the statistics for the SSTA regression model:

Table 7. Regression Results for SSTA Ratio

SSTA	Regression Coefficient	Std. Err.	Z (t-Statistics)	p-Value (Significance)
SSTA L1.	0.5414859	0.3302284	1.64	0.101
SF	0.3190693	0.3158467	1.01	0.312
CI	-0.1723582	0.2112344	-0.82	0.415
D/G	-0.3233889	0.07725996	-4.19	0.000
ISI	0.94648456	0.5408483	1.75	0.073
GF	-0.3500601	0.1394093	-2.51	0.009
NSFAS	-0.089193	0.0885551	-1.01	0.314
SU	-9.190996	1.440006	-6.38	0.000
Loc	-0.0677579	0.1095506	-0.62	0.536
HRU	0.0657362	0.0573904	1.15	0.252
Age	0.003592	0.000904	3.97	0.000
Type	-0.185507	0.069413	-2.67	0.008
_cons	0.612027	0.2924732	2.92	0.007

Note: p-value < 0.05 (5%) means significant impact and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

I confirmed the validity of this SSTA model through a run of the model specification tests. The AR(2), Sargan and Hansen test were within the acceptable levels. Although the Hansen test was outside the optimal level of 0.1 $\geq(x^2)<0.25$, this did not invalidate the full instruments set because higher values were preferable. The Wald test at 21.44 was positive.

3.2.6 GMM Regression Analysis for RR

McLaren and Struwig (2019) argued that the RR is a far better indicator of the financial sustainability of a university because a higher RR implies that an institution can continue to fund its core business without additional income, up to a point where its reserves are exhausted. In a study conducted amongst 23 public universities in South Africa, using secondary data covering the period 2017–2021, Khumalo and Schutte (2025) found that improvement in the RR was a sign of better financial management. I highlight the regression model arising from the RR regression table as follows:

$$RR_t = –2.6576 + 0.0455RR_{it-1} + 3.2946GF_{it} + 1.0892SF_{it} + 1.5502NSFAS_{it} + 1.0540CI_{it} + 4.7092D/G_{it} + 0.0363ISI_{it} – 3.1106SU_{it} + 0.2710Loc_{it} – 0.1414HRU_{it} + 0.0142Age_{it} + 1.0508Type + \varepsilon_{it} \quad (7)$$

I capture the detailed statistics upon which I built the RR model in Table 8.

Table 8. Regression Results for RR

RR	Regression Coefficient	Std. Err.	Z (t-Statistics)	p-Value (Significance)
RR L1.	0.0455341	0.003754	12.13	0.000
SF	1.089194	0.075145	14.49	0.000
CI	1.054003	1.532983	0.69	0.492
D/G	4.709217	2.0649275	2.28	0.015
ISI	0.036349	0.0091192	3.986	0.000
GF	3.29456	0.9264023	3.56	0.001
NSFAS	1.550175	0.5089232	3.05	0.002
SU	-3.110006	4.000006	-0.78	0.437
Loc	0.2710408	0.4341929	0.62	0.532
HRU	-0.1413655	0.7578522	-0.19	0.852
Age	0.01424559	0.006741	2.11	0.0165
Type	1.050845	0.1069705	9.82	0.000
_cons	-2.65755	0.1838504	-14.45	0.000

Note: p-value < 0.05 (5%) means significant impact and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

The model reflects that the prior year RR was positive and highly significant (p-value 0.000). Other predictors that had a positive and highly significant impact on the RR included SF, GF, ISI, NSFAS funding and university type. This was not surprising because institutions that generated more income from various sources tend to be more financially sustainable (Kathomi et al., 2022; Maseko et al., 2020). Nevertheless, CI, D/G, Loc and age of a university had a positive but not significant impact (p-value > 0.05) on the RR. The regression coefficients for a university's size and historic roots were negative although not significant. The model specification tests confirmed that the model was valid and the regressors were appropriate. The AR(2), Sargan and Hansen tests were all within the acceptable levels. Notably, the Wald test was positive at 36.57. This implies that the independent variables were collectively significant for the model.

