

Exploring the challenges faced by a university of technology in generating third-stream income

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TABLE OF CONTENT

- CHAPTER 1 1**
- 1.1 INTRODUCTION..... 1
- 1.2 STUDY’S MOTIVATION..... 4
- 1.3 LITERATURE REVIEW 7
- 1.4 THEORETICAL FRAMEWORK..... 8
- 1.5. PROBLEM STATEMENT 9
- 1.6 RESEARCH OBJECTIVES 9
- 1.6.1 Primary Objective 9
- 1.6.2 Secondary Objectives..... 9
- 1.7. DEMARCATION AND LIMITATION OF STUDY 10
- 1.7.1 Demarcation of Study 10
- 1.7.2 Limitation of the Study: Sector and geographical demarcation..... 10
- 1.8. RESEARCH DESIGN AND METHODOLOGY..... 10
- 1.8.1 Research design..... 10
- 1.8.2 Paradigmatic Assumptions 11
- 1.8.2.1 Ontological assumptions..... 11
- 1.8.2.2 Epistemological assumptions..... 12
- 1.8.2.3 Rhetorical assumptions 12
- 1.8.2.4 Methodological assumptions..... 12
- 1.8.3 Literature Study 13
- 1.8.4 Empirical Study 13
- 1.8.4.1 Target population..... 13
- 1.8.4.2 Sample method 15

1.8.4.3 Sample size.....	15
1.8.4.4 Data collection techniques.....	16
1.8.4.5 Data analysis.....	17
1.8.4.6 Point of saturation.....	18
1.9 ETHICAL CONSIDERATIONS	18
1.10 CHAPTER OVERVIEW	19
CHAPTER 2	22
2.1 FOUNDATIONAL THEORIES OF THIS STUDY	22
2.1.1 Resource Dependence Theory	22
2.1.2 Neoliberalism Theory.....	24
2.1.3 Innovation Diffusion Theory	25
2.1.4 Organizational Learning Theory.....	26
2.2 DIFFICULTIES IN GENERATING INCOME FROM THIRD STREAM.....	27
2.3 LITERATURE REVIEW OF RELATED WORK.....	30
2.4 GAP ANALYSIS	39
2.5 THE UNIVERSITY OF TECHNOLOGY BEING RESEARCHED.....	41
2.6 CONCLUSION	42
CHAPTER 3	44
3.1 INTRODUCTION.....	44
3.2 RESEARCH METHODOLOGY.....	44
3.2.1 Research philosophies and paradigms	44
3.2.2 Research approach	45
3.2.3 Methodological choice	46
3.2.4 Research strategy	46
3.2.5 Time horizon.....	47

3.2.6 Data collection and analysis	48
3.2.6.1 Data Analysis	48
3.2.6.2 Presentation of the Data	48
3.3 PARADIGMATIC ASSUMPTIONS	48
3.3.1 Ontological Assumptions	48
3.3.2 Epistemological Assumptions	49
3.3.3 Rhetorical Assumptions	49
3.3.4 Methodological Assumptions	49
3.3.5 Literature Study	50
3.4 EMPIRICAL STUDIES.....	50
3.4.1 Target Population	50
3.4.2 Sample Method	51
3.4.3 Sample Size	51
3.4.4 Point of Saturation	53
3.4.5 Data Collection	53
3.4.5.1 Data Collection Techniques	54
3.5 DEMARCATION OF STUDY	54
3.6 ETHICAL CONSIDERATIONS	54
3.7 SUMMARY	57
CHAPTER 4	58
4.1 INTRODUCTION.....	58
4.2 CATEGORY 1: TYPES OF THIRD-STREAM INCOME	59
4.2.1 Different types of third-stream income	59
4.2.2 Potential benefits associated with third-stream income.....	61
4.2.3 Challenges typically associated with generating third-stream income	62
4.3 CATEGORY 2 – BEST PRACTICES FROM OTHER UNIVERSITIES.....	64

4.3.1 Universities who successfully generated third-stream income	64
4.3.2 Best practices.....	66
4.4 CATEGORY 3 - ROLE OF TECHNOLOGY AND INOVATION	68
4.4.1 The role of technology and innovation	68
4.4.2 Relevant trends and emerging opportunities.....	69
4.5 CATEGORY 4 – CURRENT APPROACH and SWOT ANALYSIS.....	72
4.6 CATEGORY 5 - POLICIES and REGULATIONS that IMPACT THIRD-STREAM INCOME GENERATION AT UNIVERSITY OF TECHNOLOGY	79
4.7 CONCLUSION	81
CHAPTER 5	83
5.1 INTRODUCTION.....	83
5.2 OVERVIEW OF THE STUDY	83
5.3 SUMMARY OF THE RESULTS OF THE STUDY.....	84
5.4 RECOMMENDATIONS	86
5.5 LIMITATION OF THE RESEARCH.....	88
5.6 FUTURE RESEARCH	88
5.7 CONCLUSION	89
REFERENCES.....	90

ABSTRACT

The financial sustainability of public universities in South Africa has become uncertain, particularly since the FeesMustFall campaign, leading to changes in government policies on tuition and residence fees. This study focuses on the challenges faced by a university of technology in generating third-stream income, a critical aspect of financial sustainability. The South African higher education landscape is characterized by government funding constraints, limited tuition fees, and shifts in funding models, such as the transformation of the National Student Financial Aid Scheme (NSFAS). The study explores the intricacies of income generation in the context of a university of technology, considering the impact of government policies, funding sources, and the competitive higher education sector. Utilizing a case study approach, the research aims to provide practical insights into overcoming these challenges, contributing to the broader discourse on financial sustainability in higher education. The findings are expected to offer valuable recommendations for universities striving to enhance their income generation strategies amid an evolving educational landscape.

The study employed a qualitative research approach, incorporating structured questions in qualitative questionnaires to explore challenges faced by a university of technology in generating third-stream income. These structured questions allowed participants to express their views on the research. The research followed an interpretivism research philosophy with an inductive approach. Qualitative data collected were analysed using Atlas.ti software.

This research delves into the challenges faced by a university of technology in generating third-stream income. The study identifies and comprehensively discusses the challenges inherent in the university of technology's internal and external landscapes. Internally, issues related to institutional structure, bureaucratic procedures, and resistance to change necessitate transformative efforts for effective income generation. External challenges, including financial and legal constraints, require a nuanced understanding and targeted interventions to ensure sustained growth in income-generating initiatives. Recognizing the importance of public perception and reputation, the study emphasizes strategies aimed at enhancing the university of technology's image, aligning activities with its reputation, and effectively communicating their value. The research underscores the need for a holistic and integrated strategy that encompasses cultural transformation, financial prudence, and proactive reputation management. Successfully navigating these challenges positions the university of technology to thrive in the dynamic landscape of income generation within the higher education sector.

LIST OF ABBREVIATIONS

DHET	Department of Higher Education and Training
DUT	Durban University of Technology
NSFAS	National Student Financial Aid Scheme
RBT	Resource-based theory
Stats SA	Statistics South Africa
TVET	Technical and Vocational Education and Training
UK	United Kingdom

LIST OF GRAPHS

Graph 1: Revenue sources 41

Graph 2: Potential benefits associated with third-party income..... 61

Graph 3: Top challenges are typically associated with generating these income streams.63

Graph 4: Best practices and strategies to consider..... 66

Graph 5: The role of technology and innovation..... 68

Graph 6: Relevant trends and emerging opportunities..... 70

Graph 7: Strengths..... 72

Graph 8: Weaknesses..... 73

Graph 9: Opportunities..... 74

Graph 10: Threats..... 75

Graph 11: Policies and Regulations..... 80

LIST OF TABLES

Table 1: Types of Third-Income Stream..... 59

Table 2: Referenced Universities..... 64

Table 3: Relevant trends and emerging opportunities..... 70

Table 4: Thematic groupings for current approach and SWOT analysis..... 72

Table 5: Policies and Regulations that impact third-party income..... 79

LIST OF APPENDICES

APPENDIX A: GATEKEEPER..... 98
APPENDIX B: INFORMED CONSENT LETTER TO INTERVIEW PARTICIPANTS..... 100
APPENDIX C: INTERVIEW QUESTIONNAIRE 104

CHAPTER 1

AN INTRODUCTION TO EXPLORING THE CHALLENGES FACED BY A UNIVERSITY OF TECHNOLOGY IN GENERATING THIRD-STREAM INCOME

1.1 INTRODUCTION

The financial sustainability of public universities has been uncertain since the #FeesMustFall campaign and the demand for free higher education (Wangenge-Ouma & Kupe, 2020:1). In response to these demands, the government implemented changes to the higher education sector with limited consultation with universities regarding tuition and residence fees (Ngcobo, 2021:24). Since 2016, tuition and residence fees (hereafter “tuition fees”) have been regulated by the Department of Higher Education and Training (DHET) and are linked to an inflation-based index to make it more affordable for students to pay tuition and residence fees. It has become a common practice for tuition fees to increase by an average of 5% and accommodation fees by 7% annually. When universities raise tuition and accommodation fees more than what is suggested by DHET, it usually results in student protests, as mentioned in an article by Cloete (2022).

During the 2018 academic year, the National Student Financial Aid Scheme (NSFAS) revised its funding rules, changing from a loan scheme where students were required to pay back the loan to NSFAS, to a bursary scheme where students are not required to pay back. In addition, NSFAS has lowered the family income threshold from R600,000 to R350,000 as part of funding criteria. The reduced family income limit, now set at R350,000 instead of R600,000, has led to a group of students called 'mixing middle.' These students neither have the financial resources to cover tuition and accommodation fees nor qualify for NSFAS. The changes to the NSFAS funding model have raised concerns about the scheme's survival and the affordability of free higher education by the government, as there is no money recovered from students who benefited from NSFAS funding. Instead, NSFAS heavily relies on allocations from the National Treasury. Recent publicly available information shows that the scheme has experienced shortfalls, such as R10.1 billion in 2022 (King, 2022) and R6.8 billion in 2021 (Riddle, 2021) as per reported in their respective articles. Furthermore, the financial sustainability of university of technology is at risk, as most students come from poor backgrounds and depend on NSFAS funding. This has sparked debates on whether providing bursaries to students using NSFAS with the aim of achieving free higher education in South Africa is a viable concept or a mere parable (Mlambo *et al.*, 2017:51).

According to Wangenge-Ouma and Kupe (2020:5) many universities in South Africa are at risk of significant financial vulnerability. This vulnerability has wide-ranging implications, including a potential economic collapse characterized by worsening debt crises, rising unemployment rates, deepening economic recession, ongoing depreciation of the Rand, and the possible failure of

certain public-sector state-owned institutions. In such a scenario, universities would experience sudden reductions in state funding, a freeze on tuition and accommodation fees preventing any increase, a decline in student enrolments, and increased inequality in access and retention, particularly affecting students from lower-income backgrounds due to heightened financial and other limitations. Moreover, there would be a notable increase in student debt as student will not pay tuition fees. Additionally, public universities are under pressure to maintain quality and competitive standards (Ngenoh, 2020:1).

Universities also receive allocations from the DHET in the form of a block grant, which represents their “first income stream” (Ntsoe & Villiers, 2013:72). According to the DHET Ministerial Statement on University funding (2021:4), the amount of the grant depends on various factors, including the institution's performance in teaching and research, institutional factors, and the inflation-adjusted value of the grant. These factors are directly linked to the University's annual performance.

Wangenge-Ouma and Kupe (2020:3) argue that state funding is decreasing, creating a potentially concerning financial outlook regarding allocating the block grant. South African universities heavily rely on three primary funding sources: state funding, tuition and accommodation fees, and third-stream income, which has led to sustainability difficulties. These challenges include decreased state funding, issues related to the #FeesMustFall student protests, insourcing of services, government control over tuition and accommodation fees, mounting student debt, sluggish economic growth, and an extremely volatile currency (Wangenge-Ouma & Kupe, 2020:8).

A study by Statistics South Africa (Stats SA), October 2020 examined the revenue sources that public universities rely on for funding. The findings indicate that, on average, revenue from block grants accounts for 48% of their funding, while tuition and accommodation fees contribute 33%-, and third-stream income sources make up 19% (Financial Statistics of Higher Education Institutions Report, 2019). This study concludes that public universities increasingly depend on government funding, thereby increasing financial risk due to overstretched public finances (National Treasury, 2020:22 as cited in Wangenge-Ouma & Kupe, 2020). Furthermore, Ngcobo (2021:5) highlights the inadequate revenue generation strategies from third-stream income at the Durban University of Technology (DUT).

University financial sustainability is a global challenge (Ngcobo, 2021:1). According to Ngenoh (2020:1) United Kingdom universities have faced similar challenges; but have introduced numerous activities, including partnerships with communities. Gosku and Gosku (2015:3), as cited in Ngcobo (2021:3), confirmed the global concern about free education; however, its feasibility depends on government interventions and university management creativity. Some developed countries have implemented free education, while the United States still relies on the student loan model.

For a university to achieve its strategic objectives, it must prioritize financial sustainability. Financial resources are recognized as critical assets universities depend on to fulfil their important roles and thrive as effective and vibrant organizations. Sustaining a healthy financial position is essential for the university to attain its strategic goals (Wangenge-Ouma & Kupe, 2020:1).

South African studies by Swartz *et al.* (2018:570), Crowther *et al.* (2018:14), and Bansi (2019:117) suggest that diversification of revenue is the key solution to universities' financial sustainability. Estermann and Pruvoy (2011:17) state that diversity in the funding structure is an important step for entrepreneurial universities to achieve financial sustainability.

Monyane (2017:28) states: "Universities are left with no choice but to consider one of the most important areas of funding, which is third-stream activities that will contribute to expanding university budgets." The government plays a significant role in funding education to accommodate everyone. It has become evident that as the government faces pressure, universities must increase their focus on income generation (Ngcobo, 2021:8).

A university of technology is a South African public university which emphasizes technology and applied sciences, offering diverse undergraduate and postgraduate engineering, information technology, business management, applied sciences, and arts programs. The university of technology aims to increase its third-stream income, which currently constitutes 13% of the total income. To investigate this, a case study has been designed to identify the challenges faced by a university of technology in generating third-stream income and the strategies employed to overcome these challenges. This study's findings will benefit universities seeking sustainable third-stream income generation strategies.

The following definitions of terms will be used:

Challenges - refer to the problems or difficulties faced by the university of technology in generating third-stream income.

Consulting services - refer to the provision of expert advice or services to external clients by the university.

Exploration- refers to investigating or examining the challenges faced by the university.

Funding - refers to the financial resources that the university receives to carry out its operations.

Higher Education - refers to the sector of education that deals with post-secondary education and research institutions, such as universities.

Income generation - refers to the process of creating revenue for the university.

Licensing agreements - refer to agreements between the university and external entities that allow the entities to use the university's intellectual property in exchange for royalties or other forms of compensation.

Research – refers to the systematic investigation and study of materials and sources to establish facts and reach new conclusions.

Third-stream income - refers to income generated by universities that is separate from traditional sources such as tuition and accommodation fees and government funding. Third-stream income may come from research contracts, consulting services, and licensing agreements. According to Ngenoh (2020:4) third stream income are endeavours that boost the utilization, creation, and utilization of knowledge, resources, and abilities within universities to increase revenue generation. They encompass various approaches like institutional advancement, innovation, bequests, income from contracts or sponsored research, entrepreneurial or commercialization activities, philanthropic funding, provision of services, and investments.

University of technology - refers to an institution of higher learning being studied.

1.2 STUDY'S MOTIVATION

Exploring the challenges faced by a university of technology in generating third-stream income is the focal point of this study. The selected research design adopts a case study strategy that concentrates on a single institution. This choice facilitates the categorization of findings, aligning them with predefined objectives. Melnikovas (2018:33) provide guidance in selecting the most suitable research method using his / her onion diagram.

Universities encounter complex and multifaceted challenges when it comes to generating third-stream income. Case studies are particularly effective for delving into these complexities and exploring the interplay of various factors affecting income generation within a specific institution. Developing a comprehensive measurement system for third stream activities is challenging, especially because some of these activities exist outside the formal university system, making them hard to track (Molas-Gallart *et al.*, 2002:7). It's essential to note that public and private universities may face different dynamics. Ngenoh (2020:4) analysed two universities, Zurii University and Bidii University, representing private and public institutions, respectively. This critical analysis sheds light on whether both private and public universities struggle with income generation. Zurii University's success, as a private institution, in generating more income suggests the existence of key factors contributing to successful income generation. Conversely, Bidii

University, a public institution, faces challenges in income generation and funding issues, emphasizing the importance of exploring these obstacles and understanding the efforts made to overcome them.

(Hoskins, 2011) states that universities frequently lack the necessary leadership and business models to optimize third-stream activity and revenue, impacting their ability to effectively generate third-stream income. The article emphasizes a culture clash between academia and commercial enterprises, hindering the development of third-stream sources. Additionally, university marketers often prioritize marketing to students over businesses, posing a challenge in effectively marketing and promoting third-stream services to potential commercial partners. The article suggests that to maximize third-stream income, it should be an integral part of everything universities do, rather than a standalone revenue generator. It should align with institutional objectives and gain support from senior management to succeed.

The financial challenges universities face extends to their need for alternative income sources to supplement government funding, as constraints become a concern for South African public universities. Watson and Hall (2015:49) emphasize that universities in the United Kingdom also encounter significant funding problems due to economic conditions. These constraints highlight the importance of universities adapting to financial challenges by improving their efforts in generating third-stream income in a competitive market. The third-stream agenda aims not only to generate much-needed revenues for universities but also to enhance the quality of education and better prepare students for employment prospects, particularly relevant for South African graduates facing high unemployment rates (Stats S.A., 2018). Diversifying revenue sources is becoming increasingly important, as seen in the changing model of higher education in Poland, where institutions are transitioning towards third-generation universities with an increased reliance on third-stream activities (Piotrowska-Piatek & Kozlowski, 2020:261).

Mac Gregor, K's article (2008) reports that universities in South Africa are under pressure to find new ways of generating third-stream income due to government constraints on tuition fees. Substantial government funding constraints result in universities receiving less direct funding from the state. This situation necessitates finding alternative income sources, aligning with government policies focused on reducing reliance on public funds. The discussion about universities needing to boost third-stream income reflects the competitive dynamics within the higher education sector in South Africa, where multiple universities compete for students, research grants, and partnerships. This competition underscores the need for innovative income generation strategies to stand out in a crowded market.

Ferreira and Steenkamp's study (2015:491) at Scotland's Strathclyde University emphasizes the significance of interaction between universities and industries, along with the 'triple helix' concept, when looking at ways to generate income and encourage innovation in South African universities. Collaboration and trust-building among all parties involved in the innovation process can bring valuable advantages.

Pilbeam's research (2006:297) addresses the competitive dynamics within the higher education sector, emphasizing the need for universities to diversify their income sources, engage in entrepreneurial activities as expected by governments, and highlighting the significant variation in income generation across different institutions and disciplines. This research illustrates the competitive dynamics within the higher education sector and its impact on income generation.

The regulatory environment and governance structures in South Africa can be complex and may impact universities' ability to generate income. Compliance with government regulations, procurement processes, and financial reporting requirements can be onerous and require specialized expertise.

Notably, South African universities rely on three primary sources of funding: government grants, student tuition and accommodation fees, and third-stream income. A Stats S.A. (2019) report revealed that public universities receive an average of 48% of their revenue from government grants, 33% from tuition and accommodation fees, and 19% from other sources like interest, dividends, and donations. An analysis of seven universities of technology noted that 53% of the income is from grants, 40% from tuition and accommodation fees, and 7% from other sources.

It's essential to understand that public universities heavily rely on government funding, posing a financial risk, as argued by Wangenge-Ouma and Kupe (2020:8), indicating a negative financial outlook for universities that affects their sustainability. Despite being non-profit organizations, universities are expected to maintain financial stability.

The research topic pertains to a real-world issue faced by universities and is highly applicable to case study research. Such a study can offer practical insights and solutions to help universities improve their income generation strategies. Notably, universities' financial stability is crucial for their continued existence.

In conclusion, understanding the challenges faced by a university of technology in generating third-stream income is vital, and this study employs a case study approach to explore these complexities and offer practical solutions to enhance income generation in the ever-competitive higher education sector.

1.3 LITERATURE REVIEW

The literature review critically examines studies that delve into the challenges, opportunities, and strategies pertaining to the generation of third-stream income in universities. Emphasizing crucial factors such as diversification, collaboration, human resources, and government involvement, these studies collectively contribute unique perspectives that enrich our comprehension of financial sustainability in higher education institutions.

1.3.1 Synthesis of Core Studies:

Creswell (2014:2) emphasizes the pivotal role of a literature review in research, demonstrating knowledge and understanding of academic literature on the research topic. Ngenoh (2020:1) argues that universities worldwide face financial sustainability challenges, including fluctuating student enrollment and the need for alternative funding sources, a concern not limited to South Africa; developing nations are actively implementing strategies to support higher education. Prince (2007:743) provides clarity on the definition of third-stream income, emphasizing its involvement in non-academic activities such as research contracts, consultancy, and commercializing intellectual property. The complexity of this income source necessitates new skills and capabilities.

Shiimi (2020:2) investigates the university's potential transformation into an entrepreneurial entity, highlighting the crucial role of internal capabilities, collaboration, technology, and human capital in generating third-stream income. Hundadze and Anelidze (2016:16) explore the positive effects of entrepreneurial initiatives by universities, placing strong emphasis on the importance of diversifying funding sources and developing third-stream income for economic advancement.

Ahmad et al. (2015:194) delve into the role of academic staff in income generation, identifying prevalent activities such as research, consultation, and commercialization. The study suggests incentivizing profit-sharing as a motivational strategy. Shore and Mclauchlan (2012:267) focus on exploring the impact of commercialization on a university's mission, highlighting changes due to academic capitalism and emphasizing the need for a balanced approach.

Ngcobo (2021:5) explores potential revenue generation strategies at Durban University of Technology, emphasizing the critical role of income diversification and the management's involvement in ensuring financial sustainability. Monyane's (2017:27) study delves into the potential for universities in South Africa, particularly universities of technology, to sustain themselves by generating third-stream income, underscoring the importance of maximizing and implementing third-stream income.

Mlambo et al. (2017:51) scrutinize the contentious issue of free higher education in South Africa, presenting insights into the associated challenges, debates, and potential strategies for implementation. Ngenoh (2020:5) investigates third-stream initiatives, challenges, feasibility, and roles of participants, emphasizing the importance of human resources, organizational capabilities, and tangible/intangible resources. Additionally, the study underscores challenges and opportunities in third-stream activities, recommending government involvement, policies, training, and staff engagement.

Chumba et al. (2019:38) identify consultancy as a significant third-stream activity for financial sustainability in Kenyan universities, underscoring the importance of partnerships, linkages, and skilled personnel.

Collectively, these studies offer a comprehensive view of the challenges and opportunities associated with third-stream income generation in universities. The synthesis of their core insights forms the foundation for our theoretical framework, enriching the subsequent arguments and analyses in this research. For detailed theoretical framework, refer to section 3.3: literature review of related work under chapter 3.

1.4 THEORETICAL FRAMEWORK

Lockett *et al.* (2014) investigated how third-stream activities, which involve collaboration between universities and external partners for economic, social, and cultural benefits, are promoted and legitimised through discourse and metrics. In the case of this case study, the framework will be used to explore how the university of technology's internal and external institutional environment, including formal and informal rules, norms, and practices, shape its ability to generate third-stream income.

According to Conner and Prahalad (1996:1) Resource-Based Theory provide a framework for understanding how a firm's resources and capabilities contribute to its competitive advantage and ultimately its success in the markets. They further argued that a firm's resources, which include tangible and intangible assets such as physical capital, financial resources, human capital, and organizational capabilities, play a critical role in determining its competitive position.

In case of this study the framework will be used to examine the availability, acquisition, and allocation of resources that are critical for generating third-stream income. This could include investigating the university's tangible resources, intangible resources, and human resources and how these resources are managed, leveraged, and integrated to generate third-stream income.

Fuller *et al.* (2019) investigates the concept of the entrepreneurial/enterprising university in the context of UK universities. The focus was on indexing third stream activities, which refer to the activities that universities engage in beyond their traditional roles of teaching and research, such as knowledge exchange, innovation, and entrepreneurship. Its case of this study the research can examine how a university of technology's entrepreneurial orientation, including its innovation capacity, risk-taking propensity, and proactiveness, affects its ability to generate third-stream income. The research could investigate how the university of technology fosters an entrepreneurial culture, promotes entrepreneurial behaviours among its staff and students, and supports entrepreneurial initiatives, such as technology transfer, commercialization of research, and spin-off ventures, to generate third-stream income.

1.5. PROBLEM STATEMENT

Despite the increasing demand for sustainable revenue streams in higher education institutions, universities of technology have been facing challenges in generating third-stream income. In spite of various efforts and initiatives, the University of Technology's revenue from non-core activities has remained stagnant. The lack of success in generating third-stream income not only affects the financial sustainability of the University of Technology but also limits its capacity to expand and enhance the quality of its academic programs and services.

Consequently, the proposed study aims to answer the following overarching research question: What are the challenges faced by a University of Technology in generating third-stream income?

1.6 RESEARCH OBJECTIVES

1.6.1 Primary Objective

To investigate the challenges encountered by a university of technology in the pursuit of third-stream income generation.

