

Budgeting models at a South African university.

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DECLARATION

I declare that the field study hereby submitted for the Magister in Business Administration at the UFS Business School, University of the Free State, is my own independent work and that I have not previously submitted this work, either as a whole or in part, for a qualification at another university or at another faculty at this university. I also hereby cede copyright of this work to the University of the Free State.



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Date: 09 May 2023

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Abstract

Higher education institutions have faced increasing funding pressures. For this study, budgeting was identified as a mechanism to better manage these challenges. This study investigated the budgeting model most suitable for a selected university while balancing its duty to meet the demands for public service provision and commercial sustainability.

A literature review was done to identify the various models of budgeting that the university could employ. The empirical data allowed an analysis of how profitable the university's departments are. Many departments at the university were found to be unprofitable and cross-subsidised, despite the institution's strategic objective to operate like a business.

The research proposes target ranges for the contribution margin ratio (68-72%) and the direct profit margin ratio (0-5%) to enhance sustainability without burdening profitable departments or undermining the public service provision. The performance budget model was identified as the most appropriate for the university, as it allows targeting direct costs, which mainly consist of salaries. Implementing this model could significantly improve departmental profitability while maintaining the overall profit. Additional recommendations include compiling department-level budgets, calculating anticipated contribution margin ratios and direct profitability margin ratios, and strategising for loss mitigation or determining acceptable losses for departments fulfilling the university's public service.

Keywords: Accounting, management accounting, resource allocation, budgeting, financial sustainability, direct costs, indirect costs, contribution margin

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List of Abbreviations and Acronyms

GDP	Gross Domestic Product
SARB	South African Reserve Bank
NSFAS	National Student Financial Aid Scheme
NSF	National Skills Fund
TVET	Technical Vocational Education and Training
UNISA	University of South Africa
TOU	Teaching output units
ROU	Research output units
FTE	Full-time equivalent
TIU	Teaching input units
DHET	The Department of Higher of Education and Training
ZBB	Zero-based budgeting
RCM	Responsibility-centred management
HEI	Higher education institution
RAM	Resource Allocation Model
StatsSA	Statistics South Africa
COVID-19	Coronavirus disease 2019

Chapter 1 Introduction

1.1 Title

“Budgeting models at a South African university.”

1.2 Introduction and Background

Universities worldwide find themselves in an increasingly unpredictable and competitive environment. Disruptions in the form of the Coronavirus disease 2019 (COVID-19) pandemic, digital transformation, financial crises, and new forms of knowledge and skills have become drivers for change in order that universities remain sustainable and relevant (Kupe & Wangenge-Ouma, 2020, p. 1). Financial resources are one of the most critical components that universities find to be effective (Kupe & Wangenge-Ouma, 2020, p. 1). Therefore, it is essential that universities carefully manage the acquisition and use of financial resources to achieve their goals and maintain a sustainable organisation (Kupe & Wangenge-Ouma, 2020, p. 1). Budgeting is a planning exercise that shows how resources are expected to flow into the organisation and how it will be spent. Budgeting also forces managers to evaluate the external market and other related conditions and generate responses for any changes in conditions (Drury, 2015, pp. 370–373).

The crisis faced by universities, specifically in South Africa can be highlighted by considering the Gross Domestic Product (GDP). GDP is measured by economic activity representing the value of a country's final goods and services within a specific period (Mohr, Yu & Adendorff, 2019, pp. 20–21). This period is usually a year. GDP is one of the most important measures by which a country's economic performance is judged. GDP takes the final value of goods or services in rand and cents. This value is then added to all the other goods and services to arrive at a GDP value. To avoid double-counting, only final goods and services are used in the calculation of GDP. Final goods are goods that individuals, firms and households consume (Mohr, Yu & Adendorff, 2019, pp. 20–21). Final goods are not resold or processed further (Mohr, Yu & Adendorff, 2019, pp. 20–21).. As universities exist within the economic

environment, changes in the economic performance of the country are relevant to these universities.

A differentiation exists between whether constant or current prices are used to calculate GDP. Nominal GDP is calculated based on current prices. For example, to calculate the nominal GDP for 2018, the prices for goods and services in 2018 are used to arrive at the nominal GDP. Real GDP, by contrast, uses constant prices to arrive at a value. Real GDP is determined by taking a base year and using the prevailing prices of that year. This eliminates the price increases and looks at the volume of final goods and services (Mohr, Yu & Adendorff, 2019, p. 28). For example, if the base year is 2010, then when calculating the GDP for 2018, the goods and services produced in 2018 will be valued using the 2010 prices. This eliminates the effects of inflation (Mohr, Yu & Adendorff, 2019, p. 28).

In real GDP terms, growth in advanced economies is expected to be 5% for the 2021 fiscal year, 3.8% in 2022, and 2.3% in 2023. The growth in real GDP will ensure that investment and output (real GDP) reach trend levels equal to before the onset of the COVID-19 pandemic in 2019/2020. In emerging and developing countries like South Africa, growth is expected to be an average of 6.3% in 2021, 4.6% in 2022, and 4.4% in 2023 (World Bank, 2022, para. 4). Unfortunately, South Africa's expected GDP growth will result in output and investment not equalling pre-pandemic trend levels as growth will still be 4% below the pre-pandemic trend (World Bank, 2022, para. 4). Using 2019 GDP levels as a base equal to 100, the pre-pandemic trend projection for 2023 for emerging and developing countries was 119. The pandemic trend level has a projection of 115 for 2023. This shows that the anticipated growth with the pandemic was four lower than if there was no pandemic. For example, if the 2019 GDP was made to equal R100, then the trend projection pre-pandemic was that it would equal R119 by 2023. The pandemic projection for 2023 would be R115 (World Bank, 2022, p. 1).

The South African Reserve Bank (SARB) anticipates growth in GDP of 1.7% in 2022, 1.8% in 2023, and 2% in 2024. The SARB also sees a progressively upward trend in inflation in future. As a result, the bank increased the repurchase rate by 25 basis

points to 4% from the 28th January 2022, with a view of gradually increasing this interest rate to contain inflation rates (SARB, 2022, p. 1). The repurchase rate is the interest rate at which the SARB charges commercial banks to borrow from it. An increase in the repurchase rate discourages banks from borrowing from the SARB and restricts their ability to supply money and credit to the economy (Fourie & Burger, 2019, p. 86). These changes are again, relevant to universities as they operate within these economic changes.

Globally and locally in South Africa, inflation is limiting options around monetary policy. In advanced economies, inflation is the highest since 2008, while in emerging economies, it is at its highest level since 2011. Rather than waiting for their economies to recover from the pandemic, efforts are being put into containing this inflationary pressure by policymakers (World Bank, 2022, p. 1). Monetary policy is a framework that can influence income and the inflation rate, among other things (Fourie & Burger, 2019, p. 371). Monetary policy is important because it influences inflation. A system of inflation targeting aims to bring about a stable price environment. This targeting can be used as a basis for wage and price adjustments should inflationary problems be successfully contained (Fourie & Burger, 2019, p. 380). If the price of goods or services that universities purchase increases, they will have to use more resources to pay for the same goods and services.

Against this backdrop of low growth and rising inflation, unemployment in South Africa reached 34.9% in quarter 3 of 2021, the highest on record. Data from Statistics South Africa (StatsSA) shows that not all South Africans were affected equally based on education level (BusinessTech, 2021, para. 1). South Africa has a graduate unemployment level of 12.5%, in sharp contrast to the national level of 34.9%. For those with tertiary education (without a degree), the unemployment rate is 23.2%, while those with a matric certificate have an unemployment rate of 36.6%. Those without a matric certificate have an unemployment rate of 40.2% (BusinessTech, 2021, p. 1)..

Moreover, the youth unemployment rate (referring to persons between 15 and 34 years who are unemployed) is 66.5%. Tertiary education, therefore, provides a critical

pathway to increase the chances of being employed as the graduate unemployment rate is much lower than those who have not graduated. (BusinessTech, 2021, para. 6; StatsSA, 2021b, p. 17). The rate of 34.9% is the unemployment rate of those who meet the definition of unemployment. To meet this definition of unemployment, an individual must want to work, but should not have worked seven days before the Statistics South Africa interview, and are available to start work. These individuals must have taken active steps to look for work four weeks before the interview (StatsSA, 2022a, paras 5–12).

If unemployment is correlated with education level, then the expectation of increased enrolments is likely to correlate with a decrease in unemployment. The question then arises as to why unemployment is so high when enrolments at universities have more than doubled since 2000. In 2000, 578 134 students were enrolled at academic and technical universities. By 2016 this number was 975 837 (StatsSA, 2017, p. 33). A report by the Department of Higher Education and Training released in March of 2021 reveals that in 2019 there were 1 283 890 students enrolled at all the current higher education institutes (HEIs) in South Africa (including public and private institutions) (Department of Higher Education and Training, 2021a, p. 3).

In spite of the mentioned increase in enrolments, universities in South Africa have come under increasing pressure in terms of funding over the past few years (StatsSA, 2020, paras 1–5). Universities receive funding through three primary sources, i.e., government funding in the form of subsidies and grants, tuition income, and third-stream income. In 2014, the year before the #FeesmustFall (2015) campaign, R44 of every R100 received as revenue for universities was from government funding, while R56 was from non-government sources. By 2019, the share received from the government increased to R48. The portion of government funding received by universities indicates an increasing trend in that universities have become more dependent on funding from the government after the #FeesmustFall campaign (StatsSA, 2020, para. 10). This increased dependency on government funding means that government funding will form a more significant part of revenue budgeting for universities.

For the 26 publicly funded universities in South Africa, revenue in 2020 increased by only 1%, to R90 billion, compared to R89 billion in 2019. In 2017 revenue increased by 9.5 %, 12.5 % in 2018 and 7.4 % in 2019. Grant revenue increased by R4 billion (8.4 %) in 2020 to R46 billion from R42 billion in 2019. Revenue from tuition decreased from R29 billion in 2019 to R28 billion in 2020. Expenses also declined from R73 billion in 2019 to R70 billion in 2020. The reason given for this is COVID-19 and the resulting lockdown. Statistics South Africa did not indicate whether they were able to foresee the emergence of a trend (StatsSA, 2021c, p. 1).

Owing to COVID-19 and the resulting lockdown, South Africa's GDP decreased by 7% in 2020 compared to an increase of 0.11% in 2019 (StatsSA, 2021d, para. 4). The decrease in GDP means that government has less space to increase spending without increasing debt. The lack of leverage in the South African national budget has resulted in some funding cuts to fund other areas. In 2021, the National Student Financial Aid Scheme (NSFAS) had a R5 billion shortfall in student funding. The R5 billion shortfall was funded by reducing other grants, such as reallocating R3.3 billion from the National Skills Fund (NSF) (Nkanjeni, 2021, para. 6,8,9). By 2022, the funding shortfall is expected to be R10 billion, with increased enrolments being a significant factor (Molele, 2021, para. 5). NSFAS provides fully subsidised financial aid to eligible students (NSFAS, 2022a, para. 1). A shortfall occurs when there is a difference between the amount attributable to students who qualify and apply for funding, and the budget allocated by the government (SA News, 2021, p. 1). South African citizens with a household income of less than R350 000 qualify for financing from NSFAS (NSFAS, 2022b, para. 7).

Additionally, citizens with a disability can qualify for NSFAS funding if their household income is less than R600 000. The funding can include tuition fees, accommodation, a transport allowance, a living allowance, a book allowance, and a personal care allowance (NSFAS, 2022b, para. 1). Financial aid to universities and Technical Vocational Education and Training (TVET) Colleges increased from R20 billion in 2018 to R42 billion in 2021, an increase of 107% (Nzimande, 2021, p. 2). A TVET college focuses on preparing learners to become workers in a skilled trade (Western Cape Government, 2022, para. 3). In 2021, owing to funding pressures on NSFAS, the

South African Minister of Higher Education instructed the University of South Africa (UNISA) to decrease their enrolments by 20 000, from 57 857 to 37 857. NSFAS also decided only to fund undergraduate degrees and defund some qualifications (Mthethwa, 2021, para. 5,20).

Funding pressures are felt in universities globally. In the United States, universities had to cut their budgets owing to the financial crisis, though universities generally lacked the skills to close institutes or schools. These decreases in expenditure typically took the form of hiring freezes, actual cuts in staff levels, and selective hiring (Bienen & Boren, 2017). South African universities might have to take similar actions if funding pressures continue in a low-growth environment.

Harvard Business School professor Clayton Christensen in 2017, estimated that half of the roughly 4 000 universities and colleges in the United States would face bankruptcy in 10 years, as he anticipates online education rendering traditional universities increasingly redundant (Hess, 2018, para. 1). Traditional universities primarily focus on teaching and learning (Etzkowitz *et al.*, 2000, p. 313). Traditional universities also present courses that fulfil the university's social responsibility towards the community in which it is embedded. In this manner, it renders a public service (Walton & Martin, 2004, p. 11).

The university selected for this study is a university of technology, situated in South Africa. It has two campuses (Anonymised institution, 2022). The selected university had a headcount of 21 817 students in 2021 (Anonymised institution, 2021). As previously mentioned, traditional universities present courses that may not necessarily be financially viable but do provide a public service for the good of their community. The related university focuses on financial sustainability, defined as "running the university as a business" (Anonymised institution, 2020). Running the university as a business implies a profit motive for courses, which is at odds with providing courses only to fulfil a public service. The selected university also relies heavily on government funding. Cash received from tuition was R210 million in 2020, while income received from grants was R827 million (StatsSA, 2021a, p. 1).

In summary, universities face uncertainty in how their resources will be generated. They exist in an environment of low economic growth, high inflation, and high unemployment. The stated environment means that universities will have to evaluate their financial sustainability and resource allocation.

1.3 Problem statement

Universities in South Africa have experienced decreases in tuition income. This decrease is seen with tuition income decreasing from R29 billion in 2019 to R28 billion in 2020, primarily due to the COVID-19 pandemic and the resulting lockdowns (StatsSA, 2021d, p. 1). Students funded by NSFAS also face an uncertain future as it is anticipated that there will be a R10 billion shortfall in 2022 (Molele, 2021, para. 5). Government grant income has also seen little growth in real terms (year on year growth adjusted for inflation) with growth in real terms from 2004 to 2015 only amounting to 30.5%. The government has also intervened in the setting of tuition fee increases. In 2016, fees were frozen and could not increase. In 2017 and 2018, tuition fee increases were capped at 8%, while in 2019, increases were capped at 5.3%, with a 0% increase for certain households (Kupe & Wangenge-Ouma, 2020, p. 4). In addition to the uncertainty in income, low economic growth is also expected for the near future, with monetary policy focused on moderating any increases in inflation rather than increasing the pace of recovery (SARB, 2022, pp. 6–7). This economic situation has to be considered by universities.

Traditional universities provide courses that might not be profitable but have societal benefits. In this situation, cross-subsidising becomes prevalent. Cross-subsidising is a phenomenon where a module presented does not cover its direct costs. The costs then have to be funded from other modules that are profitable. Direct costs refer to salaries and the operational budget allocated to a faculty (Serfontein and Smit, 2021, pp. 3–6).

Owing to increased funding pressures as a result of NSFAS shortfalls, decreases in tuition income, and little growth in real terms of the government grants allocated, universities will need to manage their resources as efficiently, economically, and

effectively as possible; otherwise, universities might not be financially sustainable in the future and not achieve their objectives. Efficiency entails maximising output from units of a resource used. Economy is obtaining sufficient quality and quantity from resources at the lowest cost. Lastly, effectiveness is the extent to which an organisation achieves its objectives. It evaluates the relationship between intended and actual results (ACCA, 2022a, p. 1). Budgeting is increasingly seen as a means to allocate resources to achieve objectives rather than an activity to control expenditure (Van Wyk, 2004, pp. 36–41). Budgeting should encourage a member of an organisation to use their funds efficiently, provide accurate information for programmes and activities, aid in the decision-making process and give a historical reference to inform future decision-making. Budgeting should additionally bring members of the organisation together to support the organisation's goals (Gibson, 2009, p. 7).

The previously mentioned pressures faced by universities, like funding and economic vicissitudes (outlined in section 1.2 of this chapter), are some of the challenges that must urgently be addressed to ensure the financial sustainability of universities. Given the benefits and aim of budgeting mentioned above, this study will argue that the budgeting process, if done correctly, can address the challenges universities face.

1.4 Primary and secondary research objectives

The primary objective of this study was to determine the budgeting model most suitable for the university that is the subject of the study. Secondary objectives supported the achievement of the desired model as follows:

- The analysis of the policy, strategy and financial information gathered from the selected university;
- The determination of whether there is any difference between the official budgeting policy of the selected university and the implementation of the policy;
- Exploration of the most relevant budgeting models available for application at universities;
- Determination of the impact of a different budgeting model on the profitability of the various departments of the selected university; and

- The suggestion of a more appropriate budgeting model for the selected university.

1.5 Research Methodology

1.5.1 Research design

In this section, the various types of research designs are explored. The first design relates to quantitative research. Quantitative research emphasises quantification in the analysis and collection of data. Quantitative research is about collecting numerical data to explain a specific phenomenon. There are many types of quantitative research, such as surveys, correlational research and experimental research. Qualitative research, in contrast, emphasises words. It highlights an inductive approach to reaching conclusions (Bryman & Bell, 2009, pp. 26–28). . The research performed in this study will be quantitative and will include a literature review.

One type of quantitative research that can be performed is a case study. A case study is commonly associated with a geographical setting such as a workplace or organisation. A case study emphasises an enclosed system or situation. This emphasis is what differentiates it from other research designs (Bryman & Bell, 2009, p. 61).. An exploratory case study seeks to examine phenomena in the data that is interesting to the researcher. In this type of case study, a researcher may conduct preliminary fieldwork and collect small amounts of data before generating the research questions (Zainal, 2007, p. 4). This field study was an exploratory case study.

Quantitative research, by its nature, is deductively based and has generalisations that lead to predictions (Sukamolson, 2007, p. 6). Deductive reasoning is a kind of reasoning that yields valid conclusions if the premises are true (Johnson-Laird, 1990, p. 110). Valid conclusions from deductive reasoning can only occur if no mistake is made in the reasoning of the premises. Deductive reasoning differs from inductive reasoning. In inductive reasoning, the truth of the premises or propositions does not necessarily need to guarantee the validity of the conclusion (Schechter, 2013, p. 1). The advantages of quantitative research are that it provides results that enable

statistical analysis, allows for statistical comparison between groups and offers population estimations (Sukamolson, 2007, p. 4). The results from the investigation in this study were statistically analysed using Microsoft Excel software.

1.5.2 Sampling strategy

Quantitative research sometimes necessitates using a representative sample where the population is too large to collect data. The population is the group that will be researched. A sample is a sub-category of the population (Sekaran & Bougie, 2013, pp. 240–241). A representative sample is a sample that so closely reflects the population that it is a microcosm. Answers extrapolated from the representational population can then be attributed to the larger population (Bryman & Bell, 2009, p. 718)..