3.2.7 GMM Regression Model for Personnel Cost to Total Income

Personnel costs are afforded special disclosure in the annual financial statements of public universities in South Africa. This is because universities depend largely on their academic personnel to achieve their mandate in the form of teaching and research. The results of the PCTI ratio regression analysis reflect the regression model as:

$$PCTI_t = 0.1520 - 0.2268PCTI_{it-1} + 0.5327GF_{it} + 0.9871SF_{it} + 0.0682NSFAS_{it} + 0.5850CI_{it} + 0.3345D/G_{it} + 0.5746ISI_{it} + 2.5100SU_{it} + 0.0299Loc_{it} + 0.0378HRU_{it} - 0.0008Age_{it} - 0.0654Type + \varepsilon_{it} \quad (8)$$

I summarise the detailed statistics of the PCTI model in Table 9.

Table 9. Regression Results for PCTI Indicator

PCTI	Regression Coefficient	Std. Err.	Z (t-Statistics)	p-Value (Significance)
PCTI L1.	-0.2267804	0.01716305	-13.21	0.000
SF	0.9870825	0.1577877	6.26	0.000
CI	0.5849969	0.259347	2.26	0.024
D/G	0.3345158	0.1158582	2.88	0.003
ISI	0.5745538	0.2599791	2.21	0.0132
GF	0.5327186	1.380336	0.39	0.700
NSFAS	0.0682458	0.0868763	0.79	0.432
SU	2.510007	7.260007	0.35	0.730
Loc	0.0298625	0.00826522	3.61	0.000
HRU	0.0378214	0.0883112	0.43	0.668
Age	-0.0008166	0.0007152	-1.14	0.254
Type	-0.0653892	0.02140973	-3.05	0.000
_cons	0.152005	0.0324217	4.68	0.000

Note: p-value < 0.05 (5%) means significant impact and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

The prior year PCTI had a negative and highly significant impact (p-value 0.000) on the PCTI indicator. Similarly, university type had a negative and highly significant impact on PCTI. Although university age had a negative regression coefficient, its impact on PCTI was not significant (p-value 0.254). Student fees, D/G and university Loc had a positive and highly significant impact on the PCTI (p-values < 0.01). In 1983, Lugt confirmed the strong link between student fee income and staff salaries in the U.S. higher education sector. ISI reflected a positive and significant link to the PCTI with a coefficient of 0.5746 and p-value of 0.0132. The remaining predictors – namely CI, GF, NSFAS funding, SU and HRU – recorded positive regression coefficients, although their impact on PCTI was not significant (p-values > 0.05). Further, I ran the model specification tests on the PCTI model and all tests were within the acceptable levels. This signifies the appropriateness of the regressors and the validity of the model.

3.2.8 GMM Regression Model for Personnel Cost to Total Expenditure

The PCTE ratio is a refined version of the PCTI ratio that places personnel costs in the context of total university expenditure. The regression results for the PCTE indicator reveal the following model:

$$PCTE_t = -0.3925 - 0.2409PCTE_{it-1} + 1.0480GF_{it} + 0.6459SF_{it} + 0.4194NSFAS_{it} + 0.7002CI_{it} + 0.4469D/G_{it} + 0.0475ISI_{it} + 1.8505SU_{it} + 0.1085Loc_{it} + 0.0033HRU_{it} + 7.6506Age_{it} + 0.1680Type + \varepsilon_{it} \quad (9)$$

Table 10 captures all appropriate statistics for the PCTE regression model as follows:

Table 10. Regression Results for PCTE Indicator

PCTE	Regression Coefficient	Std. Err.	Z (t-Statistics)	p-Value (Significance)
PCTE L1.	-0.2408671	0.02602275	-9.25	0.000
SF	0.6459456	0.1650018	3.91	0.000
CI	0.7001881	0.6917016	1.01	0.311
D/G	0.4468757	0.2181688	2.05	0.031
ISI	0.0474527	0.0564913	0.84	0.413
GF	1.048026	0.282469	3.71	0.000
NSFAS	0.4194227	0.2238125	1.87	0.061
SU	1.8505	2.2706	8.15	0.000
Loc	0.1084587	0.1024029	1.06	0.290
HRU	0.0033101	0.1347823	0.02	0.980
Age	7.6506	0.0017003	0.00	0.996
Type	0.1680311	0.083017	2.02	0.041
_cons	-0.3924844	0.046644	-8.41	0.000

