

Affordability of Higher Education in South Africa: Are Above Inflation Tuition Fee Increases Justified?

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Abstract

This article investigates why South African universities increased their tuition fees above inflation during the period 2010 to 2019 (intentionally excluding the potential distortion caused by COVID-19). The affordability of higher education is the subject of increased debate among stakeholders in South Africa. From a financial point of view, universities, as typical service organisations, should have benefited from an increase in enrolments. The main reason is that their expenses are typically period costs and are hence less affected by an increase in enrolments. However, the key findings of the study on which this article is based were that revenue increased above inflation, with tuition fees the main culprit. In turn, the reason for increased tuition fees is a significant increase in expenses. This suggests that universities did not benefit from economies-of-scale or efficiency in managing their expenses. The research makes a unique contribution to the body of knowledge by assessing why university tuition fees increased using a financial model to project budgeted revenue, expenses and tuition fees (taking inflation and growth in student enrolments into account) for 2019 using actual financial data from 2010.

Key words: tuition fees, affordability, public universities, efficiency, economies-of-scale

Sommaire

Cet article étudie les raisons pour lesquelles les universités sud-africaines ont augmenté leurs frais de scolarité au-delà de l'inflation au cours de la période 2010-2019 (en excluant intentionnellement la

distorsion potentielle causée par le COVID-19). Le caractère abordable de l'enseignement supérieur fait l'objet d'un débat croissant parmi les parties prenantes en Afrique du Sud. D'un point de vue financier, les universités, en tant qu'organisations de services typiques, auraient dû bénéficier d'une augmentation des inscriptions. La raison principale est que leurs dépenses sont généralement des coûts périodiques et sont donc moins affectées par une augmentation des inscriptions. Cependant, les principales conclusions de l'étude sur laquelle se base cet article sont que les revenus ont augmenté au-delà de l'inflation, les frais de scolarité étant les principaux responsables de cette hausse. L'augmentation des frais d'inscription s'explique à son tour par une augmentation significative des dépenses. Cela suggère que les universités n'ont pas bénéficié d'économies d'échelle ou d'efficacité dans la gestion de leurs dépenses. La recherche apporte une contribution unique au corpus de connaissances en évaluant les raisons de l'augmentation des frais d'inscription dans les universités à l'aide d'un modèle financier permettant de projeter les recettes, les dépenses et les frais d'inscription budgétisés (en tenant compte de l'inflation et de l'augmentation des inscriptions d'étudiants) pour 2019 en utilisant les données financières réelles de 2010.

Mots clés: frais de scolarité, accessibilité financière, universités publiques, efficacité, économies d'échelle

Background and Introduction

In a report for KPMG, Parker (2020) states that the 'Golden Age' of traditional universities is ending as students and governments are no longer willing to pay for the services they provide (i.e., on-campus, face-to-face tuition). Minor (2023) concurs and notes that students consider the cost versus the benefits of higher education and that the former seem to currently outweigh the latter. It would thus seem that the days of traditional universities trying to be everything to everybody are numbered. The rate of change, coupled with the knowledge explosion, has changed the face of higher education, rendering it impossible for universities to be experts in all fields. Worldwide, traditional universities are struggling to survive in the face of declining government support and demands for

relevant education, as well as competition amongst universities and from private institutions. Online and opensource learning created a much more competitive environment, giving students access to more relevant and affordable education. Parker (2020) and Temoso and Myeki (2023) also allude to universities' inability to improve their labour productivity, leading to increased tuition fees. Thus, the failure of traditional, regional universities presenting face-to-face teaching to improve management of their expenses to offer more affordable education in an environment where students have an array of relevant and cheaper options, would seriously impact their chances of survival.

Globally, a growing number of students cannot afford higher education due to rising fees, leading to the commercialisation and commodification of knowledge (Schmidt, 2020; Dickler, 2021; Ivancheva and Garvey, 2022; Marcus, 2022). Affordability refers to students' ability to pay tuition fees (Peters et al., 2020, p. 740). For the purposes of this article, it is considered from the perspective that if tuition fees increase at a rate above inflation, it is unlikely that students, the majority of whom are poor in South Africa, will be able to afford higher education.

Rising tuition fees have been a bone of contention amongst South African students for several years, coming to a head in 2015 when campuses across the country were shut down by student protests under the banner of #FeesMustFall (Rand Daily Mail Newswire, 2015; Heher, 2017; Ndenze, 2018). This followed the proposal by the Minister of Higher Education to increase tuition fees by 10% to 12%. The #FeesMustFall protests escalated to a call for free higher education (Businessstech, 2015; BBC, 2016; South African History Online, 2016). Worldwide, research has indicated that poverty contributes to limiting access to higher education (Dipitso, 2021). In South Africa, where most students come from low-income households (Masehela, 2018), higher tuition fees exacerbate the situation.

Affordability of higher education is of grave concern in South Africa given the legacies of apartheid (Dipitso, 2021). In the democratic era, this sector has been tasked with remedying the socio-economic legacies of apartheid and colonialism and breaking the cycle of poverty. The National Student Financial Aid Scheme (NSFAS) was established as part of the response to this expectation. This national grant and loan scheme aims to increase access to higher education for undergraduate students from poor and working-class households with a combined income of up to

R350 000 per annum (Koornhof, 2020; Masutha, 2020). In 2020, 42% of enrolled students at South African universities were funded by NSFAS (Koornhof, 2020). In 2021, more than 750 000 applications were received, an increase of 25% from the previous year (Naidu, 2021). An added risk for South African universities emanating from unemployment and aggravated by COVID-19 is that some students will move into the 'missing middle' (households with a combined annual income of R350 000 to R600 000), meaning they will be too poor to afford higher education but will not qualify for funding, thus increasing the risk of non-payment of tuition fees (Koornhof, 2020; Naidu, 2020). In January 2024, Minister of Higher Education Dr Blade Nzimande announced that R3.8 billion would be set aside to cater for this group.