The population in this study is the four faculties and their 21 departments at the selected university. The sample consists of all four faculties and their 21 related departments. Since the population is small, the sampling strategy is to gather data from 100% of the population. The sampling strategy will therefore be non-random. The selected university was chosen because of its close proximity to the researcher and the ease with which the data was anticipated to be made available.

1.5.3 Data Collection method

Internal documents were primarily used for the field study. These documents included the budgeting policy, budget allocation working papers and management financial reports. These were obtained from the related university upon formal request.

The budgeting policy is a non-financial document that outlines the desired outcomes of resource allocation and the method of resource allocation to be used at the selected university. This information was used to compare what the allocation of resources should have been with what was done in the budget allocation working papers of the related university. The budget allocation working papers are financial documents and were used to determine the allocations and how they differ from the allocations if the budgeting policy had accurately been applied. The management financial reports are

also financial documents and were used to appropriate specific departmental allocations. Information on the teaching output units (TOUs), research output units (ROUs), full-time equivalent students (FTEs) and teaching input units (TIUs) per department were also obtained from the Data Services department at the selected university to calculate the income per department.

1.5.4 Ethical considerations

Ethics deals with concepts such as values, morality and legislation (Rossouw & L, 2013, p. 11). Ethics is essential as it speaks to the integrity of an item of research and the discipline itself (Bryman & Bell, 2009, p. 122).

Fleming and Karsten (2018, p. 210) state that the following ethical considerations must be taken into account when conducting research:

Informed consent: Informed consent means “Participants must be fully informed of what will be asked of them, how the data will be used, and what (if any) consequences there could be” (Fleming & Karsten, 2018, p. 210). Participants must provide active, explicit consent to participate and be informed that they can withdraw at any point. Participants should also be informed that they have the right to ask for information about the process to lay any complaint (Fleming and Karsten, 2018, pp. 210–211).

Confidentiality: Confidentiality is the next most important and means that the identity of participants is kept confidential. Self-identifying statements should also be avoided. (Fleming & Karsten, 2018, p. 211).

Objectivity: Objectivity means that bias should not affect the analysis of data (Sekaran & Bougie, 2013, pp. 162–163).

Voluntary participation: Voluntary participation means participants will participate voluntarily and will not be coerced or remunerated for their participation (Sekaran & Roger, 2013, pp. 162–163).

The four points mentioned above will be addressed in the following manner to ensure the study is conducted ethically:

- Informed consent: The selected university was informed about the information required of them, how the data was used and what possible consequences arose from the use of the data.
- Confidentiality: The information was kept confidential by anonymising the name of the selected university and informing the university of the anonymity.
- Objectivity: The researcher endeavoured not to let bias affect the research.
- Voluntary participation: Participation is voluntary. The university's name was anonymised to ensure that the university was protected.

The researcher applied for ethical clearance at the University of the Free State and the University selected for this study.

1.6 Demarcation of study

The empirical research is limited to the university identified. The field of study is management accounting with a focus on budgeting.

1.7 Chapter layout

Each chapter in the study was explicitly structured to address the research objectives stated in section 1.4. The study was structured as follows:

Chapter One: Introduction. This chapter introduces the background of the study. It includes the problem statement, primary and secondary objectives and the research methodology.

Chapter Two: Literature Review. This chapter consists of a literature review. This chapter will explore what resource allocation is, as well as a few of the budgeting models available to an organisation for implementation.

Chapter Three: Research methodology. This chapter provides details of the research methodology. It includes information on the research design, method, sampling, data collection, data analysis and ethical considerations.

Chapter Four: Data analysis and findings. This chapter presents the findings of the empirical research. The data received is presented, discussed and analysed. Data was collected from the selected university.

Chapter Five: Conclusion and recommendations. This chapter concludes the study with a summary of the findings and recommendations by the researcher. The researcher provides among other things a summary of the study, limitations and contribution of the study.

1.8 Summary

This chapter provides a detailed overview of the research report for this study. It includes an introduction and background. The problem statement and the primary and secondary objectives are also discussed. The research methodology is provided and a demarcation of the study is presented together with the related chapter layout. An exploratory case study was chosen as it seeks to understand an aspect that is of interest to the researcher. The four faculties and 21 departments were chosen as the sample of the selected university and it represents the full population of faculties and departments at the university. The data collected consisted primarily of internal documents from the selected university. This was financial and non-financial information.

With increasingly limited resources, universities are under pressure to find new funding sources and to allocate the funding universities receive more efficiently. Not only are these pressures from the global economic environment, but funding from the state has also come under pressure. Based on the information gathered and analysis, this study will recommend the most appropriate budgeting model for the selected university.

Chapter 2 Literature review

2.1 Introduction

The literature reviewed in this chapter explores resource allocation in service organisations with a specific focus on publicly funded universities. Included in the literature reviewed are the resource allocation methods applied at publicly funded universities. This chapter also explains what a university is and how its funding works.

Very little research has been done on the internal management processes in universities, particularly in budgeting. Management accounting researchers focused primarily on the private sector (service and manufacturing sectors). They also focused on the general public sector, like local government, to a minor degree. This focus on other areas has left very little research on higher education institutions (HEIs) in the context of management accounting (Tayib & Hussin, 2001, p. 42). This limited research means that the number of sources the researcher can acquire is limited in volume and recency. The researcher could find few sources between 2001 and 2022 which were relevant to the field study.

2.2 Resource allocation in services and universities

2.2.1 Resource allocation in services

Resource allocation is a term used to describe the overall allocation of financial resources to different decentralised management sections within an organisation (Lepori, Usher & Montauti, 2013, pp. 59–61). Since the budgets of these decentralised sections are limited by the ceiling placed on them by allocated resources and are specific plans of expenditure, budgets are closely related to resource allocation (Green *et al.*, 2000). Budgeting is a tool to allocate resources in an organisation. Budgeting is an essential tool for private and public organisations. For organisations, budgeting is a crucial element in the organisational control systems, as it balances the revenues

and expenditures of each unit within the organisation (Lepori, Usher & Montauti, 2013, pp. 59–61).

Budgeting is concerned with implementing an organisation's annual plan. It indicates how the organisation expects to generate and allocate resources (Drury, 2015, p. 369). In recent decades budgeting has also moved from a paradigm in which expenditure control is emphasised to one in which the outputs achieved are most important. The move in budgeting is underpinned by sound financial management in the three Es: effectiveness, efficiency, and economy (Van Wyk, 2004, p. 27) .

When considering the purpose of a budget, specific conditions apply to service organisations. Service organisations do not experience the same pressures as manufacturing organisations and are likely to have less developed budget practices. Reasons for the less developed budget practices in service organisations are first because manufacturing firms feel pressure to budget in order to coordinate their sales and production. Secondly, manufacturing organisations have to plan their inventory levels, adding pressure to the budget. In the most part, therefore, manufacturing firms form the focus when it comes to the budget process. But, budgeting can be helpful for service organisations. The budget process is an exercise in planning and control; two critical functions in any business or organisation. Service organisations are becoming increasingly competitive. As competition intensifies, planning and control become more relevant (Shim & Siegel, 2005, pp. 359–360).

Manufacturing and service organisations differ in the costing applied or to be applied. This difference is owing to manufacturing organisations having most of their activity driven by the production of physical goods. Manufacturing organisations, therefore, have inventory that these organisations sell and can store. Service organisations, in contrast, have most of their activity driven by personnel. Products offered by service organisations cannot be stored and are consumed immediately. This consumption means that investment in inventory in service organisations is far less than in manufacturing organisations. There is also far less production activity, if any. Therefore, the management of service organisations might not see the need for planning and control (Shim & Siegel, 2005, p. 360). The critical difference between

service and manufacturing organisations lies in the product offering. Service organisations offer intangible products whereas manufacturing organisations offer products that are tangible (Terzioglu & Chan, 2013, pp. 30–31). The intangibility of the product delivered makes the identification of a unit of service very difficult. It also makes the accurate valuation of the service product complex. The measurement problem also adds to the difficulties in financial planning and control activities of service organisations (Terzioglu & Chan, 2013, pp. 30–31).

When budgeting is considered, the process used in service organisations will be similar to manufacturing organisations since budgeting is a planning and control function. The service organisation would have to develop an overall budget and ensure that controls are in place. The significant difference in budgeting for non-manufacturing activities is the nature of the costs and, therefore, the associated control techniques (Shim & Siegel, 2005, p. 360).

In most service organisations, the highest cost is personnel cost in the form of salaries, wages, fringe benefits and other related costs. Budgeting techniques are therefore concerned primarily with planning staff use and controlling their effectiveness. Emphasis is put on labour productivity in service organisations and controlling overhead costs. The productive use of employee time is critical in service organisations (Shim & Siegel, 2005, p. 360). Manufacturing organisations identify inventory and receivables as critical current assets that must be thoroughly planned and controlled while service organisations emphasise receivables (Shim & Siegel, 2005, pp. 360–361).

Before the different budgeting models can be investigated, the budgeting process must be understood. Shim and Siegel (2005, pp. 360-361) provide the following six-step process for implementing a budgetary process in a service organisation (Shim & Siegel, 2005, pp. 360–361):

1. The organisation establishes a profit or surplus target;
2. The organisation prepares an annual plan of expected revenue and expenditure divided into specific organisational segments;

3. The organisation then establishes a cash budget;
4. A statement of financial position is developed and compared with pre-determined standards;
5. The performance is measured against plans by looking at levels of management positions; and
6. The organisation then takes whatever corrective action it deems necessary.

The Shim and Siegel (2005) reference was relied on heavily due to it being the only reference the researcher could find that provides context for the difference between budgeting in service organisations and manufacturing organisations. No alternatives could be found in the literature reviewed by the researcher after extensive searches.

Whether this process takes place from a centralised place of control or decentralised responsibility centres is an important consideration since organisations are becoming increasingly decentralised. This decentralisation is because of pressures in the external environment, such as globalisation, technological advances and a more demanding stakeholder environment. Over 63% of business leaders in Europe, North America and Asia-Pacific predicted a shift towards decentralised control to enable divisional managers to make decisions designed to cope with this modern environment (Deloitte, 2016, p. 6). This decentralisation was sped up as a result of Covid-19. Organisations were forced to become more decentralised as employees worked from home (Eshraghi, 2021, para. 2,5,6). This decentralisation creates responsibility centres. A responsibility centre is an organisational area managed by someone with a specific set of responsibilities. There are different types of responsibility centres. A cost centre is a responsibility centre where the manager is responsible for costs only. A revenue centre is a responsibility centre where the manager is responsible for revenue only. A profit centre is a responsibility centre where the manager is responsible for revenues and costs. An investment centre is a responsibility centre where the manager is responsible for costs, revenue and investments (Nscpolteksby, 2022, p. 431).

As a result of decentralisation, service organisations generally have departmental budgets. In a departmental budget, expenses are measured and compared to targets. Certain departments may also be profit centres where revenues are considered

together with the costs (Shim & Siegel, 2005, p. 361). One example of a definition of departmental expenses is all operating expenses excluding payroll, facilities, fringes and depreciation (Shim & Siegel, 2005, p. 44). At the level of the department, the budget should consider the expected work to be done to accomplish organisational objectives and translate that into an estimate of future costs (Shim & Siegel, 2005, p. 13).

2.2.2 Resource allocation in universities

The primary purpose of a university is teaching and research (Archer, 2017, p. 1). As mentioned in section 1.2, universities also render a public service. To achieve their purpose, universities utilise resources. A significant part of these resources is financial. These resources generally include the state subsidies and grants, tuition fee income, and third-party funding. Third-party funding is funds that are earmarked for specific units and activities. Third-party funding can consist of revenue such as private contract funds, research grants and other earmarked revenue (Lepori, Usher & Montauti, 2013, pp. 60–61).

Figure 2.1 shows the general averages in funding sources in the higher education system in South Africa. These proportions can differ significantly between institutions. The ability of the institution to generate private funds can significantly decrease the government grant percentage of total funds received (Department of Higher Education and Training, 2004, p. 2).

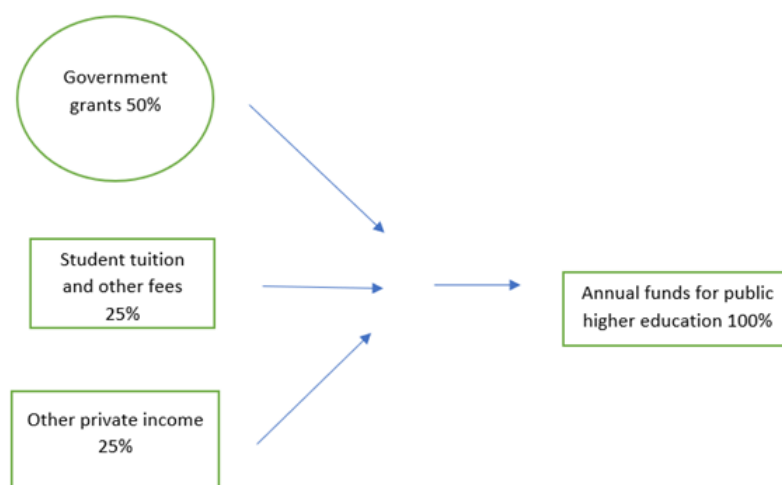


Figure 2.1: Sources of funds of higher education institutions

Source: (Department of Higher Education and Training, 2004, p. 2)

By 2012 the government contribution was 40%, while the student and tuition fee income went up to 31%. This has increased the burden on students to cover the funds needed by higher education institutions (PricewaterhouseCoopers, 2015). In 2021 tuition fee income was 36%, while government grants contributed 47% (StatsSA, 2022b, para. 2).

Only the Department of Higher Education and Training (DHET) has control over government grants. All HEIs in South Africa must submit financial statements to the DHET showing income from all public and private sources and all expenditures (Department of Higher Education and Training, 2004, p. 2). Expenditure shows how resources were allocated in a particular period.

Effective resource allocation in universities has its starting point in examining the system incentives that guide spending (Massy, 2004, pp. 4–5). These incentives are composed of intrinsic values as well as instrumental ones. Intrinsic values are the organisation's values, as found in their vision and mission (Massy, 2004, pp. 4–5). Instrumental values, by comparison, are valued not only for their own sake like intrinsic values, but they are valued for the results gained (Kumar, 2017, p. 178). There is a careful balance between offering programmes with high market demand but low intrinsic value, and those with high intrinsic value but low financial potential. This balancing often results in the former cross-subsidising the latter. A competent allocation model ensures a balance between the intrinsic values of the institution and those of the marketplace. Organisations that ignore the marketplace risk financial distress, while those that ignore the intrinsic values of the academic vision and mission risk the institution devolving into a business enterprise (Massy, 2004, pp. 4–5).

The second consideration of effective resource allocation in universities is to recognise and manage the diversity of values within the organisation (Massy, 2004, p. 5). The first relevant diversity is professional background (an English professor might see the world differently from a chemist.) The second difference is in educational purpose, and the last is self-interest. Self-interest can divert resources away from the institution's goals if viewed under the economic agency theory. The proposed remedy is for a principal, such as an administrator or trustee, to limit the ability of an agent (such as a

faculty or an employee) to divert resources without making them so powerless that they become ineffective (Massy, 2004, p. 5). A principal is an individual who has the authority to act and is in a position of control. An agent is someone who acts in place of the principal. A principal can only imperfectly monitor an agent's behaviour. An agent can also have more information than the principal and act only in their self-interest. This potential behaviour is the principal-agent problem (Silva, 2000, p. 51). The idea of educational purpose does not require more explanation, as it is not relevant to the objective of the study. This diversity is not decided at the budgetary level.

Resource diversion is crucial to take into account as it affects universities. Resource diversion occurs when resources are diverted from the institution's goals by agents because of their own self-interest. More critical are differences in good-faith beliefs in what is intrinsically vital by agents and principals. Faculties can have different views about what is academically essential compared to administrators, trustees or government funding agencies. There can even be differences in opinion within and between faculties. Each group uses high principles to argue in favour of their view. Managing this diversity of high principles is key to effective resource allocation (Massy, 2004, p. 5).

The third aspect of effective resource allocation in universities is managing complexity well. Universities are professional organisations. The expertise for teaching and research lies with faculty members. Effective resource allocation decentralises detailed budgeting away from central planners to faculties. Moving it to faculties aims to mitigate the principal-agent problems (Massy, 2004, p. 5).

Centralisation can have a disempowering effect on those executing the university's core competencies. Disempowerment can undermine productivity incentives and make accountability for improvements nearly impossible. On the other hand, too much decentralisation can lead to a loss of institutional values and priorities. This loss of institutional values can lead to the vision and mission of the organisation not being accomplished (Massy, 2004, p. 5). Policymakers have traditionally insisted on central

control over resources because of balancing values and market forces, complexity and value diversity (Massy, 2004, p. 6).

The most common resource allocation method is incremental line-item budgeting. In incremental budgeting, the previous year's allocation is taken as a base and typically adjusted with a variable such as inflation. There can also be decreases at the line-item level. There is generally only a focus on additions and deletions as the entire budget is too complex to analyse. Focusing on universities to maintain faculty morale and perceived academic quality, administrators typically keep the faculty's base budgets immune to changes in revenue owing to market downturns (Massy, 2004, p. 6). The lack of detailed examination of proposed allocations is one of the reasons why incremental budgeting lost popularity in the 1960s in the United States of America. Zero-based budgeting (ZBB) was introduced to answer the lack of examination of proposed allocations. Under ZBB, all expenditure requires justification and approval, and unlike the incremental model, the base allocation is zero (ACCA, 2022b, p. 1).

Traditional budgeting systems might have been appropriate earlier, but fall apart when faced with complexity and rapid environmental changes. Therefore, it is tricky for central planners to make a case for adaptation when faced with complexity. Faculties or unit managers also maximise expenditure and protest any proposed reduction in funding. Faculties, over time, begin to view their base allocations as something owed to them. Faculties then view these allocations as fixed costs. This view of fixed costs then makes productivity gains seem impossible. Cost reductions are viewed as compromising quality (Massy, 2004, p. 6).

Value diversity also affects how any reallocation is perceived. Units that have their resources reduced can see it as ideologically driven. This perception of ideology driving decisions results in across-the-board reductions in funding rather than making adaptive reallocations. Therefore, productivity improvement becomes challenging to achieve, preventing the university from correctly managing its values and responding to market forces (Massy, 2004, p. 6).

The economic concept of productivity defines productivity in terms of profit maximisation. However, this is generally inappropriate for universities as universities are not profit-seeking. In profit-seeking organisations, economists define productivity as the ratio of inputs to outputs. This definition performs well with one product but becomes more challenging to implement in a multiproduct organisation. In a multiproduct organisation, productivity can be understood as the ratio between the total benefits and various inputs that generate costs (Silva, 2000, p. 49).