1.6.2 Secondary Objectives

To achieve the primary objective, the following secondary objectives are formulated for the study:

- i) To investigate and categorize diverse sources of third-stream income attainable by the university of technology.
- ii) To examine and analyse successful case studies from other universities that have effectively generated third-stream income.
- iii) To identify and extract best practices from these case studies implemented by other universities, with an emphasis on adaptability and applicability within a university of technology.

- iv) To conduct a comprehensive assessment of the impact of technology and innovation on third-stream income generation within a university of technology.
- v) To perform a SWOT analysis of the university of technology's current approach to third-stream income generation, involving an evaluation of existing policies and regulations. This analysis aims to identify obstacles that may hinder growth prospects and discover promising avenues for expansion.
- vi) To identifying potential recommendations to enhance third-stream income initiatives.

1.7. DEMARCATION AND LIMITATION OF STUDY

1.7.1 Demarcation of Study

The field of study is Financial Management.

1.7.2 Limitation of the Study: Sector and geographical demarcation

The South African Higher Education Sector has 26 public universities administered by the DHET. These universities are situated across nine provinces and are classified into three categories: traditional universities, universities of technology, and comprehensive universities.

There are seven universities of technology across five provinces; however, this case study will be limited to one university of technology within Gauteng. The remaining universities of technology within the other five provinces may face different challenges in generating third-stream income, and these challenges will not be explored.

1.8. RESEARCH DESIGN AND METHODOLOGY

1.8.1 Research design

According to Sileyew (2019:2) the research design serves the purpose of establishing a suitable framework for a study. An important aspect of the research design process is the decision regarding the research approach, which determines the acquisition of relevant information for the study. It is important to note that the research design process involves a multitude of interconnected choices.

The methods used in conducting research are influenced by individuals' philosophies and assumptions about the world, forming the foundation of a research paradigm (Collis & Hussey, 2014:43). The case study will be embedded in the interpretive paradigm and will follow an inductive approach (Saunders *et al.*, 2016:74). Interpretivist research approaches aim to comprehend "the realm of human experience" (Cohen & Manion, 1994:36), which supports the idea that "reality is

socially constructed" (Mertens, 2005:12). The interpretivist/constructivist researcher emphasizes the importance of considering "participants' perspectives on the situation under investigation" (Creswell, 2003:8) and acknowledges how their own background and experience can influence the research.

In the interpretivist research paradigm, inductive research aims to create a new theory through observations of reality and the collection of primary data, without relying on existing theories. Conversely, deductive research, which falls within the positivistic research paradigm, involves formulating research hypotheses based on existing literature and testing them through empirical investigation using deductive reasoning (Saunders *et al.*, 2016:74).

For this case study, the chosen methodological approach is a mono-method qualitative approach. The mono-method approach refers to a research design that employs a single methodological approach to gather and analyse data. It involves using a single qualitative method, such as interviews, observations, focus groups, or document analysis, throughout the entire research process (Creswell & Cresswell, 2021:4).

The strategy to be used is exploratory research. After determining the research paradigm, approach, and choice, the selection of the data collection technique, referred to as the methodological strategy, becomes necessary (Bryman & Bell, 2015:100). This research proposal aims to conduct a cross-sectional or short-term study to collect data at a specific point in time (Collis & Hussey, 2014:57).

1.8.2 Paradigmatic Assumptions

The research paradigm serves as the fundamental underpinning of any study, as it outlines the core set of principles and convictions upon which the research is constructed. It provides a framework for the research by defining the ontology, epistemology, and Rhetorical that shape the research (Saunders, *et al.*, 2019).

1.8.2.1 Ontological assumptions

According to Kivunja and Kuyini (2017: 27) ontology as a philosophical field of study, explores the assumptions researchers rely on to establish the coherence or existence of something, or the fundamental nature or essence of the social phenomena under investigation. Philosophical assumptions regarding the nature of reality play a pivotal role in shaping interpretation and understanding of the data collected. Among various assumptions, two ontological assumptions recognized are: realism, which proposes that there is an objective reality that exists independently of human perception, and constructivism, which suggests that reality is shaped and interpreted by

human perception. In the context of this study constructivism is considered relevant as it suggests that reality is constructed through human perception and interpretation (Saunders *et al.*, 2012:131). This assumption would imply that the challenges faced by a university of technology in generating third-stream income are subjective and depend on the perceptions and interpretations of the individuals involved. The research would focus on understanding how different stakeholders perceive and interpret these challenges, and how their subjective realities shape their experiences and actions.

1.8.2.2 Epistemological assumptions

Epistemology pertains to the process of obtaining knowledge and ascertaining truth or reality in research, as highlighted by Kivunja and Kuyini (2017:27). This notion is further corroborated by Cooksey and McDonald (2011:122) who assert that assumptions related to knowledge involve investigating its fundamental aspects such as its nature, forms, acquisition, and dissemination to others. Among the various assumptions, two epistemological assumptions noted are positivist and interpretive. According to Saunders *et al.* (2012:13) define positivism as knowledge can be objectively measured and verified through empirical data. This may involve collecting quantitative data, such as financial reports and statistical data, to identify and quantify the challenges faced by the university in generating third-stream income. Interpretivism, on the other hand, assumes that knowledge is subjective and socially constructed through human experiences and interactions. This will involve using qualitative research methods, such as interviews, to understand the challenges faced by the university from the perspectives of key stakeholders, such as senior management, students, and external partners. Considering that financial reports do not capture the perceptions and interpretations of stakeholders, it will be important to follow an interpretive approach.

1.8.2.3 Rhetorical assumptions

The rhetorical assumption in research writing, which involves adopting an unbiased scientific perspective (Nagitta, 2021:10). This assumption emphasizes the importance of considering the audience and purpose of the research, including understanding their background, interests, and expectations. The tone, language, and approach used in the research should be shaped accordingly. Additionally, the purpose of the research should be clearly defined, with a focus on addressing challenges and providing solutions that align with the research topic.

1.8.2.4 Methodological assumptions

The methodology is an important component of the research paradigm. It deals with the 'how' aspects of the inquiry process (Khatri, 2020:1437). This is supported by Keeves (1997:386) who

states that methodology is the broad term used to refer to the research design, methods, approaches, and procedures used in a well-planned investigation to find out something.

Based on the nature and objective of the case study, mono-method qualitative research will be considered. This is linked to the interpretivism paradigm and focuses on the subjective views and beliefs of the participants (Wiid & Digging, 2013:87).

1.8.3 Literature Study

The literature review will be conducted by consulting the following sources, which include:

- i) Academic journals related to higher education administration, business management, and income generation in universities,
- ii) Reports, publications and case studies from government organizations that focus on income generation strategies for universities, particularly in the South African context,
- iii) Conference proceedings and presentations from relevant conferences or seminars on higher education, business management, or income generation in universities; and
- iv) Institutional reports, strategic plans, and policy documents from a university of technology, as well as other higher education institutions in South Africa provide information on their third-stream income generation efforts and challenges.

1.8.4 Empirical Study

The qualitative study, which forms the empirical research component, will be conducted in an exploratory manner. The aim would be to identify challenges faced by a university of technology in generating third-stream income and make recommendations for the institution to enhance its capacity.

1.8.4.1 Target population

According to Whitley and Kite (2018:485) population can be define as people to which the research outcome can be applied. Asiamah *et al.* (2017:1613) focus on how the targeted population is determined. The researcher should “to identify and eliminate individuals of the general population who may not have the ability to share experiences and thoughts in ample clarity and depth”. The researcher further argues that at the stage of specifying the target population, the researcher considers factors such as ability to recall and relate to real-life experiences as well as the capacity to logically reason and communicate thoughts in an appropriate language. In addition, education and experience in the appropriate field, should considered in selecting staff members of the target population. The population is defined as the whole group that the research will be concluded.

For this case study, the participants selected could be all university of technology's employees. It is nevertheless unfortunate that not all university of technology staff members are involved in financial management of the university of technology and understanding how the university of technology generate its revenue i.e., some academics and administrative staff might have limited understanding in terms of different streams of university of technology revenue and contribution to the total income. Therefore, staff who possess relevant knowledge about the financial modelling of the institution's income, understanding the significance of financial sustainability for the university of technology, and critical success factors for third-stream income would be regarded as targeted population. This will provide valuable understanding and insights on the research topic. The staff were categorised as follows based on the judgement of the researcher: The Vice Chancellor and its Deputy Vice Chancellors, Registrar, Executive Management, staff involved in institutional research and planning, staff involvement in financial management and administration of the university of technology (both services staff and academics), staff involved in alumnae office and Student Representatives.

The Vanderbijlpark campus will be the source of these participants, and appointments will be arranged to ensure that on-line interviews take place. Prior consent will be obtained to record the interviews, and the participants will be encouraged to respond truthfully.

Since the researcher is a university of technology employee, the following steps will be taken to address the issue of power relationships in conducting research:

The researcher will maintain objectivity throughout the research process, will ensure that the research adheres to ethical guidelines and principles, which includes obtaining informed consent from participants, protecting their privacy and confidentiality, and avoiding any actions that could exploit or harm them.

Before obtaining consent, the researcher will schedule an online meeting with each potential participant and provide a clear understanding of the research project, its goals, procedures, and what is expected of the potential participants. Subsequently, the researcher will explain the contents of the consent form and allow potential participants to ask questions for clarity. Potential participants will be given time to read and comprehend the form. This will ensure that potential participants are making an informed decision.

If potential participants agree to participate in the research, the researcher will request them to sign the consent form, share it with the research team via secured email, and keep a copy for their records. The researcher will maintain records of all informed consent forms and any communication related to the consent process to ensure ethical procedures are followed.

Throughout the research, the researcher will respect participants' autonomy and be prepared to address any concerns or changes in their willingness to participate. The researcher will maintain ongoing communication with participants to keep them updated on the progress of the research

and address any questions or concerns. Furthermore, the researcher will ensure that all collected data is stored securely, and that participant confidentiality is maintained. The researcher will involve multiple stakeholders to provide a comprehensive understanding of the challenges faced in generating third-stream income. The researcher will foster a safe environment by encouraging open communication, assuring participants that their input will be treated with respect and confidentiality, and will also avoid hierarchical biases.

1.8.4.2 Sample method

According to Singh (2014:3) sampling is the mean selection of a subset of the population of interest in a research study. Ritchie and Lewis (2011:18) define a non-probability sample as characterised by the intentional selection of units that represent specific characteristics or groups present in the population being sampled. For this study, purposive sampling will be used to select a sample.

1.8.4.3 Sample size

According to Shiimi (2020:30) who conducted a study on exploring the University of Namibia's opportunities for being an entrepreneurial university, the study focused on four centres that were responsible for research and entrepreneurship activities. The head and deputy head of each centre participated as they were considered to have more knowledge and spearhead all research and entrepreneurship activities within their respective centres. Likewise, Ngcobo (2021:55) conducted a study on the exploration of revenue sources for the financial sustainability of DUT, the study focused on university management, Heads of Departments, academic lectures from the Faculty of Accounting and Informatics, the Faculty of Management Science, and finance officers. It should be noted that a university of technology has a lean organizational structure at the senior management level, with a small community in terms of students and alumni. As a result, all key staff members, including the Student Representative Council and alumni, are proposed to be participants in this research study. Twenty-three (23) participants were considered to possess relevant knowledge about the financial modelling of the institution's income, the significance of financial sustainability, and critical success factors for third-stream income. Below is the list of participants to be used in this case study:

- i) Vice-Chancellor and Principal – the office is accountable for the financial modelling of the university of technology, which includes third-stream income and is responsible for the financial sustainability of the university,

- ii) Deputy Vice-Chancellor and Principal for Resource and Planning this portfolio has insight into the financial modelling of the university of technology and manages university resources,
- iii) Deputy Vice-Chancellor and Principal for Teaching and Learning and Executive Deans and Head of Departments for four (4) faculties of the university of technology – the portfolio is key to the financial sustainability of the university of technology and understands what other sustainability variables besides the core business.
- iv) Deputy Vice-Chancellor and Principal for Research, Innovation, Commercialization and Internationalization, Director of Research and manager of Science Park – the portfolio is responsible for the Science Park of the university of technology and research activities, and it understands the sources of income for the Science Park and research activities,
- v) Director Institutional Research and Planning – the portfolio assists with the planning of the university of technology, including the projections of income and expenditure, and helps with monitoring the performance of the university against the strategic objectives,
- vi) Two directors of finance - the portfolio assists with reporting to DHET, compiling financial reports of the university of technology, financial planning and analysis, and financial management,
- vii) Executive Director Operations and Logistics- to assess the readiness of infrastructure and impact of infrastructure on tuition income and responsible for the infrastructure of the university of technology,
- viii) Executive Director Human Resource - to assess whether the university of technology can attract employees that can bring opportunities to the university,
- ix) Representative from academics - to provide valuable insights and expertise from an academic perspective,
- x) Registrar – to understand the university’s performance on enrolment targets,
- xi) President of Student Representative Council – to understand student initiatives on third-stream income, and
- xii) Alumni- to understand opportunities / possible support from alumni of the university.

1.8.4.4 Data collection techniques

Semi-structured questionnaires with open-ended qualitative questions will be used to engage participants. The questionnaires will be sent to participants beforehand so that they can prepare for interviews when making appointments and complete them during the meetings. Interview recording and completed questionnaires will be kept for further analysis with the consent of the participants. The questions listed below have been influenced by literature review, taking note of main themes

or patterns, identifying gaps and limitations in the current literature review, and considering the specific context of a university of technology and its unique challenges.

- i) What are the different types of third-stream income that can be generated by a university of technology, and what are their potential benefits and challenges?
- ii) How have other universities successfully generated third-stream income, and what best practices can be applied at a university of technology?
- iii) What role do technology and innovation play in generating third-stream income at universities, and what are the relevant trends and emerging opportunities in this area?
- iv) What is the current approach of a university of technology to generate third-stream income, and what is SWOT analysis associated with this approach?
- v) What are the policies and regulations that impact third-stream income generation for a university of technology, and what barriers or opportunities exist for growth?

The detailed questions in Appendix C were formulated to address each component of the broader questions, providing a structured and comprehensive approach to gathering information on types of third-stream income that can be generated by a university of technology, benefits and challenges associated with these income streams, best practices from other universities with higher education sector, technological aspects, current approaches and SWOT analysis, and policies and regulations that affect third stream income generation.

1.8.4.5 Data analysis

According to Attride-Stirling (2001:387), thematic analysis is a qualitative research method used to identify and categorize underlying themes in a text or set of texts. The process involves extracting basic themes from the data, grouping similar themes into organizing themes, and ultimately capturing the main metaphors through global themes. Thematic networks are graphical representations that show the relationships and interconnectedness of these themes. The analysis involves breaking down the text, identifying explicit and implicit meanings, and using thematic networks as an organizational and illustrative tool. However, it's important to note that thematic networks are not the analysis itself but rather a means to aid researchers and readers in understanding the data.

Analysing data from semi-structured questionnaires with open-ended qualitative questions will require a systematic approach to identify, organize, and interpret the data. Since the data will be in a recorded format, it will need to be transcribed into written text. Then, a coding system will be used to categorize and label the responses based on their content or themes. A spreadsheet will be used to capture the coded data in an organized manner, and the data will be interpreted and reported.

1.8.4.6 Point of saturation

This section aims to evaluate the level of saturation achieved in qualitative research, with the goal of determining appropriate sample sizes, analysing strategies employed to assess saturation, and extracting insights and recommendations from existing studies.

Mpofu (2020:3) define saturation as a measure to alleviate the subjectivity in qualitative research, used as a yard stick for estimating sample size and assurance for rigour and quality. The researcher further confirmed four forms of saturation, namely theoretical, data, thematic and meaning. Theoretical saturation refers to the analysis of sampling, which focuses on a dimension of the theory that is fully supported by the data (Starks and Trinidad, 2007:1375). According to Fusch and Ness (2015:4), data saturation is achieved when there is enough information to replicate the study, and obtaining new information is no longer possible, and further coding is not feasible. Given the small sample size of only 21 participants and the use of a reasonable questionnaire for this study, the likelihood of achieving Theoretical or Data Saturation may be limited.

The study will utilize two approaches to assess thematic saturation and meaning saturation. Hancock *et al.* (2016:2125) argue that thematic saturation is reached when no new codes or themes emerge from the data, while Hennink *et al.* (2017:591) argue that meaning saturation relates to the richness and thickness of data, where no additional information emerges. Thematic saturation will be achieved when data collected from interviews and documents consistently reveal recurring themes or patterns related to the challenges faced by the university in generating third-stream income. Meaning saturation, on the other hand, will be reached when the topic being studied has been extensively explored or discussed to the point where its meaning has become saturated or exhausted.

1.9 ETHICAL CONSIDERATIONS

According to Arifin (2018:30) ethical considerations are essential in all research areas; however, the concern becomes more critical in qualitative research, especially when there is the involvement of vulnerable groups. Qualitative researchers are responsible for ensuring participants can participate in the study and protecting the participants' identity throughout the recruitment and research process. In addition, the research must emphasise the importance of transparent and honest research reporting without deception readers.

Permission was obtained to conduct research at a university of technology from Research Department. Participants will be asked to provide their consent before the data collection process. They will be informed about the research's purpose, their involvement reasons, and their right to withdraw. The benefits and risks of their participation will also be explained. To ensure

confidentiality, their identity and personal information will be protected using codes, and their responses will be kept highly secure and solely used for this research.

As part of ethical consideration, the Protection of Personal Information (POPI) Act No.4 of 2013 was considered. The POPI Act is a South African data protection law with significant implications for various aspects of data collection, management, and privacy. In the context of exploring the challenges faced by a university of technology in generating third-stream income, the significance of the POPI Act (No.4 of 2013) can be summarized as follows:

The POPI Act (No.4 of 2013) serves as a legal framework in South Africa governing the handling, processing, and protection of personal information. It establishes principles and requirements that organizations, including universities, must adhere to when dealing with individuals' personal data.

The POPI Act (No.4 of 2013) places a strong emphasis on safeguarding the privacy of individuals' personal information. The research involves the collection of data from various sources, including staff, alumni, and students. The researcher is committed to ensuring that personal data is managed in full compliance with the POPI Act (No.4 of 2013).

In this research, informed consent will be obtained from all participants, providing them with clear information about the purpose of data collection, the types of data to be collected, and how it will be managed.

To protect participants' identities, unique codes will be assigned to replace their names or any identifying information. Electronic data, including interview recordings, will be securely stored on an external hard drive, accessible only through a password known to the researcher and supervisor. Only the researcher and supervisor will have access to identifiable participant information. Additionally, when necessary, data will be summarized in a manner that prevents individual participant identification. Participants will be informed during the consent process about the measures in place to safeguard their confidentiality. All communications between researchers and participants will be conducted through secured email channels.

The researcher will strictly collect data that is relevant to the research, ensuring the principles of data minimization are followed.

It's important to note that the research acknowledges the potential penalties for non-compliance with the POPI Act (No.4 of 2013), which may include fines and legal actions.

1.10 CHAPTER OVERVIEW

This study will comprise the following sections:

Chapter 1 Introduction

This chapter begins with an introduction, followed by a discussion of the motivation behind the topical actuality, a literature review, theoretical framework, problem statement, research objectives, demarcation of the study, a high level of research design and methodology, ethical considerations, and the protection of personal information.

Chapter 2 Literature Review

Chapter 2 will elaborate on previous studies done to address the problem as identified in chapter 1 whereafter the various types of third-stream income that can be generated by a university of technology will be identified; the case studies of other universities that have successfully generated third-stream income will be examined, best practices that could be applied at a university of technology will be identified, and the role of technology and innovation in generating third-stream income at universities will be examined, and any relevant trends or emerging opportunities will then be identified.

To gather data from the identified research participants, structured interviews will be conducted. The research questions will focus on various aspects of the university of technology's third-stream income approach, policies, and regulations. During the interviews, the SWOT analysis will be explained to research participants, emphasizing its purpose in identifying internal strengths and weaknesses, as well as external opportunities and threats. The research participants will be asked to share their perspectives on a university of technology's current approach to generating third-stream income, as well as the university of technology's strengths and weaknesses in this area. Additionally, participants' views on the external factors affecting the university of technology's third-stream income generation will be sourced. Inquiries will be made about policies and regulations that may act as barriers to income generation or, conversely, present opportunities for growth. The goal is to understand how these policies and regulations impact the university of technology's strategies and operations.

Chapter 3 Research Design and Methodology

Chapter 3 will focus on the research methodology, including paradigmatic assumptions, empirical study, demarcation of the study, validity and reliability of the study, and confidentiality.

Chapter 4 Presentation and Analysis of the findings and results

This chapter presents on the analyses, findings, and results of the study.

Chapter 5 Conclusion and Recommendations

Chapter 5 presents the conclusion of this study focussing on the recommendations emanating from the study as well as limitations and opportunities for further research.

CHAPTER 2

LITERATURE REVIEW

2.1 FOUNDATIONAL THEORIES OF THIS STUDY

This chapter aimed to discuss the relevant literature pertaining to the research phenomenon presented in Chapter 1. It explored relevant theories and emphasized the significance of third-stream income in establishing financially sustainable universities. Furthermore, the context of university of technology as a case study is thoroughly addressed. Following this, the empirical literature is reviewed, including a comprehensive gap analysis. The conceptual framework that underpins this research is then presented.

The application of theories serves the purpose of aiding in comprehending, elucidating, foreseeing, acquiring knowledge about, and acting within our surroundings or circumstances (Lynham, 2002:222). As such, theories hold a notably pragmatic function in our daily existence. In existing literature, diverse interpretations of the term "theory" exist. It has characterised as the cognitive representation or conceptual structure utilized to address research challenges (Van de Ven, 2007:19). This case study reviews the following related theories in the context of the study: Resource Dependence Theory; Neoliberalism Theory; Innovation Diffusion Theory; and Organizational Learning Theory. The following paragraphs will discuss each of these theories while highlighting how it is applicable to this study.

2.1.1 Resource Dependence Theory

The theory of resource dependence asserts that for organizations to ensure their long-term survival, they must secure necessary resources. Additionally, it suggests that they primarily acquire these resources from their immediate surroundings. Furthermore, within this environment, multiple organizations may compete to access these identical resources (Zehir *et al.*, 2019:2).

The resource dependence theory provides a valuable framework for understanding a university challenges in generating third-stream income. According to this theory, organizations, including universities, must secure essential resources to ensure long-term survival and success (Zehir *et al.*, 2019:2). These resources can encompass financial capital, human expertise, infrastructure, partnerships, and more. The theory also suggests that organizations primarily obtain these resources from their immediate surroundings, including various stakeholders such as government entities, industry partners, local communities, and other institutions.

Applying this theory to the context of the university in question efforts to generate third-stream income, several key concepts emerge:

- i) Resource acquisition: The University's ability to generate third-stream income, which refers to revenue beyond traditional government funding and tuition fees, relies on acquiring diverse resources. These include research grants, industry partnerships, consulting projects, and intellectual property rights.
- ii) Resource dependence: The University depends on various external entities and stakeholders for resources to establish and sustain its third-stream income initiatives. These external parties include government agencies, corporations, local businesses, philanthropic organisations, and research funding bodies.
- iii) Immediate surroundings: the theory suggests that the University's primary resource providers will likely be entities within its immediate geographical and institutional environment. This could involve local industries, regional government bodies, and neighbouring businesses that have a vested interest in collaborating with the University.
- iv) Competition for resources: the theory also acknowledges that within the University's environment, multiple organisations (including other universities, research institutions, and non-academic entities) may compete for access to the same resources. This competition can intensify as the resource demand increases, potentially creating challenges for the University's resource acquisition efforts.

In the case of a university of technology exploring the challenges faced in generating third-stream income involves examining how effectively the University can identify, access, and leverage resources from its surroundings. Challenges may include:

- (i) Resource scarcity and resource allocation: limited availability of external resources is a challenge in generating third-stream income, leading to heightened competition among institutions. Grant (1991:119) underscores the critical importance of identifying and leveraging an organization's unique capabilities and resources, particularly those that are not equally available. This alignment highlights the university of technology's responsibility to strategically manage and allocate scarce resources, thereby gaining a competitive advantage.
- (ii) Stakeholder engagement: encompassing the development and maintenance of relationships with external stakeholders who contribute essential resources, is a pivotal strategy for a university of technology seeking to address challenges in generating third-stream income. Freeman et al. (2001: 1760) emphasize the integral role of stakeholder engagement within the Resource-Based View (RBV) framework.
- (iii) Strategic alliances: involve forming partnerships with industries and businesses to leverage their resources and expertise, contributing to the university's income-generating initiatives. When exploring the challenges faced by a university of technology in generating third-

stream income, a resource-based theory of strategic alliances can guide decision-making processes (Freeman, et al 2001: 1760).

- (iv) Adaptation to a changing environment involves adjusting resource acquisition strategies in response to shifts in the economic, political, and social landscape that may impact resource availability. Grant (1991:122) highlights the dynamic nature of the business environment, emphasizing the necessity for organizations to adapt their strategies to changing circumstances. This inherent adaptability aligns seamlessly with the challenge of adjusting to a changing environment, especially within the specific context of generating third-stream income.