Note: p-value < 0.05 (5%) means significant impact and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

Because an exceedingly high PCTE indicator would imply that the other expenses constituted a disproportionate amount of an institution's expenses as compared to personnel costs, it was not surprising that the prior year PCTE reflected a negative and highly significant impact on the current year PCTE. This shows that a higher prior year PCTE can cause the current year PCTE to increase beyond the acceptable range. An optimum level of spending on personnel cost is important for the financial sustainability of universities. Laktionova et al. (2021) argued that the ability of a university to optimise costs and provide for sufficient sustainable income determines the level of its financial sustainability. In fact, in a study conducted in Ghanaian public universities, Ayam (2021) found that weak and ineffective cost management was a critical challenge for the financial sustainability of public universities.

Nevertheless, all the other predictors for the PCTE indicator recorded a positive regression coefficient. Student fees, GF and SU reflected a positive and highly significant impact on PCTE considering their p-values of 0.000. The literature has ample evidence that a university with increasingly diverse funding sources can carry additional costs without negatively affecting its financial sustainability (Makoni, 2017; Ndlovu, 2020; Osei-Kuffour & Peprah, 2020). D/G and university type also registered a positive and significant impact on PCTE. To conclude the validity and appropriateness of the model for the PCTE indicator, I ran the model specification tests and found all statistics to be within the acceptable levels. The Wald test recorded a positive of 43.84, signifying that the independent variables were collectively significant for the model.

3.2.9 GMM Regression Model for SSTR Indicator

The SSTR indicates the level of margin of safety that an institution's surplus provides in case of a decline in revenue (Bunting, 2020). A higher SSTR is good for financial sustainability. I summarise the SSTR regression model as follows:

$$SSTR_t = -0.7289 + 2.5222SSTR_{it-1} + 3.5349GF_{it} - 0.0353SF_{it} + 2.7062NSFAS_{it} + 0.0914CI_{it} + 0.0961D/G_{it} + 0.0748ISI_{it} + 1.1905SU_{it} + 0.1122Loc_{it} - 0.0416HRU_{it} + 0.0019Age_{it} + 0.2369Type + \varepsilon_{it} \quad (10)$$

I highlight the detailed regression results denoting the regression coefficients and p-values for the SSTR model in Table 11.

Table 11. Regression Results for SSTR Indicator

SSTR	Regression Coefficient	Std. Err.	Z (t-Statistics)	p-Value (Significance)
SSTR L1.	2.522216	0.3428195	7.36	0.000
SF	-0.0352647	0.2266813	-0.16	0.876
CI	0.0914138	0.8564055	0.11	0.915
D/G	0.0960681	1.100613	0.09	0.930
ISI	0.0748438	0.0329708	2.27	0.023
GF	3.534936	0.2735646	12.92	0.000
NSFAS	2.706206	0.2430136	11.14	0.000
SU	1.1905	1.9406	6.13	0.000
Loc	0.112196	0.0476644	2.35	0.033
HRU	-0.0416368	0.1444185	-0.29	0.773
Age	0.001877	0.0020342	9.23	0.000
Type	0.236935	0.12541514	1.89	0.067
_cons	-0.728877	0.3673637	-1.98	0.047

Note: p-value < 0.05 (5%) means significant impact and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

The regression coefficient for the prior year SSTR was positive and highly significant (p-value of 0.0000). Other predictors that were positively correlated with SSTR at a highly significant level included GF, NSFAS funding, SU and age of university. Further, ISI and university Loc denoted a positive and significant impact (p-value < 0.05 > 0.01) on SSTR. CI, D/G and university type registered positive regression coefficients but without significant impact (p-value > 0.05) on SSTR. Consequently, student fees and HRU revealed a negative but not significant impact on the SSTR. A run of the model specification tests for the SSTR model revealed no specific challenges with regards to the validity of the model. The AR(2) at Pr>z=0.15, the Sargan test at Prob>Chi^2=0.703 and the Hansen test at Prob>Chi^2=0.567 were within the acceptable levels. Although a little lower at 11.44, the Wald test demonstrated that the independent variables were still collectively significant for the model because it was positive.