In higher education, inputs and outputs are inherently qualitative and multi-dimensional. The inputs and outputs are not easily reducible to units. The inputs and outputs are also less tangible than traditional manufacturing organisations, which makes it more complex to define and accurately measure (Silva, 2000, pp. 49–50; Massy, 2004, p. 50).

The researcher of this field study had to rely heavily on the Massy (2004) reference as it was the only reference that could be found that details the link in universities from resource allocation to budgets. No alternative sources could be found with the same content after extensive attempts by the researcher.

In universities, quality is more critical than quantitative efficiency. The quality of services provided by universities also has to be considered when judging productivity, but the quality of the service in higher education is tough to determine (Silva, 2000, p. 50).

As mentioned in section 2.2.1, budgeting is a tool to allocate resources in an organisation. In nearly all cases, this process results in a document that specifies the resources allocated for a specified period, usually the following year. HEIs approach funding in most countries in two ways. The first consists of the core budget. The core budget consists of resources attributable to the organisation as a whole that are then subdivided among subunits (Lepori, Usher & Montauti, 2013, p. 62).

At the institutional level, budgeting in HEIs typically only concerns the core budget. Third-party funds are the responsibility of subunits, even if they are included in

institutional accounts. Though there are interdependencies as sometimes activities are funded by both income streams. For example, a research grant might have overhead expenses that the institution funds for conducting research activities on campus. The institution might also fund the generation of third-party funds. Policies on the circumstances under which there can be overlap between the two streams can significantly affect budgeting (Lepori, Usher & Montauti, 2013, p. 61)

2.3 Methods of allocating resources in universities

2.3.1 Introduction

There are several different methods of allocating resources in universities. These methods take the form of budgeting models. This section will give an overview of five different models as possible alternatives for the related university.

As the majority of the literature used is US-based, a few terms need to be defined to give a South African context. A provost is someone who oversees the entire educational offering of a college, whereas a dean only oversees at the departmental level (Maryville University, 2022, para. 3). A college president is the equivalent of a chief executive officer (CEO) in other organisations that have CEOs. They oversee all academic and administrative functions of a college (Resilient Education, 2022, para. 1). A vice-president of a college is someone who reports to the president. They oversee functional areas such as finance, academic affairs, student affairs and external relations (Career Trend, 2022, para. 3). A president is the equivalent of a chancellor, while a vice-president is the equivalent of a vice-chancellor (Borwick, 2013, para. 6,7,8). In the South African context, the provost is similar to the position of deputy vice-chancellor or vice-rector in charge of academics. For example, at Wits University, the Senior Deputy Vice-Chancellor: Academic is responsible for the overall academic project of the university. The faculty deans report to this position, and this position is responsible for the academic strategy (Wits University, 2023, p. 1).

2.3.2 Executive budgeting model

In the executive budgeting model, the budget process is centralised in one office. This office is typically the vice-president or their equivalent. This vice-president would present the budget to the board for approval (Gibson, 2009, p. 33). According to Gibson (Gibson, 2009, p. 33), the advantages of this model are:

1. The Vice-President submits a budget that considers the entire need of the organisation;
2. The information is standardised and consolidated; and
3. The controls and procedures used are centralised.

The disadvantages of this model are (Gibson, 2009, p. 33):

1. It is non-participatory, so it is unlikely to get buy-in from cost centre managers who will work with the budget; and
2. Currently, most middle-managers want input on decision-making in the budget process so the executive budgeting model has little success as a model of allocating resources.

The researcher could only find one source for this model; but the researcher believes it is an important model to consider.

2.3.3 Performance budgeting model

The performance budgeting model is based on the achievement of determined objectives, goals and outcomes. Funding allocation is based on merit. The performance budgeting model is also based on activity and outcome rather than just objective (Willett, Andrew & Rudisill, 2016, p. 223). In the context of a university, examples of indicators that could be used to measure past performance in an academic context are the number of sections taught, the number of credits taught, the number of students enrolled in a program and the number of graduates (Gibson, 2009, p. 33).

The primary characteristics of the performance budgeting model are that it is rational and objective and that it rewards the measures of performance the organisation wants to see manifested. It is classified as a top-down approach (Gibson, 2009, p. 33). A

top-down approach is centralised control of unrestricted revenue by the central administration that can consist of individuals like the President, Provost and Chief Financial Officer (Myers and Fraser, 2019, p. 13).

The advantages of the performance budgeting model (Willett, Andrew & Rudisill, 2016, p. 223) are:

1. The focus is on outcomes;
2. It is a straightforward approach;
3. The model promotes an equitable allocation of resources; and
4. Distinct performance indicators are specified.

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The disadvantages of the performance budgeting model (Gibson, 2009, p. 33) are:

1. Quality indicators can be challenging to identify;
2. Reaching an agreement on appropriate measures for evaluation can be a challenging exercise; and
3. The cause/effect relationship is complex, leading to measurement problems. When effectiveness is measured, quality indicators are then used as supplements to financial measures.

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2.3.4 Zero-based budgeting

A zero-based budget (ZBB) is a budget that is built from the ground up. It starts with no preliminary allocations. The intent behind the model is to contain rising costs. The ZBB model is the most effective at reviewing discretionary overhead costs. Preparing and implementing this model requires a lot of time and effort (Deloitte, 2023, para. 1,4). The underlying principle behind ZBB is that costs have to be justified every year. This justification is done after evaluating what was done the previous year (Dagar, 2020).

This model is unsuitable for programmes that continue year to year. For example, using ZBB for faculty salaries is inappropriate. Very few organisations can implement this model fully as it requires a complete redo of its budget every year (Gibson, 2009, p. 35).

The advantages of the ZBB model according to Willett, Andrew and Rudisill ,(2016, p. 223) are:

1. There is a focus on objectives;
2. The model is rational;
3. The model is objective; and
4. The model identifies waste.

The disadvantages of the ZBB model are (Willett, Andrew & Rudisill, 2016, p. 223):

1. It is time-consuming;
2. There is no budget history; and
3. It ignores prior commitments.

2.3.5 Incremental budgeting

Incremental budgeting is a traditional form of budgeting. The starting point for any discretionary spending item is the amount allocated for the previous year. A percentage then increments this (ACCA, 2022b, para. 5). One of the difficulties with this centralised model is the great demand placed upon the administration for information. The administration has to use the information available to them to decide how resources are divided. The expected differences between revenues and expenditures create an expectation of resources available to increment existing budgets. In this system, faculties petition for resources and suffer no downside when they request more. The pool of funds then becomes oversubscribed and has to be rationed among the requesters. The economic efficiency of administrators is challenging to achieve as administrators do not have the necessary intimate knowledge of how the various faculties work. This lack of information generally results in incremental budgeting, maintaining the initial base allocations (Myers & Fraser, 2019, pp. 13–14).

The advantages of this model are that (ACCA, 2022b, para. 8):

1. It is easy to prepare and understand;
2. Because it is a consistent approach, it is more likely to reduce conflict between departmental managers;

3. Less preparation time means that there are less costs associated with compiling the budget; and
4. The budget is time efficient and has limited conflict (Willett, Andrew & Rudisill, 2016, p. 223).

The disadvantages of the model (ACCA, 2022b, para. 9) are that:

1. There is no incentive to reduce costs, as money unspent is lost in the next year's budget;
2. It maintains the status quo by assuming all current activities and costs are still needed;
3. Inefficiencies from previous years are carried forward and performance goals are mostly unchallenging.; and
4. The model is not good when there is much change and reduced funding (Willett, Andrew & Rudisill, 2016, p. 223).

2.3.6 Responsibility-centred management (RCM)

The RCM budgeting model is also called cost-centre budgeting or value-centred management. Units manage their own revenues and expenses. This budgeting model suits large, complex universities with a research focus. The idea behind the model is to create an environment that results in resource growth and rewards efficient resource use. Responsibility is decentralised (Willett, Andrew & Rudisill, 2016, p. 223). In a university context, decentralisation means funds are allocated to the faculties generating revenue. Direct costs, such as salaries and indirect costs, such as facility costs, are assigned to the faculties generating these costs. Faculties can also be 'taxed' to reallocate resources to strategic, public good or overhead-related expenditures. As previously noted, administrators do not have the same knowledge of faculties that academic staff have. The decentralisation of the RCM model aims to remedy this. The faculties make the academic decisions and have to manage the financial realities (Myers & Fraser, 2019, p. 14).

The advantages of this model according to Willett, Andrew & Rudisill (2016, p. 223) are that:

1. There is a focus on cost control, outcomes and price containment;

2. The model encourages efficient and competitive services;
3. It gives recognition to institutional priorities;
4. It can lead to more effective use of resources; and
5. It focuses attention on revenue generation.

The disadvantages of this model according to Willett, Andrew and Rudisill, (2016, pp. 223) are that:

1. Decisions are driven mainly by financial considerations;
2. Financial incentives can lead to inappropriate behaviour; and
3. Tensions might increase.

2.4 Summary

This chapter first explored the literature on resource allocation in services. Then the chapter explored resource allocation, specifically in universities. The literature shows it is a very complex process to allocate resources within a university. It is more difficult to assign costs since the cost object is intangible considering that it provides a service. Various models of resource allocation were investigated. Each of these models has advantages and disadvantages. The specifics of the organisation, like its vision and mission, will influence which model is most appropriate. The vision and mission are essential factors because these two are the intrinsic values of the organisation. The following chapter will explain the research methodology. This will include an explanation of the research design, research method, data collection, data analysis and ethical considerations.

Chapter 3 Research Methodology

3.1 Introduction

The previous chapter reviewed literature surrounding budgeting models and their application in HIEs. This chapter describes the methodology applicable to the empirical part of this field study. This methodology includes an explanation of the research design, research method, sampling, data collection and data analysis. The chapter ends with the ethical considerations applicable to this study.

3.2 Research design

A research design in business research is the criteria used to evaluate business research. It provides a framework for the generation of evidence relevant to the study. This evidence must meet a set of criteria and must be suitable to the research objectives. The set of criteria can include reliability, replication and validity. Reliability refers to whether the results of the study are repeatable. Replication in the context of research means that a researcher can follow the same process another researcher executed. For replication to be possible, the procedures used for the study have to be clear enough and comprise sufficient detail. Validity means that the conclusions from an item of research have integrity (Bryman & Bell, 2009, pp. 40–42). While testing these criteria, many writers differentiate between three types of research. The three types of research are:

- a) quantitative;
- b) qualitative; and
- c) mixed-methods (which is a combination of qualitative and quantitative research) (Dos Santos & Toit, 2021, para. 1).

Qualitative research is a research method that, unlike positivism, emphasises how people interpret their social world. Words and images are generally used for data collection and analysis (Lumen Learning, 2019, para. 2,3 17).

Quantitative research is a research method that emphasises quantification in the collection and analysis of data. Quantitative research collects numerical data to explain a specific phenomenon (Bryman & Bell, 2009, pp. 26–28). Research can be either inductive or deductive. An inductive approach to research means that research generates theory. The deductive approach, by comparison, means that a theoretical set of ideas determines how to collect and analyse the research data (Dos Santos & Toit, 2021, para. 1).

This study employed a quantitative research method. The quantitative method was chosen because most of the data the researcher collected was numerical and had to be analysed to arrive at deductive conclusions. Notwithstanding the numerical nature of the data, quantitative research is appropriate as the numerical data had to be analysed to address the research objectives (Bryman & Bell, 2009, pp. 26–28). A quantitative method usually uses deductive reasoning (Sukamolson, 2007, p. 6).

As it is a quantitative field study, a positivist approach was taken. Positivism is the view that the methods of natural sciences should be used in the study of social reality. Only evidence gathered from the senses can be considered knowledge (Bryman & Bell, 2009, p. 15). Quantitative research emphasises a deductive approach to testing a theory. Quantitative research also views social reality as an external and objective reality. This means a deductive approach can be used to make objective conclusions about social reality in this study. A deductive approach entails taking a hypothesis (or hypotheses) or a proposition (or propositions) and testing it (or them) through empirical testing, or validating it (or them) by collecting data (dos Santos & Toit, 2021, para. 1). For the purpose of this study, the social reality of budgeting could be analysed to arrive at conclusions by using a deductive approach.

One approach followed in quantitative research is the evaluation of a case study. A case study is typically associated with a geographical setting such as an organisation or workplace. A case study emphasises a bounded system or situation. This emphasis is what differentiates it from other research designs. The emphasis is also on intense scrutiny of the situation or system (Bryman & Bell, 2009, p. 61). As the researcher

wanted to focus on one specific workplace (a specifically selected university), a case study is most appropriate for this goal, as it is associated with a geographical setting.

One of the advantages of a case study is that the researcher examines the data within the context the data is embedded in. This contrasts with an experiment, where the data is isolated from its context and the researcher is able to focus on a few variables. The second advantage of a case study is its versatility (Zainal, 2007, p. 4). Yet another element of case study research is that the case study can be exploratory. An exploratory case study seeks to examine phenomena in the data that interest the researcher (Zainal, 2007, p. 4). The allocation of resources and budgeting is particularly interesting to the researcher of this study, as both function well at the selected university in the case study. The same university would like to know which budgeting model is most appropriate for its needs.

An exploratory case study is also appropriate when there is no pre-determined outcome. The questions answered in an exploratory case study are explanation of 'how' and 'what'. An exploratory case study is also very appropriate where the causal links are too complex to be explored by a survey or experiment (WPC., 2022, p. 7).. There is no pre-determined outcome for this field study, as the appropriate budgeting model must be determined. This will be done by asking how it is currently done and what is most appropriate given the research outcome.

As stated in chapter one, the primary research objective of this study is to determine the appropriate budgeting model for the university being studied. A case study is an intensive study of a research question. In bounding a study to a particular geographical setting or organisation, the researcher can highlight unique features of the case. Therefore, a case study is most appropriate for this study as it examines the data within its context. The appropriate budgeting model for the selected university was determined by examining the university's budgeting context. The analysis of the existing budgeting model and recommendations of the most appropriate model all require the study to be bounded to the selected university itself. For this reason, a case study is most appropriate for the research performed in this study as the budget will be examined within the context of the related university as opposed to outside its

context. The data for the study was for 2020 and 2021. Using two years' data enabled a comparison between the applicable years. This comparison also made it less likely that conclusions were drawn from what might have been anomalies in the data.

3.3 Research method

3.3.1 Introduction

This section will outline the research method used. The starting point for the research method is an introduction of important management accounting concepts relevant to this study.

3.3.2 Overview of important management accounting concepts

A cost objective is any activity for which a separate measurement of costs is wanted. This could be the cost of a product or service (Drury, 2015, pp. 23–28). Costs are divided into direct and indirect costs. Direct costs are those costs that can precisely and exclusively be attributed to a cost objective. Direct costs consist of direct materials and direct labour. Indirect costs cannot be specifically identified as relating to a specific cost object. Indirect costs can be activities such as property taxes, general accounting and executive salaries (Drury, 2015, pp. 23–28). For this study, departments were chosen as the cost object. The direct costs incurred by the departments at the selected university consist of the salaries and operational budget allocated to the department. Indirect costs are the share of income reallocated to the administrative departments. These administrative departments can include finance, human resources, and information technology. Departments at the selected university receive a budget based on their income from two sources; tuition fee income and government subsidies and grants. Third-party income is not considered when deciding how to allocate the budget to departments. Profit in this study is defined as the difference between the income in the department and the direct and indirect costs incurred by the department. The profitability of each department was calculated under the related university's current method of allocation as determined by their approved policy. Generally, a faculty is a university's broad academic organisational administration structure. An academic school or department is an area of specialised academic administration. It

is founded around a particular discipline or subject area and dispenses degrees related to the discipline (University of New England, 2022, paras 3–4). The budget policy was used to determine how resources were supposed to be allocated. The budget working papers were used to determine how the allocations were done and if the budget policy was followed. This indicated whether the stated policy was being applied correctly, and the possible reasons for not following the policy. If the budget policy was not followed completely then a comparison was made between the implementation and the budget as applied to the policy. Each department's current profit determined as the budgeting policy should have been implemented was then compared to the profitability under a different budgeting method.

Data from the sample were analysed based on direct profitability. This was done by calculating the direct profitability and evaluating it based on the statistical methods outlined in section 3.5. Direct profitability for the purposes of this study is the direct income less the direct costs. The following section will elaborate on the sampling strategy.

3.4 Sampling

This section will explain what a sample is and also explain what the sample for the study was. The starting point in the discussion of a sample is an understanding of the population. The population is the group that will be researched. A sample is a sub-category of the population (Sekaran & Bougie, 2013, pp. 240–241). The population in this study will be the four faculties at the selected university. The sample was all 21 departments within the four faculties. In this study, the entire population was used as the sample. Therefore, further detail on the random and non-random sampling is not required.

3.5 Data collection

As mentioned earlier, the primary documents used in this study were internal documents obtained from the selected university. These documents included the budgeting policy, budget allocation working papers and management financial reports

for the selected university. This data was directly obtained from the university through a formal request.

The budgeting policy is a non-financial document that outlines the desired outcomes of resource allocation and the method of resource allocation to be used at the selected university. This information was used to compare what the resource allocation should have been with what was done in the budget allocation working papers. The budget allocation working papers are financial documents and were used to determine the current resource allocations to departments and how they differed from the budgeting policy. The management financial reports are also financial documents and were used to get the specific departmental allocations. Information on the teaching output units (TOUs), research output units (ROUs), full-time equivalent students (FTEs) and teaching input units (TIUs) per department were also obtained from Data Services at the specific university to calculate the income per department.

3.6 Data analysis

In this specific study, data analysis is the process where the researcher will use quantitative data analysis techniques to reduce the amount of data, among other things. Reducing data into specific measures like the mean, median, mode and standard deviation enables analysis and deduction. The details of these measures are outlined in the next section. Microsoft Excel was the computer program used for the data analysis. The following sections explain essential concepts in statistics relevant to the study and the analysis of the study's data.

3.6.1 Measures of central tendency

Central tendency measures summarise the distribution of the values for the answers to a particular variable. There are three main methods for ascertaining the average in quantitative analysis. The first is the arithmetic mean. This value is arrived at by adding all the values and then dividing by the number of values. The second average is the median. The median is the midpoint in the distribution of values. After arranging the data in order from lowest to highest value, the median splits the data into two halves. While the mean can be affected by outliers, the median is not. Lastly, the mode is the

value that appears most frequently in the distribution (Dos Santos & Toit, 2021, para. 1). In the context of the study, these values will show how profitability is currently distributed in terms of averages, as well as how they would differ under a different method of budgeting.