By utilizing the theory of resource dependence as a conceptual framework, it will assist to analyse the interplay between a university of technology and its environment, identifying the specific challenges and opportunities that arise in its pursuit of third-stream income generation. This analysis can guide strategies for effective resource acquisition and management, ultimately contributing to the university's long-term sustainability and success.

2.1.2 Neoliberalism Theory

According to Harvey, (2005:2) Neoliberalism primarily suggests that people's lives can improve the most when individuals have the freedom to use their business abilities and talents. This idea is based on creating a system where individuals can freely own property, trade in open markets, and engage in unrestricted business activities.

Neoliberalism, as an ideology, asserts that the greatest potential for individual improvement lies in allowing individuals to exercise their entrepreneurial talents and business acumen freely. This philosophy is rooted in the establishment of an economic framework where individuals can exercise the ownership of assets, participate in open market exchanges, and partake in unhampered business ventures (Harvey, 2005:249). In case of a university of technology's study, the tenets of neoliberalism can be examined in relation to the university's efforts to diversify its revenue sources.

Adopting neoliberal principles might imply that the university could potentially enhance its financial sustainability by leveraging its human capital and intellectual property to generate additional income streams beyond traditional funding sources (Harvey, 2005:65). Neoliberalism's emphasis on individual initiative and unrestricted market participation could guide the university towards exploring innovative ways to commercialize its research outputs and expertise. However, while the neoliberal approach underscores the importance of individual agency and free market dynamics, it is also important to recognize potential challenges and limitations. The pursuit of third-stream

income for a university may encounter hurdles that require nuanced consideration. These challenges could include:

- i) Equity and access: neoliberalism's focus on individualism may raise concerns about equitable access to educational resources. Generating third-stream income could inadvertently lead to prioritizing programs or initiatives that are more marketable, potentially marginalizing less popular fields of study or community-oriented projects.
- ii) Research and academic freedom: In the pursuit of generating income, the pressure to monetize research outputs might impact academic freedom. Neoliberal principles might encourage the university to prioritize research that has immediate commercial potential over more exploratory or socially focused studies.
- iii) Resource allocation: the shift towards third-stream income generation could divert attention and resources away from the primary mission of education and research. University may need to carefully balance their revenue-generating activities with their core responsibilities.
- iv) Community engagement: Neoliberalism's individualistic orientation could impact the university's engagement with its local community. The pursuit of revenue might overshadow the institution's role in addressing societal challenges and serving the public good.

In summary, applying neoliberal principles to the challenges faced by a university of technology in generating third-stream income involves a careful balance between fostering entrepreneurial activities, protecting academic integrity, and maintaining the institution's commitment to broader societal well-being. While neoliberalism's emphasis on individual agency and market dynamics can offer insights into income diversification, it must be weighed against potential drawbacks, particularly within the context of higher education's broader mission and responsibilities.

2.1.3 Innovation Diffusion Theory

The "Innovation Diffusion Theory" explains how individuals spread and adopt innovations, ideas, or technologies over time (Pinho *et al.*, 2021:424). It identifies different stages of adoption, ranging from innovators and early adopters to the majority and laggards. This theory considers factors like communication channels, social systems, perceived benefits, and obstacles to adoption (Roger, 2003:1).

Applying the Innovation Diffusion Theory in the context of the research topic would involve analysing how the University's attempts to generate income through innovative methods (third-stream income) are being adopted and diffused within the university community and beyond. The theory would help understand the factors influencing the adoption of income-generation initiatives, such as new programs, partnerships, or technologies, and the challenges faced at different stages

of implementation. It would also provide insights into how communication, social networks, and perceived benefits impact the acceptance and diffusion of these income-generating innovations among various stakeholders in the university context.

2.1.4 Organizational Learning Theory

Organizational Learning Theory is a framework that focuses on how organizations acquire, process, and apply knowledge to adapt and improve their performance over time. It emphasizes the importance of continuous learning and knowledge creation within an organization to enhance its ability to innovate, respond to changes, and achieve its goals (Fauske & Raybould, 2005:1).

In the context of the case study, organizational learning theory can provide a lens to understand how the University learns and adapts to the challenges it encounters in generating third-stream income. The theory suggests that the University's ability to address these challenges effectively depends on how it processes information, shares knowledge, and integrates new insights into its practices (Argyris, 1995:26).

The research will consider the following key aspects:

- i) Information gathering: how does the University collect and analyse information about potential sources of third-stream income? Are there mechanisms in place to identify opportunities and threats in this regard?
- ii) Knowledge sharing: how does the University disseminate the information it gathers about third-stream income generation across various departments and faculties? Is there a culture of open communication and collaboration to facilitate learning?
- iii) Experimentation and innovation: do the University encourage experimentation and innovative approaches to generating third-stream income? How does it learn from both successes and failures in these endeavours?
- iv) Feedback loops: Is there a mechanism for gathering feedback from ongoing efforts to generate third-stream income? How does the University use this feedback to improve and refine its strategies?
- v) Organizational memory: How does the university document and retain the knowledge gained from its efforts in third-stream income generation? Is this knowledge accessible for future decision-making?

Applying organizational learning theory to the research topic will help uncover the challenges faced by the university of technology in effectively generating third-stream income and provide insights into how the University can enhance its learning processes to address these challenges more effectively.

2.2 DIFFICULTIES IN GENERATING INCOME FROM THIRD STREAM

Generating income from a third stream in a public university context poses several challenges. Third-stream income generally involves activities beyond traditional teaching and research to generate revenue from sources other than government funding and tuition fees. These activities include consulting, industry partnerships, research commercialization, executive education, and more.

Here are some difficulties that the university might encounter:

- i) Balancing the mission of public universities, which is primarily focused on education and research, with the necessity of generating revenue can pose a significant challenge. The core activities of universities, such as teaching and research, might face the risk of resource redirection and a shift in focus when there is a strong emphasis on revenue generation. Koryakina *et al.* (2015:1) emphasize the difficulty of maintaining this balance between the essential academic mission and the imperative to generate third stream income.
- ii) Conflicting priorities arise when universities try to generate income through third-stream activities. This can create conflicts between the university's academic goals and the expectations of external partners or funders. There might be pressure to focus more on activities that bring in revenue rather than those that align with the university's core values. Koryakina *et al.* (2015:2) also back up this idea, stating that universities may face conflicts of interest between their academic goals and the pursuit of activities related to the university's third mission.
- iii) Cultural Shift: Moving from a traditional academic mindset to a more entrepreneurial one can be tough for faculty and staff. Getting people to appreciate a culture that values commercialization and external engagement may face resistance, especially from those who prioritize research and teaching. The entrepreneurial practices indicate possible areas of disagreement and pushback within the organization (McGrath & MacMillan, 2000:1),
- iv) Intellectual property matters can be quite intricate when it comes to turning research findings and innovations into commercial ventures. This process involves navigating patent negotiations, licensing agreements, and determining ownership rights. Public universities, including those in South Africa, often have specific policies in place regarding intellectual property rights, which can add to the complexity. Johnstone (2002:31) supports this by noting that public universities, like those in South Africa, are bound by regulatory and legal frameworks that might pose challenges to diversifying their sources of revenue.
- v) Infrastructure and resources: establishing the infrastructure to support third-stream activities, such as incubators, technology transfer offices, and business development units, requires financial investment and administrative resources.

- vi) Regulatory and legal constraints: public universities are subject to various regulations and legal frameworks that can affect their ability to engage in certain revenue-generating activities. These constraints include procurement rules, conflict of interest regulations, etc.
- vii) Risk Management: some third-stream activities involve financial risks, such as entering into partnerships or investing in new ventures. Managing these risks while protecting the University's reputation and financial stability is a crucial challenge.
- viii) Sustainability generating income from third-stream activities can be unpredictable. Funding from external sources may fluctuate, and revenue-generating ventures might only sometimes succeed. Ensuring the sustainability of these efforts over the long term can be difficult (Ngcono, 2021:1).
- ix) Competition and market demand pose challenges for universities. In some regions and fields, there can be tough competition for the same sources of revenue. Additionally, the demand for specific services or products offered by a university might not always match what the university is equipped to provide.
- x) As mentioned by Wiese (2008:1) the competition is intense, and universities must effectively promote themselves. This competition is not only among public universities but also involves private ones. Notably, there has been a noticeable rise in the number of private education providers in recent years. Universities, therefore, face the task of distinguishing themselves and meeting the demands of both competition and market expectations.
- xi) Faculty and staff expertise is crucial when it comes to third-stream activities. These activities often demand a skill set that goes beyond traditional academic roles. To effectively engage in business development, marketing, and negotiations, faculty and staff may need additional training and development. According to Cunningham (2007: 204), there is a specific challenge in this area. Many academics lack awareness and experience in commercialization. This lack of understanding and experience poses a hurdle for company formation, which, in turn, affects the generation of third-stream income. In simpler terms, faculty and staff need to develop new skills, especially in business-related areas, to navigate these challenges successfully.
- xii) Time and energy allocation: Pursuing third-stream income can redirect time and energy from traditional academic duties. Striking the right balance between generating income and maintaining teaching and research excellence can be challenging.

Addressing these challenges requires careful planning, effective communication, stakeholder engagement, and a clear strategy that aligns revenue-generating activities with the University's mission and values. It is essential to involve faculty, staff, and other stakeholders in the decision-

making process and to continuously assess and adapt the strategy based on the evolving landscape.

In a South African public university context, generating income from a third stream can pose several challenges and difficulties. Some specific difficulties that universities might encounter are:

- i) **Regulatory and Legal Constraints:** Public universities in South Africa are subject to various regulatory and legal frameworks that can restrict their ability to engage in certain commercial activities. There might be limitations on the types of businesses they can operate and navigating these regulations can take time and effort.
- ii) **Intellectual property (IP) ownership:** Determining ownership rights over the IP resulting from research can be challenging, particularly when multiple researchers, departments, or external collaborators are involved. This can lead to disputes and delays in bringing innovations to the market.
- iii) **Limited Industry Engagement:** Building strong partnerships with industries and businesses is crucial for generating third-stream income. However, some industries might be hesitant to collaborate due to concerns about bureaucracy, intellectual property issues, or a perception that academic institutions are not aligned with real-world needs. Building and maintaining these relationships takes effort and time.
- iv) **Resource constraints:** Public universities in South Africa often need more budget constraints, which can impact their ability to invest in the infrastructure, staff, and technology needed to pursue third-stream income initiatives effectively. Lack of adequate resources can lead to suboptimal outcomes and slow progress.
- v) **Market demand and commercial Viability:** Not all research outputs can be quickly commercialized or turned into profitable ventures. Identifying viable market opportunities for university innovations can be challenging, and some projects might need a more straightforward path to monetization.
- vi) **Administrative Burden:** Developing and managing partnerships, licensing agreements, and other commercial activities require administrative efforts. Universities might need more streamlined processes to manage these tasks efficiently, leading to delays and inefficiencies.
- vii) **Socioeconomic Context:** The broader socioeconomic conditions in South Africa can also impact the ability to generate third-stream income. Economic instability, political factors, and resource access disparities can influence the demand for services and partnerships.

To overcome these difficulties, South African public universities must invest in capacity-building, foster a culture of innovation and entrepreneurship, streamline administrative processes, engage with industries effectively, and advocate for favourable policy changes supporting their third-stream

income initiatives. It is a complex process that requires collaboration among stakeholders, including academia, government, industry, and the broader community.

2.3 LITERATURE REVIEW OF RELATED WORK

In this literature section, empirical findings are presented from universities worldwide, including those in Africa, to illustrate the points mentioned about the current challenges public universities face in generating third-stream income.

Ngenoh (2020:1) highlighted that the financial sustainability of universities is a challenge that extends globally. The enrolment of students in various countries has shown fluctuations over time. For instance, in the United Kingdom (UK), the student population has increased two-fold in the past two decades, contrasting the decrease in funding per student.

Noticeably, Australia has explored innovative approaches to broaden its funding sources (Greenaway, 2003:165) as the traditional funding sources have become inadequate. Consequently, many educational institutions have sought alternative funding options to sustain their operations. Ngcobo (2021:3) confirmed that the issue of financial sustainability in universities is not limited to South Africa alone. Many countries worldwide are grappling with similar challenges in their higher education sectors. To address this, developing nations have implemented various strategies to encourage and support higher education.

Considering the difficulties mentioned in previous paragraphs, universities must enhance their endeavours in generating third-stream income to finance the shortfall. Third-stream income pertains to revenue generated from non-academic activities such as research contracts, consultancy services, and commercialising university intellectual property (Prince, 2007:743). This income has gained significant importance in ensuring the sustainability of universities' operations and funding their research undertakings. Generating this income can be challenging and requires universities to develop new skills and capabilities (Ngcobo, 2020:20).

According to Creswell (2014:2), a literature review has a central position in research as a literature review is academic writing demonstrating knowledge and understanding of the academic literature on the research topic.

In the study done by Shiimi (2020) where the primary objective of the study was to investigate if the University possesses the potential to transform into an entrepreneurial entity by leveraging its internal capabilities (Shiimi, 2020:2). The study aimed to examine how these capabilities are utilised to generate a competitive edge and external prospects for the institution. Entrepreneurial universities and higher education were the two key concepts that were defined. The research

utilised the resource-based theory (RBT) to differentiate between resources, capabilities, and competencies, focusing on the importance of resources and capabilities for attaining exceptional performance. The study used the existing theoretical and conceptual frameworks before investigating the opportunities of being an entrepreneurial university.

The findings were as follows (Shiimi, 2020:63):

- i) Creating a favourable environment through internal capabilities such as infrastructure and equipment is crucial for universities.
- ii) In addition to generating research outputs, universities should strive to translate them into innovations that can be commercialised, rather than letting them collect dust. This approach can help universities attract collaborators and investors interested in working together.
- iii) Collaboration and partnerships can aid the University in securing funding for essential research and related endeavours. This can enable the University to investigate international best practices, ultimately bringing them up to par with global standards.
- iv) The University should invest in technology to simplify work, and technology integration in universities will streamline work processes and create a sustainable competitive advantage in the long run.
- v) People often measure the importance of a university based on the skills and expertise of its human capital, considering it a crucial aspect for achieving optimal performance. This reinforces the notion by Alvarez and Busenitz (2001:768), who assert that entrepreneurial opportunities arise when certain individuals possess unique insights into the value of specific resources. Furthermore, Huffman and Quigley (2002:4) contend that universities are vital in attracting skilled professionals to the local area and fostering entrepreneurial potential within the region.
- vi) Generating revenue is critical to the institution's operations to counteract revenue deficiencies the University faces. Moreover, this practice enhances educational services and research outcomes by reducing reliance on government funding.
- vii) The increasing investment in human capital impacts other resources, mainly when providing tools for work is needed.

The research corroborated previous literature that supports the notion of universities being able to adopt an entrepreneurial approach by leveraging various internal capabilities, gaining a competitive advantage, and seizing available opportunities.

The strength identified from the study performed by Shiimi (2020:2) is the use of the term "exploratory," which suggests that this study is more of a preliminary investigation rather than a definitive analysis and it is appropriate for an initial investigation of a dissertation in Master of

Business Administration. In addition, the study was conducted by the Rhodes Business School, a reputable institution, indicating that the study likely adheres to high academic standards. The weakness identified is that the study only focuses on the opportunities for the University of Namibia, which may limit the relevance of the findings to other universities.

The study by Hundadze and Anelidze (2016) was also analysed. Their research paper aimed to examine the favourable effects of entrepreneurial initiatives undertaken by universities, explore the attributes and potential of converting universities into entrepreneurial entities, and emphasize the significance of diversified funding for the advancement of entrepreneurial universities, which is a relatively novel concept in South Africa's educational landscape (Hundadze & Anelidze, 2016:36). The research validated that the idea of entrepreneurial universities is a recent development within the realm of higher education. The study applied fundamental theories derived from Levine's (2009:10) work, which suggests that the entrepreneurial University incorporates three economic development theories:

- i) The theory of endogenous growth posits that the stock of knowledge and technological innovation primarily determines the economic growth rate. It suggests that ideas and technological advancements result in "increasing returns," meaning they can lead to exponential economic growth.
- ii) Michael Porter's theory of "Competitiveness", which gained popularity in 1998, suggests that regional economic prosperity can be achieved by developing a competitive advantage for local firms within industry "clusters".
- iii) The University's integration into a culture of "everything for sale" is called "market triumphalism." In this approach, knowledge is no longer viewed as a public good but rather as a commodity to be exploited for profit-driven endeavours.

The research utilised pre-established theoretical and conceptual frameworks from prior research to guide their research. Hundadze and Anelidze's (2016:42) research yielded the primary discoveries regarding Higher Education Institutions in Georgia, and the findings were as follows:

- i) Analysing global practices reveals that fostering entrepreneurial universities and related activities plays a crucial role in the economic advancement of a nation.
- ii) One of the critical traits of transforming Higher Education Institutions into entrepreneurial universities is diversifying their funding sources and developing third-stream income. Research conducted on a global scale has confirmed that generating alternative funding sources, apart from government funding and student tuition and accommodation fees, can enable higher education institutions to achieve financial autonomy, allowing them greater flexibility in managing their resources. This, in turn, can foster more robust partnerships

between universities and businesses and encourage the commercialization of their activities and products.

- iii) A concern has been raised that if private businesses become a significant funding source for public universities, these institutions may reduce their dependence on government funding and become more reliant on the private sector. This could lead to a greater focus on research yielding short- or medium-term commercial benefits.
- iv) Although Georgian legislation permits universities to generate income through economic or entrepreneurial pursuits, universities in Georgia could be more entrepreneurial.

The study highlighted the significance of the University and cautioned against neglecting its core mission and duty as a public institution, even as it explores alternative avenues for generating revenue. Furthermore, it affirmed the significance of universities not relying solely on their primary and secondary sources of income, as emphasized in previous literature. The study is closely related to other literature on third-stream income generation for public universities, emphasizing the importance of diversifying funding sources, adopting an entrepreneurial mindset, and investing in transformational activities. To examine the status of income diversity in Georgian universities, business participants realized their shortcomings, specifically the need for more collaboration with higher education institutions in Georgia. Instead, they viewed universities solely as a source of potential employees for their organizations; there are valuable lessons learned. The weakness identified is that the study focused on the qualitative data research method. This could limit the ability to make quantitative comparisons.

Ahmad *et al.* (2015) research paper employed a distinct method to address third-stream income. Rather than attributing the responsibility of generating third-stream income to the entire University, the authors identified the specific academic activities to generate income (Ahmad *et al.*, 2015:194). The concepts of sustainability and higher education were identified as key. The application of Resource Dependency Theory (RDT) was used to explain how educational institutions behave in establishing start-up businesses to generate additional income and ensure their survival, which aligns with Shiimi's (2020:14) case study. On the other hand, the Agency Theory is employed to describe the contractual relationship between two parties. The research paper used an established framework; the two theories helped the researchers to understand the factors that influence academic staff's income generation activities.

The study revealed that (Ahmad *et al.*, 2015:199):

- i) The most prevalent means of generating income within the University are research, consultation, and commercialization activities. However, it has been observed that only a limited number of academic staff possess the necessary qualifications to participate in

commercialization ventures, as the products typically produced are primarily in the realm of social sciences from specific faculties rather than tangible products with commercial potential.

- ii) The academic staff at the Public Universities in Malaysian being discussed currently, generate low-income levels through their activities, which could be more optimistic. However, if they are free to work flexible hours or have reduced working hours, this situation can be improved.
- iii) The research recognized that although the universities being studied were relatively inexperienced in income generation activities, it highlights the significance of such activities in guaranteeing the institution's sustainability.
- iv) Finally, the study uncovered that providing incentives on a profit-sharing basis would be an effective way to motivate academic staff.

This research paper on income generation activities among academic staff at Malaysian public universities contributes to the broader literature on third-stream income generation. It highlights the importance of understanding the factors influencing academic staff participation in these activities. The research topic is valuable to the literature on third-stream income generation for public universities, as it sheds light on how academic staff members can contribute to this effort. The publication is published in an international peer-reviewed journal, which suggests that it has undergone rigorous review and meets high academic standards. The weakness identified is that the study only focused on four centres, while the University of Namibia has 17 centres. The study should have captured the broader opportunities or challenges across the entire University.

Shore and Mclauchlan (2012:267) focused on understanding the impact of commercialisation on a university mission statement. The key concepts were defined: entrepreneurship, third-stream, knowledge transfer, academic entrepreneur, and entrepreneur and established frameworks. The research used Neoliberalism as a key theory. The study found that the modern public University is undergoing significant changes due to commercialization and the overall academic capitalism it is integrated with. This transformation creates fresh prospects and novel approaches for scholars in academia. The research topic is valuable to the literature concerning third-stream income generation for public universities by illuminating how academic staff can play a role in this endeavour. The publication focused on the emerging trend of commercialization and entrepreneurship within academia, which is a highly relevant and timely topic; however, it is based on the European context, which may limit its relevance to other parts of the world.

A study done by Ngcobo (2021) from DUT was also reviewed. The view of the research was to ensure the financial sustainability of DUT (Ngcobo, 2021:5). A case study was conducted to explore potential revenue generation strategies. The researcher emphasized the need for a

detailed definition of revenue, leading the study to focus on accounting measurement and the various categories of revenue available to public universities, including DHET revenue allocation. The case study employed the resource dependency theory (RDT) and neoliberalism theory, aligning with previous research such as Shiimi (2020:14) and Ahmad *et al.* (2015:195) for RDT and Shore and Mclauchlan (2012:269) for Neoliberalism. These theories are widely recognized and have been used by other researchers in the field.

As per Ngcobo's (2021:118) perspective, universities must recognize the significant role played by the knowledge and abilities of their management in ensuring financial sustainability. Furthermore, boosting revenue through the enrolment of international students can be a valuable contribution towards achieving this objective. Finally, diversifying income sources is a potential solution to the financial challenges faced by the university sector.

According to the study's findings, DUT's funding is primarily impacted by several factors, including the source of revenue, inadequate research output, insufficient management skills and knowledge, and a low postgraduate completion rate. The analysis of the third-stream income revealed that the revenue generated needs to be improved to ensure the University's financial sustainability. The study indicated that to enhance the third-stream income; the University should focus on improving its strategies for sourcing income from industry partnerships, motivating university departments to generate additional income using their expertise, and enhancing commercial services provided to external communities. Ngcobo's case study pertains to the field of higher education finance models, and its relevance is underscored by the current economic climate, wherein several public universities face financial difficulties. It is worth noting that the research is specific to DUT. As such, the applicability of the findings to other regions or countries may be limited by socioeconomic and cultural disparities.

Monyane's (2017) research paper was also reviewed, and in this paper, Monyane (2017:26) examined the potential for higher education institutions in South Africa to sustain themselves in the future by generating third-stream income. The researchers' attention was particularly directed toward the University of Technology and its opportunities for generating revenue through training, contract research, and innovation. To explore this topic, Monyane (2017:26) employed a framework derived from existing literature on third-stream income in South African universities.

A research study was conducted in response to various trends, such as university budget cuts and the #feesmustfall campaign. The study revealed that universities are experiencing a decrease in financial resources from the government, as well as challenges with donors and non-organizations. As a result, universities need to be forced to rethink their sources of income and leverage third-stream income to address budget shortages. The study emphasized the critical importance of

maximizing and implementing third-stream income, as it could result in universities facing increased financial risks and potentially bankrupt. The weakness identified is that the study focused on the qualitative data research method. This could limit the ability to make quantitative comparisons.

Further review was done on a research paper by Mlambo *et al.* (2017). The primary point of contention for this research paper revolved around the source of funding for free higher education, as well as whether the idea of providing it in South Africa is a viable reality or merely a mythical concept (Mlambo *et al.*, 2017:51). Additionally, there are questions surrounding the specific parameters and guidelines for the provision of free higher education in South Africa. Key concepts were identified as higher education, parable, feasibility, debate, and socioeconomic. To contextualize the concept of free higher education in South Africa, the study used the available secondary data.

Providing free higher education in South Africa has been a contentious issue for many years, with various stakeholders holding different opinions on the matter. Some argue that it is necessary to provide access to higher education for all, regardless of their financial background, to address issues of inequality and promote social mobility. Others argue that such a policy would be too costly and not necessarily improve outcomes. Research on the source of funding for free higher education has drawn on a range of established frameworks and theories, i.e., Education policy, social justice, or economic development. Implementing free higher education, funded through reduced budget allocation to other departments, may hurt service delivery. Consequently, the government must exercise caution in its implementation to ensure that it does not disrupt the functioning of other departments or impede the country's economic growth (Mlambo *et al.*, 2017:59).

The study further recommended that:

- i) The viable and enduring strategy would entail the government forging stronger ties with the private sector to finance higher education with mutual gains for both entities.
- ii) The existing economic conditions in South Africa make it unfeasible to offer free education. Unless there is a tax hike, the government might need to rearrange the budget and allocate funds toward other services, which may affect the delivery of services in the country.
- iii) If educational services were free, there would be a surge in demand for university access, necessitating the government to furnish more resources to universities for educational services. Another option is to invest in TVET colleges, which could address the education issue and lower the unemployment rate because of the graduates' skills.

- iv) Finally, the government must ensure proper funding management without any misappropriation.

The researcher questioned the effectiveness or appropriateness of free higher education in South Africa, which could challenge established ideas about the benefits of such policies. The paper presents a relevant and important topic, especially given the ongoing debates about higher education in South Africa.