3.2.10 GMM Regression Model for ISR Indicator

The ISR indicator is a measure of the financial sustainability of an institution based on its pool of interest and dividends yielding financial investments. In fact, Minyoso (2020) postulated that financial investments offer an entity the opportunity to generate more income. I capture the regression model for the ISR as follows.

$$ISR_t = -0.1343 - 0.8144ISR_{it-1} + 0.8175GF_{it} + 0.0264SF_{it} + 0.0513NSFAS_{it} + 0.0205CI_{it} + 0.2082D/G_{it} + 0.1055ISI_{it} - 1.5007SU_{it} + 0.0342Loc_{it} - 0.0116HRU_{it} + 0.0004Age_{it} + 0.0428Type + \varepsilon_{it} \quad (11)$$

I capture the detailed statistics for the ISR model in Table 12.

Table 12. Regression Results for ISR Indicator

ISR	Regression Coefficient	Std. Err.	Z (t-Statistics)	p-Value (Significance)
ISR L1.	-0.8143641	0.3704073	-2.20	0.028
SF	0.0263587	0.0412072	0.64	0.522
CI	0.020472	0.1014736	0.20	0.840
D/G	0.2081732	0.2071446	1.00	0.315
ISI	0.10546268	0.03435266	3.07	0.018
GF	0.8175016	0.3925934	2.08	0.037
NSFAS	0.0512825	0.0232762	2.20	0.028
SU	-1.5007	2.2307	-0.67	0.502
Loc	0.0341795	0.0427239	0.80	0.424
HRU	-0.0115733	0.0543965	-0.21	0.832
Age	0.000419	0.0002271	1.84	0.065
Type	0.0427956	0.0647028	0.66	0.508
_cons	-0.1342932	0.1234254	-1.09	0.277

P-value < 0.05 (5%) means significant impact and p-value < 0.01 (1%) implies highly significant impact.

Source: analysed by the researcher.

The model reflects that the prior year ISR had a negative and significant impact on the ISR indictor. The finding aligns with Chumba et al. (2019) in that investments were negatively correlated with financial sustainability in a study amongst 71 universities in Kenya. However, Minyoso (2020) noted in their study of 18 public universities in Kenya that the coefficient for financial investments was positively correlated with financial sustainability. Nevertheless, student fees, CI, D/G, ISI, GF, NSFAS funding, university Loc, age of university and university type recorded positive regression coefficients. The impact of GF, ISI and NSFAS funding on the ISR indicator was positive and significant. Meanwhile, SU and HRU showed a negative but not significant impact on the ISR. An analysis of the model specification tests for the ISR model showed that the model was valid because the regressors were appropriate with AR(2) at Pr>z =0.2826. The Sargan and Hansen tests also reflected favourable outcomes. The Wald test at 174.96 was positive, thereby confirming that the independent variables were collectively significant for the ISR regression model.

4. Discussion of the Findings

The research results revealed that the various financial sustainability ratios were impacted by the various funding sources in the public universities of South Africa. In the case of the CR (CR_{it}), I found student fees and ISI to have a positive significant impact on this ratio when compared to the other funding sources. Nevertheless, I found NSFAS funding to have an inverse relationship with both the CR and CashR. I believe this may be because NSFAS funding was a component of the student fees payment mechanism and as such was often taken into consideration when analysing student debt (Matyana et al., 2023; Naidoo & Mckay, 2018). Consequently, I found student fees to have a negative relationship with the CashR. GF, income from commercial activities, D/G and ISI emerged strongly as having a positive impact on the CashR ($Cash_{it}$). Government funding supported by student fees, income from commercial activities, NSFAS funding and ISI also showed a positive impact on the SR (SR_{it}). This supports the assertion that an institution that is able to generate income from various sources tends to have a lower debt burden (Aziz & Rahman, 2017). This is also in line with the resource dependency theory's assertion that revenue diversification mitigates against financial challenges (Jaafar et al., 2021). Regarding the SDR (SDR_{it}), NSFAS funding and ISI were the only funding sources that displayed a positive impact on this ratio.