Globally, increased student debt is a further challenge emanating from substantial increases in tuition fees. On 24 August 2022, the President of the United States (US) announced relief for student debt (United States Government, 2022). According to Dickler and Nova (2022), in 2022, this amounted to \$1.7 trillion owed by 44 million students. The Biden Administration stated that, "A post-high school education should be a ticket to a middle-class life, but for too many, the cost of borrowing for college is a lifelong burden that deprives them of that opportunity" (United States Government, 2022). This expectation leads to willingness among students to incur debt to ensure employability and an improved standard of living.

Higher education recorded extraordinary growth following the Second World War, changing from an elitist to a high or mass-participation system. This contributed to technological progress, social well-being, nation building and, ultimately, life enrichment (Parker, 2020). However, the massification of higher education caused the earnings premium of a degree to decrease. For example, it is estimated that a fifth of the degrees conferred in the United Kingdom are not worth their cost in terms of future returns. Britton et al. (2020) thus assert that these students would have been better off had they not studied. The fact that student loans must be repaid adds to this equation (Smit and Serfontein, 2019). If a graduate cannot find employment or obtain a job with a return related to the cost of tuition, his/her debt will continue to increase, and his/her financial status (which in South Africa is primarily poor) will worsen.

Student debt in South Africa amounted to R16 billion in September

2022, increasing by around R2 billion per annum (Mail and Guardian, 2022). Given that students incur debt in the expectation that they would obtain employment, increasing student debt levels should be reflected in a decreasing graduate unemployment rate. However, in quarter 1 of 2022, the unemployment rate among young graduates aged 15-24 in South Africa stood at 32.6%. For those aged 25-34, the graduate unemployment rate was 22.4% for the same period (Statistics South Africa, 2022b). Thus, about one in four South African graduates was unemployed in the first quarter of 2022.

Graduate unemployment is a serious concern, especially in a country like South Africa, which is among the most unequal countries in the world, with a Gini coefficient (last measured in 2014) of 63% (Editorial, 2022). This implies that the wealthiest 10% of South Africans own 71% of the wealth whilst the poorest 60% only own 7% (Editorial, 2022). It is for this reason that South African youth seek affordable higher education that will enhance their employability (Smit and Serfontein, 2019).

Globally and in South Africa, higher education cannot be considered 'affordable', especially since the return on its cost is decreasing. Coupled with rising tuition fees and spiralling student debt, this calls into question the efficiency of university administration that causes expenses to increase (Parker, 2020; Serfontein, 2022).

While the purpose of universities is the subject of extensive debate, given that the majority of South African students come from disadvantaged backgrounds, they cannot afford the luxury of obtaining knowledge that will not lead to increased employment opportunities. Many academics might argue that this might not be the purpose of a university, but serving their immediate community is one of universities' acknowledged objectives, and if that community consists of a significant number of poor households, the university cannot relinquish its responsibility to alleviate poverty, and one way to do so is to enhance employability. Indeed, many South African universities' mission statements highlight their role in improving the employability of their graduates.

Research Problem

The prevalence of unemployment in South Africa is caused by many factors, ranging from sluggish economic growth, to poor quality

education, and government inefficiency. The youth are affected the most by unemployment (Smit and Serfontein, 2019). Whilst the unemployment rate has escalated over the past decade, there have been significant increases in universities' tuition fees. New graduates' spiralling debt burden negatively impacts economic development (Mail and Guardian, 2022). Given South Africa's unequal wealth distribution and high unemployment and poverty rates, it is critical to provide affordable higher education. The high graduate unemployment rate, together with rising tuition fees, begs the question of whether universities are behaving ethically in charging high fees for education that cannot guarantee employment, leaving graduates with enormous levels of debt. A further concern is the reason why tuition fees have increased, especially after the increase in government funding following the #FeesMustFall campaign. It is against this background that this article investigates whether the increases in tuition fees at South African universities are justifiable and if these institutions are achieving the goal of affordable higher education.

Research Objectives

The primary research objective was to determine the affordability of tuition fees at South African universities by analysing how well these institutions' revenue and expenses were managed from a financial management perspective, focusing on the sampled universities as typical service organisations with relatively high period costs that should have benefited from an increase in enrolments. The secondary objectives were to:

- Evaluate the performance of South African universities' revenue in terms of the budgeted benchmark (related to growth in teaching input units (TIUs) and teaching output units (TOUs)) from 2010 to 2019;
- Determine possible reasons for the increase in tuition fees from a financial management perspective;
- Evaluate South African universities' expenses in terms of the budgeted benchmark (related to growth in TIUs and TOUs) from 2010 to 2019; and
- Determine the strength, form, and structure of the relationship between the difference between actual and budgeted total

revenue as the dependent variable (y) and budgeted and actual expenses as the independent variable (x).

Literature Review

South Africa's higher education landscape needs to be understood in order to measure the impact of increases in tuition fees. Higher education in the country consists of privately and publicly funded institutions (Mabizela, 2002, p. 49; Kruss and Kruss, 2005, p. 273). This article focuses on publicly funded universities, of which there are currently 26, with the majority mainly delivering on-campus, face-to-face tuition. The University of South Africa (UNISA), which only offers distance education (Universities South Africa, 2018) was excluded from this study. Thus, for the purposes of the article, a traditional university is a publicly funded university primarily delivering on-campus, face-to-face tuition.