The literature review focused on Ngenoh (2020). The research was centred on the investigation of third-stream initiatives, the challenges that arise during these ventures, the possibility of implementing such activities within academic institutions, and the different roles played by participants (Ngenoh, 2020:5). The study recognized human resources, intangible resources, organizational capabilities, tangible resources, third-stream activities, University, and university sustainability as critical terms. The study was grounded in Resource-based theory and was per prior studies such as Shiimi (2020:14) and Ahmad *et al.* (2015:195).

The research was based on established frameworks as it has used existing literature.

- i) A study conducted by Chumba *et al.* (2019:38) on the effect of financial investment strategies on the financial sustainability of universities in Kenya identified that the most significant third-stream activity is consultancy; however, from this study, agricultural activities are also a major significant third-stream activity.
- ii) The partnership and linkages were identified as critical in enhancing third-stream income.
- iii) It was also noted that human resource is critical in third-stream activities in universities, and it should be from the top to the bottom employees, furthermore, the management helps to stir the correct direction towards income generation while the administrators and other employees are critical in implementation.
- iv) The study also revealed that the need for adequate skilled personnel is a challenge that significantly influences university sustainability.

The study made specific recommendations regarding the government's involvement in funding and investing in third-stream income activities, which were unique compared to other research papers placing the sole responsibility on the University, its management, and its employees. It was suggested that university management develop policies and processes to guide the implementation of such activities, while also engaging staff members in developing sustainable measures to improve the University's financial standing. To support this effort, management should provide training and benchmarking opportunities to staff to increase their exposure to third-stream

activities. The study's focus on the challenges associated with third-stream income aligns with existing literature.

The SWOT analysis serves as a strategic planning tool, integral for identifying and assessing the internal factors (Strengths and Weaknesses) and external factors (Opportunities and Threats) impacting an organization, project, or venture. This comprehensive evaluation involves recognizing the entity's positive and negative attributes and understanding potential external opportunities and threats Samejima et al. (2006:2).

The process of SWOT analysis entails the identification of Strengths and Weaknesses, alongside opportunities and threats. Organizational strategies are then devised to capitalize on strengths and opportunities, address weaknesses while leveraging opportunities, and minimize weaknesses while avoiding potential threats.

For a university of technology exploring challenges in generating third-stream income, the purpose of conducting a SWOT analysis becomes paramount. This strategic exercise aims to:

- i. Identify Internal Factors: Recognize the institution's strengths and weaknesses relevant to third-stream income generation. This encompasses factors like faculty expertise, existing infrastructure, and limitations in current approaches.
- ii. Identify External Factors: Gain insights into opportunities and threats within the external environment, including emerging trends, regulatory changes, and competitive pressures.
- iii. Strategic Planning: Utilize the analysis to inform strategic planning and decision-making processes. This involves developing strategies that capitalize on strengths, address weaknesses, seize opportunities, and mitigate potential threats.
- iv. Risk Management: Identify potential risks and challenges that may impede third-stream income generation. This allows the institution to proactively address or mitigate these issues, enhancing overall risk management.
- v. Resource Allocation: Optimize resource allocation by focusing on areas where the institution has a competitive advantage or where improvements are required. This ensures efficient utilization of resources for sustainable third-stream income generation.

2.4 GAP ANALYSIS

As seen from the above overview of available literature, there is extensive research on different aspects of tertiary income or diversification. The following common factors in the literature reviews on public universities worldwide regarding university funding were identified:

- i) The literature consistently highlights that financial sustainability is a significant challenge faced by universities worldwide, including those in Africa. This challenge is not limited to a specific region and is a global concern (Ngenoh, 2020; Ngcobo, 2021; Hundadze & Anelidze, 2016).
- ii) Changes in student enrolment have been identified as a factor impacting university finances. Fluctuations in student numbers can affect the financial stability of universities, and in some cases, there has been an increase in student population but a decrease in funding per student (Ngenoh, 2020; Greenaway, 2003).
- iii) The literature consistently emphasizes the necessity for universities to diversify their funding sources beyond traditional means. As traditional funding sources become inadequate, universities are urged to explore alternative options to sustain their operations (Greenaway, 2003; Hundadze & Anelidze, 2016; Ngcobo, 2021).
- iv) The concept of third-stream income, defined as revenue generated from non-academic activities such as research contracts, consultancy services, and commercializing intellectual property, is identified as crucial for the sustainability of universities. It is emphasized that universities need to enhance efforts in generating third-stream income to counteract revenue deficiencies (Prince, 2007; Ngcobo, 2021).
- v) Several studies (Shiimi, 2020; Hundadze & Anelidze, 2016) stress the importance of adopting an entrepreneurial approach. This involves leveraging internal capabilities, fostering innovation, and forming collaborations and partnerships to secure funding for essential research and related endeavours.
- vi) The integration of technology and innovation is highlighted as playing a significant role in generating third-stream income. Investing in technology is identified as a means to simplify work processes, streamline operations, and create a sustainable competitive advantage (Shiimi, 2020).
- vii) The literature consistently underscores the importance of human capital in universities, emphasizing that the skills and expertise of individuals contribute significantly to the institution's performance. Collaborations with skilled professionals and the development of human capital are identified as critical factors (Shiimi, 2020; Hundadze & Anelidze, 2016).
- viii) Collaboration and partnerships are identified as strategies that can aid universities in securing funding for research and related endeavours. Establishing strong ties with

external entities, including businesses, is considered crucial for financial sustainability (Shiimi, 2020; Hundadze & Anelidze, 2016).

- ix) The literature consistently recommends the diversification of income sources to address financial challenges. This involves exploring multiple avenues, including industry partnerships, commercial services, and international student enrolment.

It is necessary for the study to be undertaken for university of technology to ensure the following gap are addressed:

- i) There has been a notable absence of literature reviewing the challenges and opportunities specific to a university of technology within the region. Recognizing the significance of the local context, the specific socio-economic conditions, industry landscape, and governmental policies in the area may introduce unique factors that influence third-stream income generation.
- ii) A focused exploration of the challenges and opportunities encountered by a university of technology in the region is lacking. Universities of technology possess distinctive characteristics, priorities, and industry connections compared to traditional universities, highlighting the need for tailored research.
- iii) While existing literature outlines broad strategies such as diversification, entrepreneurship, and technological integration, there exists a gap in providing a detailed analysis of the effectiveness of these strategies within the specific context of a university of technology. Understanding how these strategies manifest in practical terms, considering the dynamics of the region, is crucial for targeted and effective implementation.
- iv) The current body of literature has contributed insights from researchers, government perspectives, and global trends. However, there is a notable omission in focusing on the perspectives of internal stakeholders within a university of technology, including faculty, administrators, and students. Their insights are indispensable for understanding the practical challenges and opportunities encountered on the ground.
- v) Some of the reviewed studies are rooted in international or European contexts, potentially limiting the applicability of their findings to the South African or relevant region. Research that is geographically and culturally relevant is indispensable for formulating strategies aligned with the specific challenges and opportunities faced by a university of technology in the applicable area.

It is the opinion of the researcher that the above literature review provide justification for the study.

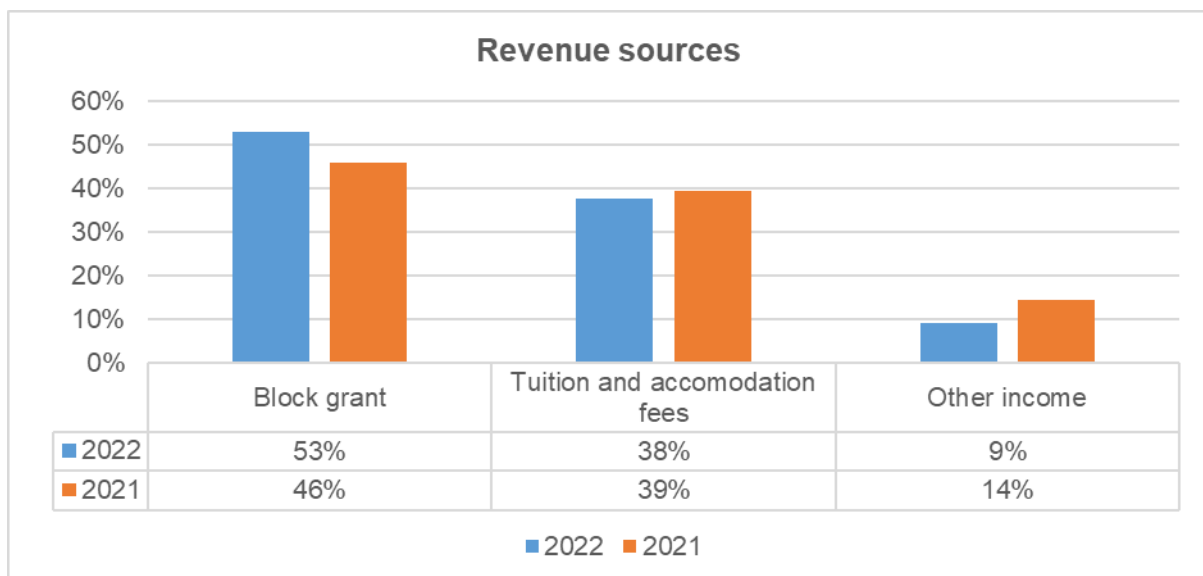
2.5 THE UNIVERSITY OF TECHNOLOGY BEING RESEARCHED

The university of technology under investigation has experienced significant growth, both in terms of its reputation and size as a Higher Education Institution. It has successfully attracted students from various regions within the country and across the African continent. Not only does it excel academically, but its influence extends to both private and public sectors, with its graduates assuming leadership roles that contribute to progress on multiple fronts.

The curriculum at the university is organized into four distinct faculties: Applied and Computer Sciences, Human Sciences, Engineering and Technology, and Management Sciences. Each faculty offers a diverse range of courses. What sets this university apart is its reputation for customizing academic programs to meet industry needs, ensuring that students acquire practical skills and knowledge relevant to their chosen fields. The global outreach of the university, with students hailing from 29 countries worldwide, further emphasizes its commitment to providing relevant education.

In the university's Annual Report for 2022, similar to other public universities in South Africa, funding is derived from three primary sources: subsidies, tuition and accommodation fees, and other income. Graph 1 in the report provides a summarized comparison of financial data between the years 2022 and 2021.

Graph 1: Revenue sources



(Source: University of Technology Annual Report, 2022)

Analysing the graph 1, it is evident that there was a 7% increase in dependency on the block grant, amounting to 53% of the total income. Additionally, there has been a 1% decrease in tuition and accommodation fees, constituting 38% of the total income. Moreover, there is a 5% decrease in other income (third-stream income), representing 9% of the total income. The notable risk is that university of technology relies heavily on subsidies, with limited tuition and accommodation fees and low levels of other income.

Significant third-stream income may contribute to university of technology's financial sustainability and academic excellence. Financially sustainable universities can invest in cutting-edge research facilities, innovative teaching methods, and state-of-the-art technologies, thereby enhancing the overall quality of education and research outcomes. With increased financial autonomy, universities can expand their offerings, providing a wider array of specialized programs and courses that cater to the evolving demands of students and industries.

Moreover, a robust third-stream income empowers universities to engage in community outreach, knowledge transfer, and social impact initiatives, fostering stronger connections with local stakeholders and driving regional development. This financial diversification also mitigates the risks associated with dependence on government funding, enabling universities to navigate economic fluctuations and political uncertainties more effectively.

For the university of technology to overcome its challenges in generating third-stream income and benefit from the mentioned advantages, the University needs to explore its challenges in creating third-stream income.

Based on the work done by Stats SA, 2019 reviewing revenue sources public universities depends on, on average, institutions have 48% of the funding coming from the block grant, 33% of the funding coming from tuition fees, and other income at 19%. The university of technology had 55% of the funding coming from the block grant, indicating higher dependency on the government grant, and 32% of the funding being tuition fees, indicating a reasonable percentage. However, 13% of the funding being other income is relatively low compared to other institutions. The situation has not improved as other income is still lower than the average of 19%.

2.6 CONCLUSION

Chapter 3 provides a comprehensive overview, encompassing applied theories, challenges in generating third-stream income, literature review findings, and a gap analysis focused on both existing literature and the context of university of technology.

The existing literature on tertiary income and diversification highlights global challenges faced by universities, emphasizing financial sustainability, the impact of changing student enrolment, and the need for diversified funding, especially through third-stream income. However, a research gap is identified for the university of technology due to the absence of literature addressing the unique challenges and opportunities. This gap stems from limited exploration of region-specific factors, such as local socio-economic conditions, industry landscape, and governmental policies, influencing third-stream income. The study underscores the necessity for tailored research recognizing the distinct characteristics, priorities, and industry connections of universities of technology in the region. While broad strategies like diversification, entrepreneurship, and technological integration are acknowledged, a detailed analysis of their effectiveness within the specific context of a university of technology in the region is lacking. Practical insights from internal stakeholders, including faculty, administrators, and students, are deemed crucial for understanding practical challenges and opportunities. Some reviewed studies, rooted in international or European contexts, may have limited applicability to the South African or region. The call for geographically and culturally relevant research is emphasized for formulating effective strategies.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In this chapter, the research design and methodology employed to address the objectives outlined in Chapter 1 (main objective in paragraph 1.6.1 and secondary objectives in paragraph 1.6.2) will be detailed. The selection of the appropriate research methodology, along with a comprehensive review and justification of the chosen approach, was crucial in meeting the main objective.

The subsequent sections of this chapter provide an overview of the research plan implemented to fulfil the study's objectives. The discussion commences by elucidating the chosen research methodology, followed by a delineation of the specific methods employed and the criteria for participant selection within the case study. Furthermore, insight is provided into the procedures for data collection and analysis. Before concluding the chapter, attention is directed towards a comprehensive discussion on the reliability and validity of the measurement tools used, accompanied by an exploration of the ethical principles that guided the entire research process. This logical progression ensures a coherent and structured presentation of the research design and methodology.

3.2 RESEARCH METHODOLOGY

According to Sileyew (2019:2) the research design establishes a suitable framework for a study. An essential aspect of the research design process is the decision regarding the research approach, which determines the acquisition of relevant information for the study. It is important to note that the research design process involves many interconnected choices.

3.2.1 Research philosophies and paradigms

The methods used in conducting research are influenced by individuals' philosophies and assumptions about the world, forming the foundation of a research paradigm (Collis & Hussey, 2014:43). The various research philosophies and paradigms one can utilise to build the foundation for the research design and methodology to conduct one's own research is: Positivism; critical realism; interpretivism; postmodernism; and pragmatism and their relevancy to the study is outlined below following principles from Saunders *et al.* (2012):

- i) Positivism: means knowledge can be objectively measured and verified through empirical data. This may involve collecting quantitative data, such as financial reports and statistical data, to identify and quantify the challenges faced by the University in generating third-stream income. Positivism was considered less appropriate for this case study as it

involved interviews with participants. The interviews are a qualitative research method that involves exploring individuals' subjective experiences, perceptions, and meanings.

- ii) Critical realism: is a philosophical perspective that has been influential in the field of social science research. It encourages researchers to move beyond simple observations and interpretations, delving into the deeper layers of social reality to understand the causal forces at play. The research solely focuses on individual experiences without considering the broader social structures and mechanisms. Based on the university's current environment, current processes are not integrated, making it difficult to assess all elements that might have an indirect or direct impact on the generation of third-stream income.
- iii) Postmodernism: as a philosophical and theoretical approach, it challenges the idea of universal truths and objective knowledge. This approach was not considered as it is not aligned with research goals and objectives.
- iv) Pragmatism: as a philosophical stance, it generally characterized by its practical and flexible approach to research and is often associated with mixed-methods research, where both qualitative and quantitative approaches are used to address research questions. This research only used qualitative approach to address the research questions.
- v) Interpretivism: The case study approach employed in this research is rooted in the interpretive paradigm, adopting an inductive approach (Saunders et al., 2016:74). Interpretivist research seeks to grasp "the realm of human experience" (Cohen & Manion, 1994:36), asserting that reality is socially constructed (Mertens, 2005:12). Researchers within the interpretivist/constructivist framework highlight the significance of understanding participants' perspectives on the investigated situation (Creswell, 2003:8). They recognize how individuals' backgrounds and experiences shape the research process, emphasizing subjectivity and the social construction of knowledge.

In line with this philosophy, the study assumes that knowledge is subjective and arises from social constructions shaped by human experiences and interactions. To delve into the challenges faced by the university, particularly from the viewpoints of key stakeholders like senior management, students, and external partners, qualitative research methods, including interviews, was employed. Recognizing that financial reports alone cannot capture the diverse perceptions and interpretations of stakeholders, the research adopted an interpretive approach.

3.2.2 Research approach

The inductive research endeavours to develop new theories by observing reality and collecting primary data without being dependent on pre-existing theories. In contrast, deductive research, associated with the positivistic research paradigm, entails formulating hypotheses based on existing literature and testing them through empirical investigation using deductive reasoning (Saunders et al., 2016:74). The abductive approach stands apart from a blend of deductive and

inductive approaches. It proves valuable when the researcher aims to uncover novel insights or discoveries (Dubois & Gadde, 2002:559).

The research used the inductive approach to explore and derive broader themes or patterns from the specific challenges identified during the exploration of third-stream income generation.

3.2.3 Methodological choice

In choosing research methods, either a single data collection technique and corresponding analysis procedures (mono method) will be chosen, or a more than one data collection technique and analysis procedures to answer the research question (multiple methods).

Mono-method quantitative research involves the exclusive use of quantitative research methods throughout the entire research process, from data collection to analysis. According to Saunders *et al.* (2016), mono-method quantitative research means employing methods such as surveys, experiments, or structured observations that generate numerical data. The emphasis is on statistical analysis and the objective measurement of variables to draw conclusions.

Mono-method qualitative research exclusively employs qualitative research methods, emphasizing the collection and analysis of non-numerical data. According to Saunders *et al.* (2016) this approach involves qualitative methods such as interviews, focus groups, or content analysis. The focus is on exploring and understanding subjective experiences, meanings, and social phenomena without the use of statistical procedures typically associated with quantitative research.

The chosen methodological approach for this case study is a mono-method qualitative approach to maintain consistency and depth in the exploration of challenges. The mono-method qualitative approach is a research design employing a single methodological approach to gather and analyse data. It involves using a single qualitative method, such as interviews, observations, focus groups, or document analysis, throughout the entire research process (Creswell & Creswell, 2021:4). This case study will use interviews to gather the data.

3.2.4 Research strategy

According to Saunders *et al.* (2016) research can pursue the following strategies: Experimental; survey; case study; ethnography; narrative; grounded theory; action research; and archival research. A description of each strategy is outlined below:

- i) Experimental research involves manipulating one or more variables to observe their effect on another variable under controlled conditions. The aim is to establish cause-and-effect relationships.

- ii) Survey research collects data from a sample of individuals using standardized questionnaires or interviews. It aims to gather information about a population's characteristics, opinions, or behaviours.
- iii) A case study is an in-depth exploration of a particular instance or phenomenon within its real-life context. It provides detailed, context-specific insights.
- iv) Ethnography involves immersive, long-term observation and interaction with a social group or community. The goal is to gain a deep understanding of their culture, behaviours, and perspectives.
- v) Narrative research focuses on studying individuals' stories or experiences. It explores the meaning and interpretation of these narratives to understand the essence of lived experiences.
- vi) Grounded theory is an inductive research approach where researchers develop theories or concepts grounded in the data. It emphasizes generating new insights without preconceived notions.
- vii) Action research involves a cyclic process of planning, acting, observing, and reflecting, with the goal of solving practical problems in a specific context. It often engages participants in the research process.
- viii) Archival research uses existing records, documents, or data sets to answer research questions. Researchers analyse historical or archived materials to draw conclusions.

The use of a case study approach is justified for exploring the challenges faced by a university of technology in generating third-stream income. A case study is particularly suited to this research topic as it allows for an in-depth and holistic examination of a specific instance, in this case, the university of technology. This approach enables the researcher to investigate deeply into the unique contextual factors and intricacies of the university's situation, providing a comprehensive understanding of the challenges associated with third-stream income generation.

3.2.5 Time horizon

According for Rindfleisch *et al.* (2008:1) the cross-sectional and longitudinal are terms that refer to different approaches for collecting and analysing data over time. Cross-sectional research is concerned with the collection of data from a sample of respondents at one point in time, while longitudinal research is concerned with the collection of data from a sample of respondents over more than one point in time.

This research aimed to conduct a cross-sectional or short-term study to collect data at a specific point in time (Collis & Hussey, 2014:57). Universities are dynamic environments with ever-changing circumstances. A cross-sectional design accommodates the practical challenges of

studying the university by offering a real-time depiction of challenges without the complexities associated with tracking changes over an extended period.

3.2.6 Data collection and analysis

3.2.6.1 Data Analysis

According to Attride-Stirling (2001:387), thematic analysis is a qualitative research method used to identify and categorize underlying themes in a text or set of texts. The process involves extracting basic themes from the data, grouping similar themes into organizing themes, and ultimately capturing the central metaphors through global themes. Thematic networks are graphical representations that show the relationships and interconnectedness of these themes. The analysis involves breaking down the text, identifying explicit and implicit meanings, and using thematic networks as an organizational and illustrative tool. However, it is important to note that thematic networks are not the analysis itself but rather a means to aid researchers and readers in understanding the data.

Analysing data from structured questionnaires with open-ended qualitative questions require a systematic approach to identify, organize, and interpret the data. Since the data is recorded, it was transcribed into written text. Then, a coding system was used to categorize and label the responses based on their content or themes. A spreadsheet was used to capture the coded data in an organized manner, and the data was interpreted and reported.

3.2.6.2 Presentation of the Data

After collecting the data, an analysis was conducted, and the findings were comprehensible. This is achieved by utilizing straightforward tables, diagrams, and textual explanations, all aimed at improving the comprehension of the measured variables. Additionally, efforts were made to ensure proper spelling, grammar, and logical coherence throughout the research proposal.

3.3 PARADIGMATIC ASSUMPTIONS

The research paradigm serves as the fundamental underpinning of any study, as it outlines the core set of principles and convictions upon which the research is constructed. It provides a framework for the research by defining the ontology, epistemology, rhetoric, and methodological assumptions that shape the research (Saunders *et al.*, 2019).

3.3.1 Ontological Assumptions

According to Kivunja and Kuyini (2017:27), ontology, as a philosophical field of study, explores the assumptions researchers rely on to establish the coherence or existence of something or the fundamental nature or essence of the social phenomena under investigation. Philosophical assumptions regarding the nature of reality play a pivotal role in shaping the interpretation and understanding of the data collected. Among various assumptions, two ontological assumptions recognized are realism, which proposes that an objective reality exists independently of human

perception, and constructivism, which suggests that reality is shaped and interpreted by human perception.

This study considers constructivism relevant as it suggests that reality is constructed through human perception and interpretation (Saunders *et al.*, 2012:131). This assumption implies that the challenges the University faces in generating third-stream income are subjective and depend on the perceptions and interpretations of the individuals involved. The research focuses on understanding how stakeholders perceive and interpret these challenges and how their subjective realities shape their experiences and actions.

3.3.2 Epistemological Assumptions

Epistemology pertains to the process of obtaining knowledge and ascertaining truth or reality in research, as highlighted by Kivunja and Kuyini (2017:27). This notion is further corroborated by Cooksey and McDonald (2011:122), who assert that assumptions related to knowledge involve investigating its fundamental aspects such as its nature, forms, acquisition, and dissemination to others. Among the various assumptions, two epistemological assumptions noted are positivist and interpretive. According to Saunders *et al.* (2012:13) define positivism as knowledge can be objectively measured and verified through empirical data. This may involve collecting quantitative data, such as financial reports and statistical data, to identify and quantify the challenges faced by the University in generating third-stream income. Conversely, Interpretivism assumes that knowledge is subjective and socially constructed through human experiences and interactions. This will involve using qualitative research methods, such as interviews, to understand the challenges faced by the University from the perspectives of key stakeholders, such as senior management, students, and external partners. Considering that financial reports do not capture the perceptions and interpretations of stakeholders, it was essential to follow an interpretive approach.

3.3.3 Rhetorical Assumptions

The rhetorical assumption in research writing involves adopting an unbiased scientific perspective (Nagitta, 2021:10). This assumption emphasizes the importance of considering the audience and purpose of the research, including understanding their background, interests, and expectations. The tone, language, and approach used in the research were shaped accordingly. Additionally, the purpose of the research is clearly defined, with a focus on addressing challenges and providing solutions that align with the research topic.

3.3.4 Methodological Assumptions

The methodology is an essential component of the research paradigm. It deals with the 'how' aspects of the inquiry process (Khatri, 2020:1437). This is supported by Keeves (1997:386), who

states that methodology is the broad term used to refer to the research design, methods, approaches, and procedures used in a well-planned investigation to find out something.

Based on the nature and objective of the case study, mono-method qualitative research was considered. This is linked to the interpretivism paradigm and focuses on the subjective views and beliefs of the participants (Wiid & Digging, 2013:87).