3.6.2 Measures of dispersion

Measures of dispersion show how much the values in data vary. The range of a dataset is the difference between the highest and lowest values. The variance is a measure of dispersion that shows how far each value is from the mean. It, therefore, shows how spread out the data is from the average value. A higher variance means the data is spread out from the mean more than if the variance is lower. The variance is calculated by taking the sum of the square of the difference between the mean and each value, divided by the number of values. The standard deviation is the square root of the variance. The standard deviation and variance increase in value the more dispersed the data is and decrease if the level of dispersion is lower (Bhandari, 2023, p. 1). A low standard deviation means the data points are closer to the mean (average) than a high standard deviation (EDUCBA, 2023, p. 1). The standard deviation is critical for this study. It will allow a comparison between the current direct profit and a direct profit from a new budgeting model. This comparison will show how the two budgeting models differ in how their profit is dispersed around the mean. Measures of dispersion and central tendency both fall under univariate analysis. The formula for the variance is provided in Equation 3.1 and for standard deviation in Equation 3.2 (EDUCBA, 2022, p. 1).

Equation 3.1: Variance

$$\sigma^2 = \sum (X_i - X_m)^2 / N$$

Where:

- σ^2 – Variance
- X_i – i^{th} value of data set
- X_m – Mean value of data set
- N – Total number of data points

Equation 3.2: Population standard deviation

$$\sigma = \sqrt{[\sum (X_i - X_m)^2 / N]}$$

Where:

- σ – Population standard deviation
- X_i – i^{th} value of data set
- X_m – Mean value of data set
- N – Total number of data points

Seen above, the standard deviation is the square root of the variance. Univariate analysis is the simplest method of data analysis that enables data from one variable to be described and summarised. The univariate analysis does not deal with the relationship or causes between variables (Glen, 2021, para. 1). In the context of this study, measures of dispersion will allow an analysis of differences in dispersion between the current method of budgeting and a different method of budgeting.

3.7 Ethical considerations

Ethics is a crucial consideration as it relates to the integrity of an item of research and the discipline itself (Bryman & Bell, 2009, p. 122). In this study, the following ethical considerations are addressed:

- *Informed consent*: The university is informed about the information required from them, how the data would be used and whether there would be any consequences for the university from the findings of the study. Participants also provide written consent to their data being used in this study.
- *Confidentiality*: The information is kept confidential by anonymising the selected university and all documents relates to it. The university is informed of this anonymity and confidentiality.
- *Objectivity*: The researcher endeavours not to let bias affect the research.
- *Voluntary participation*: Participation is voluntary and the university could at any point refuse that the researcher use its data.

3.8 Summary

This chapter outlined the quantitative research design and methodology for this study. This outline included the research design, method, sampling, data collection, data analysis and ethical considerations. The research design is an exploratory case study that is quantitative in nature. The sample chosen was the total population of academic departments at the selected university. The next chapter will provide the results of the data analysis outlined in this chapter.

Chapter 4 Research findings and analyses

4.1 Introduction

This study was conducted to determine the most appropriate budgeting model at a selected publicly funded university in South Africa. The researcher believes that the selected university would be better equipped to achieve its goals with an optimal budgeting model. The optimal budgeting model for this study is investigated by evaluating the current budgeting model of the related university and applying a different model as determined by the researcher based on the literature reviewed in chapter two.

This chapter will outline the findings from the empirical part of the research performed. The first step in the performance of the empirical process is to gather data regarding the budget policy and other documents centred around the overall financial strategy of the related university. The second step is to obtain the relevant management reports for the same university that reported on the budget versus actual expenditure for 2020 and 2021. After that, information on the factors affecting income per department is obtained. This information is obtained by requesting it from the selected university (see section 3.5). This information enables a calculation of the total income and of the related university and, subsequently, the direct income. Direct costs (defined in section 4.2 below) could then be deduced from direct income to determine a direct profit percentage. As stated in section 1.4, one of the objectives of the research is to compare the direct profit when the budget policy is accurately implemented with how it is currently being done. This chapter will illustrate that comparison.

The primary objective of the research is to arrive at the most suitable form of budgeting for the related university (see section 1.4). This chapter will show how the ideal budgeting model is arrived at by applying the literature reviewed in Chapter 2 to the goals (found in section 4.3a) of the university, its budgeting policy, and its current financial situation.

4.2 Clarification of terms

For the purpose of this study, the following terms are used to describe the relevant financial information:

- **Income:** Income is equal to the teaching input grant plus the teaching output grant plus fee income (see section 4.2.1). The teaching input and output grant income is distributed to faculties and departments based on teaching input and output units attributable to faculties and departments. The selected university, for its budgeting purposes, classifies fee income as tuition plus residence plus registration and application income, less a bad debts provision. Residence income is income derived from students staying on university premises.
- **Indirect Costs:** are costs allocated to revenue-producing units. A revenue-producing unit is a department that generates revenue. These costs consist of an institutional and support section charge.
- **Direct Costs:** are budgeted expenses directly attributable to the faculty or department's operations. These expenses consist of operational expenses and salaries. The budget allocations, rather than actual expenditure, were used in the analyses performed in this section.
- **Direct Income:** means income less indirect costs. This definition was used due to the selected university's budgeting process.
- **Direct Profit:** means direct income less direct costs.
- **Direct Profit Ratio:** Direct Profit divided by Income expressed as a percentage.
- **Contribution:** is income less direct costs.
- **Contribution margin ratio:** means that contribution is divided by income. This calculation is expressed as a percentage.

In addition, financial sustainability needs to be discussed. Financial sustainability in a business is the ability in the long and short-term, to be able to remain profitable and give comfort to employees and owners with the profits earned (Pipestone, 2023, para. 3). Another definition is the ability to sell a product or service at a price that not only covers expenses, but also creates a profit (Mirus, 2020, para. 5). In non-profit

organisations, financial sustainability is the ability of the organisation to survive and serve its constituency. This entails fulfilling commitments to its clients, patrons and the community it is embedded in. These stakeholders rely on the non-profit organisation to service a need (Weerawardena, McDonald and Mort, 2010, p. 347).

4.2.1 Explanation of applicable subsidies and grants

Some of the terms above refer to specific grants, like the teaching input grant. It is essential to discuss and define the grants applicable to the budget workings to understand the link between units and the different grants mentioned.

4.2.1.1 Teaching input grant

The teaching input grant is based on approved and planned full-time equivalent (FTE) student enrolments. These enrolments are weighted to determine the final funding. The weightings are based on the fund group (Group 1 to 4), as well as whether the student is a contact or distance-tuition student. The funding groups are based on the classification of educational subject matter (CESM) levels. For example, such contains subject categories include education, law, business, social sciences, life sciences and physical sciences (Department of Higher Education and Training, 2021b, pp. 7–8).

4.2.1.2 Teaching output grant

The teaching output grant aims to incentivise and fund increases in student graduates. The research output grant already funds research masters graduates and all doctoral graduates, so these post-graduate students are excluded from this grant. The funding for this grant is based on actual student graduate numbers that the external auditors of universities should have verified. The principle is that the graduate numbers in a particular year will then be used in the calculation for the grant two years in advance. For example, the 2022/23 (n) grant is based on the 2020/21 ($n - 2$) student graduate numbers (Department of Higher Education and Training, 2021b, p. 11).

4.2.1.3 Research output grant

The aim of the research output grant is to subsidise research activities at universities. Publications, innovations outputs and creative arts are used as a proxy for research outputs. Similar to the grant above, the funding for a particular year will be based on the output from the previous two years ($n - 2$). For instance, the 2022/23 funding was based on the 2020/21 total actual publications, creative arts and innovation units. Doctoral and research masters graduate numbers also form part of the calculation (Department of Higher Education and Training, 2021b, p. 12).

4.3 Preliminary data received

This section will outline the preliminary data received from the selected university. The following documents used to obtain data from the university include:

a) The Budgeting policy; b) The Budget allocation working papers for 2020 and 2021; c) Management financial reports for 2020 and 2021; d) The Report on Teaching Input Units (TIU), Teaching Output Units (TOU), Full Time Equivalents (FTE) of the selected university; and e) The Strategic document of the related university. Each of these documents is briefly described in this section.

a. The budgeting policy

The budgeting policy is the document that guides how budgeting should take place at the related university. The following are summarised extracts from the policy (Anonymised institution, 2022):

“–Budgeting and resource allocation is done on a revenue-driven basis

–Spending budgets (Operating and salaries) for revenue generators (Faculties) are proportionate to the total percentage of revenue each produces

–This can be adjusted in accordance to the needs of revenue generators where the margins are disproportionate to the norm”

(Anonymised institution, 2022, p. 2)

The extract above will enable an analysis of what type of budget the university uses based on the literature in Chapter 2 (section 2.3). It outlines the basis for how budgeting should be done at the university being reviewed.

“The budget should:

- a) balance - that is, planned expenditure should not exceed planned income;*
- b) reflect the planning priorities of the institution;*
- c) be easy to understand;*
- d) give appropriate recognition to changes in government policy and funding arrangements; and*
- e) be prepared on a revenue-driven basis for a rolling period of three years.”*

(Anonymised institution, 2022, p. 2)

The principles above are what the budget should be based on. It sets limits on planned expenditure, for instance. It also reaffirms the revenue-driven nature of the budget. The budgeting policy also includes the following steps for preparation (Anonymised institution, 2022):

Finance Section produces preliminary budget for Year (n+1) based on Year (n-1) data
↓
Budget holders develop draft spending budgets for Year (n+1) and submit to Finance Section by Sept. 30th of Year n
↓
Finance Section consolidates requests by Oct. 31st of Year n
↓
Consolidated requests submitted to the Management Committee
↓
Proposed allocations prepared using various information
↓
Management Committee discusses and modifies, final changes agreed upon by November Year n
↓
Approved allocations communicated to stakeholders by Nov. 30th of Year n
↓
Budget holders make necessary adjustments
↓
Finance Section consolidates adjustments and reconciles budget requests with approved budgets
↓
Finance Section transfers reconciled budgets to the accounting system
↓
Adjusted budget prepared in January of Year n+1
↓
Revised budget submitted to the Management Committee for approval if variance is less than 5%,
↓
Submitted to the Planning Committee and Council for approval if variance is more than 5%

Figure 4.1: Steps in the budget process at the selected university

The figure above shows the summarised steps in the budget process. The letter “n” is the current year in which the budget is prepared (Anonymised institution, 2022, p. 3).

The objectives of the budget policy, as included in the budgeting policy, are to

- a) *“allocate funds in a viable and sustainable manner;*
- b) *align funding with the strategic goals and objectives of the institution*
- c) *support the allocation of funds based on value for money.”*

(Anonymised institution, 2022, pp. 3–4).

The objectives above show that the budget should emphasise sustainable allocations. The funding also has to be in line with the overall strategic goals and objectives of the institution. This is important when evaluating whether the current allocations align with these objectives.

The budgeting policy also includes guidance on the treatment of the budget shortfall on an item. A budget shortfall refers to a situation where the actual expenditure exceeds the amount that has been budgeted. In the case of exceptional circumstances where a budget shortfall is anticipated, the budget holder is required to submit a request for consideration. To address such shortfalls, a contingency fund specifically designed for such exceptions can be used. The use of this fund is subject to approval by the vice-chancellor and principal. It is important to note that budget shortfalls can only be related to non-capital expenditure that was not initially provided for in the annual budget. Additionally, the contingency fund should not exceed 5% of the total revenue (Anonymised institution, 2022).

A budget surplus is when actual expenditure falls short of the budgeted amount. Budgeted funds that have been allocated but remain unused in the current year are generally not carried forward unless approved in exceptional circumstances. Any budget surpluses on an item in the current year contribute to the overall accumulated funds available to the institution, subject to the discretion and control of the Council, for allocation to institutional activities. In the case of budget surplus on capital items,

reallocation to units that were insufficiently or not funded is permissible (Anonymised institution, 2022).

One of the noteworthy elements discussed in the budgeting policy is the salary budget. The term "salary budget" refers to the aggregate of all remuneration. The salary budget is funded solely by current funds, and no salary shortfalls are covered by reserves. This budget is evaluated against the previous year's budget and adjusted to account for increments, bonuses, and newly authorised positions. The budget can be modified to include institutional salary-related expenses, such as scarce-skills allowances, and is established per position, according to staff establishment. Proposals for salaries are compiled for divisions, faculties, and programmes. Each divisional manager is accountable for managing the salary budget within the approved parameters. For new positions, the salary budget is compiled from a hypothetical base and necessitates the submission of a request to the Management Committee for assessment and approval. The budget for part-time positions is compiled in the same way and necessitates the submission of a request for review and endorsement as part of the draft spending budget. Finally, the salary budget must be endorsed by the Management Committee as part of the budget allocations for Year n+1 (Anonymised institution, 2022, p. 7).

Financial sustainability is one of the critical elements of the budgeting policy of the related university. All programmes and support divisions must provide motivations for their future sustainability. Budgeted costs must not at any time exceed available funds. Financial sustainability projection for the next three-year cycle must be submitted together with the final consolidated budget for the year (Anonymised institution, 2021, p. 8).

b. Budget allocation working papers for 2020 and 2021

The budget workings show the calculation for income and the proposed budget allocations. The income is based on a prediction of the teaching input and output grants to be received as well as the anticipated tuition and other income. The institutional factor grant is considered an institutional income by the selected

university. The selected university, therefore, defines income for the Resource Allocation Model (RAM) as the estimated teaching input grant, estimated teaching output grant, the anticipated fee and other income. The anticipated fee and other income consist of the tuition fee income, residence fee income less a bad debts provision, as calculated in the preliminary budget. The selected university uses this calculation for fee income, while also calculating the fees multiplied by the enrolments for the past two years. No reason is given in the budget workings for this. This report was received from an employee in the finance department after all relevant permissions and clearance had been obtained (see sections 1.5.4 and 3.7). The budget for 2020 was based on 2018 FTEs, TIUs and TOUs; while the 2021 budget was based on 2019. These figures are used for these variables.

c. Management financial reports for 2020 and 2021

The management financial reports show the actual expenditure versus budgeted figures for the selected university. This report was used to determine the final budget allocations for each department and faculty for 2020 and 2021. This report was received from an employee in the finance department after all relevant permissions and clearance had been obtained (see section 1.5.4 and 3.7).

d. The report on teaching input units (TIU), teaching output units (TOU), and full time equivalents (FTE)

This report was received from an employee in the data services section of the selected university after all relevant permissions and clearance had been obtained (see sections 1.5.4 and 3.7). The report contained the TIUs, teaching output units (TOUs) and FTEs per department for 2018 and 2019 for the selected university. These units were used to apportion the income to the departments based on the RAM model.

e. The strategic document

This document outlined the strategic vision for the selected Institution until 2030. The relevance of this document was that it outlined how the selected university wants to

position itself and how it wants to operate. A few of the focus areas to reimagining the university were the following:

“-A sustainable and well-equipped University (smart green campuses and digital transformation).

-Effective and efficient administration and governance.

-Financial sustainability (running the University as a business).”

(Anonymised institution, 2020, p. 18)

One of the critical aspects of this document is that the selected university states that it wants to “run like a business” in the context of financial sustainability. This is relevant for this study as this goal implies a surplus or profit motive given the definition of financial sustainability for a business in section 4.2 when the various terms were discussed. This is also why terms associated with a business like ‘direct profit’ were used in this study, instead of non-profit terms such as ‘surplus’.

The following section will present the findings of the comparison between how the budget was prepared versus how the budget should have been prepared if the policy had been followed thoroughly. This comparison considers the operational allocations as currently calculated by the university versus what should have been done if the policy had been correctly applied.

4.4 Budget policy versus actual results

Section 3.4 indicates that the population of the data was the four faculties of the selected university. These four faculties have a total of 21 departments. The sample selected represented all four faculties and all the departments that fall under the faculties.

The budget policy indicates that the budget (i.e., the equivalent of direct costs defined in section 4.2) for operating expenses and salaries for revenue generators like departments and faculties are proportionate to the total percentage of the total income each produces. The policy states that salaries are based on the staff establishment. The staff establishment is the total salaries of all employees currently employed at the

related university. This value cannot, therefore, be changed in the short term, as even though the principle is that the salaries should be proportional to income generated, the policy expressly states that the salaries are based on the staff establishment. The operational costs are determined by comparing the policy with the actual application.

The first step, therefore, was calculating the direct income attributable to each department and faculty. This calculation was performed to determine the appropriate proportion of funds allocated to operations. The university had already calculated the direct income that should have been attributable to faculties, but this was not proportional when allocating operational expenses. The university did not calculate direct income attributable to each department, so this was a calculation that had to be done. Table 4.1 indicates the direct income attributable to faculties for 2020:

Table 4.1: Direct income 2020

2020	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Estimated teaching input grant	R51 245 944.00	R49 636 109.65	R76 956 141.50	R58 400 684.10	
Estimated teaching output grant	R16 551 089.10	R13 376 305.27	R21 264 895.56	R35 388 726.11	
Fees & other Income	R11 297 554.55	R4 057 706.16	R13 024 068.85	R10 525 503.17	
Total	R79 094 587.65	R67 070 121.08	R111 245 105.91	R104 314 913.39	R361 724 728.03

From Table 4.1, the combined total direct income for 2020 for the related university as a whole was R361 724 728.03. Each of the faculty's totals was divided by R361 724 728.03 to arrive at their share of the direct income in percentage terms. For example, the total of R79 094 587.65 for Faculty 1 was divided by R361 724 728.03 to arrive at a percentage of 21.87%. These calculated percentages for each faculty are presented in Table 4.2.

Table 4.2: Percentage proportion of direct income 2020

Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
21.87%	18.54%	30.75%	28.84%	100%

The percentages in Table 4.2 show a disproportionate direct income generation amongst the faculties of the related university. Faculty 3 generated 30.75% of the total direct income of the selected university. Faculty 2, by contrast, was only able to

generate 18.54% of the direct income of the university. Faculty 3 should therefore receive 30.75% of the budget allocated for faculties, while Faculty 2 should only receive 18.54%. This unequal distribution would not take the faculties' specific needs into account. For example, the faculties could have different needs in terms of their laboratories and operating expenses. The percentages in Table 4.2 can be compared to the share of operating expenses allocated to the faculties, as indicated in Table 4.3.

Table 4.3: Operational budget allocations and percentage proportion of budget allocations for 2020

2020	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Operational budget 2020	R2 591 452.80	R2 937 035.70	R3 098 385.00	R4 014 842.40	R12 641 715.90
Ratio for operational allocations	20.50%	23.23%	24.51%	31.76%	100.00%

As seen from the results presented in Table 4.3, the operational allocation differed from what was expected had the policy been applied as determined in Table 4.2. Faculty 3 brought in 30.75% of direct income, but received only 24.51% of the total operational allocation for faculties. Faculty 2, which only generated 18.54% of direct income, was allocated an operational budget of 23.23%. This shows that the selected university did not allocate the budget proportionately to the direct income generated. A comparison between the actual percentages the faculties contributed to the total direct income of the selected university. The percentages of the operational budget actually allocated to faculties is summarised in Table 4.4.