Purpose of Traditional Universities

Kotzee and Martin (2013) assert that any conversation on traditional universities should include a debate on their purpose, nature, and value. While the authors of this article concur with this observation, debating the role of a traditional university falls outside its scope. Instead, the authors argue that if universities' financial affairs are not managed efficiently, thus preventing them from providing affordable education that ensures employability, they fail to achieve their most important objective.

A traditional university's three main focus areas are teaching, research and public service (Perkins, 1973; Etzkowitz et al., 2000; Walton and Martin, 2004; Bikse et al., 2016). As noted above, they primarily provide face-to-face, on-campus tuition, separating them from other higher education institutions that provide online or distance education to passive recipients (Mackeogh and Fox, 2009; Long, 2012). Further characteristics of traditional universities identified by Walton and Martin (2000, 2004) are sponsorship of research, the openness of access, a focus on education, evidence of scholarly activity, and independence. For the purposes of this study, an essential characteristic of traditional universities is that they are not-for-profit organisations that provide a diverse range of services to their community (Serfontein and Smit, 2021).

Universities as Service Organisations

When universities are considered service organisations, it is critical to understand their cost structure. Service organisations confront challenges in defining a clear input-output relationship (Serfontein, 2019). The main reason is the complexity of defining a single unit of service output (Gripper, 1995; Terzioglu and Chan, 2013). Output diversity, that refers to output that relies on different measures of support activities, adds to the complexity of defining a unit of service output (Gripper, 1995). The lack of a causal input-output relationship renders most of the costs incurred by service organisations period costs. Since most of the costs are not specifically related to the cost objective, they are therefore not assigned to this objective (product cost), but reported in the period in which they were incurred (period cost) (Terzioglu and Chan, 2013; Drury, 2018).

Efficiency at Universities

Improved efficiency occurs when the relationship between a decision-making unit's weighted outputs and weighted inputs improves (Charnes, Cooper and Rhodes, 1978; Kudła, Stachowiak-Kudła and Figurski, 2016). In other words, efficiency is indicated by the cost effectiveness ratio of operating costs (input) divided by related output (Titus et al., 2021). According to Perović and Kosor (2020), efficiency is also achieved when a decision-making unit's stated goals are fulfilled with the resources employed. It therefore starts by defining input and output (Toukoushian and Lee, 2018). For the purposes of this study, inputs were regarded as total council-controlled unrestricted expenses and output as tuition fees as representative of enrolments. A similar study that explored economies-of-scale at American community colleges also utilised total cost as an input measure and enrolments as an output measure (Toukoushian and Lee, 2018). One of the main factors to consider in the management of universities is to understand how to measure the efficiency of its units (Mojahedian et al., 2020). Efficiency entails that the organisation should have benefited from an increase in enrolments since most of the costs it incurs are period costs without a clear causal input-output relationship. Economies-of-scale typically occur at higher education institutions (Kuo and Ho, 2005; Robst, 2001). The increase in tuition fees experienced at universities seems to point in the opposite direction, indicating that they did not

benefit from economies-of-scale that should have led to improved efficiency.

Economies-of-Scale at Universities

Universities achieve economies-of-scale when the average cost per student decreases, since the same period costs incurred are covered by a greater number of students (Williams, Morgan and Lloyd, 1993; Zhang and Worthington, 2017). Therefore, economies-of-scale are achieved when the resources utilised (cost) of delivering a service to one student (enrolment) decrease as the student numbers increase. The empirical part of this study investigated whether universities did, in fact, benefit from improved efficiency by requiring decreased tuition fees to cover their expenses as enrolments increased.

Research Methodology

The empirical part of this study analysed financial data from a sample of the 26 publicly funded universities in South Africa. Regression analysis was applied as an inferential statistical tool.

Description of the Sample

As noted previously, South Africa has 26 publicly funded universities. A sample of 16 was selected from this population, with UNISA excluded due to the fact that it is a distance learning institution. While summarised information is available for all 26 institutions for the period considered in this study, this data is a) not sufficiently detailed, b) not comprehensive or grouped similarly for the entire period, and c) does not separate restricted and unrestricted and council-controlled financial data. For these reasons, the researchers gathered the financial data analysed from the actual financial statements of the sampled universities.

The sample size was due to the fact that a) some universities in the population did not exist or were very small in 2010, b) financial statements were not available for the period covered by this study, and c) certain universities did not provide sufficient detail in their financial statements for the purpose of this study. Thus, only universities that published financial statements with sufficient disclosure were included in the sample.

The sample of 16 universities represents 61.5% of the population of 26. However, when considering TIUs and TOUs as the primary

indication of the subsidies and grants revenue stream received by universities, as can be seen in Table 1, it is representative. TIUs and TOUs can be considered as a measurement of the size of the sample and population since subsidies and grants comprise the most considerable portion of revenue received by universities (Statistics South Africa, 2020).

Table 1: TIUs and TOUs of the population and the sampled universities

	Total TIUs		Total TOUs	
	2010	2019	2010	2019
Population	1,158,537	1,553,743	134,270	202,694
Sample	798,363	1,053,193	88,194	126,307
% of Population	68.9	67.8	65.7	62.3

Table 1 shows that the sample represents more than 67% of the TIUs of the population and more than 62% of the TOUs. Research output units (ROUs) were specifically excluded from the empirical part of this study because, at 7% in 2015 and 8% in 2019 of the total unrestricted revenue of South African universities, they would not have a significant impact on the findings. Tables 2 and 3 illustrate the portion of the sample's revenue and expenses in relation to the population.