3.3.5 Literature Study

The literature review was conducted by consulting the following sources, which include:

- i) Academic journals related to higher education administration, business management, and income generation in universities,
- ii) Reports, publications, and case studies from government organizations that focus on income generation strategies for universities, particularly in the South African context,
- iii) Conference proceedings and presentations from relevant conferences or seminars on higher education, business management, or income generation in universities; and
- iv) Institutional reports, strategic plans, and policy documents from a university of technology and other higher education institutions in South Africa provided information on their third-stream income generation efforts and challenges.

3.4 EMPIRICAL STUDIES

The qualitative study, which forms the empirical research component, was conducted exploratory. The aim was to identify challenges faced by a university of technology in generating third-stream income and make recommendations for the institution to enhance its capacity.

3.4.1 Target Population

According to Whitley and Kite (2018:485), the population can be defined as people to which the research outcome can be applied. Asiamah *et al.* (2017:1613) focus on determining the targeted population. The researcher should "identify and eliminate individuals of the general population who may not be able to share experiences and thoughts in ample clarity and depth. The researcher further argues that at the stage of specifying the target population, the researcher considers factors such as the ability to recall and relate to real-life experiences and the capacity to reason and communicate thoughts in an appropriate language logically. In addition, education and experience in the appropriate field should be considered in selecting staff members of the target population. The population is defined as the whole group in the research will be concluded.

For this case study, the participants selected could be all University employees. Unfortunately, not all university staff members are involved in the financial management of the University and understand how the University generates its revenue i.e., some academics and administrative staff

might have limited understanding in terms of different streams of university revenue and contribution to the total income. Therefore, staff who possess relevant knowledge about the financial modelling of the institution's income, understand the significance of financial sustainability for the University, and critical success factors for third-stream income were regarded as the targeted population. This provides valuable understanding and insights into the research topic. The staff was categorised as follows based on the judgment of the researcher: The Vice-Chancellor and its Deputy Vice Chancellors, Registrar, Executive Management, staff involved in institutional research and planning, staff involved in financial management and administration of the University (both services staff and academics), staff involved in alumnae office and Student Representatives. One campus was used as the source of these participants, and appointments were arranged to ensure that on-line interviews took place. Prior consent, as outlined in Appendix B, was obtained to participate in the research project and conduct interviews.

3.4.2 Sample Method

According to Singh (2014:3), sampling is the mean selection of a subset of the population of interest in a research study. There are two types of sampling techniques, namely probability and non-probability sampling. Ritchie and Lewis (2011:18) define a non-probability sample as characterised by the intentional selection of units that represent specific characteristics or groups present in the population being sampled. Taherdoost (2016:22) further supports the definition of non-probability sampling, which is commonly linked with case study research design and qualitative research. Non-probability sampling typically encompasses several methods, including quota, snowball, convenience, and purposive or judgmental. In case studies, the focus is often on utilizing data to depict and elucidate the experiences of the study's participants or samples. The researcher must ensure an adequate number of participants to expound upon the phenomenon under investigation effectively (Ishak & Abu Bakar: 2014:34). Martínez-Mesa *et al.* (2016:327) defines the non-probabilistic sampling as a sampling methodology in which the probability of selecting specific individuals from the intended population is non-existent. This approach does not yield a representative sample; thus, the outcomes observed are typically not applicable to the entire target population. For this study, purposive sampling was used to select a sample.

3.4.3 Sample Size

According to Shiimi (2020:30) who conducted a study on exploring the University of Namibia's opportunities for being an entrepreneurial university, the study focused on four centres that were responsible for research and entrepreneurship activities. Each centre's head and deputy head participated as they were considered to have more knowledge and spearhead all research and entrepreneurship activities within their respective centres. Likewise, Ngcobo (2021:55), conducted a study on the exploration of revenue sources for the financial sustainability of DUT; the study

focused on university management, Heads of Departments, academic lectures from the Faculty of Accounting and Informatics, the Faculty of Management Science, and finance officers. It should be noted that university of technology has a lean organizational structure at the senior management level, with a small community in terms of staff, students, and alumni. As a result, all key staff members, including the Student Representative Council and alumni, were proposed to participate in this research study. Twenty-one (21) participants were considered to possess relevant knowledge about the financial modelling of the institution's income, the significance of financial sustainability, and critical success factors for third-stream income. Below is the list of participants that could have been used in this case study:

- i) Vice-Chancellor and Principal – the office is accountable for the financial modelling of the University, which includes third-stream income, and is responsible for the financial sustainability of the University,
- ii) Deputy Vice-Chancellor and Principal for Resource and Planning: this portfolio has insight into the financial modelling of the University and manages university resources,
- iii) Deputy Vice-Chancellor and Principal for Teaching and Learning and Executive Deans and Head of Departments for four (4) faculties of the University – the portfolio is critical to the financial sustainability of the University and understands what other sustainability variables besides the core business.
- iv) Deputy Vice-Chancellor and Principal for Research, Innovation, Commercialization, and Internationalization, Director of Research and manager of Science Park – the portfolio is responsible for the Science Park of the university and research activities, and it understands the sources of income for the science park and research activities,
- v) Director Institutional Research and Planning – the portfolio assists with the planning of the University, including the projections of income and expenditure, and helps with monitoring the performance of the University against the strategic objectives,
- vi) Two directors of finance - the portfolio assists with reporting to DHET, compiling financial reports of the University, financial planning and analysis, and financial management,
- vii) Executive Director Operations and Logistics- to assess the readiness of infrastructure and impact of infrastructure on tuition income and responsible for the infrastructure of the University,
- viii) Executive Director Human Resource - to assess whether the University can attract employees that can bring opportunities to the University,
- ix) Representative from academics - to provide valuable insights and expertise from an academic perspective,
- x) Registrar – to understand the University's performance on enrolment targets,
- xi) President of Student Representative Council – to understand student initiatives on third-stream income and

xii) Alumni- to understand opportunities / possible support from alumni of the University.

At participant number 12, the point of saturation was reached, therefore not all participants were interviewed as the process was no longer adding value to the data collection. Since the sampling method and size have been justified, the following section focuses on data collection.

3.4.4 Point of Saturation

This section aims to evaluate the saturation level achieved in qualitative research, determine appropriate sample sizes, analyse strategies employed to assess saturation, and extract insights and recommendations from existing studies.

Mpofu (2020:1) defines saturation as a measure to alleviate the subjectivity in qualitative research, used as a yardstick for estimating sample size and assurance of rigor and quality. The researcher further confirmed four saturation forms: theoretical, data, thematic, and meaning. Theoretical saturation refers to the analysis of sampling, which focuses on a dimension of the theory that is fully supported by the data (Starks and Trinidad, 2007:1375). According to Fusch and Ness (2015:4), data saturation is achieved when there is enough information to replicate the study, obtaining new information is no longer possible, and further coding is not feasible. Given the small sample size of only 21 participants and the use of a reasonable questionnaire for this study, the likelihood of achieving theoretical or data saturation may be limited.

The study utilised two approaches to assess thematic saturation and meaning saturation. Hancock *et al.* (2016) argue that thematic saturation is reached when no new codes or themes emerge from the data, while Hennink *et al.* (2019) argue that meaning saturation relates to the richness and thickness of data, where no additional information emerges.

Thematic saturation was achieved when data collected from interviews was no longer creating new patterns and themes and this was at participant twelve.

3.4.5 Data Collection

As per Swain (2017: 141), data collection involves systematically collecting and quantifying information related to the research variables to address the research problem and objectives. The role of data collection holds significance in facilitating statistical analysis and encompasses various techniques for information acquisition, classified into two main categories: primary and secondary data (Douglas, 2015). Primary data refers to information gathered by the researcher first-hand. In contrast, secondary data pertains to data previously amassed or generated by external sources (Ajayi, 2017: 1). This distinction underscores the pivotal role of data collection in research endeavours. For this case study primary data was obtained from research participants.

3.4.5.1 Data Collection Techniques

This case study used structured questionnaires to engage participants. The questionnaires were sent to participants when making appointments for interviews and were completed during the team meeting (online). Interviews and completed questionnaires were kept for further analysis with the consent of the participants, as recorded. The questions listed on Annexure C have been informed by the literature review, taking note of main themes or patterns, identifying gaps and limitations in the current literature review, and considering the specific context of the University and its unique challenges.

3.5 DEMARCATION OF STUDY

Delimitation refers to the intentional boundaries established by the authors themselves. They revolve around the definitions chosen by researchers to demarcate the scope of their work, ensuring that the study's goals and objectives remain feasible. Consequently, researchers can control these delimitations (Theofanidis & Fountouki, 2018:157).

The South African Higher Education Sector has 26 universities administered by the DHET. These universities are situated across nine provinces and are classified into three categories: traditional universities, universities of technology, and comprehensive universities. There are six technology universities across five provinces; however, this case study will be limited to a university of technology in Gauteng, South Africa.

3.6 ETHICAL CONSIDERATIONS

The data gathered throughout the research endeavour has been handled with the utmost confidentiality. The anonymity of participants was, and still is, rigorously maintained, and the results of the research were utilised in a summarized manner to ensure the participants' anonymity. The personal information of participants was not revealed or is not accessible to anyone except for the supervisor and the researcher. The completed questionnaires are securely stored.

According to Golafshani (2003: 600) validity refers to the extent to which a research study accurately measures or assesses what it claims to measure. In the context of qualitative research, validity ensures that the findings are credible, trustworthy, and aligned with the research objectives. On the other hand, reliability addresses the consistency and repeatability of research findings. In both qualitative and quantitative research, reliability ensures that the study's results are dependable and can be replicated under similar conditions. For qualitative research, this implies that the methods and procedures used in the study are stable and would yield consistent results if repeated. Internal validity was employed as the focal point of this case study, concentrating

exclusively on university of technology and its employees. The research method captured what was supposed to be studied, and the findings are consistent and can be replicated.

According to Roshaidai (2018:30) ethical considerations are essential in all research areas; however, the concern becomes more critical in qualitative research, especially when vulnerable groups are involved. Qualitative researchers are responsible for ensuring participants can participate in the study and protecting the participants' identity throughout the recruitment and research process. In addition, the research must emphasise the importance of transparent and honest research reporting without deception readers.

Permission was obtained to conduct research at the university of technology from the Research Department, and Gatekeeper is attached in Appendix A. Participants were asked to provide their consent before the data collection process. They were informed about the research's purpose, their involvement reasons, and their right to withdraw. The benefits and risks of their participation will also be explained. To ensure confidentiality, their identity and personal information were protected using codes, and their responses were kept highly secure and solely used for this research.

Since the researcher is a university employee, the following steps were taken to address the issue of power relationships in conducting research:

- i) The researcher-maintained objectivity throughout the research process to ensure that the research adhered to ethical guidelines and principles, which included obtaining informed consent from participants, protecting their privacy and confidentiality, and avoiding any actions that could exploit or harm them.
- ii) Before obtaining consent, the researcher scheduled an on-line meeting with each potential participant and provided a clear understanding of the research project, its goals, procedures, and what is expected of the potential participants. Subsequently, the researcher explained the contents of the consent form and allowed potential participants to ask questions for clarity. Potential participants were given time to read and comprehend the form. This ensured that potential participants would make informed decisions. If potential participants agreed to participate in the research, the researcher requested them to indicate on the consent form, share it with the researcher via secured email, and keep a copy for their records.
- iii) The researcher-maintained records of all informed consent forms and any communication related to the consent process to ensure ethical procedures were followed.

Throughout the study, the researcher respected participants' autonomy and was prepared to address any concerns or changes in their willingness to participate. The researcher maintained ongoing communication with participants to keep them updated on the research progress and address any questions or concerns. Furthermore, the researcher ensured that all collected data is stored securely, and that participants' confidentiality was maintained. The researcher involved multiple stakeholders to comprehensively understand the challenges faced in generating third-stream income. The researcher fostered a safe environment by encouraging open communication, assuring participants that their input is treated with respect and confidentiality, and avoiding hierarchical biases.

As part of ethical consideration, the Protection of Personal Information Act 4 of 2013 (POPI Act) was considered. POPI Act is a South African data protection law with significant data collection, management, and privacy implications. In the context of exploring the challenges faced by a university of technology in generating third-stream income, the significance of the POPI Act can be summarized as follows:

The POPI Act serves as a legal framework in South Africa governing the handling, processing, and protecting of personal information. It establishes principles and requirements that organizations, including universities, must adhere to when dealing with individuals' data.

The Act strongly emphasizes safeguarding the privacy of individuals' personal information.

The research involves collecting data from various sources, including staff, alumni, and students. The researcher is committed to ensuring that personal data is managed in full compliance with the Act. In this research, informed consent was obtained from all participants, providing clear information about the purpose of data collection, the types of data to be collected, and how it will be managed.

To protect participants' identities, unique codes were assigned to replace their names or identifying information. Electronic data, including interview recordings, are securely stored on an external hard drive, accessible only through a password known to the researcher and supervisor. Only the researcher and supervisor will have access to identifiable participant information. Additionally, when necessary, data will be summarized to prevent individual participant identification. During the consent process, participants are informed about the measures in place to safeguard their confidentiality. All communications between researchers and participants are conducted through secured email channels.

The researcher strictly collects data that is relevant to the research, ensuring the principles of data minimization are followed. It is important to note that the research acknowledged the potential penalties for non-compliance with the POPI Act, which may include fines and legal actions.

3.7 SUMMARY

In conclusion, this chapter has provided an overview of the research methodology utilized to explore challenges faced by a university of technology. To summarize, the research methodology adopts interpretivism as its guiding paradigm, highlighting the subjective and socially constructed nature of knowledge. The chosen inductive approach aims to formulate new theories through first-hand observations and primary data collection, avoiding reliance on existing theories. The consistent use of mono-method qualitative research ensures depth in examining challenges. The qualitative study centres on an exploratory analysis of the challenges faced by the university in generating third-stream income. Furthermore, the research focuses on a cross-sectional, short-term study to collect data at a specific moment in time. Data collection involved interviews with research participants, and the chapter also addresses the demarcation of the study, along with considerations of validity and reliability.

CHAPTER 4

PRESENTATION AND ANALYSIS OF THE RESULTS

4.1 INTRODUCTION

This chapter aims to address the following secondary objectives: explore and categorize the various sources of third-stream income that the university can generate, including the benefits and challenges of each income stream; examine successful case studies and best practices of universities that have efficiently generated third-stream income; conduct an assessment of the role of technology and innovation in the generation of third-stream income within a university of technology; and perform a SWOT analysis of the university's existing approach to third-stream income generation, encompassing an evaluation of current policies and regulations.

This chapter then presents the analysis of the results and findings derived from the measuring tool and the interview questionnaire found in appendix C, which served as the means to gather responses aimed at addressing the objectives and inquiries outlined in this research.

In addressing the multifaceted landscape of third-stream income generation in a university of technology, the research delved into a series of interconnected questions. Firstly, an exploration was conducted to identify the diverse types of third-stream income achievable by a university of technology. Subsequently, the potential benefits associated with each income stream were investigated, providing a nuanced understanding of the advantages these endeavours could bring. In tandem, the research sought to unravel the challenges commonly linked with the generation of these income streams, acknowledging the complexities inherent in such pursuits. Furthermore, the study examined success stories from other universities that have adeptly navigated this terrain, shedding light on best practices and strategies that might be transferrable. A keen focus on the role of technology and innovation in shaping third-stream income emerged as a critical aspect, along with an exploration of relevant trends and emerging opportunities for consideration by the university of technology. The investigation then turned inward, employing SWOT analysis to evaluate university of technology's current approach to third-stream income generation, discerning its strengths, weaknesses, opportunities, and threats. Lastly, the research addressed the regulatory landscape, scrutinizing policies that impact third-stream income generation at the university of technology. This comprehensive exploration lays the foundation for informed decision-making and strategic planning in enhancing the financial sustainability of university of technology.

This chapter is organised based on the sections outlined in the questionnaire (Appendix C).

4.2 CATEGORY 1: TYPES OF THIRD-STREAM INCOME

4.2.1 Different types of third-stream income

The first question was understanding the different types of third-stream income that can be generated by a university of technology.

Thematic groupings include:

- T1 - Educational Services
- T2 - Research and Innovation
- T3 - Commercial and Business Ventures
- T4 - Digital and Educational Technology
- T5 - Campus Resources Utilization
- T6 - External Funding, Endowments, and Donations
- T7 - Collaborations and Partnerships

Table 1: Types of Third-Income Stream

Third Income Streams	Occurrences
T2 - Research and Innovation	13
T3 - Commercial and Business Ventures	11
T1 - Educational Services	9
T5 - Campus Resources Utilization	9
T6 - External Funding, Endowments, and Donations	3

T4 - Digital and Educational Technology	2
T7 - Collaborations and Partnerships	2

Interpretation and discussion of results

The analysis of the different types of third-stream income that the university of technology can generate reveals a diverse landscape with varying levels of emphasis on each type. The most prominent area, with the highest number of occurrences, is Research and Innovation (T2). This indicates a strong inclination towards leveraging research capabilities as a significant source of third-stream income. This emphasis is logical given the nature of a technology-focused university where research, especially in cutting-edge technologies and innovations, can attract substantial external funding and commercial opportunities.

The next most frequently cited area is Commercial and Business Ventures (T3). This suggests a keen interest in entrepreneurial activities, including the development of business models that capitalize on the university's intellectual property, expertise, and resources. The presence of this theme aligns with a growing trend in university of technology to engage more actively in the commercialization of their research and knowledge.

Educational Services (T1) and Campus Resources Utilization (T5) are also notably significant, each with nine occurrences. This reflects the recognition of the potential in offering specialized educational services, such as short courses and professional development programs, and the utilization of campus facilities and resources for income-generating activities. These areas represent traditional yet evolving domains where university of technology have existing strengths to leverage.

In contrast, Digital and Educational Technology (T4), External Funding, Endowments, and Donations (T6), and Collaborations and Partnerships (T7) are less emphasized. The lower occurrence of Digital and Educational Technology, as well as Collaborations and Partnerships, could indicate either a nascent stage in these areas or a need for further development and strategic focus. The limited emphasis on External Funding, Endowments, and Donations might reflect a focus on more direct and active income generation strategies rather than reliance on external financial support.

Overall, the data suggests that while university of technology is exploring a range of third-stream income avenues, there is a clear inclination towards leveraging core strengths in research and innovation, along with commercial and business ventures. The comparatively lower focus on certain areas might also point to untapped opportunities or areas requiring strategic enhancement to realize their full potential in contributing to third-stream income.

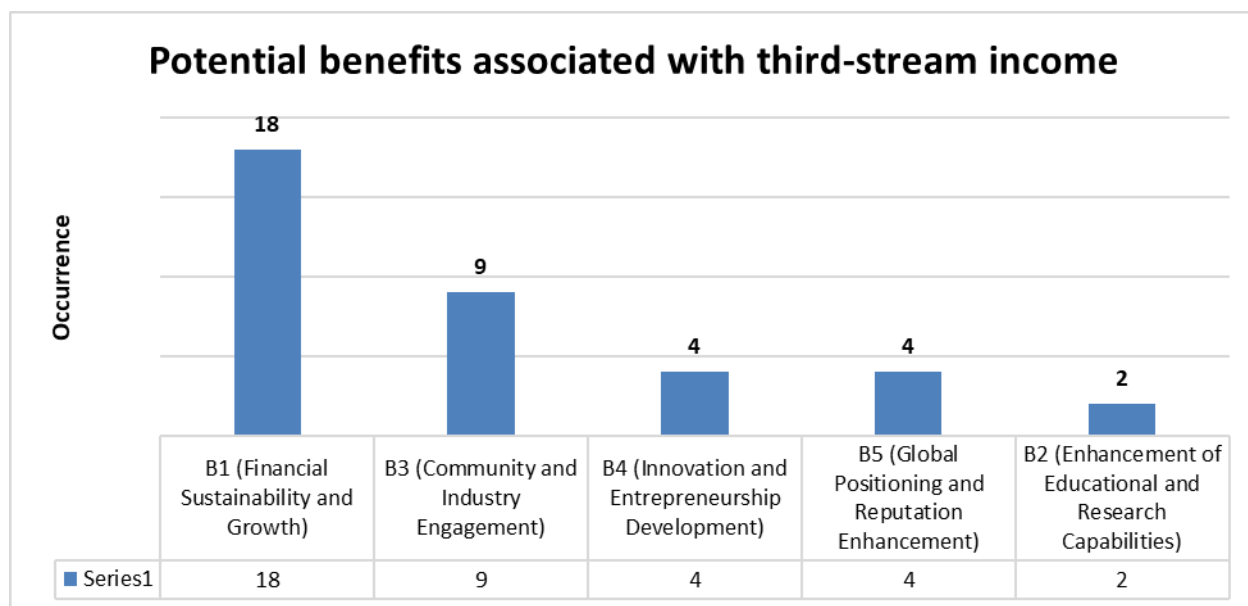
4.2.2 Potential benefits associated with third-stream income

The second question was understanding the potential benefits associated with each type of third-stream income.

Thematic groupings include:

- B1 - Financial Sustainability and Growth
- B2 - Enhancement of Educational and Research Capabilities
- B3 - Community and Industry Engagement
- B4 - Innovation and Entrepreneurship Development
- B5 - Global Positioning and Reputation Enhancement

Graph 2: Potential benefits associated with third-party income



Interpretation and discussion of results

The result offers a revealing perspective on the priorities and perceived advantages for a university of technology. The data indicates a strong emphasis on Financial Sustainability and Growth (B1) with 18 occurrences, underscoring the crucial role of third-stream income in bolstering the financial

health and expansion potential of university of technology. This focus reflects a pragmatic approach where the primary objective is to ensure financial stability and growth, vital for sustaining and enhancing the university's core academic and research missions.

In contrast, the Enhancement of Educational and Research Capabilities (B2) is noted only twice, suggesting that while recognized, this benefit may not be the primary driver for pursuing third-stream income. This could imply that while educational and research enhancements are valued, they are perhaps seen as secondary benefits or natural outcomes of financial growth and stability.

Community and Industry Engagement (B3) is recognized as a significant benefit, indicated by its nine occurrences. This highlights an awareness of the broader impact of third-stream income activities, especially in terms of fostering connections with local communities and industries. Such engagement not only strengthens the university's role in societal and economic development but also potentially opens up new avenues for collaboration and income generation.

Innovation and Entrepreneurship Development (B4) and Global Positioning and Reputation Enhancement (B5) both received four mentions. This parallel emphasis signals a recognition of the role third-stream income can play in driving innovation and entrepreneurship within the university environment, as well as enhancing its global standing and reputation. While not the foremost benefits, these aspects are clearly acknowledged as important for a university's overall progress and prestige.

The analysis suggests a strong focus on financial aspects, with other benefits like community engagement, innovation, and global positioning also being recognized but to a lesser extent. This could indicate a strategic approach where financial imperatives are prioritized, with other benefits being considered important but secondary outcomes. It also reflects a multifaceted understanding of the value of third-stream income, encompassing not just financial gains but also broader impacts on education, community relations, innovation, and global presence.

4.2.3 Challenges typically associated with generating third-stream income

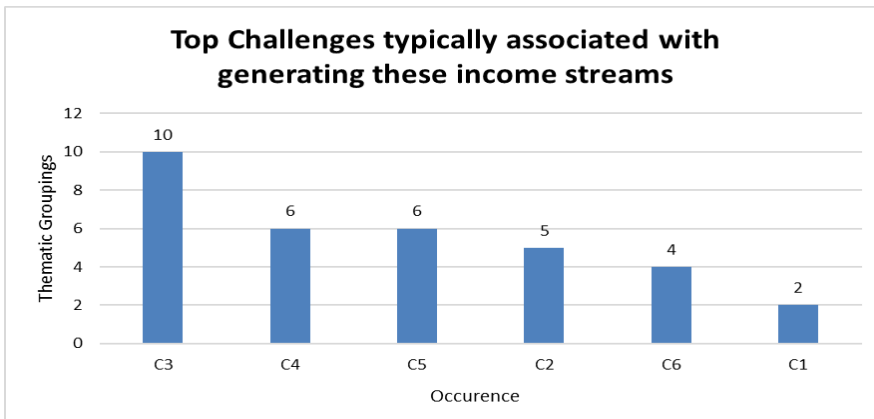
The third question was understanding the challenges are typically associated with generating these income streams.

The themes include:

- C1 - Regulatory and Compliance Challenges
- C2 - Resource and Capacity Constraints
- C3 - Cultural and Organizational Resistance

- C4 - Financial Risk and Sustainability Concerns
- C5 - Market Competition and Partnership Dynamics
- C6 - Reputation and Public Perception Management

Graph 3: Top challenges are typically associated with generating these income streams



Interpretation and discussion of results

Graph 3 provides critical insights into the areas requiring attention and strategy formulation. The most striking observation is the prominence of cultural and organizational resistance, suggesting that the most significant barriers to embracing third-stream income activities are internal. This resistance could be rooted in a traditional mindset or a lack of alignment between the university's core academic mission and its commercial pursuits.

The data also highlights the considerable challenges posed by financial risk and sustainability concerns, alongside market competition and partnership dynamics. This underlines the need for strategic planning and risk management in third-stream activities. The university of technology needs to carefully assess and balance potential financial risks with rewards, ensuring that new initiatives are sustainable and competitive in the market.

The reputation and public perception management also emerge as notable challenges. This indicates a recognition of the impact that third-stream income activities can have on a university's brand and public image. It underscores the importance of aligning these activities with the university's reputation and values.