Table 4.4: Comparison between the operational budget allocations and what it should have been if the direct income proportion percentage was used for 2020

2020	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Operational budget 2020	R2 591 452.80	R2 937 035.70	R3 098 385.00	R4 014 842.40	R12 641 715.90
Allocation if ratio was applied	R2 764 232.66	R2 343 996.28	R3 887 843.20	R3 645 643.76	R12 641 715.90
Difference in Rand	R172 779.86	-R593 039.42	R789 458.20	-R369 198.64	R0.00
Percentage difference	7%	-20%	25%	-9%	

In Table 4.4, the operational budget that should have been allocated to faculties if the direct income ratio percentage was applied to the actual operational budget allocation of R12 641 715.90 is displayed. The result was achieved by taking the percentages calculated in Table 4.2 and multiplying them by the R12 641 715.90 total operational

budget allocation. For instance, Faculty 2 only achieved 18.54% in direct income. This percentage was multiplied by R12 641 715.90 to get a result of R2 343 996.28.

Deduced from Table 4.4 is that Faculty 2 should have had 20% less operational budget allocated, while Faculty 3 should have had 25% more. This result amounts to Faculty 3 receiving R789 458.20 less than it should have and Faculty 2 receiving R593 039.42 more. Table 4.5 presents the effect of the difference in the operational budget allocations on direct profit.

Table 4.5: The effect of the difference in the operational budget allocations on direct profit for 2020

2020	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Direct income	R79 094 587.65	R67 070 121.08	R111 245 105.91	R104 314 913.39	R361 724 728.03
Salaries budget 2020	-R70 061 532.17	-R44 493 674.36	-R84 010 004.16	-R69 552 700.50	-R268 117 911.19
Operational budget 2020	-R2 591 452.80	-R2 937 035.70	-R3 098 385.00	-R4 014 842.40	-R12 641 715.90
Direct profit	R6 441 602.68	R19 639 411.02	R24 136 716.75	R30 747 370.49	R80 965 100.94
Direct income	R79 094 587.65	R67 070 121.08	R111 245 105.91	R104 314 913.39	R361 724 728.03
Salaries budget 2020	-R70 061 532.17	-R44 493 674.36	-R84 010 004.16	-R69 552 700.50	-R268 117 911.19
New operational budget 2020	-R2 764 232.66	-R2 343 996.28	-R3 887 843.20	-R3 645 643.76	-R12 641 715.90
Direct profit	R6 268 822.82	R20 232 450.44	R23 347 258.55	R31 116 569.12	R80 965 100.94
Percentage difference	-3%	3%	-3%	1%	

Table 4.5 shows the effect on direct profit if the operational budget allocation was based strictly on direct income generated. The salaries budget remained the same in the two calculations. The percentage difference was calculated by taking the new direct profit (with the total operational budget adjusted for the proportion of direct income generated), less the actual operational budget allocated, divided by the actual operational budget allocated. For example, for Faculty 1, the percentage was calculated by taking the new direct profit of R6 268 822.82, less the direct profit of R6 441 602.68 and dividing the answer by R6 441 602.68. That answer is then multiplied by 100 to give the percentage value of negative 3% (rounded up). As seen above, the difference between the actual allocation and the policy was minimal overall. For Faculty 1 and 3, the direct profit decreased by 3%. By contrast, Faculty 2 had a 3% increase while Faculty 4 had a 1% increase.

Table 4.6 considers the same comparison performed for 2020 in Tables 4.1 to 4.5 for the 2021 financial year. Table 4.6 indicates the total income for the four faculties of the selected university for 2021.

Table 4.6: Direct income 2021

2021	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Estimated teaching input grant	R55 148 069.79	R47 220 827.04	R87 363 083.30	R52 468 662.14	
Estimated teaching output grant	R20 968 728.85	R13 514 502.99	R25 397 065.99	R32 137 318.11	
Fees & other income	R22 024 464.84	R7 082 255.16	R24 936 029.92	R18 901 198.77	
Total	R98 141 263.48	R67 817 585.18	R137 696 179.21	R103 507 179.02	R407 162 206.89

The combined total for 2021 was R407 162 206.89. Faculty 3 generated the largest direct income share at R137 696 179.21, while Faculty 2 only generated R67 817 585.18. Table 4.7 illustrates the percentage of direct income contributed per faculty of the total R407 162 206.89 for the selected university.

Table 4.7: Percentage proportion of direct income 2021

Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
24.10%	16.66%	33.82%	25.42%	100%

From Table 4.7 the deduction can be made that Faculty 3 generated 33.82% of the direct income, while Faculty 2 generated slightly less than half that at 16.66%. When considering direct expenses, Table 4.8 presents the share of operating expenses allocated by the university to each faculty.

Table 4.8: Operational budget allocations and percentage proportion of budget allocations for 2021

2021	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Operational budget 2021	R3 378 012.00	R3 906 873.00	R3 340 185.00	R4 383 521.00	R15 008 591.00
Ratio for operational allocations	22.51%	26.03%	22.26%	29.21%	100.00%

As presented in Table 4.8, Faculty 4 was allocated 29.21% of the total operational budget for faculties, and this was the largest allocation to an individual faculty at the related university, followed by Faculty 2 with 26.03%. The difference between what

the selected university allocated (Table 4.8) and the percentage that should have been allocated (Table 4.7) is expressed in Rand value in Table 4.9.

Table 4.9: The effect of the difference in the operational budget allocations on direct profit for 2021

2021	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Operational budget 2020	R3 378 012.00	R3 906 873.00	R3 340 185.00	R4 383 521.00	R15 008 591.00
Allocation if ratio was applied	R3 617 629.68	R2 499 854.80	R5 075 681.39	R3 815 425.13	R15 008 591.00
Percentage difference	7%	-36%	52%	-13%	

What can be deduced from Table 4.9 is that Faculty 3 should have had 52% more operational budget allocated to them, while Faculty 2 should have had 36% less. Faculty 3 generated 33.82% (Table 4.7) of the direct income, but was only allocated 22.26% of the operational budget for faculties (Table 4.8). Instead of R5 075 681.39, Faculty 3 was allocated R3 340 184. This result again shows that the selected university did not allocate the budget for operational activities in proportion to direct income generated by the faculties. The effect of the differences on direct profit, as indicated in Table 4.9 is detailed in Table 4.10.

Table 4.10: The effect of the difference in the operational budget allocations on direct profit for 2021

2021	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Direct income	R98 141 263.48	R67 817 585.18	R137 696 179.21	R103 507 179.02	R407 162 206.89
Salaries budget 2021	-R78 656 230.46	-R47 840 515.78	-R90 240 986.62	-R76 210 975.29	-R292 948 708.15
Operational budget 2021	-R3 378 012.00	-R3 906 873.00	-R3 340 185.00	-R4 383 521.00	-R15 008 591.00
Direct profit	R16 107 021.02	R16 070 196.40	R44 115 007.59	R22 912 682.73	R99 204 907.74
Direct income	R98 141 263.48	R67 817 585.18	R137 696 179.21	R103 507 179.02	R407 162 206.89
Salaries budget 2021	-R78 656 230.46	-R47 840 515.78	-R90 240 986.62	-R76 210 975.29	-R292 948 708.15
New operational budget 2021	-R3 617 629.68	-R2 499 854.80	-R5 075 681.39	-R3 815 425.13	-R15 008 591.00
Direct profit	R15 867 403.34	R17 477 214.60	R42 379 511.20	R23 480 778.60	R99 204 907.74
Percentage difference	-1%	9%	-4%	2%	

The results in Table 4.10 indicate that Faculty 2 had an increase of 9% in direct profit, while Faculty 4 had a 2% increase if the operational budget is allocated in accordance with the set policy of the related university. Faculty 3 had a 4% decrease, while Faculty 1 had a 1% decrease. The 9% increase by Faculty 2 is the most considerable increase between 2020 and 2021.

4.5 Discussion of direct profit results and ideal budget

In the previous section, the direct profit based on the university's operational allocation was compared with what the direct profit would be if the operational allocations were adjusted according to their direct income ratios as indicated in the related university's budgeting policy. While some differences between the actual budget and what should have happened were greater in percentage terms, overall, the result on direct profit was relatively insignificant. This result is because operational allocations form a small part of direct costs (Table 4.11 and Table 4.12 indicate the share of the operational budget allocations of direct costs for 2020 and 2021, respectively).

Table 4.11: Share of the operational budget allocations of direct costs for 2020

2020	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Salaries budget 2020	-R70 061 532.17	-R44 493 674.36	-R84 010 004.16	-R69 552 700.50	-R268 117 911.19
Operational budget 2020	-R2 591 452.80	-R2 937 035.70	-R3 098 385.00	-R4 014 842.40	-R12 641 715.90
Salaries budget 2020 %	96%	94%	96%	95%	95%
Operational budget 2020 %	4%	6%	4%	5%	5%

Table 4.12: Share of the operational budget allocations of direct costs for 2021

2021	Faculty 1	Faculty 2	Faculty 3	Faculty 4	Total
Salaries budget 2021	-R78 656 230.46	-R47 840 515.78	-R90 240 986.62	-R76 210 975.29	-R292 948 708.15
Operational budget 2021	-R3 378 012.00	-R3 906 873.00	-R3 340 185.00	-R4 383 521.00	-R15 008 591.00
Salaries budget 2021 %	96%	92%	96%	95%	95%
Operational budget 2021 %	4%	8%	4%	5%	5%

As seen in Tables 4.11 and 4.12, the operational budget allocated to faculties did not ever exceed 8% of the total direct costs of the related faculties. The most considerable portion of direct costs was notably salary-related costs. In section 4.3, the budgeting policy was discussed, and it was mentioned that in terms of the current policy, salaries were based on the staff establishment rather than on the income generated. If faculties are to be financially sustainable, the salary cost of a faculty should be further investigated and staff establishment possibly based on revenue brought in. The principle of the revenue-based model of budgeting of the university is that revenue-based allocations should be applied, and salaries should not be excepted.

In Chapter 2, the literature on budgeting indicated that a service organisation should start by setting a target surplus (see section 2.2.1). The related university wants to be financially sustainable (i.e., It wants to “Run like a business”) as described in section 4.3 under the strategic document, and setting a target surplus aligns with this goal. This university also has to be mindful of the public service it offers, as mentioned in section 1.2. A university is not merely profit-seeking but also provides programmes to fulfil its obligation to the community it serves, and these programmes are not necessarily commercially viable. It would be ill-advised to disregard completely those programmes that offer a public service in favour of surplus seeking. Using a target surplus also aligns with the performance budgeting model, described in detail in section 2.3.3. In Chapter 2, which clearly illustrates that this model allocates funds based on merit. A specific target is set, and funding should align with the attainment of the target. The target could be the number of enrolments, graduates, or any other means of measuring achievement. The most important principle of this model is that funding is based on pre-determined objectives, goals and outcomes. The heads of the academic departments at the selected university can therefore have pre-determined goals and have their performance measured based on attaining those goals.

The heads of the academic departments are limited to the control of direct costs only. These heads have no control over the indirect costs as these are charges for the support and institutional areas of the university and are, therefore, primarily fixed. The target profit or surplus should therefore focus on direct costs. One way to do this is to use an equation or target ratio that affects direct costs.

The contribution margin is an equation defined as sales less variable costs (Drury, 2015, p. 172). The contribution margin ratio is the contribution margin divided by sales (Drury, 2015, p. 173). The contribution margin ratio shows the proportion of sales available to cover fixed costs in order to return a profit. For this study, as explained in section 4.2, the direct costs are analogous to the variable costs in the contribution margin, while income is analogous to the sales. A target contribution margin ratio will allow targets to be set around direct costs. This contribution margin ratio will be the measure by which to build a new budgeting model for the related university. Controlling direct costs will allow for a more significant effect on direct profit than by focusing on

operational allocations only. It will also allow for a direct profit ratio range. This direct profit ratio range will ensure a target surplus range is set as a goal. The contribution margin ratio is calculated using Equation 4.1:

Equation 4.1: Contribution margin ratio

$$\text{Contribution margin ratio} = \frac{(\text{Income} - \text{Direct Costs})}{\text{Income}}$$

4.6 Contribution margin ratio findings

Section 4.5 explained that a target contribution margin ratio would give the university a target surplus range. The contribution margin ratio is the contribution margin (income less direct costs) divided by income. Table 4.13 illustrates the calculation of the actual contribution margin ratio for each faculty at the selected university. The related university calculates the figures in Table 4.13, as required for this study, by applying its current funding model. The figures for income and indirect costs were obtained from the budget workings, while the direct cost figures were extrapolated from the management reports.

Table 4.13: Contribution margin and contribution margin ratio for 2020

	Total for 2020	Faculty 1	Faculty 2	Faculty 3	Faculty 4
Total Income	R1 009 193 844.17	R245 883 882.90	R158 607 817.13	R319 938 753.75	R284 763 390.39
Estimated teaching input grant	R429 525 235.01	R93 174 443.63	R90 247 472.09	R139 920 257.28	R106 183 062.01
Estimated teaching output grant	R157 420 029.16	R30 092 889.27	R24 320 555.04	R38 663 446.47	R64 343 138.38
Fees & other income	R422 248 580.00	R122 616 550.00	R44 039 790.00	R141 355 050.00	R114 237 190.00
Indirect costs	-R647 469 116.14	-R166 789 295.25	-R91 537 696.05	-R208 693 647.84	-R180 448 477.00
Fee adjustment (Bad debts)	-R144 294 220.18	-R41 901 525.08	-R15 049 635.35	-R48 304 997.75	-R39 038 062.00
Institutional tax on fees	-R207 218 300.31	-R60 174 016.64	-R21 612 507.09	-R69 369 927.07	-R56 061 849.50
Support tax on fees	-R31 831 226.78	-R9 243 453.73	-R3 319 941.40	-R10 656 056.33	-R8 611 775.32
Support tax on input grant	-R193 286 355.75	-R41 928 499.63	-R40 611 362.44	-R62 964 115.78	-R47 782 377.90
Support tax on output grant	-R70 839 013.12	-R13 541 800.17	-R10 944 249.77	-R17 398 550.91	-R28 954 412.27
	R361 724 728.03	R79 094 587.65	R67 070 121.08	R111 245 105.91	R104 314 913.39
Direct costs	-R280 759 627.09	-R72 652 984.97	-R47 430 710.06	-R87 108 389.16	-R73 567 542.90
Salaries budget 2020	-R268 117 911.19	-R70 061 532.17	-R44 493 674.36	-R84 010 004.16	-R69 552 700.50
Operational budget 2020	-R12 641 715.90	-R2 591 452.80	-R2 937 035.70	-R3 098 385.00	-R4 014 842.40
Contribution	R728 434 217.08	R173 230 897.93	R111 177 107.07	R232 830 364.59	R211 195 847.49
Contribution margin ratio	72%	70%	70%	73%	74%
Direct costs as a % of income	-28%	-30%	-30%	-27%	-26%
Adjustment of direct costs to match % above		-R68 405 359.06	-R44 124 993.28	-R89 007 563.53	-R79 221 711.23

In Table 4.13, the contribution was calculated by subtracting the direct costs from the total income. The contribution was divided by the income to calculate the contribution margin ratio. The total contribution for the four faculties of the related university was R728 434 217.08, with a contribution margin ratio of 72%.

The overall contribution margin of 72% was then set as the target ratio for the faculties. Faculty 1 had a ratio of 70%, which meant that its direct costs were too high. By contrast, Faculty 4 had a margin of 74% and, therefore, could have been allocated additional funding for direct costs. Dividing direct costs by income at the overall level yielded a percentage of 28% for direct costs. This is the target for direct costs as a percentage of income. Table 4.14 shows the monetary change needed for direct costs to match the 28% calculated above.

Table 4.14: Monetary change required for a contribution margin of 72% for 2020

	Total for 2020	Faculty 1	Faculty 2	Faculty 3	Faculty 4
Direct costs	-R280 759 627.09	-R72 652 984.97	-R47 430 710.06	-R87 108 389.16	-R73 567 542.90
Direct costs as a % of income	-28%	-30%	-30%	-27%	-26%
Adjustment of direct costs to match % above	-R280 759 627.09	-R68 405 359.06	-R44 124 993.28	-R89 007 563.53	-R79 221 711.23
Difference between current direct costs and ideal		-R4 247 625.91	-R3 305 716.78	R1 899 174.37	R5 654 168.33

When considering the results in Table 4.14, it is essential to keep in mind that while reference is made to 28%, the calculations to determine how the direct costs per faculty should match 28% value at the overall level were based on the unrounded value of 27.8201882%. Table 4.14 first shows the unadjusted direct costs. The second row shows the calculated direct costs as a percentage of Income at the overall level and for each faculty. Faculty 1, for instance, had a percentage of 30%, which is higher than it should have been, given the target of 28%. The third row shows the amount of direct costs each faculty should have achieved in order also to have a percentage of 28%.

The difference in monetary terms between the actual direct costs and direct costs adjusted to equal the calculated 28% is shown in the fourth row of Table 4.14. For Faculty 1, this was calculated by taking the direct costs of R72 652 984.97 and subtracting it from the adjusted amount of R68 405 359.06 calculated above. The negative values are where the faculties need their direct costs lowered, while positive

values show where a faculty should receive an increased allocation of direct costs. Faculty 1 and 2 had direct costs above what it should have been. Faculty 3 and 4 could have their direct costs increased by R1 899 174.37 and R5 654 168.33, respectively. Table 4.15 performs a similar calculation to Table 4.13 for the 2021 financial year.