The positive impact of NSFAS funding on the SDR is consistent with findings from other studies in South Africa (Bitzer & De Jager, 2018; Sader & Gabela, 2017; Wildschut et al., 2020). The funding sources found to have a positive impact on the SSTA ($SSTA_{it}$) indicator were student fees and ISI. Notably, I found student fees, GF, ISI and

NSFAS funding to be critical predictors (having a positive and highly significant impact) on the RR (RR_{it}). This is consistent with a view in literature that a university reliant on a diverse range of funding sources tends to be more financially sustainable (Abankina et al., 2017; Aziz & Rahman, 2017; Denman, 2005; Makoni, 2017; Ndlovu, 2020). In fact, in an earlier study, McLaren and Struwig (2019) found that the RR was one of the critical ratios measuring the financial sustainability of a university in South Africa. The importance of diverse sources of funding for a university's financial sustainability was also reflected in the PCTI ($PCTI_{it}$) indicator. As such, I found student fees, D/G, ISI, CI, GF and NSFAS funding to have a positive impact on this indicator. Lugt (1983) also discerned the positive link between student fees and staff salaries (personnel costs) in a study conducted in the U.S. higher education sector. Similarly, I found all the funding sources in the funding model of the public universities in South Africa to have a positive impact on the PCTE ($PCTE_{it}$). The trend whereby diverse funding sources have a positive impact on the financial sustainability ratios continued with the SSTR ratio ($SSTR_{it}$). The only funding source that had a negative impact on this ratio was student fees. This may suggest the dominance of GF whereby student fees may be overshadowed by NSFAS funding. I also found the last financial sustainability indicator, ISR as percentage of total revenue (ISR_{it}), to be positively impacted by all the funding sources including NSFAS funding.

Although I found NSFAS funding to have a positive impact on seven of the 10 financial sustainability indicators, it showed a negative impact on the CR, CashR and SSTA. Based on these findings, the study has both policy and practice implications. It is apparent that GF supported by a diverse range of funding sources remains critical for the financial sustainability of South African universities. In fact, there is no empirical evidence that GF alone can lead to the financial sustainability of a public university in South Africa (Ngcobo et al., 2024). At the policy level, the South African government should balance resource allocations to universities with measures that allow universities to generate their own income. This implies that the current regime of university fee caps should be reviewed to the effect that universities are allowed to at least increase fees as per the inflation rate. There are also policy implications regarding the NSFAS. Due to its importance as part of diverse funding sources for the public universities in South Africa, the NSFAS needs to be effectively managed. In another study, Mbhalati (2025) has provided proposals on how the NSFAS can be better equipped for it to be an effective funding tool. At a practice level, universities should improve their ability to generate income from other sources. These sources may include student fees supported by NSFAS funding, commercial activities of universities, G/D and ISI. Additional income sources should also be pursued. These may include research income whereby universities invest resources in commercialising their research endeavours.

5. Conclusion

The work covered in this paper is seminal in that it is the only study thus far in South Africa that has provided a comprehensive analysis of the financial sustainability indicators for public universities. The study also brought into perspective the importance of other factors in an understanding of the financial sustainability of public universities in South Africa. These factors, namely SU, Loc, HRU, age and type, deserve further analysis in future studies to better reflect the historically advantaged and disadvantaged university divide in South Africa. Nevertheless, this study has limitations with regards to the selection of the financial sustainability indicators given I did not incorporate emerging indicators such as environmental, social and governance. There is a need to plug this gap by incorporating forward-looking indicators to make the financial sustainability framework for public universities in South Africa more comprehensive. Future researchers can also use the findings from this study as a framework to gain a deeper understanding of the mechanism by which funding sources affect the financial sustainability of universities. The mean scores for the 10 ratios could be used in future studies to develop a benchmark for financial sustainability measurements in public universities. The work covered in this paper demonstrated that financial sustainability is not a product of a single revenue stream. I have established a clear link between an effective diversified revenue strategy and financial sustainability in this study.

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