Resource and capacity constraints are significant but comparatively fewer dominant challenges. This points to the need for adequate resources, including infrastructure and skilled personnel, to support the development of third-stream income projects. It also implies that while resources are a constraint, they are perhaps not the most critical barrier compared to internal cultural challenges.

Finally, regulatory and compliance challenges, while mentioned the least, are still essential considerations. This could indicate that these areas are relatively well-managed or not perceived as immediate barriers compared to other challenges.

In summary, the data underscores the importance of internal university dynamics in the pursuit of third-stream income. The need for cultural change, strategic alignment, risk management, and effective use of resources and capabilities appears to be at the forefront of successfully navigating the landscape of third-stream income generation. This suggests a paradigm shift within the universities, focusing as much on internal restructuring and cultural adaptation as on external market strategies and collaborations.

4.3 CATEGORY 2 – BEST PRACTICES FROM OTHER UNIVERSITIES

4.3.1 Universities who successfully generated third-stream income

The first question was understanding examples of universities that have successfully generated third-stream income.

The following universities are mentioned as potential benchmarks: Cape Peninsula University of Technology (CPUT), Nelson Mandela University, North-West University, Stellenbosch University, University of South Africa (UNISA), University of KwaZulu Natal (UKZN), University of Cape Town (UCT), University of Free State (UFS), University of Johannesburg (UJ), University of Pretoria (UP), University of South Africa (UNISA), University of the Witwatersrand (WITS), University of Western Cape (UWC). Notable mentions include Business schools like Gordon Institute of Business Science, innovative centres, Special Economic Zone, and more as other inspiring institutes to draw inspiration from. A summary of their frequency is mentioned on table 2 with top universities being UCT, UFS, and WITS.

Table 2: Referenced universities

Referenced universities	Occurrences
OTHERS (Business schools, centres etc)	7
University of Cape Town (UCT)	3
University of Free state (UFS)	3

University of the Witwatersrand (WITS)	3
University of Johannesburg (UJ)	2
University of Pretoria (UP)	2
University of South Africa (UNISA)	2
Stellenbosch	2
Cape Peninsula University of Technology (CPUT)	1
Nelson Mandela University	1
Northwest University	1

Interpretation and discussion of results

The findings reveal that business schools stand out as exemplary models for generating third-stream income, surpassing traditional universities, which were mentioned either two or three times. Business schools demonstrate several notable advantages, including global recognition, diverse program offerings, industry-relevant curriculum, extensive networking opportunities, entrepreneurial support, research opportunities, professional development services, and corporate partnerships. These factors collectively contribute to the effectiveness of business schools in cultivating revenue streams beyond conventional funding sources.

On the other hand, traditional universities were acknowledged for their added advantage in research activities. This includes generating revenue through subsidies and commercialization of research outcomes. While traditional universities may not match the business schools in certain aspects, their emphasis on research serves as a valuable avenue for income generation and contributes to the academic and economic landscape.

In essence, the results underscore the distinct strengths of business schools in diversifying income sources, emphasizing the importance of their global orientation, diverse offerings, and strategic partnerships. Traditional universities, while excelling in research-related activities, may benefit from incorporating some of the successful practices observed in business schools to enhance their overall financial sustainability.

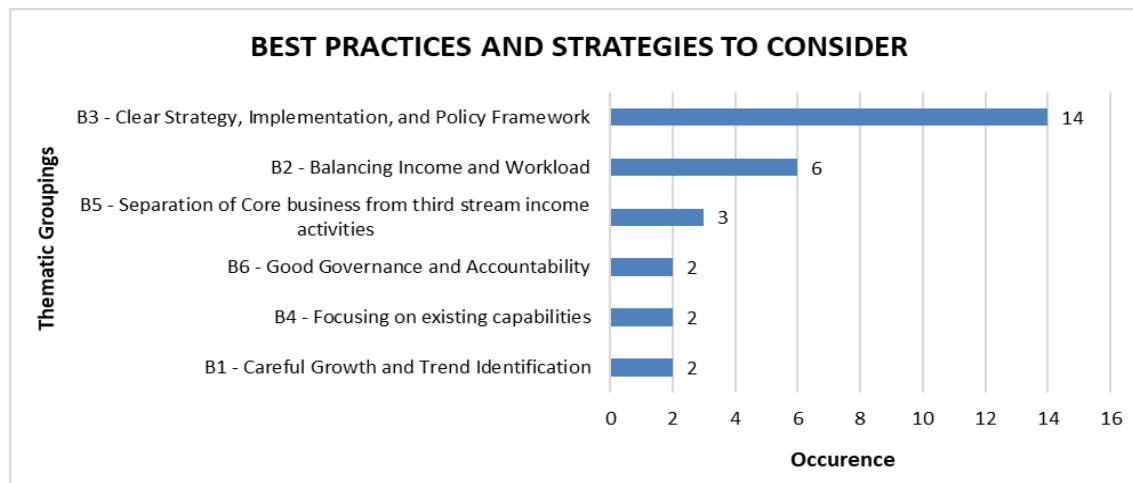
4.3.2 Best practices

The second question was understanding best practices or strategies these universities have employed that could be applied at university of technology.

The second thematical grouping in category 2 is provided below:

- B1 - Careful Growth and Trend Identification
- B2 - Balancing Income and Workload
- B3 - Clear Strategy, Implementation, and Policy Framework
- B4 - Focusing on existing capabilities
- B5 - Separation of Core business from third stream income activities
- B6 - Good Governance and Accountability

Graph 4: Best practices and strategies to consider



Interpretation and discussion of results

The data on best practices and strategies used by other universities presents a rich source of insights for university stakeholders and the researcher. These insights can inform decisions and actions aimed at improving the income generation efforts of the university.

Firstly, the recurring theme of "Clear Strategy, Implementation, and Policy Framework" (B3), mentioned 14 times, underscores the critical importance of having a well-defined and transparent approach to income generation. This includes not only setting clear objectives but also establishing effective policies and procedures for implementation. The prevalence of this theme suggests that universities achieving success in income generation prioritize strategic clarity, offering a compelling lesson for the researcher.

Secondly, "Balancing Income and Workload" (B2), cited six times, highlights the delicate equilibrium that universities must strike between pursuing income generation opportunities and ensuring that faculty and staff workload remains manageable. This theme indicates that successful universities have found ways to harmonize these aspects, serving as an essential consideration for the researcher when formulating recommendations.

The recurring mention of "Separation of Core Business from third-stream income activities" (B5), three times in the data, indicates that some universities excel in income generation by carefully distinguishing their primary academic functions from income-generating endeavours. This strategy could imply that such separation can mitigate conflicts of interest and ensure a clear focus on both academic excellence and income generation.

The data also highlights "Careful Growth and Trend Identification" (B1) and "Focusing on existing capabilities" (B4), each appearing twice. These themes underscore the significance of universities being prudent in identifying growth opportunities and leveraging their current strengths when venturing into income generation.

Finally, the theme "Good Governance and Accountability" (B6), mentioned twice, emphasizes the role of governance structures and accountability mechanisms in income generation success. The data indicates that universities with robust governance frameworks tend to perform well in income generation activities.

In summary, the data offers a nuanced understanding of the best practices and strategies applied by successful universities in income generation. The recurring themes suggest that clear strategy, workload management, separation of core functions, prudent growth, leveraging existing capabilities, and strong governance are pivotal. These insights equip the researcher with valuable knowledge to make well-informed recommendations tailored to the university's unique context and goals.

4.4 CATEGORY 3 - ROLE OF TECHNOLOGY AND INOVATION

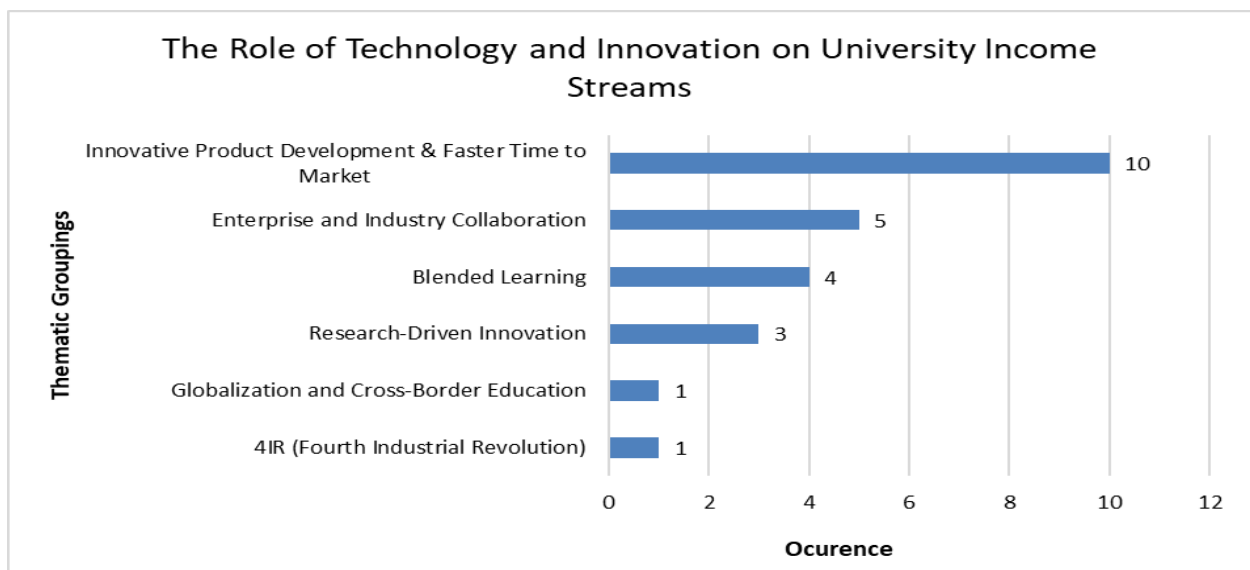
4.4.1 The role of technology and innovation

The first question was understanding how technology and innovation plays a role in generating third-stream income at universities.

The thematic groupings for this category are as follows:

- T1 - Innovative Product Development & Faster Time to Market
- T2 - 4IR (Fourth Industrial Revolution)
- T3 - Blended Learning
- T4 - Globalization and Cross-Border Education:
- T5 - Research-Driven Innovation:
- T6 - Enterprise and Industry Collaboration

Graph 5: The role of technology and innovation



Interpretation and discussion of results

The most prominent theme, 'Innovative Product Development & Faster Time to Market', noted 10 times, signifies a strategic focus on converting research outputs into market-ready products. This is exemplified by participant 5's "Development and commercialization of products" and Participant 8's "Producing actual products for sale," which underscore a shift towards entrepreneurial activities within academia.

The theme '4IR (Fourth Industrial Revolution)', although mentioned only once, introduces an awareness of the impact of emerging technologies on education and research sectors. This single mention, despite its infrequency, reflects a recognition of the transformative potential of 4IR technologies, albeit an area perhaps still in its infancy in academic contexts.

'Blended Learning', with four mentions, illustrates the merging of traditional and digital learning methods. Participant 7's focus on "Blended learning environments" exemplifies this trend, indicating a strategic adaptation towards more versatile and accessible education models in line with global digital education trends.

The 'Globalization and Cross-Border Education' theme, mentioned once, highlights the potential for extending educational outreach internationally. This theme, though less emphasized, points to the opportunities in leveraging academic expertise across borders, a notion that may still be in the exploratory stage for many institutions.

'Research-Driven Innovation', appearing three times, stresses the importance of aligning research with innovative commercial outputs. Participant 9's approach to "Creating and delivering new products and services" is indicative of this theme, emphasizing the transition of research from purely academic endeavours to key drivers of market-relevant innovation.

These findings paint a picture of a dynamic academic landscape where technology and innovation are pivotal in creating diverse income streams. The focus on quick product development and commercialization indicates an evolving academic culture, now more aligned with market demands and entrepreneurial practices. Conversely, the lesser emphasis on themes like 4IR and cross-border education might signal either a cautious engagement with these concepts or their status as emerging trends in the context of third- stream income generation.

In essence, the dataset reveals university actively engaging with technological advancements and innovation to diversify and enhance its financial avenues. The highlighted instances from participants' responses corroborate a movement towards integrating academic pursuits with market-oriented and globally conscious strategies.

4.4.2 Relevant trends and emerging opportunities

The second question was understanding relevant trends and emerging opportunities in this area that university of technology should consider.

The thematic groupings for this category are as follows:

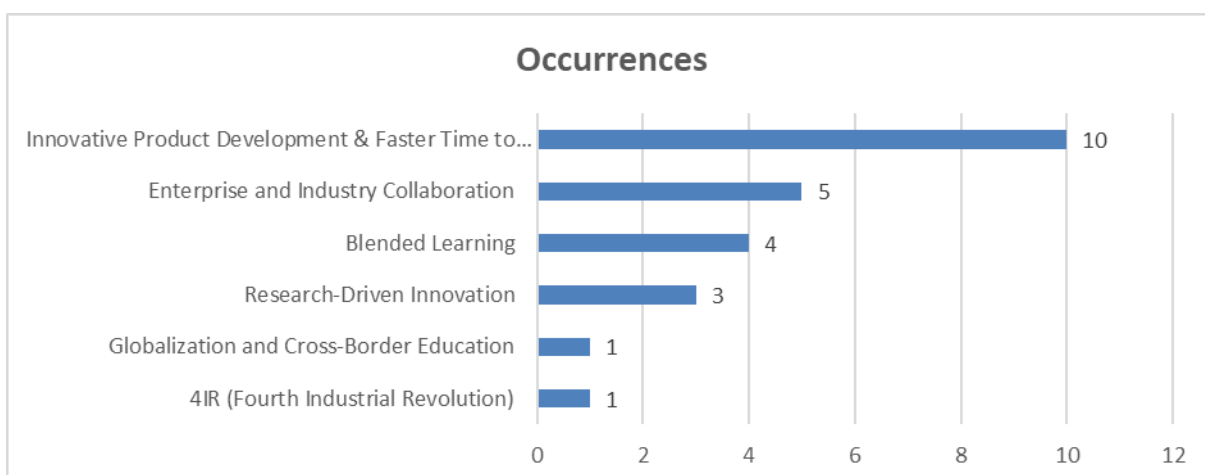
- D1- 4IR (Fourth Industrial Revolution)

- D2- Globalization and Cross-Border Education
- D3- Research-Driven Innovation
- D4- Blended Learning
- D5- Enterprise and Industry Collaboration
- D6- Innovative Product Development & Faster Time to Market

Table 3: Relevant trends and emerging opportunities

Theme	Occurrences
4IR (Fourth Industrial Revolution)	1
Globalization and Cross-Border Education	1
Research-Driven Innovation	3
Blended Learning	4
Enterprise and Industry Collaboration	5
Innovative Product Development & Faster Time to Market	10

Graph 6: Relevant trends and emerging opportunities



Interpretation and discussion of results

The high occurrence of innovative product development and faster time to market emphasizes the need for the university to strategically focus on innovation and swift commercialization. By investing in innovation hubs, technology transfer initiatives, and entrepreneurship programs, the university can create an ecosystem that not only fosters creativity but also accelerates the transformation of ideas into market-ready products and services. This approach aligns with the evolving market demand for cutting-edge solutions and positions the university as a hub for innovation, attracting both students and external stakeholders interested in pioneering advancements.

The prevalence of "Enterprise and Industry Collaboration" signifies the potential for the university to form strategic alliances with businesses. Actively seeking collaborations for joint projects, consultancy services, and knowledge exchange can lead to mutually beneficial relationships that not only enhance the university's reputation but also contribute to sustained third-stream income. By engaging in collaborative initiatives with industries, the university can tap into external funding sources, access real-world problem-solving opportunities, and ensure that its offerings remain relevant and applicable to the evolving needs of the business sector.

The theme of "Blended Learning" highlights the growing importance of flexible learning models. By exploring opportunities in online education, professional development courses, and customized training programs, the university can diversify its income streams and cater to a broader audience. This strategy not only addresses the changing preferences of students but also taps into the global demand for continuous learning. By offering flexible and customized learning experiences, the university can attract a diverse student base and generate revenue from various educational offerings.

The recurring theme of "Research-Driven Innovation" emphasizes the importance of leveraging research for income generation. Prioritizing initiatives that translate research outcomes into tangible products, services, or solutions enhances the university's capacity to attract external funding and form strategic partnerships. This approach positions the university as a research powerhouse, contributing not only to academic knowledge but also to practical solutions that have real-world applications. It strengthens the university's appeal to funding agencies and industry partners seeking innovative solutions.

The acknowledgment of "Globalization and Cross-Border Education" suggests an awareness of the potential opportunities in reaching a global audience. By exploring international collaborations, partnerships, and distance learning programs, the university can tap into the vast potential of a

broader student base. This strategy aligns with the global trends in higher education, where institutions are increasingly reaching beyond national borders. It opens avenues for attracting international students, forming academic partnerships, and participating in collaborative research projects on a global scale.

The recognition of the Fourth Industrial Revolution (4IR) as a trend indicates the need for the university to align its third-stream income strategies with technological advancements such as automation, artificial intelligence, and data analytics. Analysis: This strategic alignment ensures that the university remains at the forefront of technological advancements, catering to the demands of a rapidly evolving job market. It positions the institution as a leader in preparing students for the skills required in the digital era and attracts partnerships with tech-driven industries.

4.5 CATEGORY 4 – CURRENT APPROACH and SWOT ANALYSIS

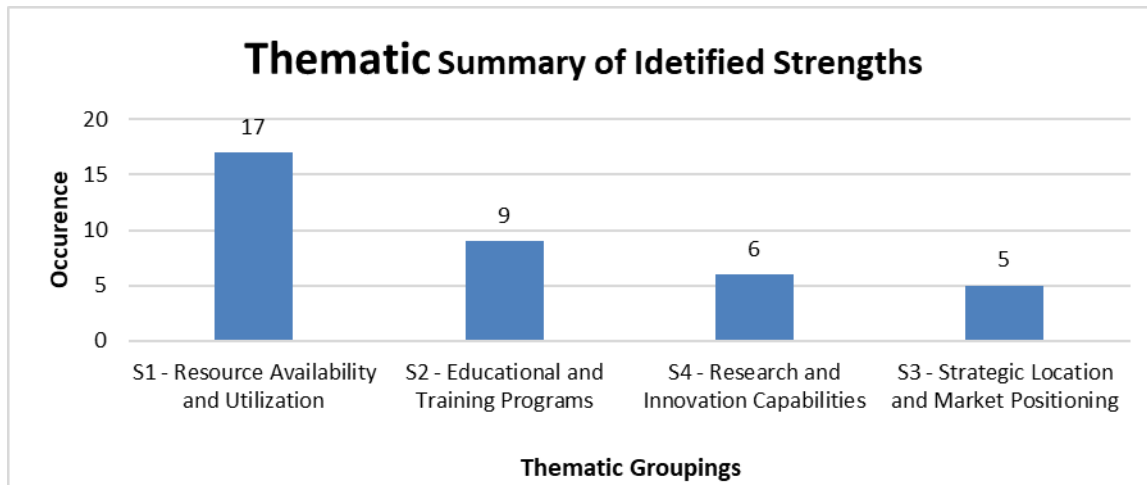
The question was understanding the current approach of the university of technology to generate third-stream income using SWOT analysis.

Table 4: Thematic groupings for current approach and SWOT analysis:

THEMATIC GROUPINGS	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Theme 1	S1 - Resource Availability and Utilization	W1- Internal Culture and Governance	O1 - Market Expansion and Partnerships	TH1 - Competition and Market Dynamics
Theme 2	S2 - Educational and Training Programs	W2 - Financial Constraints	O2 - Educational Program Enhancement	TH2 - Economic and Regulatory Challenges
Theme 3	S3 - Strategic Location and Market Positioning	W3 - Operational Inefficiencies	O3 - Resource Optimization	TH3 - Public Perception and Reputation

Theme 4	S4 - Research and Innovation Capabilities	W4 - Brand Image and Visibility	O4 - Community and Industry Engagement	TH4 - Technological Disruption
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Graph 7: Strengths



Interpretation and discussion of results

The analysis of the strengths reveals a comprehensive picture of the institution's core competencies and assets. The most pronounced strength, Resource Availability and Utilization, with 17 occurrences, indicates a well-established perception of the university as being resource rich. This encompasses not just physical and financial resources, but also human capital, which is essential for driving all university functions, from academic to administrative and beyond.

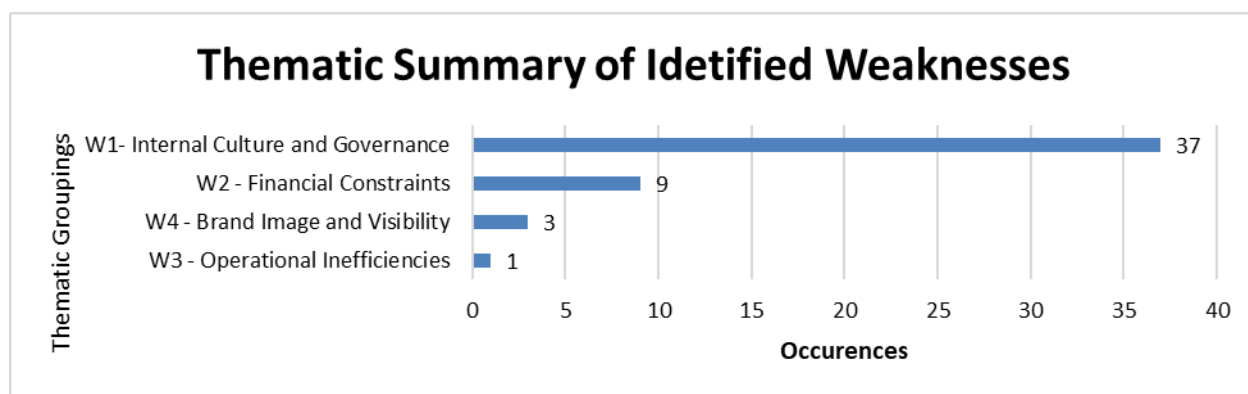
The significant mention of Educational and Training Programs as a strength underlines the university's commitment to delivering high-quality and relevant educational offerings. This suggests that the institution's academic programs are well-regarded, align with market needs, and are likely a key factor in attracting and retaining students. It also implies a potential for these programs to evolve and adapt in response to changing educational landscapes and market demands.

Strategic Location and Market Positioning, though less frequently mentioned, still plays a vital role in the university's strengths profile. This points to the advantage of geographical positioning and how it benefits the university in terms of accessibility, collaborations, and relevance in the regional and national context. It also reflects a strategic awareness of the university's standing and reputation in the wider academic and research community.

Research and Innovation Capabilities being identified as a key strength highlights the university's focus on cutting-edge research and its capacity for innovation. This is particularly crucial for a technology-focused institution where advancements and breakthroughs can significantly impact not only academic standing but also practical applications in the wider world.

Collectively, these strengths form a robust foundation for the university. They reflect an institution well-equipped with resources, strong in its educational and training offerings, strategically positioned in the market, and committed to research and innovation. This combination of strengths positions the university favourably for future growth, adaptation to emerging challenges, and seizing opportunities in the ever-evolving landscape of higher education and technology.

Graph 8: Weaknesses



Interpretation and discussion of results

The result provides a revealing snapshot of the internal challenges that need addressing. The dominant theme of Internal Culture and Governance, with its substantial 37 occurrences, indicates that the most significant barrier to progress and adaptation lies within the university's own institutional structure and culture. This could manifest in various forms, from rigid bureaucratic procedures that slow down decision-making to a resistance to change that hampers innovation and responsiveness. It highlights a critical need for cultural transformation and governance reforms to foster a more agile and forward-thinking environment.

Financial Constraints, emerging as the second most cited weakness, underscores the perennial challenge of limited financial resources. Despite having robust resources in other areas, financial limitations remain a hurdle, impacting the university's ability to fund new initiatives, expand existing programs, or invest in state-of-the-art technology and facilities.

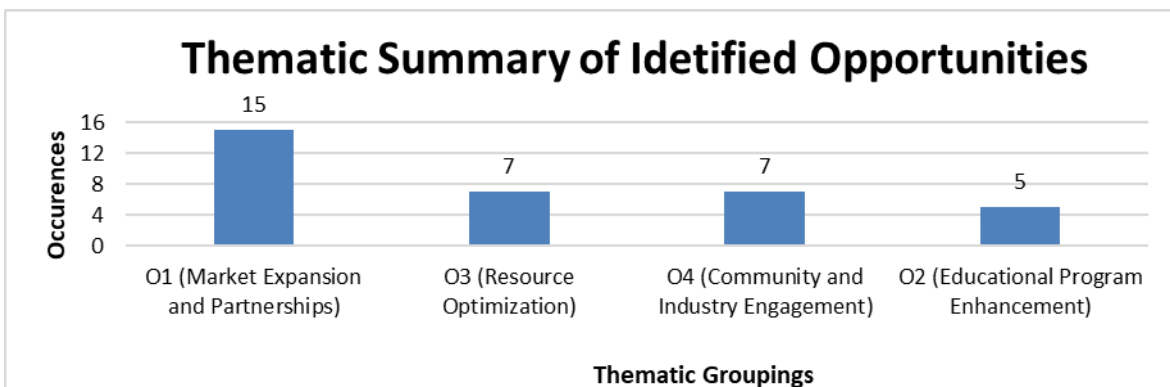
Operational Inefficiencies, though mentioned only once, still represent an area of concern. Even minor inefficiencies in operations can cumulatively affect the university's effectiveness and ability to

deliver on its mission. Addressing these inefficiencies is essential for streamlining processes and enhancing overall productivity especially concerning the challenges associated with generating third-stream income.