Table 4.15: Contribution margin and contribution margin ratio for 2021

	Total for 2021	Faculty 1	Faculty 2	Faculty 3	Faculty 4
Total Income	R1 096 829 909.81	R286 495 864.93	R157 457 987.07	R372 263 320.17	R280 612 737.64
Estimated teaching input grant	R436 397 553.63	R99 365 891.51	R85 082 571.24	R157 410 960.91	R94 538 129.97
Estimated teaching output grant	R165 797 506.17	R37 781 493.42	R24 350 455.83	R45 760 479.26	R57 905 077.67
Fees & other income	R494 634 850.00	R149 348 480.00	R48 024 960.00	R169 091 880.00	R128 169 530.00
Indirect costs	-R689 667 702.92	-R188 354 601.45	-R89 640 401.89	-R234 567 140.95	-R177 105 558.63
Fee adjustment (Bad debts)	-R151 149 754.27	-R45 637 678.08	-R14 675 393.18	-R51 670 835.79	-R39 165 847.22
Institutional tax on fees	-R212 054 557.54	-R64 027 081.48	-R20 588 746.72	-R72 491 260.57	-R54 947 468.77
Support tax on fees	-R58 486 589.49	-R17 659 255.59	-R5 678 564.95	-R19 993 753.72	-R15 155 015.23
Support tax on input grant	-R194 196 911.37	-R44 217 821.72	-R37 861 744.20	-R70 047 877.60	-R42 069 467.84
Support tax on output grant	-R73 779 890.25	-R16 812 764.57	-R10 835 952.84	-R20 363 413.27	-R25 767 759.56
	R407 162 206.89	R98 141 263.48	R67 817 585.18	R137 696 179.21	R103 507 179.02
Direct costs	-R307 957 299.15	-R82 034 242.46	-R51 747 388.78	-R93 581 171.62	-R80 594 496.29
Salaries budget 2021	-R292 948 708.15	-R78 656 230.46	-R47 840 515.78	-R90 240 986.62	-R76 210 975.29
Operational budget 2021	-R15 008 591.00	-R3 378 012.00	-R3 906 873.00	-R3 340 185.00	-R4 383 521.00
Contribution	R788 872 610.66	R204 461 622.47	R105 710 598.29	R278 682 148.55	R200 018 241.35
Contribution margin ratio	72%	71%	67%	75%	71%
Direct costs as a % of income	-28%	-29%	-33%	-25%	-29%
Adjustment of direct costs to match % above		-R80 439 539.43	-R44 209 531.48	-R104 520 496.41	-R78 787 731.82

In calculating the results presented in Table 4.15, the target was again 72% for the contribution margin ratio and 28% for the direct costs as a percentage of income. These are rounded figures; the actual values are 71.9229667% and 28.077033%, respectively. The calculation to determine these values is the same as outlined in Table 4.13. While reference is made to the rounded figures, the unrounded figures were used to adjust the individual faculties figures to arrive at the required contribution margin ratio and direct costs as a percentage of income. To meet the required contribution margin of 72%, the direct costs allocated to faculties must be adjusted with the monetary amounts presented in Table 4.16.

Table 4.16: Monetary change required for a contribution margin of 72% for 2021

	Total for 2021	Faculty 1	Faculty 2	Faculty 3	Faculty 4
Direct costs	-R307 957 299.15	-R82 034 242.46	-R51 747 388.78	-R93 581 171.62	-R80 594 496.29
Direct costs as a % of income	-28%	-29%	-33%	-25%	-29%
Adjustment of direct costs to match % above		-R80 439 539.43	-R44 209 531.48	-R104 520 496.41	-R78 787 731.82
Difference between current direct costs and ideal		-R1 594 703.03	-R7 537 857.30	R10 939 324.79	-R1 806 764.47

Table 4.16 is similar to Table 4.14, except that 2021 figures were used. Faculty 1, 2 and 3 should have had reductions in their allocations of R1 594 703.03, R7 537 857.30 and R1 806 764.47, respectively. Faculty 3 could have had an increase of R10 939 324.79 in its allocation. This performance declined from 2020 when two faculties should have seen reductions (Faculties 1 and 2).

The same calculation was also performed at the departmental level for the related university. Table 4.17 provides the breakdown of the department changes required to meet the set contribution margin of 72% for the 2020 financial year.

Table 4.17: Monetary change required for contribution margin of 72% per department for 2020

Current 2020			Total per faculty
Faculty	Department	Difference between current direct costs and ideal	
Faculty 1	1.1	R5 780 161.75	
Faculty 1	1.2	-R9 998 237.90	
Faculty 1	1.3	-R29 549.76	-R4 247 625.91
Faculty 2	2.1	R2 706 726.08	
Faculty 2	2.2	-R4 298 903.25	
Faculty 2	2.3	-R2 513 585.75	
Faculty 2	2.4	R800 046.14	-R3 305 716.78
Faculty 3	3.1	R746 612.82	
Faculty 3	3.2	R2 408 888.24	
Faculty 3	3.3	-R4 205 531.00	
Faculty 3	3.4	-R1 507 762.54	
Faculty 3	3.5	-R1 279 835.06	
Faculty 3	3.6	R4 041 438.22	
Faculty 3	3.7	R1 695 363.70	R1 899 174.38
Faculty 4	4.1	-R4 718 140.35	
Faculty 4	4.2	R4 295 803.63	
Faculty 4	4.3	R16 215 333.29	
Faculty 4	4.4	-R1 294 534.31	
Faculty 4	4.5	-R5 666 780.43	
Faculty 4	4.6	-R3 177 513.51	R5 654 168.33

Table 4.17 shows the differences between the current direct and ideal direct costs when adjusted for the overall contribution margin of 72%. The amounts under the “Total per faculty” match the amounts in the last row of Table 4.14 and are the total adjustments needed at the faculty level. The amounts in bold are negative values that need a downward adjustment in their allocation. Interestingly, every faculty has at least one department that should have had a downward adjustment. This detail means that even profitable faculties are cross-subsidising departments within their faculties. Faculty 3 has a net positive value of R1 899 174.38. This faculty has three departments with a downward adjustment (Departments 3.3, 3.4, and 3.5), while the other four departments should have been allocated more funds (Departments 3.1, 3.2, 3.6 and 3.7). To arrive at these values, the same calculations were followed for the departments that were made for faculties, as explained in Table 4.14. The calculation for the required adjustments per department for 2021 is provided in Table 4.18.

Table 4.18: Monetary change required for contribution margin of 72% per Department for 2021

Current 2021			Total per faculty
Faculty	Department	Difference between current direct costs and ideal	
Faculty 1	1.1	R6 997 827.87	
Faculty 1	1.2	-R12 020 500.66	
Faculty 1	1.3	R3 427 969.76	-R1 594 703.03
Faculty 2	2.1	R3 185 345.14	
Faculty 2	2.2	-R5 571 730.82	
Faculty 2	2.3	-R3 145 405.06	
Faculty 2	2.4	-R2 006 066.55	-R7 537 857.30
Faculty 3	3.1	R1 816 379.86	
Faculty 3	3.2	R4 931 109.41	
Faculty 3	3.3	-R2 290 040.96	
Faculty 3	3.4	-R408 538.67	
Faculty 3	3.5	R500 139.50	
Faculty 3	3.6	R4 293 220.99	
Faculty 3	3.7	R2 097 054.67	R10 939 324.80
Faculty 4	4.1	-R6 178 760.33	
Faculty 4	4.2	R2 987 206.42	
Faculty 4	4.3	R11 739 584.47	
Faculty 4	4.4	-R1 445 290.50	
Faculty 4	4.5	-R5 738 529.09	
Faculty 4	4.6	-R3 170 975.44	-R1 806 764.47

In Table 4.18, the amounts under the “Total per faculty” column match those in the last row of Table 4.16. The table again shows that departments in every faculty are being cross-subsidised even if the overall faculty could have had a higher allocation. While Faculty 3 should have had an extra allocation of R10 939 324 .80, two of its departments (3.3 and 3.4) should have received lower allocations of R2 290 040.96 and R408 538.67, respectively. These departments are being cross-subsidised by departments within the faculty. Table 4.19 shows the departmental direct profit for 2020 before any adjustments are presented.

Table 4.19: Departmental direct profit before any adjustments for 2020

Current 2020					
Faculty	Department	Income	Direct costs	Income minus direct costs	Direct profit
Faculty 1	1.1	R53 016 834.63	-R8 969 221.44	R44 047 613.19	R5 632 782.12
Faculty 1	1.2	R13 076 520.55	-R13 636 150.53	-R559 629.98	-R8 361 671.17
Faculty 1	1.3	R179 790 527.73	-R50 047 613.00	R129 742 914.73	R9 170 491.73
Faculty 2	2.1	R35 335 638.36	-R7 123 715.03	R28 211 923.33	R8 450 361.54
Faculty 2	2.2	R24 878 719.33	-R11 220 209.80	R13 658 509.53	-R947 258.90
Faculty 2	2.3	R45 036 572.81	-R15 042 845.08	R29 993 727.73	R3 956 652.03
Faculty 2	2.4	R53 356 886.62	-R14 043 940.15	R39 312 946.47	R8 179 656.34
Faculty 3	3.1	R30 411 790.27	-R7 714 004.48	R22 697 785.79	R3 706 043.10
Faculty 3	3.2	R65 422 456.41	-R15 791 762.28	R49 630 694.13	R8 990 315.59
Faculty 3	3.3	R57 078 807.55	-R20 084 962.70	R36 993 844.85	R627 808.97
Faculty 3	3.4	R70 465 757.57	-R21 111 468.94	R49 354 288.63	R747 322.09
Faculty 3	3.5	R46 990 448.19	-R14 352 666.20	R32 637 781.99	R1 396 813.14
Faculty 3	3.6	R43 475 488.67	-R8 053 524.56	R35 421 964.11	R6 585 215.80
Faculty 3	3.7	R6 094 005.09	R0.01	R6 094 005.10	R2 083 198.07
Faculty 4	4.1	R38 187 349.02	-R15 341 932.73	R22 845 416.29	-R1 844 852.25
Faculty 4	4.2	R85 863 666.00	-R19 591 629.87	R66 272 036.13	R13 069 801.43
Faculty 4	4.3	R100 617 993.56	-R11 776 781.91	R88 841 211.65	R27 916 604.55
Faculty 4	4.4	R37 624 180.61	-R11 761 652.18	R25 862 528.43	R425 003.45
Faculty 4	4.5	R12 235 665.99	-R9 070 765.74	R3 164 900.25	-R5 931 599.41
Faculty 4	4.6	R10 234 535.22	-R6 024 780.47	R4 209 754.75	-R2 887 587.29

From the figures presented in Table 4.19, Department 1.2 had the lowest direct profit with direct costs that exceeded its income by R559 629.98. This is the only department that could not cover its direct costs with its income. This detail means that even without deducting the indirect costs, this department was unprofitable. Regarding direct profit, five departments (4.1, 4.5, 4.6, 1.2 and 2.2) had a negative direct profit. The direct profit for 2021 is illustrated in Table 4.20:

Table 4.20: Departmental direct profit before any adjustments for 2021

Current 2021					
Faculty	Department	Income	Direct costs	Income minus direct costs	Direct profit
Faculty 1	1.1	R58 235 898.97	-R9 353 084.88	R48 882 814.09	R7 660 147.25
Faculty 1	1.2	R11 930 884.28	-R15 370 339.01	-R3 439 454.73	-R10 561 439.25
Faculty 1	1.3	R216 329 081.68	-R57 310 818.57	R159 018 263.11	R19 008 313.02
Faculty 2	2.1	R39 615 896.00	-R7 937 623.18	R31 678 272.82	R10 178 750.96
Faculty 2	2.2	R22 886 765.15	-R11 997 655.49	R10 889 109.66	-R2 748 536.68
Faculty 2	2.3	R48 481 428.31	-R16 757 551.84	R31 723 876.47	R4 064 704.86
Faculty 2	2.4	R46 473 897.62	-R15 054 558.27	R31 419 339.35	R4 575 277.27
Faculty 3	3.1	R35 820 360.14	-R8 240 914.59	R27 579 445.55	R5 989 515.76
Faculty 3	3.2	R75 772 148.92	-R16 343 462.08	R59 428 686.84	R13 784 926.05
Faculty 3	3.3	R69 441 259.73	-R21 787 086.59	R47 654 173.14	R5 380 993.72
Faculty 3	3.4	R78 306 355.80	-R22 394 640.27	R55 911 715.53	R3 074 413.88
Faculty 3	3.5	R56 427 666.56	-R15 343 075.24	R41 084 591.32	R5 225 647.13
Faculty 3	3.6	R49 026 596.54	-R9 471 992.85	R39 554 603.69	R7 864 855.86
Faculty 3	3.7	R7 468 932.48	R0.01	R7 468 932.49	R2 794 655.20
Faculty 4	4.1	R36 180 603.06	-R16 337 200.30	R19 843 402.76	-R3 752 586.06
Faculty 4	4.2	R90 064 318.60	-R22 300 182.31	R67 764 136.29	R13 141 993.88
Faculty 4	4.3	R89 746 559.36	-R13 458 586.90	R76 287 972.46	R20 725 799.87
Faculty 4	4.4	R40 225 495.06	-R12 739 416.15	R27 486 078.91	R1 090 809.57
Faculty 4	4.5	R13 556 598.16	-R9 544 819.67	R4 011 778.49	-R5 606 411.06
Faculty 4	4.6	R10 839 163.41	-R6 214 290.96	R4 624 872.45	-R2 686 923.48

As seen in Table 4.20, Department 1.2 again had direct costs that its income could not fund. It also had a negative direct profit of R10 561 439.25, the highest negative direct profit consistent with 2020, followed by Department 4.5 with a negative direct profit of R5 606 411.06. The same five departments (4.1, 4.5, 4.6, 1.2 and 2.2) with a negative direct profit in 2020 also had a negative direct profit in 2021. The amounts presented in Tables 4.19 and 4.20 provide an overview of how the direct costs, income, and direct profit are distributed among the various departments. This overview is vital since if adjustments are made for a target contribution margin and target direct costs, a comparison can be made in terms of direct costs and direct profit with the figures in Tables 4.19 and 4.20. For 2020, in the case of each department, the current contribution margin ratio, direct profit ratio and direct costs as a percentage of income are presented in Table 4.21.

Table 4.21: Departmental contribution margin ratio, direct profit ratio and direct costs as a percentage of income for 2020

Current 2020				
Faculty	Department	Contribution margin ratio	Direct profit ratio	Direct costs as a % of income
Faculty 1	1.1	83%	11%	17%
Faculty 1	1.2	-4%	-64%	104%
Faculty 1	1.3	72%	5%	28%
Faculty 2	2.1	80%	24%	20%
Faculty 2	2.2	55%	-4%	45%
Faculty 2	2.3	67%	9%	33%
Faculty 2	2.4	74%	15%	26%
Faculty 3	3.1	75%	12%	25%
Faculty 3	3.2	76%	14%	24%
Faculty 3	3.3	65%	1%	35%
Faculty 3	3.4	70%	1%	30%
Faculty 3	3.5	69%	3%	31%
Faculty 3	3.6	81%	15%	19%
Faculty 3	3.7	100%	34%	0%
Faculty 4	4.1	60%	-5%	40%
Faculty 4	4.2	77%	15%	23%
Faculty 4	4.3	88%	28%	12%
Faculty 4	4.4	69%	1%	31%
Faculty 4	4.5	26%	-48%	74%
Faculty 4	4.6	41%	-28%	59%
	Average	66%	2%	34%
		Max	34%	
		Min	-64%	
		Standard deviation	23%	
		Median	7%	

Deduced from Table 4.21 is that the average contribution margin ratio was 66% for all departments, which is lower than the overall level of 72% for the selected university. This means that, on average, the income is either too low or the direct costs are too high for the related departments to reach the overall level of 72%. By comparison, the direct costs as a percentage of income average was 34%, which is higher than the 28% at the overall level for the university. This means the direct costs were too high on average. Department 1.2 had a negative contribution margin ratio of 4%, the lowest among all departments. This department was the only department with a negative contribution margin ratio. The highest contribution margin ratio was 100% for Department 3.7, which has no direct costs, followed by Department 4.3, with 88%. The direct profit ratio's average was 2%. The lowest of this ratio was -64% for Department 1.2, while the highest was 34% for Department 3.7. The standard deviation of the

direct profit ratio was 23%. As noted in Section 3.6.3, the higher the standard deviation, the more dispersed the values are. This dispersion means that the higher it is, the more the values spread out from the mean (average). A lower standard deviation for direct profit would mean that the values would be closer to the average, which means fewer outliers and therefore ensures that there is less likelihood of any department having an extensive negative direct profit. For 2021, the current contribution margin ratio, direct profit ratio and direct costs as a percentage of income for each department are seen in Table 4.22.

Table 4.22: Departmental contribution margin ratio, direct profit ratio and direct costs as a percentage of income for 2021

Current 2021				
Faculty	Department	Contribution margin ratio	Direct profit ratio	Direct costs as a % of income
Faculty 1	1.1	84%	13%	16%
Faculty 1	1.2	-29%	-89%	129%
Faculty 1	1.3	74%	9%	26%
Faculty 2	2.1	80%	26%	20%
Faculty 2	2.2	48%	-12%	52%
Faculty 2	2.3	65%	8%	35%
Faculty 2	2.4	68%	10%	32%
Faculty 3	3.1	77%	17%	23%
Faculty 3	3.2	78%	18%	22%
Faculty 3	3.3	69%	8%	31%
Faculty 3	3.4	71%	4%	29%
Faculty 3	3.5	73%	9%	27%
Faculty 3	3.6	81%	16%	19%
Faculty 3	3.7	100%	37%	0%
Faculty 4	4.1	55%	-10%	45%
Faculty 4	4.2	75%	15%	25%
Faculty 4	4.3	85%	23%	15%
Faculty 4	4.4	68%	3%	32%
Faculty 4	4.5	30%	-41%	70%
Faculty 4	4.6	43%	-25%	57%
	Average	65%	2%	35%
		Max	37%	
		Min	-89%	
		Standard deviation	27%	
		Median	9%	

When considering the figures presented in Table 4.22, the average contribution margin ratio was 65%, while the direct costs as a percentage of income average was 35%. The lowest contribution margin ratio was negative 29% for Department 1.2,

which also had the lowest contribution margin ratio in 2020. The highest contribution margin ratio was again Department 3.7 with 100%, followed by Department 4.3 with 85%. The average of the direct profit ratio was again 2% (consistent with 2020). The department with the lowest related percentage was Department 1.2, with -89%, while the highest was 37% for Department 3.7. The standard deviation of the direct profit ratio was 27%. This standard deviation was higher than 2020's 23%, meaning the values for direct profit were more spread out from the average (2%) than in 2020.

The calculations in Tables 4.21 and 4.22 were to determine the actual direct costs allocated to departments as a percentage of the income of that department. To arrive at the target contribution margin ratio (72%), direct costs had to be adjusted with the values calculated in Tables 4.17 and 4.18. Table 4.23 quantifies the required adjustment for each department at the selected university for 2020 and arrives at an adjusted direct cost.