Table 2: Average Revenue and Expenses: Population versus Sample 2015

Average	2015 (R1 million)		Sample / Pop.	2015 Composition	
	Pop. 26	Sample-16		Pop. 26	Sample-16
Revenue**	2,018.6	2,040.1	101.1%	100.0%	100.0%
Expenses**	1,946.9	1,901.6	97.7%	96.4%	93.2%
Net Surplus	71.7	138.5		3.6%	6.8%

*The population universities include restricted revenue and student accommodation revenue as well as UNISA which is substantially bigger than any other university in the sample, while the sample only reflects unrestricted revenue.

**The population universities include restricted expenses and student accommodation expenses, while the sample only reflects unrestricted expenses.

Table 3: Average Revenue and Expenses: Population versus Sample 2019

Average	2019 (R1 million)		Sample	2019 Composition	
	Pop. 26	Sample-16	/ Pop.	Pop. 26	Sample-16
Revenue*	3,401.1	2,969.3	87.3%	100.0%	100.0%
Expenses**	2,798.9	2,559.0	91.4%	82.3%	86.2%
Net Surplus	602.2	410.3		17.7%	13.8%

*The population universities include restricted revenue and student accommodation revenue as well as UNISA which is substantially bigger than any other university in the sample, while the sample only reflects unrestricted revenue.

**The population universities include restricted expenses and student accommodation expenses, while the sample only reflects unrestricted expenses.

As illustrated in Tables 2 and 3, when total revenue and total expenses are considered, the sample represents a substantially bigger share of the population. In 2015, revenue per university of the sample represented 101.1% of the population, whilst the sample represented 97.7% of the expenses of the population. These figures decreased somewhat in 2019, when the sample represented 87.3% of the population in terms of revenue, and 91.4% in terms of expenses. Based on the information in Tables 2 and 3, the sample was regarded as representative of the population.

Important Terms, Concepts, and Assumptions

The empirical part of this study analysed the financial data of the sampled universities for a nine-year period from 2010 to 2019. All the data were secondary data in the public domain. This section provides more detail on the terms, concepts, and assumptions applicable to the analysis of the financial data.

Revenue

The analysis of the financial data focused on three areas, i.e., revenue, expenses and growth. The first analysis related to the sampled universities' total council-controlled unrestricted revenue. As per South African universities' funding model, total revenue consists of subsidies and grants, tuition fee income and other (third-stream) income (PwC South Africa, 2016; Heher, 2017; Koornhof, 2020; Naidu and Dell, 2020). Tuition fee income was also analysed as part of the analysis of total revenue.

Expenses

Total council-controlled unrestricted expenses were the next element analysed. Total expenditure was grouped into academic and other personnel costs, and other expenditure, which includes operating expenses and depreciation.

Growth

The analyses of the growth in total revenue, tuition fee income and total expenses were performed using a budgeted benchmark. This was calculated considering both inflation and growth in enrolments (the term nominal TIOU growth will be used for the purpose of this study comprising TIUs and TOUs).

The growth in TIUs and TOUs from 2010 to 2019 was regarded as the most appropriate proxy for growth in enrolments, with the term TIOUs used to refer to their combined growth. Total South African inflation was based on the all items, total country Consumer Price Index (CPI) for the nine years (Statistics South Africa, 2022a). The same inflation (59.41%) was used for all universities, but the individual growth in each university's TIOU was used to calculate the budgeted values separately. Equation 1 illustrates the calculation of the nominal TIOU growth rate applied:

Equation 1: Formula to calculate the nominal TIOU growth

$$\text{nominal TIOU growth} = (1 + \text{inflation}) \times (1 + \text{TIOU growth}) - 1$$

Focusing only on unrestricted council controlled revenue and expenses, the extent to which actual total revenue, tuition fee income and total expenses deviated from the projected budgeted benchmark values provided an indication of whether the sampled South African universities managed their revenue and expenses efficiently, including whether they benefited from economies-of-scale.

Research Method

The actual 2010 amounts for total revenue, tuition fee income, other revenue and total expenses were adjusted using the nominal TIOU growth rate from 2010 to 2019 to determine their budgeted benchmark for 2019. The actual 2019 amounts were then compared to the 2019 budgeted benchmark to determine whether universities managed their

revenue and expenses efficiently.

For total revenue and tuition fee income, the 2019 budgeted benchmark was deducted from the actual 2019 income. A positive difference is interpreted as negative (depending on where the additional revenue was generated from), since it indicates that universities received more than what was reasonably expected. For total revenue, tuition fee income and other revenue only one growth scenario was applied, i.e., 100% inflation and 100% growth in TIOUs.

In analysing total expenses, the 2019 actual total expenses were deducted from the 2019 budgeted benchmark. Two possible scenarios were applied, namely, 100% inflation and 100% growth in TIOUs, and 100% inflation and 50% growth in TIOUs. Since the majority of costs incurred at universities are period costs without a direct causal relationship to the number of enrolments, the authors are of the opinion that including only 50% of the growth in TIOUs is still a very conservative projection that does not fully take the benefits of efficiency, economies-of-scale or technology into account. A negative result indicates that universities spent more than what was reasonably expected, suggesting a possible lack of efficiency in managing their expenses. All the differences between the budgeted benchmark and the actual amounts for total revenue, tuition fee income and total expenses were expressed as a percentage of the budgeted benchmark.

The last part of the empirical study entailed a regression analysis, which determines which independent variables explain the significant change in the dependent variable under consideration. Regression analysis can also be used to explain the strength, form, and structure of the relationship between variables. Lastly, it can be employed to predict the value of the dependent variables (Malhotra, Nuna and Birks, 2017). The Statistical Package for the Social Sciences (SPSS) was utilised to perform the regression analysis that tested the difference between budgeted and actual total expenses' relationship to the difference between actual and budgeted total revenue. A bivariate regression analysis was applied since a mathematical relationship (equation) between a single predictor, or metric-independent variable and a single metric-dependent variable was determined (Malhotra et al., 2017). Equation 2 illustrates the bivariate regression equation applied.