Brand Image and Visibility, although not a primary concern, are nonetheless acknowledged as areas needing improvement. In the context of researching the challenges faced by a university of technology in generating third-stream income, it is crucial for the institution to uphold a robust and recognizable brand. This is essential in a competitive academic and research environment as it helps attract top talent, secure partnerships, and improve the overall reputation of the university.

In essence, the data paints a picture of a university grappling with internal challenges that hinder its ability to fully capitalize on its strengths. The focus must be on internal restructuring and cultural shifts to create a more conducive environment for growth, innovation, and adaptability. Addressing these weaknesses is key to unlocking the university's potential and ensuring its success in an increasingly competitive and fast-paced educational landscape.

Graph 9: Opportunities



Interpretation and discussion of results

The summary count of themes in the Opportunities section of the SWOT analysis shows key areas where the university, see potential for growth and advancement. The prominence of Market Expansion and Partnerships indicates a strategic recognition of the importance of extending reach and forging new alliances. This trend suggests that universities are increasingly looking to broaden their impact and influence, both geographically and through diverse collaborations.

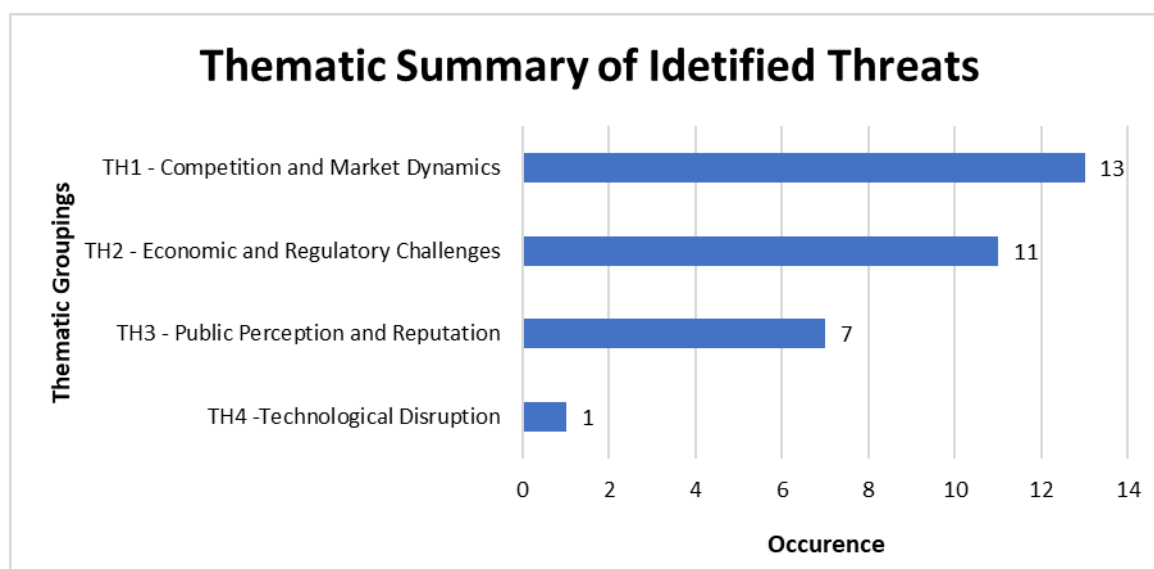
The comparatively lower emphasis on Educational Program Enhancement suggests a targeted rather than a widespread approach to evolving educational offerings. The focus appears to be on specific enhancements that align with current trends and market needs, rather than an overhaul of

educational programs. This approach reflects a nuanced understanding of the need to stay relevant and competitive in a rapidly changing educational landscape.

Resource Optimization and Community and Industry Engagement, both receiving equal emphasis, underscore a balanced approach to leveraging existing assets and strengthening external relationships. This dual focus indicates an understanding that maximizing internal efficiencies and fostering external connections are both crucial for sustainable growth. The emphasis on these areas suggests an awareness of the importance of efficient resource management and the value of strong industry and community ties.

The data also reflects a strategic mindset where the focus is on opportunities that align closely with the core strengths and objectives of the university. It highlights a comprehensive perspective that considers various dimensions of growth, from financial and resource management to community engagement and educational quality. The analysis suggests a forward-looking approach, aiming to enhance the university's reach, impact, and capabilities in a holistic manner.

Graph 10: Threats



Interpretation and discussion of results

The summary underscores the external factors (threats) that currently pose a challenge to the university's quest for generating third-stream income. The prominence of Competition and Market Dynamics signifies an acute recognition that the institution is navigating a highly competitive educational landscape. This environment necessitates a strategic approach to distinguish the university and leverage its unique offerings to maintain a competitive edge.

Economic and Regulatory Challenges emerge as a significant concern, highlighting the complexities of financial and legal constraints that the university must adeptly manage. These challenges have far-reaching implications for funding stability and the capacity to engage in innovative ventures without incurring prohibitive risks or compliance issues.

Public Perception and Reputation, with a notable frequency, is an aspect that the institution cannot afford to neglect. The image of the university serves as a linchpin for attracting students, securing research grants, and forging industry partnerships. The emphasis here reflects an understanding that reputation shapes the university's ability to sustain and grow its third-stream income.

Technological Disruption, though cited only once, remains a relevant threat, particularly for a technology-focused institution. It serves as a reminder of the need to continuously evolve and adapt in an era of rapid technological change. The lower frequency of mention may suggest a perception that the university is currently well-positioned to cope with such disruptions, yet vigilance in this area remains crucial.

In essence, the data sheds light on the necessity for the university to engage in strategic planning that not only confronts these external threats but also turns them into avenues for opportunity and innovation. It calls for a nuanced understanding of the university's positioning within both the educational and broader socio-economic context, as it seeks to enhance its third-stream income avenues.

A MULTIFACETED VIEW OF THE SWOT

The SWOT analysis derived from the participants' responses presents a multifaceted view of the strategic landscape of university of technology in the context of third-stream income generation. The analysis reveals significant insights into the internal and external factors influencing the university's ability to generate and sustain alternative revenue streams.

Strengths: The most notable strength, 'Resource Availability and Utilization', with 17 mentions, indicates a widespread recognition of the substantial assets and capabilities inherent within the university of technology. This strength is exemplified by instances like Participant 1's emphasis on creativity and a supportive faculty environment and Participant 5's expertise in operating a science park. However, the varied focus on resources, from intellectual to physical assets, suggests a disparity in how different institutions perceive their primary assets.

'Educational and Training Programs', with 9 occurrences, underscores the inherent advantage university of technology have in leveraging their educational expertise. This strength aligns well

with the core mission of the university but also points to a potential over-reliance on traditional educational models for revenue generation.

Weaknesses: The predominant weakness identified is 'Internal Culture and Governance', mentioned 37 times, highlighting significant concerns over administrative and regulatory frameworks within university of technology. This overwhelming emphasis suggests a systemic issue across institutions, potentially hindering effective exploitation of strengths and opportunities.

'Financial Constraints', though less mentioned, is a critical weakness that aligns with the broader challenges faced in higher education funding. Participant 6's concern about the lack of capital injection highlights the real impact of this weakness on pursuing new initiatives.

Opportunities: 'Market Expansion and Partnerships', cited 15 times, reflects a strategic orientation towards collaboration and external engagement. This opportunity, illustrated by Participant 1's focus on stakeholder collaboration, suggests a growing awareness of the benefits of external partnerships. However, the relatively lesser emphasis on 'Educational Program Enhancement' and 'Resource Optimization' indicates potential underutilization of internal capabilities in favour of external collaborations.

Threats: 'Competition and Market Dynamics', the most frequently mentioned threat, underscores the intense competitive landscape in which university of technology operate. Participant 1's mention of competition with other universities highlights the pressure to innovate and diversify income streams in a crowded market.

'Economic and Regulatory Challenges', though less cited than competition, is a significant external factor impacting university of technology's strategic decisions. This threat aligns with the identified weakness of financial constraints, suggesting a challenging external environment that compounds internal financial issues.

Contrasting observations and anomalies: A notable anomaly in the analysis is the disproportionate emphasis on internal governance issues as a weakness, which starkly contrasts with the strengths and opportunities identified. This mismatch suggests that while the university of technology recognize their inherent capabilities and external opportunities, internal systemic issues could be a major impediment to fully capitalizing on these advantages.

The emphasis on market expansion and partnerships as opportunities, juxtaposed with the threat of competition, presents a dynamic tension. This indicates that while the university of technology is looking outward for growth and collaboration, they are also acutely aware of the competitive challenges such strategies entail.

In summary, the SWOT analysis reveals a complex strategic environment for the university of technology. While they possess significant strengths in resources and educational capabilities, internal governance issues and financial constraints pose substantial challenges. The pursuit of external partnerships and market expansion, although promising, is fraught with competitive pressures and economic uncertainties. This analysis underscores the need for a balanced approach that leverages internal strengths and external opportunities while effectively addressing inherent weaknesses and external threats.

4.6 CATEGORY 5 - POLICIES and REGULATIONS that IMPACT THIRD-STREAM INCOME GENERATION AT UNIVERSITY OF TECHNOLOGY

The thematic groupings for this category are as follows:

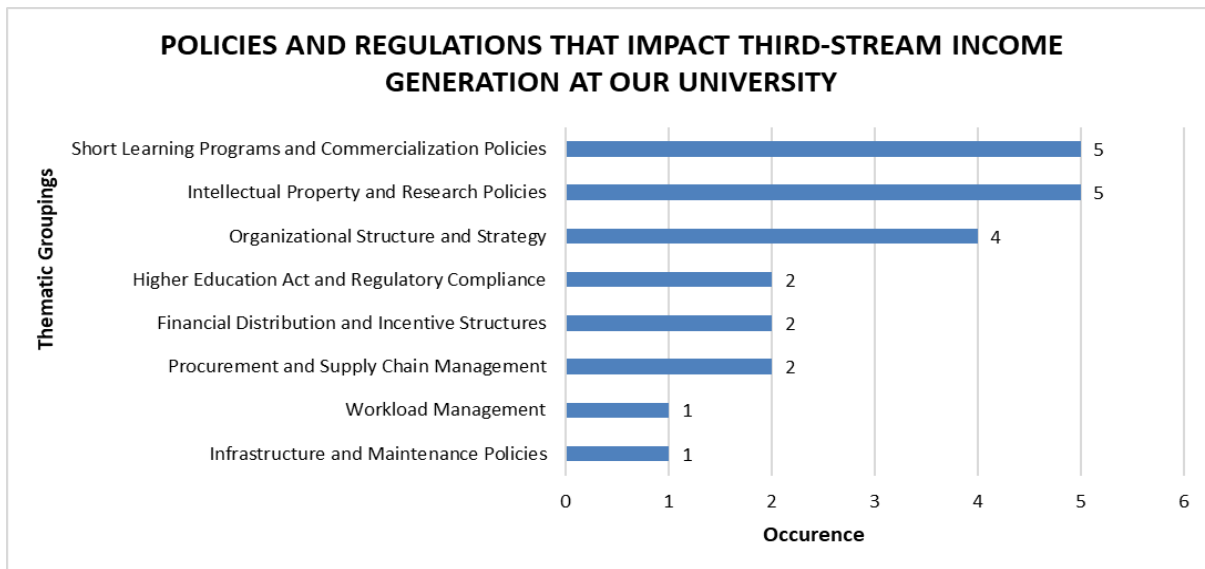
- T1- Intellectual Property and Research Policies
- T2- Procurement and Supply Chain Management
- T3- Financial Distribution and Incentive Structures
- T4- Infrastructure and Maintenance Policies
- T5- Short Learning Programs and Commercialization Policies
- T6- Higher Education Act and Regulatory Compliance
- T7- Organizational Structure and Strategy
- T8- Workload Management

Table 5: Policies and Regulations that impact third-party income

Theme	Occurrences
Infrastructure and Maintenance Policies	1
Workload Management	1
Procurement and Supply Chain Management	2
Financial Distribution and Incentive Structures	2
Higher Education Act and Regulatory Compliance	2

Organizational Structure and Strategy	4
Intellectual Property and Research Policies	5
Short Learning Programs and Commercialization Policies	5

Graph 11: Policies and Regulations



Interpretation and Discussion of results

From analysing the thematic grouping counts based on the research responses, several intriguing insights emerge about the priorities and concerns related to third-stream income generation at the university.

Firstly, the equal prominence of 'Intellectual Property and Research Policies' and 'Short Learning Programs and Commercialization Policies' is particularly striking. This suggests a dual focus in the academic community: on one hand, there is a keen awareness of the importance of safeguarding intellectual property, which is fundamental in a research-intensive environment. On the other hand, there is an equally strong interest in developing and commercializing educational programs. This dual focus reflects a balanced approach towards both protecting the innovations and knowledge generated within the university and actively seeking ways to monetize these assets.

The notable mention of 'Organizational Structure and Strategy' as the next most frequent theme reveals an underlying concern about the operational aspects of third-stream income activities. This

indicates that there is a conscious effort among university staff and administrators to think strategically about how their institutions are organized and how they execute their third-stream income strategies. This strategic thinking is crucial for ensuring that these initiatives are not only effective but also align with the broader goals and values of the university.

It is also interesting to see that 'Higher Education Act and Regulatory Compliance' and 'Financial Distribution and Incentive Structures' received moderate attention. This implies a pragmatic understanding of the regulatory environment and a recognition of the need for fair and motivating financial practices. These aspects are essential for maintaining legal compliance and fostering an environment where staff are incentivized to contribute to third-stream income generation.

The lesser focus on themes like 'Procurement and Supply Chain Management', 'Infrastructure and Maintenance Policies', and 'Workload Management' might suggest these areas are either adequately addressed within the university or not seen as immediate priorities compared to the other themes. This could indicate a perception that these operational aspects, while important, do not currently pose significant challenges or opportunities in the context of third-stream income generation.

In summary, the data reveals a nuanced understanding among university staff and administrators of the various factors that influence third-stream income generation. The emphasis on intellectual property and educational program commercialization, coupled with strategic organizational planning, demonstrates a comprehensive approach to leveraging university resources and capabilities for additional income generation. Simultaneously, the recognition of regulatory, financial, and operational factors shows a depth of understanding of the broader ecosystem in which these activities occur.

4.7 CONCLUSION

This chapter has provided a comprehensive analysis of the results and findings obtained through both the measuring tool and the questionnaire. By utilizing the questionnaire as a valuable means of collecting responses, the study effectively addressed the outlined objectives as follows:

Objective: explore and categorize the various sources of third-stream income that the university can generate, including the benefits and challenges of each income stream. The analysis categorizes third-stream income into different types, emphasizing Research and Innovation, Commercial and Business Ventures, Educational Services, and Campus Resources Utilization. The possible benefits and challenges were also explored, providing a comprehensive overview of the university's potential income streams.

Objective: examine successful case studies and best practices of universities that have efficiently generated third-stream income. The best practices from other universities, especially business schools and traditional universities, are identified. These practices include having a clear strategy, workload management, separation of core business from income activities, careful growth, trend identification, good governance, and accountability. The analysis draws insights from successful models to inform potential strategies for the university.

Objective: conduct an assessment of the role of technology and innovation in the generation of third-stream income within a university of technology. The role of technology and innovation is explored, highlighting Innovative Product Development, Enterprise and Industry Collaboration, Blended Learning, and Research-Driven Innovation. This assessment provides insights into the significance of technological advancements and innovation in enhancing the university's third-stream income generation.

Objective: perform a SWOT analysis of the university's existing approach to third-stream income generation, encompassing an evaluation of current policies and regulations. The SWOT analysis identifies Strengths (resource availability and utilization), Weaknesses (internal culture and governance issues), Opportunities (market expansion and partnerships), and Threats (competition and economic/regulatory challenges). Additionally, an evaluation of existing policies and regulations, including Intellectual Property, Research, Short Learning Programs, Commercialization, Organizational Structure, Strategy, Higher Education Act, Regulatory Compliance, Financial Distribution, and Incentive Structures, provides a comprehensive understanding of the university's current approach to third-stream income generation.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter gives a summary of the study, presents the study's findings, and draws conclusions based on the results. Recommendations are included, along with the study's limitations and suggestions for future research.

5.2 OVERVIEW OF THE STUDY

Addressing the financial challenges faced by a university of technology in generating third-stream income is crucial. In recent years, South African public universities, already grappling with financial difficulties, experienced heightened financial strain during 2015 and 2016, primarily due to the #FeesMustFall campaign. Students raised concerns about financial exclusion, high fees, and dissatisfaction with the lack of social and academic transformation.

The Department of Higher Education and Training (DHET) intervened with resolutions and measures that significantly impacted the financial sustainability of universities. Many universities had to make annual financial concessions for students who are unable to afford their fees, leading to a direct increase in student debt, which later became subject to the Prescription Act. The persistently high unemployment rate in South Africa further complicated matters, making it challenging for graduates to afford tuition fees. Despite the financial challenges, universities faced constraints in adjusting tuition fees, as the DHET recommended fee increases annually. The gap in tuition fees among universities remained unaddressed, exacerbating the financial strain for disadvantaged universities. The mismatch between increased student enrolments and decreased or reprioritized university funding posed a challenge, especially when universities are expected to provide quality education.

The NSFAS played a role in intervention, but its resources were insufficient to fund all financially needy South African students. To manage this, NSFAS introduced a cap based on a family income threshold of R350,000.

Given these challenges, both block grants and tuition and other fees are under pressure. Universities must seek ways to address the shortfall, with a crucial emphasis on generating third-stream income. While acknowledging that this may not be the universities' core competence, third-stream income is identified as a critical variable for the financial sustainability of the university.

Based on this context, the objective of this research was to investigate the challenges faced by a university of technology in generating third-stream income.

The research aim was supported by the secondary objectives as detailed in chapter 1 section 1.6.2.

The research background assisted to identify the research problem. The literature review improved the study by considering important theories about how universities get money. It considered how universities get financed and then gave suggestions for improvements, both in Africa and beyond. A questionnaire served as the measuring instrument in this study, supplying the necessary data to address the research questions posed.

5.3 SUMMARY OF THE RESULTS OF THE STUDY

This section provides a summary of the results and findings from the research per category as outlined in chapter 4.

Category 1: Types of Third-Stream Income

The analysis reveals a diverse landscape of third-stream income avenues for the university. The emphasis is on Research and Innovation, Commercial and Business Ventures, Educational Services, and Campus Resources Utilization. There is a clear inclination towards leveraging core strengths in research and innovation, along with commercial and business ventures. The comparatively lower focus on certain areas might point to untapped opportunities or areas requiring strategic enhancement.

Category 2: Potential Benefits

Financial Sustainability and Growth are the primary drivers for pursuing third-stream income. Other benefits include Enhancement of Educational and Research Capabilities, Community and Industry Engagement, Innovation and Entrepreneurship Development, and Global Positioning and Reputation Enhancement. The strong focus on financial aspects indicates a strategic approach, with other benefits considered secondary but important.

Category 3: Challenges

Cultural and organizational resistance is the most significant challenge, highlighting internal barriers to embracing third-stream income activities. Financial risk, sustainability concerns, market competition, partnership dynamics, and reputation management are also notable challenges.

Internal university dynamics, cultural change, and effective resource utilization appear crucial for navigating third-stream income challenges.

Category 4: Best Practices from Other Universities

Business schools emerge as exemplary models for generating third-stream income, emphasizing global recognition, diverse programs, and strong industry connections. Traditional universities excel in research-related activities. Best practices include having a clear strategy, workload management, separation of core business from income activities, careful growth, and trend identification, and good governance and accountability.

Category 5: Role of Technology and Innovation

Innovative Product Development and Enterprise and Industry Collaboration are significant themes while Blended Learning and Research-Driven Innovation the second best.

Category 6: Current Approach and SWOT Analysis

Strengths include resource availability and utilization, weaknesses are internal culture and governance issues, opportunities lie in market expansion and partnerships, and threats include competition and economic/regulatory challenges. The SWOT analysis underscores the need for a balanced approach leveraging internal strengths and addressing weaknesses and external threats.

Category 7: Policies and Regulations

Key themes include Intellectual Property and Research Policies, Short Learning Programs Policy, and Commercialization Policies, Organizational Structure and Strategy, Higher Education Act, and Regulatory Compliance, and Financial Distribution and Incentive Structures. There is a dual focus on safeguarding intellectual property and commercializing educational programs, coupled with a strategic understanding of organizational dynamics and compliance.

The findings offer a comprehensive overview of the university's current standing, highlighting challenges, strengths, and opportunities in third-stream income generation. The prioritization of research and innovation, strategic partnerships, and technological advancements indicates a proactive approach to adapting to the evolving landscape of higher education. Addressing internal cultural barriers, capitalizing on existing strengths, and aligning with emerging trends emerge as crucial considerations for future strategic planning.

Consistent with the perspectives of other researchers, the findings underscore a shared understanding of the challenges, benefits, and strategies linked to third-stream income generation

in universities. This comprehensive review provides a nuanced perspective on the intricate nature of this endeavor.

Ngcobo's (2021) emphasis on financial sustainability and revenue from industry partnerships resonates with the primary drivers identified in Category 2. Ahmad et al.'s (2015) focus on research, consultation, and commercialization as prevalent means of generating income aligns seamlessly with the income avenues identified in Category 1. Shiimi's (2020) emphasis on internal capabilities, collaboration, and technology aligns with themes in Categories 4 and 5. Hundadze and Anelidze's (2016) emphasis on diversified funding sources and third-stream income corresponds with the importance of financial sustainability highlighted in Category 2.

5.4 RECOMMENDATIONS

The study recommends that university management conduct a thorough analysis of internal culture and governance challenges that hinder income generation activities. This analysis should encompass exploring aspects of institutional structure, bureaucratic procedures, and resistance to change that impact third-stream income initiatives. Additionally, the study suggests further investigation into successful case studies of universities that have undergone cultural transformations and governance reforms to overcome similar challenges.

In the realm of financial and legal considerations, management should explore specific constraints affecting third-stream income initiatives. They need to assess how other universities with similar challenges navigate regulatory complexities and financial constraints to sustain and grow income-generating activities. The recommendation emphasizes the recognition that investing money may be necessary to increase third-stream income.

Furthermore, the study suggests that management should investigate the impact of public perception and reputation on the university's ability to generate third-stream income. This involves analysing how positive or negative perceptions influence student enrolment, research grants, and industry partnerships. The study proposes developing strategies for enhancing the university's public image, aligning third-stream activities with its reputation, and effectively communicating their value to external stakeholders.

In the context of globalization and cross-border education, the study advises the university to explore potential opportunities. This includes investigating how the institution can strategically engage in international collaborations, partnerships, and distance learning programs to tap into a global student base. The study also recommends examining successful models of universities that have expanded globally and increased income through international initiatives.

Considering the Fourth Industrial Revolution (4IR), despite its least occurrence, the study suggests that the university should investigate its implications on third-stream income strategies. This involves assessing how technological advancements, such as automation and artificial intelligence, can be leveraged for income generation. The study recommends exploring case studies of universities that have successfully aligned income strategies with 4IR trends.

Regarding intellectual property and research policies, the study recommends that management conduct a comprehensive evaluation. This includes examining the impact of these policies on safeguarding innovations and monetizing intellectual property. The study suggests identifying best practices in managing intellectual property within a university context and proposing potential improvements to existing policies.

In addition, the study recommends that management investigate the role of short learning programs and commercialization policies in income generation. This involves examining how these policies contribute to developing and monetizing educational programs and analysing successful cases of universities effectively implementing them to diversify income streams.

The study also suggests that management should examine the theme of "Balancing Income and Workload" and its implications. This includes investigating how universities successfully balance income generation opportunities with managing faculty and staff workload. The study recommends providing recommendations for achieving a harmonious equilibrium between income generation initiatives and ensuring a manageable workload for faculty and staff.

Regarding the "Separation of Core Business," the study recommends an investigation into how universities distinguish their primary academic functions from income-generating endeavours and the impact of such separation. The study proposes providing insights into how this strategy can mitigate conflicts of interest and ensure a clear focus on both academic excellence and income generation.

In the context of growth and trend identification, the study recommends that the university explore the themes of "Careful Growth and Trend Identification" and "Focusing on Existing Capabilities." This involves assessing how universities prudently identify growth opportunities and leverage existing strengths for income generation. The study suggests providing recommendations for strategically identifying growth trends and maximizing existing capabilities for successful income generation.

Lastly, regarding governance and accountability enhancement, the study recommends that management investigate the role of governance structures and accountability mechanisms in income generation success. This includes analysing how universities with robust governance frameworks tend to perform well in third-stream activities. The study proposes providing recommendations for enhancing governance structures and accountability mechanisms to ensure effective and transparent income generation processes.

5.5 LIMITATION OF THE RESEARCH

The interview questions, while comprehensive, may not capture the entirety of potential third-stream income sources, benefits, challenges, and best practices. There is a risk that participants might gravitate towards discussing well-known or conventional streams, potentially overlooking emerging or unconventional opportunities in the rapidly evolving landscape of tertiary education.