Table 4.23: Adjustments to direct costs to achieve a 72% contribution margin ratio for 2020

Current 2020				New direct costs 2020	
Faculty	Department	Direct costs	Difference	Direct costs	Difference at faculty level
Faculty 1	1.1	-R8 969 221.44	R5 780 161.75	-R14 749 383.19	
Faculty 1	1.2	-R13 636 150.53	-R9 998 237.90	-R3 637 912.63	
Faculty 1	1.3	-R50 047 613.00	-R29 549.76	-R50 018 063.24	-R4 247 625.91
Faculty 2	2.1	-R7 123 715.03	R2 706 726.08	-R9 830 441.11	
Faculty 2	2.2	-R11 220 209.80	-R4 298 903.25	-R6 921 306.55	
Faculty 2	2.3	-R15 042 845.08	-R2 513 585.75	-R12 529 259.33	
Faculty 2	2.4	-R14 043 940.15	R800 046.14	-R14 843 986.29	-R3 305 716.78
Faculty 3	3.1	-R7 714 004.48	R746 612.82	-R8 460 617.30	
Faculty 3	3.2	-R15 791 762.28	R2 408 888.24	-R18 200 650.52	
Faculty 3	3.3	-R20 084 962.70	-R4 205 531.00	-R15 879 431.70	
Faculty 3	3.4	-R21 111 468.94	-R1 507 762.54	-R19 603 706.40	
Faculty 3	3.5	-R14 352 666.20	-R1 279 835.06	-R13 072 831.14	
Faculty 3	3.6	-R8 053 524.56	R4 041 438.22	-R12 094 962.78	
Faculty 3	3.7	R0.01	R1 695 363.70	-R1 695 363.69	R1 899 174.38
Faculty 4	4.1	-R15 341 932.73	-R4 718 140.35	-R10 623 792.38	
Faculty 4	4.2	-R19 591 629.87	R4 295 803.63	-R23 887 433.50	
Faculty 4	4.3	-R11 776 781.91	R16 215 333.29	-R27 992 115.20	
Faculty 4	4.4	-R11 761 652.18	-R1 294 534.31	-R10 467 117.87	
Faculty 4	4.5	-R9 070 765.74	-R5 666 780.43	-R3 403 985.31	
Faculty 4	4.6	-R6 024 780.47	-R3 177 513.51	-R2 847 266.96	R5 654 168.33
Total		-R280 759 627.08	R0.01	-R280 759 627.09	

In Table 4.23, the “Difference” column and “Difference at faculty level” match the values calculated in Table 4.17. The current direct costs for 2020 were added or subtracted from the “Difference” column. A positive value in the “Difference” column means an increase in direct costs can be achieved, while a negative value means the direct costs have to be adjusted downwards. This is how the new direct costs for 2020 were calculated which would yield a contribution margin ratio of 72%. The figures in Table 4.43 were used to calculate the adjusted direct profit per department for 2020.

Table 4.24: Departmental adjustments required to achieve the target contribution margin ratio of 72% for 2020

New direct costs 2020					
Faculty	Department	Income	Direct costs	Income- direct costs	Direct profit
Faculty 1	1.1	R53 016 834.63	-R14 749 383.19	R38 267 451.44	-R147 379.63
Faculty 1	1.2	R13 076 520.55	-R3 637 912.63	R9 438 607.92	R1 636 566.73
Faculty 1	1.3	R179 790 527.73	-R50 018 063.24	R129 772 464.49	R9 200 041.49
Faculty 2	2.1	R35 335 638.36	-R9 830 441.11	R25 505 197.26	R5 743 635.47
Faculty 2	2.2	R24 878 719.33	-R6 921 306.55	R17 957 412.78	R3 351 644.35
Faculty 2	2.3	R45 036 572.81	-R12 529 259.33	R32 507 313.48	R6 470 237.78
Faculty 2	2.4	R53 356 886.62	-R14 843 986.29	R38 512 900.33	R7 379 610.20
Faculty 3	3.1	R30 411 790.27	-R8 460 617.30	R21 951 172.97	R2 959 430.28
Faculty 3	3.2	R65 422 456.41	-R18 200 650.52	R47 221 805.89	R6 581 427.35
Faculty 3	3.3	R57 078 807.55	-R15 879 431.70	R41 199 375.85	R4 833 339.96
Faculty 3	3.4	R70 465 757.57	-R19 603 706.40	R50 862 051.17	R2 255 084.63
Faculty 3	3.5	R46 990 448.19	-R13 072 831.14	R33 917 617.05	R2 676 648.21
Faculty 3	3.6	R43 475 488.67	-R12 094 962.78	R31 380 525.89	R2 543 777.58
Faculty 3	3.7	R6 094 005.09	-R1 695 363.69	R4 398 641.41	R387 834.37
Faculty 4	4.1	R38 187 349.02	-R10 623 792.38	R27 563 556.64	R2 873 288.10
Faculty 4	4.2	R85 863 666.00	-R23 887 433.50	R61 976 232.49	R8 773 997.80
Faculty 4	4.3	R100 617 993.56	-R27 992 115.20	R72 625 878.35	R11 701 271.26
Faculty 4	4.4	R37 624 180.61	-R10 467 117.87	R27 157 062.74	R1 719 537.76
Faculty 4	4.5	R12 235 665.99	-R3 403 985.31	R8 831 680.68	-R264 818.98
Faculty 4	4.6	R10 234 535.22	-R2 847 266.96	R7 387 268.25	R289 926.22

Table 4.24 reveals that only two departments, Departments 4.5 and 1.1, have a negative direct profit when the new direct costs are calculated. This shows an improvement from the current 2020 figures in Table 4.19, where five departments had a negative direct profit. This result shows a move towards profitability for the departments. The selected university would have more profitable departments with this adjustment to direct costs. For 2021, Table 4.25 indicates the departmental

adjustments to direct costs required to achieve the target contribution margin ratio of 72%.

Table 4.25: Adjustments to direct costs to achieve a 72% contribution margin ratio for 2021

Current 2021				New direct costs 2021	
Faculty	Department	Direct costs	Difference	Direct costs	Difference at faculty level
Faculty 1	1.1	-R 9 353 084.88	R 6 997 827.87	-R 16 350 912.75	
Faculty 1	1.2	-R 15 370 339.01	-R12 020 500.66	-R 3 349 838.35	
Faculty 1	1.3	-R 57 310 818.57	R 3 427 969.76	-R 60 738 788.33	-R 1 594 703.03
Faculty 2	2.1	-R 7 937 623.18	R 3 185 345.14	-R 11 122 968.32	
Faculty 2	2.2	-R 11 997 655.49	-R 5 571 730.82	-R 6 425 924.67	
Faculty 2	2.3	-R 16 757 551.84	-R 3 145 405.06	-R 13 612 146.78	
Faculty 2	2.4	-R 15 054 558.27	-R 2 006 066.55	-R 13 048 491.72	-R 7 537 857.30
Faculty 3	3.1	-R 8 240 914.59	R 1 816 379.86	-R 10 057 294.45	
Faculty 3	3.2	-R 16 343 462.08	R 4 931 109.41	-R 21 274 571.49	
Faculty 3	3.3	-R 21 787 086.59	-R 2 290 040.96	-R 19 497 045.63	
Faculty 3	3.4	-R 22 394 640.27	-R 408 538.67	-R 21 986 101.60	
Faculty 3	3.5	-R 15 343 075.24	R 500 139.50	-R 15 843 214.74	
Faculty 3	3.6	-R 9 471 992.85	R 4 293 220.99	-R 13 765 213.84	
Faculty 3	3.7	R 0.01	R 2 097 054.67	-R 2 097 054.66	R 10 939 324.80
Faculty 4	4.1	-R 16 337 200.30	-R 6 178 760.33	-R 10 158 439.97	
Faculty 4	4.2	-R 22 300 182.31	R 2 987 206.42	-R 25 287 388.73	
Faculty 4	4.3	-R 13 458 586.90	R11 739 584.47	-R 25 198 171.37	
Faculty 4	4.4	-R 12 739 416.15	-R 1 445 290.50	-R 11 294 125.65	
Faculty 4	4.5	-R 9 544 819.67	-R 5 738 529.09	-R 3 806 290.58	
Faculty 4	4.6	-R 6 214 290.96	-R 3 170 975.44	-R 3 043 315.52	-R 1 806 764.47
Total		-R307 957 299.14	R 0.01	-R 307 957 299.15	

Table 4.25 follows the same process as Table 4.23, with the adjustments needed to direct costs that were calculated in Table 4.18 for 2021. Table 4.25 further illustrates the new direct costs needed to achieve a contribution margin ratio of 72% for 2021 by adding or subtracting the calculated adjustments to the current direct costs. The figures in bold are downward adjustments. As seen in Table 4.25, Department 1.2 had the most significant adjustment as the direct costs were R15 370 339.01 and needed to be lowered by R12 020 500.66 to R3 349 838.35. The direct costs were nearly four times what it should have been. This suggests unsustainable spending in the department. Departments 2.2, 4.1 and 4.5 required downward adjustments of over five million rands. This also suggests potential problems in sustainability for these departments. Table 4.26 shows the effect of the direct cost adjustments in Table 4.25 on direct profit.

Table 4.26: Departmental adjustments required to achieve the target contribution margin ratio of 72% for 2021

New direct costs 2021					
Faculty	Department	Income	Direct costs	Income- direct costs	Direct profit
Faculty 1	1.1	R58 235 898.97	-R16 350 912.75	R41 884 986.22	R662 319.38
Faculty 1	1.2	R11 930 884.28	-R3 349 838.35	R8 581 045.93	R1 459 061.40
Faculty 1	1.3	R216 329 081.68	-R60 738 788.33	R155 590 293.35	R15 580 343.26
Faculty 2	2.1	R39 615 896.00	-R11 122 968.32	R28 492 927.68	R6 993 405.82
Faculty 2	2.2	R22 886 765.15	-R6 425 924.67	R16 460 840.47	R2 823 194.14
Faculty 2	2.3	R48 481 428.31	-R13 612 146.78	R34 869 281.53	R7 210 109.92
Faculty 2	2.4	R46 473 897.62	-R13 048 491.72	R33 425 405.90	R6 581 343.82
Faculty 3	3.1	R35 820 360.14	-R10 057 294.45	R25 763 065.69	R4 173 135.90
Faculty 3	3.2	R75 772 148.92	-R21 274 571.49	R54 497 577.42	R8 853 816.64
Faculty 3	3.3	R69 441 259.73	-R19 497 045.63	R49 944 214.10	R7 671 034.68
Faculty 3	3.4	R78 306 355.80	-R21 986 101.60	R56 320 254.20	R3 482 952.55
Faculty 3	3.5	R56 427 666.56	-R15 843 214.74	R40 584 451.82	R4 725 507.63
Faculty 3	3.6	R49 026 596.54	-R13 765 213.84	R35 261 382.70	R3 571 634.87
Faculty 3	3.7	R7 468 932.48	-R2 097 054.66	R5 371 877.82	R697 600.53
Faculty 4	4.1	R36 180 603.06	-R10 158 439.97	R26 022 163.08	R2 426 174.27
Faculty 4	4.2	R90 064 318.60	-R25 287 388.73	R64 776 929.86	R10 154 787.46
Faculty 4	4.3	R89 746 559.36	-R25 198 171.37	R64 548 387.99	R8 986 215.40
Faculty 4	4.4	R40 225 495.06	-R11 294 125.65	R28 931 369.41	R2 536 100.07
Faculty 4	4.5	R13 556 598.16	-R3 806 290.58	R9 750 307.58	R132 118.02
Faculty 4	4.6	R10 839 163.41	-R3 043 315.52	R7 795 847.89	R484 051.96

Table 4.26 illustrates the positive direct profit experienced by all departments in 2021 once the direct costs had been adjusted. The highest direct profit was Department 1.3 with R15 580 343.26; the lowest was Department 4.5 with R132 118.02. In Table 4.20, it was shown that the current values for 2021 yielded a negative profit for five departments. The adjustments above show improved profitability, given all of the departments are now profitable. This shows an improvement in sustainability for departments. There would be no need for any cross-subsidising for any of the departments. For 2020, for each department, the adjusted contribution margin ratio, direct profit ratio and direct costs as a percentage of income are presented in Table 4.27.

Table 4.27: Adjusted departmental contribution margin ratio, direct profit ratio and direct costs as a percentage of income for 2020

New direct costs 2020					
Faculty	Department	Contribution margin ratio	Direct profit ratio	Direct costs as a % of income	Change in direct costs as a % of income
Faculty 1	1.1	72%	0%	28%	64%
Faculty 1	1.2	72%	13%	28%	-73%
Faculty 1	1.3	72%	5%	28%	0%
Faculty 2	2.1	72%	16%	28%	38%
Faculty 2	2.2	72%	13%	28%	-38%
Faculty 2	2.3	72%	14%	28%	-17%
Faculty 2	2.4	72%	14%	28%	6%
Faculty 3	3.1	72%	10%	28%	10%
Faculty 3	3.2	72%	10%	28%	15%
Faculty 3	3.3	72%	8%	28%	-21%
Faculty 3	3.4	72%	3%	28%	-7%
Faculty 3	3.5	72%	6%	28%	-9%
Faculty 3	3.6	72%	6%	28%	50%
Faculty 3	3.7	72%	6%	28%	-16953636981%
Faculty 4	4.1	72%	8%	28%	-31%
Faculty 4	4.2	72%	10%	28%	22%
Faculty 4	4.3	72%	12%	28%	138%
Faculty 4	4.4	72%	5%	28%	-11%
Faculty 4	4.5	72%	-2%	28%	-62%
Faculty 4	4.6	72%	3%	28%	-53%
	Average	72%	8%	28%	
		Max	16%		
		Min	-2%		
		Standard deviation	5%		
		Median	8%		

As seen in Table 4.27, the average contribution margin ratio was 72% for the total university, while the direct costs as a percentage of income average was 28% once the adjustments to direct costs from Tables 4.17 and 4.18 are made. The direct profit ratio's average was again 8%. The Department with the lowest direct profit ratio was Department 4.5, with a ratio of -2%, while the highest ratio was 16% for Department 2.1. The standard deviation of the direct profit ratio was 5%. This standard deviation is much lower than the unadjusted value for 2020 of 23%, as seen in Table 4.21. The decrease in the standard deviations means that the values for direct profit are less spread out from the average of 8% compared to 2020's unadjusted average direct profit of 2%. This also means that the direct profit for any department is more likely to

be close to 8% than the unadjusted 2020's average of 2%. This change to a target contribution margin ratio has therefore resulted in a higher average direct profit for the departments that is also less likely to have outlying values that range too far from the average of 8%. Table 4.28 calculates the adjusted contribution margin ratio, direct profit ratio and direct costs as a percentage of income per department for the 2021 financial year.

Table 4.28: Adjusted departmental contribution margin ratio, direct profit ratio and direct costs as a percentage of income for 2021

New direct costs 2021					
Faculty	Department	Contribution margin ratio	Direct profit ratio	Direct costs as a % of income	Change in direct costs as a % of income
Faculty 1	1.1	72%	1%	28%	75%
Faculty 1	1.2	72%	12%	28%	-78%
Faculty 1	1.3	72%	7%	28%	6%
Faculty 2	2.1	72%	18%	28%	40%
Faculty 2	2.2	72%	12%	28%	-46%
Faculty 2	2.3	72%	15%	28%	-19%
Faculty 2	2.4	72%	14%	28%	-13%
Faculty 3	3.1	72%	12%	28%	22%
Faculty 3	3.2	72%	12%	28%	30%
Faculty 3	3.3	72%	11%	28%	-11%
Faculty 3	3.4	72%	4%	28%	-2%
Faculty 3	3.5	72%	8%	28%	3%
Faculty 3	3.6	72%	7%	28%	45%
Faculty 3	3.7	72%	9%	28%	-20970546718%
Faculty 4	4.1	72%	7%	28%	-38%
Faculty 4	4.2	72%	11%	28%	13%
Faculty 4	4.3	72%	10%	28%	87%
Faculty 4	4.4	72%	6%	28%	-11%
Faculty 4	4.5	72%	1%	28%	-60%
Faculty 4	4.6	72%	4%	28%	-51%
	Average	72%	9%	28%	
		Max	18%		
		Min	1%		
		Standard deviation	4%		
		Median	10%		

From the figures presented in Table 4.28, the average contribution margin ratio was 72%, while the direct costs as a percentage of income average was 28% after direct costs were adjusted with the figures as presented in Table 4.18. The average of the

direct profit ratio was again 9% for all departments when compared to the adjusted 2020 figures. The lowest direct profit ratio was 1% for Department 4.5 and Department 1.1, while the highest was 18% for Department 2.1. The standard deviation of the direct profit ratio was 4%, much lower than the 27% in the current values in Table 4.22. This means the values are more likely to be close to the average of 9% in direct profit. The comparison between the current and adjusted direct profitability for 2020 and 2021 is contained in Table 4.29 and 4.30 respectively. These figures come from Tables 4.19, 4.20, 4.24 and 4.26.

Table 4.29: Comparison between current and adjusted direct profitability for 2020

		Current 2020	New 2020	Current 2020	New 2020
Faculty	Department	Direct profit	Direct profit	Direct profit ratio	Direct profit ratio
Faculty 1	1.1	R5 632 782.12	-R147 379.63	11%	0%
Faculty 1	1.2	-R8 361 671.17	R1 636 566.73	-64%	13%
Faculty 1	1.3	R9 170 491.73	R9 200 041.49	5%	5%
Faculty 2	2.1	R8 450 361.54	R5 743 635.47	24%	16%
Faculty 2	2.2	-R947 258.90	R3 351 644.35	-4%	13%
Faculty 2	2.3	R3 956 652.03	R6 470 237.78	9%	14%
Faculty 2	2.4	R8 179 656.34	R7 379 610.20	15%	14%
Faculty 3	3.1	R3 706 043.10	R2 959 430.28	12%	10%
Faculty 3	3.2	R8 990 315.59	R6 581 427.35	14%	10%
Faculty 3	3.3	R627 808.97	R4 833 339.96	1%	8%
Faculty 3	3.4	R747 322.09	R2 255 084.63	1%	3%
Faculty 3	3.5	R1 396 813.14	R2 676 648.21	3%	6%
Faculty 3	3.6	R6 585 215.80	R2 543 777.58	15%	6%
Faculty 3	3.7	R2 083 198.07	R387 834.37	34%	6%
Faculty 4	4.1	-R1 844 852.25	R2 873 288.10	-5%	8%
Faculty 4	4.2	R13 069 801.43	R8 773 997.80	15%	10%
Faculty 4	4.3	R27 916 604.55	R11 701 271.26	28%	12%
Faculty 4	4.4	R425 003.45	R1 719 537.76	1%	5%
Faculty 4	4.5	-R5 931 599.41	-R264 818.98	-48%	-2%
Faculty 4	4.6	-R2 887 587.29	R289 926.22	-28%	3%

Table 4.29 illustrates the differences in direct profit for 2020. The current direct profit for 2020 had five departments with a negative direct profit (Department 4.1, 4.5, 4.6, 1.2 and 2.2) with negative values of R1 844 852.25, R5 931 599.41, R2 887 587.29, R8 361671.17 and R947 258.90 respectively. After adjusting for a target contribution

margin ratio of 72%, only two departments (4.5 and 1.1) have negative direct profits of R264 818.98 and R147 379.63 respectively. Not only are there fewer departments that are unprofitable now, but the amounts are also far less than the current negative values. This result shows an improvement in the number of departments that are profitable in 2020.