Equation 2: Bivariate regression model straight line formula

$$y = \beta_0 + \beta_1 x + e_i$$

In Equation 2:

- y = Dependent variable
- x = Independent variable
- β_0 = Line intercept
- β_1 = Line slope
- e_i = Error term (residual)

In most regression models, parameters are unknown. However, they can be estimated from the observations in a sample by applying Equation 3 (Malhotra et al., 2017).

Equation 3: Equation to estimate parameters

$$\hat{Y}_i = a + bx_i$$

The variables in Equation 3 are as follows:

- \hat{Y}_i = Predicted dependent variable value (actual – budgeted revenue)
- a = Independent variable value (actual – budgeted expenses)
- b = Vertical axis intercept ()
- x_i = Slope of the straight line ()

Equation 2 was used to develop the regression equation illustrating the relationship between the difference in actual and budgeted total revenue as the dependent variable (y) and the difference in budgeted and actual expenses as the independent variable (x). The aim of the regression analysis was to determine whether the increase in revenue (especially tuition fees) at the sampled South African universities was caused by an increase in expenses (both above inflation). A range of observations of y and x for the sampled universities was entered into SPSS to derive the regression findings presented in Table 14 in the following section, which also contains the results of the analysis of the financial data.

Results

The literature suggests that the increase in university tuition fees over the past decade is a worldwide phenomenon that has undermined disadvantaged students' opportunity to obtain a degree and resulted in high levels of student debt that are increasing exponentially. This is of particular concern in South Africa that suffers from high levels of poverty and unemployment and has the most unequal distribution of wealth in the world. Levelling the playing field to enable disadvantaged students to have access to a tertiary qualification should be one of universities' primary objectives. From a financial management perspective, above inflation increases in tuition fees could be the result of a) a decline in government subsidies, b) decreased student enrolments, or c) increases in expenses above growth and inflation.

The empirical questions addressed in this study were a) what are the trends in total revenue and tuition fees at universities, and b) how **efficiently** are South African universities managing their expenses to ensure that students obtain **affordable** education? The financial statements of a sample of 16 of the 26 publicly funded South African universities for the period 2010 to 2019 were analysed to answer these questions. The 2019 financial year was intentionally chosen to exclude COVID-19's impact on their financial performance. Analyses were performed to:

- Assess actual total revenue, tuition fee income, other revenue and total expenses from 2010 to 2019.
- Calculate budgeted total revenue, tuition fee income, other revenue and total expenses for 2019 (using the 2010 financial statements as the base).

Table 4 uses inflation of 59.41% for this period, while the average growth in TIOUs for the 16 universities was 33.04%. Using Formula 1, an increase of 112.08% (taking inflation and 100% of TIOU growth into account) was used to calculate the budgeted values for both revenue and expenses for 2019. In addition, a growth of 85.75% (100% inflation and 50% of TIOU growth) was used for expenses to calculate alternative budgeted expenses for 2019. These assumptions and calculations are illustrated in Equation 1 (see previous section) and Table 4.

Table 4: South African Universities: Inflation and Growth in Enrolments from 2010 to 2019

2010 – 2019	% Increase (100%)	% Increase (50%)
Inflation	59.41	59.41
Growth in TIOUs	33.04	16.52
Nominal TIOU growth (100%)	112.08	
Nominal TIOU growth (50%)		85.75

Table 4 illustrates that mean budgeted revenue and expenses should increase by 112.08% as a reflection of the nominal TIOU growth rate from 2010 to 2019 (85.75% if expenses only increased by 100% inflation plus 50% of enrolment growth). If actual revenue and tuition fees exceeded the budget in 2019, this shows that the actual revenue of the sampled universities increased more than necessary. If actual expenses exceeded the budget, this implies that the sampled universities did not manage their expenses efficiently. Tables 5 to 13 compare budgeted total revenue, tuition fee income, other revenue (taking 100% inflation plus 100% TIOU growth into account) and total expenses (100% inflation plus either 100% or 50% TIOU growth) for 2019 to the actual amounts related to these variables. Table 5 focuses on actual versus budgeted total revenue for 2019.

Table 5: South African Universities: 2010 as a Base to compare Budgeted versus Actual Revenue for 2019

Unrestricted Revenue	MEAN: Per University		All 16 Univ. Rand ('000)
	Rand ('000)	Increase %	
Actual Revenue:			
- Mean 2010	1,320,142		21,122,278
- Mean 2019	2,969,318	124.92	47,509,085
Budget 2019	2,832,227		45,315,631
Dif. (Actual - Budget)	137,091		2,193,454
% Dif. (Actual/Budget) - 1	4.8		

Table 5 illustrates that actual mean revenue for 2019 was R137.1 million per university, above inflation and 100% growth in TIOUs (actual minus budget). Depending on the source of this additional revenue, this is not necessarily a negative trend. To put the means into perspective,

the 16 sampled universities were split into two groups, namely, a group with actual total revenue above inflation and TIOU growth (or budget), and the other that stayed within budget. The same division was applied to tuition fee income. It was established that ten universities generated actual revenue above budget and six stayed within budget.

Table 6: South African Universities that Generated Actual Revenue above Budget versus those within Budget

Unrestricted Revenue	10 Univ.	6 Univ.
Actual Avg. Revenue (R'000):	> Budgeted Revenue	< Budgeted Revenue
- Mean 2010	1,123,937	1,647,151
- Mean 2019	2,651,869	3,498,399
Mean Budget 2019	2,313,915	3,696,080
Difference	337,954	- 197,681
% Difference	14.6	-5.3
Difference (Total) (R'000):	3,379,539	(1,186,086)

What is interesting about Table 6 is that smaller universities generated revenue above budget (compare the mean in 2019). The differences are quite substantial, with the universities that exceeded budgeted revenue at a difference of 14.6% (R3,379.6 million for ten universities) and those that stayed within budget at a difference of -5.3% (-R1,186.1 million for six universities). The purpose of these calculations was to establish the difference among the universities, but before reaching a conclusion, it was important to focus on tuition fees as one of the major sources of revenue to make any deduction regarding *affordable* education.