Furthermore, participants may inherently bring their own experiences and perspectives into their responses, introducing the potential for a biased representation of challenges and solutions. The diversity of these individual experiences among participants may impact the overall comprehensiveness of the insights obtained, limiting the scope of perspectives considered.

Considering the dynamic nature of the higher education landscape, particularly in the realms of technology and innovation, there's a possibility that the information gathered during the interviews may quickly become outdated. The rapid evolution of these fields means that new challenges and opportunities may arise post-interview, affecting the relevance and applicability of the findings.

Lastly, it's crucial to acknowledge that the study was conducted at a specific institution. As a result, the results and conclusions drawn may not be easily generalized to other universities. The uniqueness of each university's context, policies, and practices implies that the challenges and opportunities faced in third-stream income generation could vary significantly across different institutions.

5.6 FUTURE RESEARCH

The research conducted focused on a detailed analysis of third-stream income through university employees within a specific institution at a particular point in time. To broaden the understanding and enhance the generalizability of findings, future research could extend its scope across universities of technology in South Africa. Additionally, a comparative analysis with universities of technology worldwide would provide a global perspective, allowing for a more comprehensive understanding of how different institutions approach and navigate the challenges and opportunities associated with third-stream income as university of technology. This approach would contribute to

a more nuanced and robust exploration of the subject, considering diverse institutional contexts and practices.

5.7 CONCLUSION

The aim of the research was to explore the challenges faced by a university of technology in generating third-stream income. The challenges were identified and discussed. The main challenges faced by a university of technology in generating third-stream income are multi-faceted and require a nuanced and strategic approach. The internal landscape poses significant hurdles, with issues related to institutional structure, bureaucratic procedures, and resistance to change demanding transformative efforts. Navigating and reshaping the internal culture is crucial for creating an environment conducive to income generation activities.

Externally, financial, and legal constraints add another layer of complexity, necessitating a thorough understanding and targeted interventions. Managing regulatory complexities and financial limitations is imperative for the sustained growth of income-generating initiatives, and there is a recognition that strategic investments may be essential to overcome these hurdles.

Moreover, the public perception and reputation of the university play a pivotal role in its ability to attract third-stream income. Strategies aimed at enhancing the university's public image, aligning income-generating activities with its reputation, and effectively communicating their value to external stakeholders are essential components of a comprehensive approach.

In essence, addressing these challenges requires a holistic and integrated strategy that encompasses internal cultural transformation, financial prudence, and proactive reputation management. The successful navigation of these challenges will position the university of technology to not only overcome obstacles but also thrive in the dynamic landscape of income generation within the higher education sector.

REFERENCES

- Ahmad, A.R., Soon, N.G. & Ting, N.P. 2015. Income generation activities among academic staffs at Malaysian public universities. *International Education Studies*, 8:194-203.
- Ajayi, V.O. 2017. Primary sources of data and secondary sources of data. *Benue State University*, 1(1): 1-6.
- Alvarez, S.A. & Busenitz, L.W. 2001. The entrepreneurship of resource-based theory. *Journal of Management*, (27) :755-775.
- Arifin, S.R.M. 2018. Ethical considerations in qualitative study. *International journal of care scholars*, 1(2): 30-33.
- Asiamah, N., Mensah, H. K. & Oteng-Abayie, E. 2017. General, target, and accessible population: Demystifying the concepts for effective sampling. *The Qualitative Report*, 22(6) :1607-1621. <https://doi.org/10.46743/2160-3715/2017.2674>. Date of access: 14 November 2023.
- Attride-Stirling, J. 2001. Thematic networks: an analytic tool for qualitative research. *Qualitative Research*, 1(3): 385-405.
- Bansi, R. 2019. Challenges to the commercialization of university innovation: A South African Study. *European Conference on Innovation and Entrepreneurship. Academic Conferences International Limited*.
- Chantel King MP. 2022. R10 billion NSFAS funding shortfall: Minister Nzimande must explain from where the money will come. Newsroom 14 January 2022. <https://www.da.org.za/2022/01/r10-billion-nsfas-funding-shortfall-minister-nzimande-must-explain-from-where-the-money-will-come/> date of access:27 November 2023.
- Chumba, J.A., Muturi, W. & Oluoch, J.O. 2019. Effect of financial investment strategies on the financial sustainability of universities in Kenya. *International Academic Journal of Economics and Finance*, 3(3):37-49.
- Cohen, L. & Manion, L. 1994. *Research methods in education*. (4th ed.) London: Routledge.
- Cloete. 2022. Universities set increase accommodation and tuition fees. <https://www.skillsportal.co.za/content/universities-set-increase-accommodation-and-tuition-fees>. Date of access:27 November 2023.

- Collis, J. & Hussey, R. 2014. *Identifying your paradigm in business research*. Palgrave, London. pp. 42-57.
- Conner, K.R. & Prahalad, C.K. 1996. A resource-based theory of the firm: knowledge versus opportunism. *Organization Science*, 7 (5): 477- 501.
- Creswell, J.W. 2003. *Research design: qualitative, quantitative, and mixed methods approach*. (2nd ed.) Thousand Oaks: Sage.
- Creswell, J. W. 2014. *Qualitative inquiry & research design: choosing among five approaches* (4th Ed.) Thousand Oaks: CA: SAGE.
- Crowther, D., Strydom, A.J. & Dzansi, D.Y. 2018. Towards the sustainability of a financially constrained university's hotel school: lessons from local and international universities' hotel schools. *Journal of Hospitality, Tourism and Leisure*, 7(4): 1-31.
- Dubois, A. & Gadde, L.E. 2002. Systematic combining: an abductive approach to case research. *Journal of business research*, 55(7): 553-560.
- Estermann, T.& Pruvoy, E. B. 2011. *Financially sustainable universities: European universities diversifying income streams*. Belgium: European University Association.
- Fauske, J.R. & Raybould, R. 2005. Organizational learning theory in schools. *Journal of Educational Administration*, 43(1):22-40.
- Ferreira, E.J. & Steenkamp, R.J. 2015. The exploration of the triple helix concept in terms of entrepreneurial universities and corporate innovation. *Corporate Ownership & Control*, 12(2), pp.497-512.
- Freeman, R.E., Dmytriyev, S.D. & Phillips, R.A. 2021. Stakeholder theory and the resource-based view of the firm. *Journal of Management*, 47(7) :1757-1770.
- Fuller, D., Beynon, M. & Pickernell, D. 2019. Indexing third stream activities in UK universities: exploring the entrepreneurial /enterprising university. *Studies in Higher Education*, 44 (1): 86-110.
- Fusch, P.I. & Ness, L.R. 2015. Are we there yet? Data saturation in qualitative research. *Walden Faculty and Staff Publications*, 455.
- Goksu, A. & Guksu, G.G. 2015. A comparative analysis of higher education financing in different countries. *Procedia Economics and Finance*, 26:1152-1158.

Golafshani, N. 2003. Understanding reliability and validity in qualitative research. *The qualitative report*, 8(4):597-607.

Grant, R.M. 1991. The resource-based theory of competitive advantage: implications for strategy formulation. *California management review*, 33(3): 114-135.

Greenaway, D. 2003. Funding Higher Education in the UK: The role of fees and loans. *Economic Journal*, 113 (485) :150-166.

Harvey, D. 2005. *A Brief History of Neoliberalism*. Oxford: Oxford University Press.

Hancock, M. E., Amankwaa, L., Revell, M. A., & Mueller, D. 2016. Focus Group Data Saturation: A New Approach to Data Analysis. *Creative Commons Attribution-Non-commercial-Share Alike*,21(11):2124-2130.

Hennink, M.M., Kaiser, B.N. & Marconi, V.C. 2017. Code saturation versus meaning saturation: how many interviews are enough?, *Sage Journals*, 27(4): 591-608.

Huffman, D. & Quigley, J. 2002. The role of the university in attracting high tech entrepreneurship: A Silicon Valley tale. *Ann Reg Sci* 36: 403–419.

Hundadze, S. & Anelidze, S. 2016. Diversified funding for successful transformation of universities into entrepreneurial organizations. *Journal of Business*, 5 (2):35- 44.

Hoskins, P. 2011. Why universities must optimise third stream revenue opportunities. *Guardian Professional*, October 2022. <https://www.theguardian.com/higher-education-network/blog/2011/oct/04/universities-optimise-third-stream-revenues>. Date of access: 14 November 2023.

Ishak, N.M. & Abu Bakar, A.Y. 2014. Developing sampling frame for case study: challenges and conditions. *World Journal of Education*, 4(3):29-35.

Johnstone, B. 2002. Challenges of financial austerity: Imperatives and limitations of revenue diversification in higher education. *Wales Journal of Education*, 11(1).

Keeves, J.P. 1997. *Educational research methodology and measurement*. Cambridge: Cambridge University Press.

Khatri, K.J. 2020. Research paradigm: A philosophy of educational research. *International Journal of English Literature and Social Sciences*, 5(5):1435-1440.

- Kivunja, C. & Kuyini, A.B. 2017. Understanding and applying research paradigms in educational contexts. *International Journal of Higher Education*, 6(5):26-41.
- Koryakina, T. Sarrico, C.S. & Teixeira, P.N. 2015. Universities' third mission activities: Challenges to extending boundaries. *In The transformation of university institutional and organizational boundaries*, pp. 63-82.
- Levine, M. V. 2009. The false promise of the entrepreneurial university. *Center for Economic Development Publications*. pp:26.130.
- Lockett, A., Wright, M. & Wild A. 2014. The Institutionalization of third-stream activities in UK Higher Education: The role of discourse and metrics. *British Journal Management*, 26:78-92.
- Lynham, S. A. 2002. *The general method of theory-building research in applied disciplines*. Advances in Developing Human Resources, 4:221-241.
- Martínez-Mesa, J., González-Chica, D.A., Duquia, R.P., Bonamigo, R.R. & Bastos, J.L. 2016. Sampling: how to select participants in my research study? *Anais brasileiros de dermatologia*, 91: 326-330.
- Mertens, D.M. 2005. *Research methods in education and psychology: Integrating diversity with quantitative and qualitative approaches*. 2nd ed. Thousand Oaks: Sage.
- Department of Higher Education and Training (South Africa). 2020: *Ministerial statements on university funding: 2021/22 & 2022/23*.
- MacGregor, K. 2008. SOUTH AFRICA: Third stream income a new priority. <https://www.universityworldnews.com/post.php?story=2008061309381763>. Date of access 27 November 2023.
- McGrath, R.G. and MacMillan, I.C. 2000. *The entrepreneurial mindset: Strategies for continuously creating opportunity in an age of uncertainty*, Vol. 284. Harvard Business Press.
- Melnikovas, A. 2018. Towards an explicit research methodology: Adapting research onion model for futures studies. *Journal of futures Studies*, 23(2).
- Mlambo, H.V., Hlongwa, M. & Mubecua, M. 2017. The provision of free higher education in South Africa: a proper concept or a parable? *Journal of Education and Vocational Research*, 8(4):51-61.
- Molas-Gallart, J., Salter, A., Patel, P., Scott, A. & Duran, X. 2002. Measuring third stream activities. Final report to the Russell Group of Universities. Brighton: SPRU, University of Sussex, 81.

- Monyane, M. 2017. Third-stream income as the future survival of South African Universities. *International interdisciplinary business-economics advancement conference, Florida*. 8th :26-28.
- Ngcobo, X.M. 2021. Exploration of revenue sources for financial sustainability of a public university in KwaZulu-Natal: a case study of the Durban University of Technology pp.1-171.
- Ngenoh, D.C. 2020. Influence of third-stream activities on university sustainability: a comparative study of Bidii and Zurii University. Thesis, Strathmore University. 1 -131.
- Ntshoe, I. & De Villiers, P. 2013. Funding sources for public higher education in South Africa: Institutional responses. *Perspectives in education*, 31(4) :71-84.
- Orr, G. 2003. *Diffusion of innovations*, by Everett Rogers, Retrieved 21 January 2005.
- Pilbeam, C. 2006. Generating additional revenue streams in UK universities: An analysis of variation between disciplines and institutions. *Journal of Higher Education Policy and Management*, 28(3) :297-311.
- Pinho, C., Franco, M. & Mendes, L. 2021. Application of innovation diffusion theory to the E-learning process: higher education context. *Education and Information Technologies*, 26 :421-440.
- Pouris, A. & Inglesi-Lotz, R. 2014. The contribution of higher education institutions to the South African economy. *South African Journal of Science*, 110(3/4): 1-5.
- Piotrowska-Piatek, A. & Kozlowski, M. 2020. The third stream as a new model of generating revenue for higher education institutions in Poland. *European Research Studies Journal*, 23: 260-270.
- Prince, C. 2007. Strategies for developing third stream activity in new university business schools. *Journal of European Industrial Training*, 31(9):742-757.
- Protection of Personal Information Act No.4. 2013. (Notice 4 of 2013). Government Gazette 37067,26 November 2013.
- Riddle, S. 2022. NSFAS R10 billion funding shortfall: Nzimande has some explaining to do South African News, 16 January. <https://www.thesouthafrican.com/news/da-wants-answers-nsfas-funding-shortfall/> Date of access: 24 May 2023.
- Rindfleisch, A., Malter, A. J., Ganesan, S. & Moorman, C.2008. Cross-Sectional versus Longitudinal Survey Research: Concepts, Findings, and Guidelines. *Journal of Marketing Research*, 45(3):261-279.

- Ritchie, J. & Lewis J. 2011. *Qualitative research practice: A guide for social science students and researchers*. (4th Ed). Thousand Oaks, CA: Sage.
- Samejima, M., Shimizu, Y., Akiyoshi, M. & Komoda, N. 2006. SWOT analysis support tool for verification of business strategy. *IEEE International Conference on Computational Cybernetics*.pp. 1-4
- Saunders, M., Lewis, P. & Thornhill, A. 2019. *Research methods for business students*. 8th ed. Harlow, UK: Pearson.
- Saunders, M., Lewis, P. & Thornhill, A. 2016. *Research methods for business students*. 7th Edition.
- Sebele-Mpofu, F.Y. 2020. Saturation controversy in qualitative research: Complexities and underlying assumptions. *Cogent Social Sciences*, 6(1): 1-17.
- Schell, C. 1992. The Value of the case study as a research strategy- *Manchester Business School*, 1-15.
- Shiimi, V. 2020. An exploratory study on UNAM's opportunities of being an entrepreneurial university. *Faculty of Commerce, Rhodes Business School*.
- Sileyew, K. J. 2019. *Research design and methodology*. Available: <https://www.intechopen.com/books> Accessed: 28 May 2023.
- Singh, A.S. & Masuku, M.B. 2014. Sampling techniques and determination of sample size in applied statistics research: An Overview. *International Journal of Economics, Commerce and Management*. 2:1-22.
- Shore, C. & Mclauchlan, L. 2012. 'Third mission' activities, commercialisation and academic entrepreneurs. *European Association of Social Anthropologists*. 267-286.
- Stats SA (Statistics South Africa). 2018. Unemployment drops in fourth quarter: February: 2019. Statical release P11897. <https://www.statssa.gov.za/?p=11897>. Date of access:14 November 2023.
- Stats SA (Statistics South Africa). 2019. Financial Statistics of Higher Education Institutions. <http://www.statssa.gov.za/publications/P91031/P910312019.pdf>. Date of access: 14 November 2023,

Stats SA (Statistics South Africa). 2020. Universities depends more on government for funding: October 2020. Statal release P 13719. <https://www.statssa.gov.za/?p=13719>. Date of access:14 November 2023.

Starks, H & Trinidad S.B. 2007. *Choose your method: A comparison of phenomenology, Discourse Analysis, and Grounded Theory*. *Qualitative Health Research* Volume 17:1372 :1380.

Swartz, R., Ivancheva, M., Czerniewicz, L. & Morris, N.P. 2019. Between a rock and a hard place: Dilemmas regarding the purpose of public universities in South Africa. *Higher Education*, 77: 567-583.

Taherdoost, H. 2016. Sampling methods in research methodology; how to choose a sampling technique for research. *International Journal of Academic Research in Management (IJARM)*, 5(2):18-27

Theofanidis, D. & Fountouki, A. 2018. Limitations and delimitations in the research process. *Perioperative Nursing-Quarterly scientific, online official journal of GORNA*, 7: 155-163.

Turner, R. S. 2008. *Neo-liberal ideology: history, concepts and policies*. Edinburgh: Edinburgh University Press Ltd.

Wangenge-Ouma, G. & Kupe, T. 2020. UNCERTAIN TIMES: Re-imagining universities for new, sustainable futures. *Uncertain-Times-Paper.pdf* (usaf.ac.za).

Watson, D. & Hall, L. 2015. Addressing the elephant in the room: Are universities committed to the third-stream agenda. *International Journal of Academic Research in Management*, 4(2):48-76.

Wiese, M. 2008. A higher education marketing perspective on choice factors and information sources considered by South African first year university students. Doctoral dissertation, University of Pretoria.pp1:372.

Wiid, J. & Diggines, C. 2013. *Marketing research*. Cape Town: Juta.

Whitley, B. E. & Kite, M. E. 2018. *Principles of research in behavioural science*. 4th ed. Oxfordshire: Routledge.

Van de Ven, A. H. 2007. *Engaged scholarship: A guide for organizational and social research*. New York: Oxford University Press.

Zehir, C., Çeltekligil, K. & Afacan Findikli, M. 2019. Resource dependence theory, firm performance and producers-suppliers relationships. *European Proceedings of Social and Behavioural Sciences*, 54.

APPENDIX A: GATEKEEPER



VAAL UNIVERSITY
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Research Directorate
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LETTER FROM THE CENTRAL RESEARCH ETHICS COMMITTEE

Private Bag X021
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09 October 2023

**DECISION:
FINAL APPROVAL**

**CREC REFERENCE NUMBER –
24-08-2023-5.1**

Dear Ms Mgobo,

PROJECT TITLE: *Exploring the challenges faced by a University of Technology in generating third-stream income.*

RESEARCHER/PRINCIPLE INVESTIGATOR: Ms NR Mgobo

SUPERVISOR: Dr A Storm

APPLYING INSTITUTION: North-West University

DEPARTMENT: North-West Business School

QUALIFICATION: Master in Business Administration

Thank you for submitting the appeal for the above-mentioned project for research ethical approval. Your application was reviewed by the Chairperson of the CREC and was granted final approval.

The terms and conditions presented in the box below are binding:

As the primary researcher you undertake:

- 1. To follow only those procedures for which the approval has been given;*
- 2. To inform the committee should there be significant deviations from that which has been approved;*
- 3. To report any Serious Adverse Events that might occur, within 14 days of the event (following the Guidelines procedure);*
- 4. That it is noted that this ethics clearance lapses on 31st December 2025, after which you will need to apply again;*
- 5. To inform the committee on the completion of the project, when the findings have entered the public domain;*
- 6. In all correspondence to use the CREC Reference Number, above;*
- 7. Please take note that a progress report needs to be submitted every six months, in the months of June and November from the approval date;*
- 8. Should the project extend beyond the 3 years, the normal resubmission procedure will commence, or a special application for extension for a short period not more than 3 to 6 months, provided that the progress reports were received.*

We wish you well with your future research endeavours.

Sincerely,



Prof T Padayachee
Chairperson: Central Research Ethics Committee
Vaal University of Technology

APPENDIX B: INFORMED CONSENT LETTER TO INTERVIEW PARTICIPANTS

DEAR PARTICIPANT

You are invited to take part in a research study that forms part of a Master of Business Administration (MBA) degree. Please take some time to read the information presented here, which will explain the details of this study. Please ask the researcher or person explaining the research to you any questions about any part of this study that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research is about and how you might be involved. Also, your participation is entirely voluntary, and you are free to say no to participating. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part now.

This study was approved by the NWU Economic and Management Sciences Research Ethics Committee (EMS-REC) after receiving a permission letter from a university of technology and is conducted according to the ethical guidelines and principles of the North-West University and other international ethical guidelines applicable to this study.

Title of the project: Exploring the challenges faced by a university of technology in generating third-stream income

Institution: NWU Business School

Ethics Reference Number: NWU- 0 1 8 9 1 - 2 3 - A 4

Names and contact details of project staff

Supervisor

Researcher

Title, name & surname	Dr A. Storm, PhD, CFE	Ms NR Mgobo CA (SA)
Full Names:	Ansia	Nontando Rose
Function in Project	Supervision	Researcher
Telephone	(018) 299 1460	083 294 5642

What is this research study all about?

A university of technology has been facing challenges in generating third-stream income. Despite various efforts and initiatives, university's revenue from non-core activities has remained stagnant. The lack of success in generating third-stream income not only affects the financial sustainability of the university but also limits its capacity to expand and enhance the quality of its academic programs and services. Consequently, the main objective of the study is to explore the challenges faced by a university of technology in generating third-stream income.

Why have you been invited to participate?

You have been invited to participate in this research study because you fall into at least one of the following categories:

- i. You have been considered to possess relevant knowledge about the financial modelling of the institution's income,
- ii. You are considered to understand the significance of financial sustainability for the university, and
- iii. You are considered to understand critical success factors for third-stream income.

What will be expected of you?

You will be expected to:

- Participate in a 45 – 60 min structured interview with the researcher at a suitable time and private area without interruptions that is convenient for both parties via an online platform. This will be scheduled by the researcher once approved by the NWU Economic and Management Sciences Research Ethics Committee (EMS-REC).
- Respond to the questions in an open and honest manner.
- Inform the supervisor should you feel or experience any form of discomfort or distress during the research process and inform the supervisor if you at times feel the need to terminate your involvement in the research process.

Will you gain anything from taking part in this research?

This research study intends to give you a voice to reveal, explain and reflect on challenges faced by university in generating third stream income. No monetary reward shall be made available for participation in the study. You will however be furnished with a two-page communique on the outcomes of the study that you can utilize to for future reference.

Are there risks involved in your taking part in this research and what will be done to prevent them?

Participation in this study creates minimum risk as the study does not involve any physical activities or experiments. We, however, have identified certain ethical principles that shall be always maintained to prevent any damage to you. The focus of these principles will be to protect your dignity and keep all records provided private and confidential.

How will we protect your confidentiality and who will see your findings?

You will be assigned a unique participant ID. Our interview will be recorded and saved with reference to the ID, but data collected shall be regarded as confidential and will not be shared with any 3rd party that is not directly involved in the research process. Personal details of participants and their direct input to the research study shall not be made public. All records of the research shall be kept for a retention period and destroyed by an appropriate means. The findings of the study will be made public however will not contain any raw data that might incriminate certain individuals.

How will we ensure compliance with the POPI Act?

The researcher will ensure compliance with the POPI Act by prioritizing privacy and data security throughout the research process. This includes obtaining informed consent from participants, using unique codes to protect identities, securely storing electronic data on hard drive that is password protected and access restricted to researcher and supervisor, conducting data minimization to collect only relevant information, and communicating with participants through secured email channels.

What will happen with the findings or samples?

The findings concluded in the study will be for academic purposes and will only be utilized to add to the current body of available knowledge.

How will you know about the results of this research?

Participants in the study, should they require, will be made aware of the results of the research, through a two-page communique, by means of electronic mail. The electronic final version of the dissertation will also be made available if requested.

Will you be paid to take part in this study and are there any costs for you?

Participation in this study will not yield monetary value to you. There is no cost envisaged to you except the time that you spend participating in this study. This study will be funded by the researcher himself.

Is there anything else that you should know or do?

You may contact the supervisor, Dr Ansia Storm, PhD, CFE, on 018 299 1460 if you have any further questions or problems. You will receive a copy of this information and consent form for your own purposes.

APPENDIX C: INTERVIEW QUESTIONNAIRE

Exploring the challenges faced by a university of technology in generating third-stream income.

Introduction:

A university of technology under consideration has encountered persistent obstacles when it comes to generating third-stream income. Despite multiple attempts and strategic initiatives, the university's income derived from non-core activities has shown no significant growth. This struggle not only poses financial sustainability concerns but also constrains the institution's ability to expand and elevate the quality of its academic offerings and services. Consequently, the primary aim of this study is to explore the challenges that this university of technology encounters in its pursuit of generating third-stream income.

Questions:

Questions	Response from participant
1.Types of Third-Stream Income	
(i) What are the different types of third-stream income that can be generated by a university of technology?	
(ii) What are the potential benefits associated with each type of third-stream income?	
(iii) What challenges are typically associated with generating these income streams?	

2. Best Practices from other universities	
(i) Can you share examples of universities that have successfully generated third-stream income?	
(ii) What best practices, strategies, or specific success stories/case studies have these universities employed that could be applied at our university?	
3. Role of Technology and Innovation	
(i) How do technology and innovation play a role in generating third-stream income at universities?	
(ii) Could you discuss any relevant trends and emerging opportunities in this area that our university should consider?	
4. Current Approach and SWOT Analysis	
(i) What is the current approach of our university of technology to generate third-stream income, explain using SWOT Analysis?	

➤ What are the strengths of current approach?	
➤ What are the weaknesses of current approach?	
➤ What are the opportunities of current approach?	
➤ What are the threats of current approach?	
5. Policies, Regulations, Barriers, and Opportunities	
(i) What are the policies and regulations that impact third-stream income generation at our university?	

Closing:

The researcher to”

- Thank the participant for their time and insights.
- Offer to provide a summary of the interview findings if they wish to receive it.
- Reiterate the importance of confidentiality and ethical data handling.