Table 4.30: Comparison between current and adjusted direct profitability for 2021

		Current 2021	New 2021	Current 2021	New 2021
Faculty	Department	Direct profit	Direct profit	Direct profit ratio	Direct profit ratio
Faculty 1	1.1	R7 660 147.25	R662 319.38	13%	1%
Faculty 1	1.2	-R10 561 439.25	R1 459 061.40	-89%	12%
Faculty 1	1.3	R19 008 313.02	R15 580 343.26	9%	7%
Faculty 2	2.1	R10 178 750.96	R6 993 405.82	26%	18%
Faculty 2	2.2	-R2 748 536.68	R2 823 194.14	-12%	12%
Faculty 2	2.3	R4 064 704.86	R7 210 109.92	8%	15%
Faculty 2	2.4	R4 575 277.27	R6 581 343.82	10%	14%
Faculty 3	3.1	R5 989 515.76	R4 173 135.90	17%	12%
Faculty 3	3.2	R13 784 926.05	R8 853 816.64	18%	12%
Faculty 3	3.3	R5 380 993.72	R7 671 034.68	8%	11%
Faculty 3	3.4	R3 074 413.88	R3 482 952.55	4%	4%
Faculty 3	3.5	R5 225 647.13	R4 725 507.63	9%	8%
Faculty 3	3.6	R7 864 855.86	R3 571 634.87	16%	7%
Faculty 3	3.7	R2 794 655.20	R697 600.53	37%	9%
Faculty 4	4.1	-R3 752 586.06	R2 426 174.27	-10%	7%
Faculty 4	4.2	R13 141 993.88	R10 154 787.46	15%	11%
Faculty 4	4.3	R20 725 799.87	R8 986 215.40	23%	10%
Faculty 4	4.4	R1 090 809.57	R2 536 100.07	3%	6%
Faculty 4	4.5	-R5 606 411.06	R132 118.02	-41%	1%
Faculty 4	4.6	-R2 686 923.48	R484 051.96	-25%	4%

The differences in direct profit for 2021, as illustrated in Table 4.30, show that the current direct profit for 2021 had five departments with a negative direct profit (Department 4.1, 4.5, 4.6, 1.2 and 2.2) with negative values of R3 752 586.06, R5 606 411.06, R2 686 923.48, R10 561 439.25 and R2 748 536.68. Department 1.2 had the highest negative direct profit ratio of 89%. After adjusting for a target contribution margin ratio of 72%, there are no unprofitable departments. Department 1.2 improved from a negative direct profit ratio of 89% to a positive direct profit ratio of 12%. The adjustment has made all the departments profitable and has decreased the value

range. Previously the lowest direct profit ratio was negative 89%, but with the adjustment, it is now positive 1%. Table 4.31 shows the change in the range of values for direct profit for 2020.

Table 4.31: Comparison between the range in current and adjusted direct profitability for 2020

		Current 2020	Total			New 2020	Total
Faculty	Department	Direct profit		Faculty	Department	Direct profit	
Faculty 1	1.2	-R8 361 671.17		Faculty 4	4.5	-R264 818.98	
Faculty 4	4.5	-R5 931 599.41		Faculty 1	1.1	-R147 379.63	-R412 198.61
Faculty 4	4.6	-R2 887 587.29		Faculty 4	4.6	R289 926.22	
Faculty 4	4.1	-R1 844 852.25		Faculty 3	3.7	R387 834.37	
Faculty 2	2.2	-R947 258.90	-R19 972 969.01	Faculty 1	1.2	R1 636 566.73	
Faculty 4	4.4	R425 003.45		Faculty 4	4.4	R1 719 537.76	
Faculty 3	3.3	R627 808.97		Faculty 3	3.4	R2 255 084.63	
Faculty 3	3.4	R747 322.09		Faculty 3	3.6	R2 543 777.58	
Faculty 3	3.5	R1 396 813.14		Faculty 3	3.5	R2 676 648.21	
Faculty 3	3.7	R2 083 198.07		Faculty 4	4.1	R2 873 288.10	
Faculty 3	3.1	R3 706 043.10		Faculty 3	3.1	R2 959 430.28	
Faculty 2	2.3	R3 956 652.03		Faculty 2	2.2	R3 351 644.35	
Faculty 1	1.1	R5 632 782.12		Faculty 3	3.3	R4 833 339.96	
Faculty 3	3.6	R6 585 215.80		Faculty 2	2.1	R5 743 635.47	
Faculty 2	2.4	R8 179 656.34		Faculty 2	2.3	R6 470 237.78	
Faculty 2	2.1	R8 450 361.54		Faculty 3	3.2	R6 581 427.35	
Faculty 3	3.2	R8 990 315.59		Faculty 2	2.4	R7 379 610.20	
Faculty 1	1.3	R9 170 491.73		Faculty 4	4.2	R8 773 997.80	
Faculty 4	4.2	R13 069 801.43		Faculty 1	1.3	R9 200 041.49	
Faculty 4	4.3	R27 916 604.55	R100 938 069.96	Faculty 4	4.3	R11 701 271.26	R81 377 299.55
			R80 965 100.95				R80 965 100.94

As illustrated in Table 4.31, for 2020, the total for departments making a negative direct profit was R19 972 969.01. By comparison, the adjusted figures have a minimal negative direct profit for all departments of R412 198.61. The total for departments making a positive direct profit in 2020 was R 100 938 069.96, while the adjusted values are R81 377 299.55. This is because the costs have been redistributed in order to reach the new target contribution margin ratio. The total direct profit at the overall level of R80 965 100.95 remains unchanged. There are now far more profitable departments, while the total of all profitable departments has decreased. This shows a decrease in the range of profitable and unprofitable departments, adding the advantage of improved sustainability and predictability for the related university. Table 4.32 shows the same comparison for 2021.

Table 4.32: Comparison between the range in current and adjusted direct profitability for 2021

		Current 2021	Total			New 2021	Total
Faculty	Department	Direct profit		Faculty	Department	Direct profit	
Faculty 1	1.2	-R10 561 439.25		Faculty 4	4.5	R132 118.02	
Faculty 4	4.5	-R5 606 411.06		Faculty 4	4.6	R484 051.96	
Faculty 4	4.1	-R3 752 586.06		Faculty 1	1.1	R662 319.38	
Faculty 2	2.2	-R2 748 536.68		Faculty 3	3.7	R697 600.53	
Faculty 4	4.6	-R2 686 923.48	-R25 355 896.53	Faculty 1	1.2	R1 459 061.40	
Faculty 4	4.4	R1 090 809.57		Faculty 4	4.1	R2 426 174.27	
Faculty 3	3.7	R2 794 655.20		Faculty 4	4.4	R2 536 100.07	
Faculty 3	3.4	R3 074 413.88		Faculty 2	2.2	R2 823 194.14	
Faculty 2	2.3	R4 064 704.86		Faculty 3	3.4	R3 482 952.55	
Faculty 2	2.4	R4 575 277.27		Faculty 3	3.6	R3 571 634.87	
Faculty 3	3.5	R5 225 647.13		Faculty 3	3.1	R4 173 135.90	
Faculty 3	3.3	R5 380 993.72		Faculty 3	3.5	R4 725 507.63	
Faculty 3	3.1	R5 989 515.76		Faculty 2	2.4	R6 581 343.82	
Faculty 1	1.1	R7 660 147.25		Faculty 2	2.1	R6 993 405.82	
Faculty 3	3.6	R7 864 855.86		Faculty 2	2.3	R7 210 109.92	
Faculty 2	2.1	R10 178 750.96		Faculty 3	3.3	R7 671 034.68	
Faculty 4	4.2	R13 141 993.88		Faculty 3	3.2	R8 853 816.64	
Faculty 3	3.2	R13 784 926.05		Faculty 4	4.3	R8 986 215.40	
Faculty 1	1.3	R19 008 313.02		Faculty 4	4.2	R10 154 787.46	
Faculty 4	4.3	R20 725 799.87	R124 560 804.28	Faculty 1	1.3	R15 580 343.26	R99 204 907.74
			R99 204 907.75				R99 204 907.74

The total for departments making a negative direct profit was R25 355 896.53 for 2021 before any adjustments. The adjusted figures show that no department is now unprofitable. This shows a decrease in the range of unprofitable departments. The total for departments making a positive direct profit in 2021 was R 124 560 804.28 before any adjustments. After the adjustments to direct costs, the total was R99 204 907.94. The overall profitability of the university remains unchanged since only a redistribution of costs occurred. The adjustments show that departmental profitability has drastically improved to such an extent that no department is unprofitable.

4.7 Summary

This chapter started by outlining the steps in the empirical process for this study. Data was obtained from the selected university. This data enabled an analysis of the university's current budgeting policy. The financial information supplied enabled a calculation of the differences between how the university implements its budgeting and how budgeting should be implemented according to the budgeting policy. The

results showed a difference between the two implementation methods. It is noted that the difference was relatively small when the total allocated direct costs were considered. This difference is slight because the salaries form the most considerable portion of direct costs and had not been adjusted.

The next part of the chapter was to generate a new ideal budgeting method for the selected university. The literature from chapter two was used with the university's aim to be run 'like a business to generate this new method. The performance budgeting method was selected as the most appropriate form of budgeting as it enabled a goal to be reached that would guide allocations. At the overall university level, a contribution margin ratio of 72% on average was achieved for 2020 and 2021. This ratio was selected as the target for each department. To achieve this, the direct costs, including salaries, were adjusted to an average of 28%. By adjusting salaries, there would be a more significant difference in profitability compared to when operational costs alone were adjusted. It is important to note that any adjustments to salaries would be a long-term project due to employment contracts and departmental needs. The results of these adjustments showed a marked improvement in direct profitability for departments, with the overall profit unchanged. For 2020 the number of unprofitable departments went from four to one. The standard deviation in profitability also decreased substantially, which showed fewer dispersed values. For 2021, similar results were achieved. The number of unprofitable departments went from five to zero. The average direct profit per department also increased from 2% in both years to 8% in 2020 and 9% in 2021. This result was achieved with a redistribution of costs rather than changes in income or a reduction of overall costs. The following chapter will conclude the field study with a summary of the findings and a discussion of the recommendations from the results obtained.

Chapter 5 Conclusions and recommendations

5.1 Introduction

Chapter one (Section 1.3) of this study outlined the economic climate universities and other institutions of higher education face. Universities in South Africa experienced decreased tuition income and very little growth in grant income in real terms over the past few years. Additionally, economic growth has been weak (Kupe and Wangenge-Ouma, 2020, p. 1). Better budgeting was proposed as a potential solution to these challenges as budgeting, if done correctly, can help an institution manage its funds as efficiently, economically, and effectively as possible.

Chapter two provided more information about the different budgeting models an organisation can employ. The literature reviewed in Chapter 2 also gave context to identify how the selected university prepared their related budgets. The literature showed the advantages and disadvantages of each budgeting model identified in this study. The specifics of the organisation, like its mission and vision, play a critical role in determining which model is appropriate. This finding shows that there is no one-size-fits-all model of budgeting. The budgeting model developed in this study is therefore appropriate as it takes into account the specifics of the organisation.

Chapter three outlined the quantitative research design and methodology for this study. This outline included the research design, method, sampling, data collection, data analysis and ethical considerations. The research design was an exploratory quantitative case study. The sample chosen was the entire population of academic departments at the selected university.

Chapter four presented the analysis, interpretation and findings of the data collected from the selected university. The budget policy and financial data collected enabled an analysis of the policy's implementation. Findings showed that there was a difference between what the policy stated and the actual implementation of the policy. The difference, however, was relatively small if the overall direct costs were taken into account. This was because the salaries were not adjusted when the comparison was

made, as the policy states that salaries were not to be based on revenue generated, but on staff establishment. A new budgeting model for the university was generated by using the literature from Chapter two and the data collected and analysed in the empirical part of this study. The performance budgeting model was selected as it enables businesses to set goals. Given the budgeting circumstances, controlling direct costs in relation to income was identified as a method to achieve the goal of being financially sustainable for the selected university. This control would be expressed in the contribution margin ratio. At the overall university level, a contribution margin ratio of 72% on average was achieved for 2020 and 2021. This ratio was selected as the target for each department. To achieve this, the direct costs, including salaries, were adjusted to an average of 28%. The results of these adjustments showed a large improvement in direct profitability per department (with the overall profit unchanged). For 2020 the number of unprofitable departments went from four to one. The standard deviation in profitability also decreased substantially. For 2021, similar results were achieved. The number of unprofitable departments went from five to zero. The average direct profit also increased from 2% in both years to 8% in 2020 and 9% in 2021. This adjustment also decreased cross-subsidising (see section 4.4) between faculties and departments within faculties.

This chapter concludes the study by providing conclusions and recommendations. The limitations and contributions of the study are highlighted. Suggestions for further research are recommended, and a summary provided.

5.2 Conclusions and recommendations

As noted earlier, universities must balance providing a public service with offering commercially viable and sustainable programmes (see section 1.2). The research findings from this study show that many departments at the university selected for this study are not profitable and are being cross-subsidised (see section 4.4). While the provision of a public service can result in unprofitable departments, this unprofitability, in order to remain sustainable, should exist within a range. The university achieved an overall contribution margin ratio of 72% (see section 4.4) for 2020 and 2021. Direct costs on average consisted of 28% of income (as defined in section 4.2). From the

findings and analyses performed in Chapter 4, the following targets are proposed for the departments within the related university:

Contribution margin ratio: 68-72%

Direct profit margin ratio: 0-5%

The proposed targets seek to find a balance between the objective of delivering a public good that universities deliver and the university's objective to have a sustainable budget that aligns with its strategic objectives (see section 4.3a). One strategic objective was to run the university 'like a business' (see section 4.3). When adjustments were made in Chapter 4 (see section 4.4) to achieve a contribution margin ratio of 72% for each department, the result was an average direct profit ratio margin of 8% for 2020 and 9% for 2021 per department. Decreasing these to a target of between 0 to 5% will allow more flexibility to allow for departments that are not necessarily very profitable to ensure that these departments do not make a loss without burdening profitable departments with cross-subsiding the less profitable departments. The same rationale applies to the proposed contribution margin ratio. The margin of 72% might be perceived as too profit-seeking and unrealistic for those departments that provide a public service. The provision of a margin of 68% takes into account that conditions at the university could change year to year to the extent that 72% will not always be a realistic target. Additionally, salaries (which form the largest portion of direct costs) might not be as easily adjustable in the short term.

These targets should ensure that all departments are at least not incurring a loss and are controlling their costs. While salaries are fixed in the short-term owing to employment contracts, departments should have plans to achieve sustainability. The budget policy of the university states that all programmes must motivate their sustainability. However, no such motivation was found for any programme when procuring the data. Another problem is that the information received from the university did not have any calculations for direct profitability overall or on departmental levels. If the university wants sustainable departments, then decision-makers should have this information.

The following are additional recommendations:

The university compiles the budget at the department level when calculating income and allocating indirect costs. Currently the university prepares the calculation of income and allocation of indirect costs at the faculty level. Compiling the budget at the departmental level will allow stakeholders to see the anticipated income, indirect costs and subsequent direct profit for each department;

Each departmental budget should include a calculation of the anticipated contribution margin ratio and direct profitability margin ratio;

Departments that are anticipating making a loss, should propose a strategy to mitigate the possibility of a loss and achieve a profit;

Alternatively, if the university determines that the department can run at a loss owing to its public service, no such plan is required; and for departments that are esteemed for the fulfilling of the university's public service, not necessarily for their contribution to profit, the university should determine the acceptable loss the department can achieve before a plan to improve profitability is required.

5.3 Limitations of the study

The study was firstly limited by its design. Since it was an exploratory case study at a selected university a limiting factor is that only one university was explored. This limitation implies that the conclusions drawn and recommendations made cannot necessarily be carried over and implemented at other universities. This inability is because the case study took the specific conditions of the selected university into account when making recommendations and finding a suitable form of budgeting.

Another limitation applicable to this study was that the data used was for 2020 and 2021. The COVID-19 pandemic occurred during this period and, therefore, the budgeting the selected university undertook might not necessarily have been their standard practice.

Lastly, there was very little literature on budgeting in HEIs that the researcher could find. The literature that could be found was, in many cases, relatively outdated. This challenge limited the number of models that could be explored and potentially implemented.

5.4 Contribution of the study

Chapter 1 of this study showed the problems universities face regarding funding and the general economic environment. Budgeting was identified as a potential tool to navigate and deal with these challenges. The first contribution of the study is that it adds to the limited literature field surrounding budgeting practices at publicly funded universities. Empirically, the main contribution of this study is that, by considering the literature reviewed surrounding budgeting as well as the selected university's goals, budgeting policy and financial conditions, the researcher arrived at a suitable form of budgeting for the related university. So, a further contribution of this study is that it outlines a more appropriate model for budgeting at a publicly funded university.

5.5 Suggestions for further research

Future research can analyse the income aspects of budgeting. This study focused on direct costs since budget holders can more easily control these costs over the long term. A change in income is another way the university can achieve a target direct profit margin ratio or contribution margin ratio. This possibility of future research includes a focus on how the target enrolments of a university are determined and how fee charges per department are set by the university.

5.6 Summary

The primary objective of this study has been to determine the budgeting model most suitable for the university that was the subject of this study. This objective was supported by secondary objectives. The first was analysing the budgeting policy, strategy and financial information gathered from the selected university. Chapter four showed the findings of this analysis. The university's budget policy highlighted a need

for sustainability. One of the university's strategic documents emphasised a need to run the university like a business. Lastly, the financial data enabled an analysis of profitability for departments.

After this information was reviewed and analysed, the researcher could achieve the second secondary objective of determining whether there occurred any differences between the official budget policy of the selected university and the implementation of the policy. The findings in chapter four showed that there were differences between the two.

The third secondary objective was to explore the most relevant budgeting models available for application at universities. Chapter two's findings identified budgeting models the university could apply.

The fourth secondary objective was to determine the impact of a different budgeting model on the profitability of the various departments of the selected university. The findings in chapter four achieved this objective by showing increased profitability for departments at the university by a reallocation of the total direct costs. The overall profit remained unchanged.

Finally, taking all the stated information and findings into account, the researcher was able to suggest a more appropriate budgeting model for the selected university. Chapter four's findings determined that a performance budget model was more appropriate for the university. Thus, the last secondary objective of suggesting a more appropriate budgeting model for the selected university was achieved.

In spite of a very little difference noted between the budgeting policy and its implementation, the study found that the selected university had numerous unprofitable departments. The performance budgeting model was selected as the most appropriate form of budgeting for the university studied as it allowed the targeting of direct costs as a goal, which would allow salaries, which formed the most significant portion of direct costs, to be adjusted. A target contribution margin yielded drastic increases in profitability amongst departments (with the overall profit unchanged).

Therefore, this form of budgeting is more suitable for the selected university given its goals, financial situation, and the economic challenges it faces.

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