Table 7: South African Universities: 2010 as a Base to compare Budgeted versus Actual Tuition fee income for 2019

Tuition fees	MEAN: Per University		All 16 Univ.
Actual Tuition fees:	Rand ('000)	Increase %	Rand ('000)
- Mean 2010	415,691		6,651,048
- Mean 2019	1,030,383	147.87	16,486,130
Mean Budget 2019	892,143		14,274,295
Dif. (Actual - Budget)	138,240		2,211,835
% Dif. (Actual/Budget) - 1	15.5		

Table 7 indicates that South African universities generated additional revenue (above budget) almost exclusively from tuition fees (a R137.1 million difference in actual versus budgeted revenue versus R138.2 million for tuition fees). Their top management could argue that the relative decrease in subsidies is the main reason for the abnormal increase in tuition fees. However, Table 8 confirms that this is not the case.

Table 8: South African Universities: 2010 as a Base to compare Budgeted versus Actual Other Revenue for 2019 (excluding Tuition fees)

Other Revenue (Excl. Tuition)	MEAN: Per University		All 16 Univ.
	Rand ('000)	Increase %	Rand ('000)
- Mean 2010	904,452		4,471,230
- Mean 2019	1,938,935	114.38	31,022,955
Mean Budget 2019	1,940,083		1,041,336
Difference (Actual - Budget)	- 1,149		- 18,381
% Dif. (Actual/Budget) - 1	-0.1		

Although actual other revenue (predominantly subsidies) did increase less than budget, it is only -0.1% below budget, which is negligible. Focusing on the difference between both actual and budgeted revenue and tuition fee income, it is obvious that tuition fees, rather than other revenue or subsidies and grants, increased above budget, which confirms that the sampled universities used an increase in tuition fees to increase their revenue from 2010 to 2019.

Hence, it is reasonable to conclude that, by increasing tuition fees above inflation and enrolment growth from 2010 to 2019, South African universities did not act in the interests of students and thus did not offer affordable education. Table 9 highlights that this does not necessarily apply to all sampled universities. If some universities did not have to increase their tuition fees above inflation from 2010 to 2019, it is unlikely that there could be a uniform or external reason for doing so.

Table 9: South African Universities that Generated Actual Tuition fees above Budget versus those within Budget

Tuition fees (R'000)	10 Univ.	6 Univ.
Actual Tuition fees:	> Budgeted Tuition fees	< Budgeted Tuition fees
- Mean Actual Tuition Fees 2010	359,262	509,738
- Mean Actual Tuition Fees 2019	930,878	1,196,225
Mean Budget 2019	737,628	1,149,669
Difference (Actual - Budget)	193,250	46,556
% Dif. (Actual/Budget) – 1	26.2	4.0
Difference (Total):	1,932,499	279,335

The same grouping used in Table 6 was applied in Table 9. The ten universities with actual total revenue above budget increased tuition fees at 26.2% above budget, thus using an increase in tuition fees to increase their revenue streams. This implies that, in 2019, students paid R1,932 million more in tuition fees than necessary across these ten universities, without the universities benefiting from economies-of-scale or efficiency. Similarly, six of the universities with actual total revenue within budget increased their tuition fees above inflation, but only by 4% as opposed to 26.2% among the worst performing universities. In our view, from a financial management point of view, there is almost no justification for these increases in tuition fees to the detriment of disadvantaged students requiring affordable education. Table 10 focuses on total expenses of South African universities in order to identify possible reasons for the increase in tuition fees.

Table 10: South African Universities: 2010 as a Base to compare Budgeted versus Actual Expenses for 2019

Expenses at 100% of TIOU Growth	MEAN: Per University		All 16 Univ.
	Rand ('000)	Increase %	Rand ('000)
- Mean 2010	1,206,184		19,298,947
- Mean 2019	2,559,039	112.16	40,944,630
Mean Budget 2019	2,588,811		41,420,977
Difference	29,772		476,347
% Difference	1.2		

Table 10 focuses on the worst-case scenario, namely that budgeted total expenses for 2019 will increase with both inflation and 100% growth in TIOUs. Universities can be regarded as typical service organisations, which should benefit from predominantly period costs rather than product costs in their cost structure. Period costs such as salaries are fixed for a period of time, irrespective of the number of enrolments (in the case of universities). Hence, most expenses incurred by universities should not increase above inflation with a moderate increase in student enrolments. In addition, a university's expenses include non-academic salaries and operating expenses that are indirect to teaching as one cost objective, and the number of enrolments as the second. The only costs with a direct input-output relationship (also called product costs) are academic salaries. Therefore, to increase expenses in the budget with both inflation and the growth of TIOUs is to include a measure of inefficiency in the budget for 2019.

The findings are relatively positive in the sense that actual expenses were just 1.2% under budget for 2019, but as noted previously, the situation would have improved if economies-of-scale and efficiency were taken into account. Table 11 considers the expenses of universities whose budget minus actual expenses was positive (underspending) versus those where it was negative. Coincidentally, these two groups also had a ten-versus-six split, although there were small differences between the first (driven by revenue) and the second (driven by expenses) groupings.

Table 11: South African Universities with Actual Expenses above Budget versus those within Budget

Expenses at 100% of TIOU Growth	10 Univ.	6 Univ.
Actual Expenses (R'000):	> Budget	< Budget
- Mean 2010	1,038,366	1,485,882
- Mean 2019	2,194,746	3,166,195
Mean Budget 2019	2,037,789	3,507,182
Difference (Budget - Actual)	-156,957	340,987
% Dif. (1 - Actual/Budget)	-7.7	9.7
Difference (Total):	(1,569,575)	2,045,922

The results in Table 11 are quite concerning. The amount the ten universities overspent on their budget averages -R157.0 million per

university for 2019; thus, there is no indication of either efficiency or benefits from economies-of-scale. On the positive side, six universities achieved budget minus actual expenses of R341.0 million per university and did not overspend on their expense budget. If all 16 universities overspent on their expense budget, there might have been an accepted external factor justifying the overspending. However, this is not the case, indicative of inconsistent management of expenses at the sampled universities. The true measure of efficiency is when expenses grow in line with inflation, but much slower than enrolment growth. Given the fixed and indirect nature of most of the costs at a typical university, it could be expected that expenses increase with inflation, but not nearly at 100% of the growth in enrolments. Adding technology, efficiency, and economies-of-scale to the equation, especially non-academic salaries and operating expenses should only be marginally influenced by TIOU growth.

To address this problem, the budgeted expenses for the sampled universities are considered from two separate scenarios, i.e., including total inflation and 100% growth in TIOUs and total inflation and 50% of the growth in TIOUs. We are of the view that including only 50% of the growth in TIOUs is still a very conservative projection, not fully benefiting from the fixed and indirect nature of these expenses or fully taking the benefits of efficiency, economies-of-scale or technology into account. Tables 12 and 13 focus on the assumption of 100% inflation plus only 50% of TIOU growth.

Table 12: South African Universities: 2010 as a Base to compare Budgeted (50%) versus Actual Expenses for 2019

Expenses at 50% of TIOU Growth	MEAN: Per University		All 16 Univ.
	Rand ('000)	Increase %	Rand ('000)
- Mean 2010	1,206,184		19,298,947
- Mean 2019	2,559,039		40,944,630
Mean Budget 2019	2,242,605	85.75*	35,881,678
Difference (Budget – Actual)	-316,435		-5,062,952
% Dif. (1 – Actual/Budget)	-14.1		

*See Table 4.

As noted above, in an environment with predominantly period and indirect costs, any growth in the volume of the cost objective (enrolments) delivered should have a minimal impact on expenses (excluding inflation). Applying this principle to determine the 2019 expense budget using 100% inflation and only 50% of TIOU growth, the results in Table 12 do not bode well for South African universities' ability to benefit from economies-of-scale and from an efficiency point of view. The actual total expenses for 2019 for all the sampled universities exceeded the budget by R5.1 billion. This is a clear indication of poor financial management by not benefiting from economies-of-scale, improved technology, or efficiency in managing their expenses. Not only is this a direct reflection on the top management of South African universities, but it also explains, in part, the increase in tuition fees. Table 13 again differentiates between the group of universities that incurred actual expenses for 2019 above budget versus those that stayed within budget (using only 50% of TIOU growth).

Table 13: South African Universities with Actual Expenses above Budget (50%) versus those within Budget

Expenses at 50% of TIOU Growth	10 Univ.	6 Univ.
Actual Expenses (R'000):	> Budget	< Budget
- Mean 2010	1,038,366	1,485,882
- Mean 2019	2,194,746	3,166,195
Mean Budget 2019	1,841,656	2,910,853
Difference (Budget - Actual)	- 353,090	-255,342
% Dif. (1 - Actual/Budget)	-19.2	-8.8
Difference (Total):	(3,530,902)	(1,532,050)

Of great concern is that, in terms of actual expenses, considering only 50% of TIOU growth and 100% inflation, both groups did not stay within budget. Although the Rand differences between the two groups are not material, the percentage difference of -19.2% versus -8.8% between the two groups is substantial; again, a clear indication of South African universities' inability to control their expenses from a financial management perspective. The fact that universities are not-for-profit organisations does not justify poor financial management of expenses. Tables 14 and 15 present a regression analysis between actual less budgeted total revenue (dependent variable) and budgeted less

actual total expenses (independent variable). The following hypothesis was formulated:

H_{1_0} : *There exists no significant relationship between budgeted less actual total expenses and actual less budgeted total revenue.*

H_{1_a} : *There exists a significant relationship between budgeted less actual total expenses and actual less budgeted total revenue.*

As shown in the following two tables, there is a significant (sig. = 0.003**) relationship between overspending on expenses and the increase in revenue ($r = -0.697$). The reason for the negative correlation is that actual revenue above budget is positive, while actual expenses above budget are negative.

Table 14: Actual less Budgeted Total Revenue versus Budgeted less Actual Total Expenses

		Actual - Budgeted Total Revenue	Budgeted - Actual Total Expenses
Pearson Correlation	Actual - Budgeted Total Revenue	1.000	-0.697
	Budgeted - Actual Total Expenses	-0.697	1.000
Sig. (1-tailed)	Actual - Budgeted Total Revenue		0.001**
	Budgeted - Actual Total Expenses	0.001**	
N	Actual - Budgeted Total Revenue	16	16
	Budgeted - Actual Total Expenses	16	16

**Significant at <1%; *Significant at <5%

Table 15: Actual less Budgeted Total Revenue versus Budgeted less Actual Total Expenses Regression Analysis

R	r ²	Adjusted r ²	Sig. F Change
.697a	0.486	0.449	0.003**

**Significant at <1%; *Significant at <5%

Tables 14 and 15 confirm that H_{1_0} is rejected and that the sampled universities increased their revenue to fund their expense increases above inflation and growth. The regression model in Table 15 confirms the universities' dependence on revenue, specifically tuition fees, to cover their expenses since almost 45% (Adjusted $r^2 = 0.449$) of the change in

the difference between actual and budgeted revenue can be explained by a change in the difference between budgeted and actual expenses. Not only is this unacceptable; it is clearly not sustainable. As indicated in Tables 7, 8 and 9, universities exclusively used tuition fees to increase their revenue. Although these results were the trend for the sampled universities from 2010 to 2019, quite a few universities did not increase their expenses or tuition fees above inflation and TIOU growth for this period, indicating that this phenomenon is not necessarily indicative of common/mutual external factors impacting all universities. Although the sampled universities' net surplus was not a research focus, if the actual 2019 revenue (Table 5) and actual 2019 expenses (Table 10) are deducted from the actual 2010 revenue and expenses, respectively, the mean net surplus increased from R114.0 million to R410.3 million per university, an increase of 260.0% or 69.8% above both TIOU growth and inflation, a concerning factor for organisations such as universities that lack a profit motive.

Conclusion

The period 2010 to 2019 was intentionally chosen to assess the financial results of the sampled universities. Some of the universities did not exist or were very small prior to 2010, and 2019 was selected to mitigate the impact of COVID-19. The study's primary focus was to determine whether the tuition fees at South African universities were still affordable by investigating whether the increases were justified. This was achieved by first assessing the revenue performance, focusing on the sampled universities as typical service organisations with relatively high period costs that should have benefited from an increase in enrolments. As indicated in Table 4, the sampled universities showed an increase of 33.0% in enrolments (TIOUs) from 2010 to 2019, indicating that they grew in size. Secondly, the focus was on investigating the possible reasons for the increase in tuition fees with the aim of determining whether or not it was justified. The second part of the investigation began with an analysis of expenses at the sampled universities to determine whether they benefited from economies-of-scale and thus managed their expenses efficiently. Thirdly, the correlation between the universities' revenue and expenses was considered as part of the quest to explain the increase in tuition fees. While universities are not-for-profit organisations, this does not justify inefficient management

of expenses nor the failure to benefit from economies-of-scale to provide affordable higher education in a country characterised by poverty, unequal distribution of wealth and unemployment.

Top management of universities will most probably justify the increase in tuition fees and the related increase in expenses, and there might be some reasonable explanations from their perspective. However, since the increase in both expenses and revenue were not consistent amongst the sampled universities, justification would be difficult. The sampled universities almost exclusively used an increase in tuition fees (above inflation and growth) to cover the abnormal increase in expenses. Students at the 16 universities paid R2.212 billion (see Table 5) too much for tuition in 2019 alone, or R3.380 billion at the ten universities with the largest difference between actual and budgeted revenue (see Table 6). In an environment of poverty and unemployment where universities' primary objective should be affordable higher education, these differences are unacceptable, and any form of overpayment would make it unaffordable for a household under financial pressure.

Focusing on expenses, we argue that, given the fact that universities are typical service organisations with predominantly period costs that are indirectly linked to an increase in enrolments, determining budgeted expenses for 2019 using 100% inflation and 50% enrolment growth is a very realistic and even conservative assumption. Using this norm, Table 12 indicates that the sampled 16 universities overspent on their budget by R5.063 billion for just the 2019 financial year. Universities have two primary stakeholders, namely, students seeking affordable education and the government that provides subsidies and grants. All indications are that top management at the sampled universities did not act in the interests of these two primary stakeholders by increasing tuition fees to fund the growth in expenses above budget. From a financial management perspective, this clearly reflects inefficient management of expenses.

The limitations of this research study include that not all 26 universities were included in the sample, and all the revenue streams and expense categories were not analysed. Although it was outside the scope of this article, an above budget salary increase for academic personnel would, to some extent, be a reasonable explanation for increasing tuition fees given the need for new and more relevant skills in the market. Non-salary related expenses, such as technology and services (electricity, rates and

taxes, etc.) could also be used to explain increased expenses. Regardless of these limitations, the study's results are extremely concerning, with the rejection of H_{10} confirming that universities increased their tuition fees to fund the increase in expenses rather than due to declining government subsidies or reduced student enrolments.

An issue that was not addressed in the empirical part of this study was the disruption caused by the 4IR, expedited by COVID-19, with traditional face-to-face universities losing their competitive advantage due to opensource and online learning being the new norm. Students can and increasingly will obtain more affordable and relevant higher education from the best universities in the world, with a resulting decline in student enrolment in traditional universities. Given that university expenses are typically period costs that remain fixed for a period of time, a decline in enrolments is a serious risk that could impact these institutions' very survival. Declining enrolments will lead to reduced revenue streams, but, given the fixed nature of expenses, almost no spontaneous decline in expenses. The scope of this study did not allow for a more detailed examination of the disruption of higher education. Future research could investigate the full impact of introducing free education in South Africa and students' expectations surrounding access to higher education.

It is clear that South African universities did not manage their expenses efficiently from 2010 to 2019 and, to make matters worse, used abnormal increases in tuition fees to fund these inefficiencies. They therefore, did not benefit from economies-of-scale that typical service organisations are expected to experience in times of growth and technological advancements. From a financial perspective, being a not-for-profit organisation does not justify poor management of expenses or, even worse, increasing their net surplus to almost 70% above enrolment growth and inflation. Lastly, violating their responsibility to provide affordable education to all students, specifically those from disadvantaged backgrounds, could be regarded as unethical behaviour. The inconsistencies in the increase in expenses among the sampled universities are a clear indication that there is no mutual external reason for this phenomenon, but rather, a lack of discipline or commitment amongst top management to ensure that tuition fees remain reasonable so that students can afford to obtain higher education.

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