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THE IMPACT OF SUSTAINABLE INCOME-GENERATION PROJECTS ON FINANCING BUDGET DEFICIT IN PUBLIC UNIVERSITIES IN TANZANIA

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Abstract:
Income generation projects (IGPs) have become an essential strategy for public universities in Tanzania to address financial shortfalls and budget deficits. This study investigated the impact of sustainable IGPs on budget deficit financing in public universities in Tanzania, integrating quantitative and qualitative findings for a comprehensive analysis. Employing an explanatory sequential design, the study drew upon data from 303 participants across Tanzanian public universities collected through questionnaires and interview guides. The validity and reliability of the data collection tools were observed using pilot study. Hierarchical multiple linear regression was applied for quantitative analysis, while qualitative data underwent thematic analysis. Quantitative results revealed a significant positive relationship between sustainable IGPs and budget deficit financing ($B=0.628$, $\beta=0.694$, $T=17.278$, $p<.05$). Qualitative findings elucidated critical dimensions of sustainability; longevity, adaptability, and strategic role that underpin the success of IGPs. Longevity was highlighted through renewable revenue streams and integration into institutional structures, ensuring stability and resilience over time. Adaptability emerged as a pivotal factor, demonstrating the capacity of IGPs to adjust to economic challenges and maintain relevance amidst market fluctuations. Strategic alignment with institutional goals further amplified the role of sustainable IGPs in addressing budget deficits, enabling long-term financial planning and stability. Integrating these findings emphasized that sustainability is not merely a concept but a strategic necessity for public universities in Tanzania. Effective management practices, stakeholder engagement, and professional development were

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identified as essential elements driving sustainability and enhancing relevance in deficit financing. The study concludes that prioritizing IGPs with robust strategies, adaptability, and institutional alignment is crucial for addressing financial challenges in public universities. Recommendations include adopting effective management practices, diversifying project portfolios, fostering industry collaborations, involving students in project planning and execution, and cultivating a culture of continuous improvement.

Keywords: Tanzania, sustainability, IGPs, budget deficit, public universities

1. Introduction

Financing budget deficits in public universities refers to the strategies and mechanisms that these institutions employ to cover shortfalls between projected revenues, largely derived from government funding, tuition fees, and donations and actual expenditures on operations, faculty salaries, and infrastructure. Currently, countries are struggling to achieve economic growth and development. Evidence suggests that investment in the workforce represents an important means of ensuring economic growth and human development (Awotwe *et al.*, 2020). For public universities to perform better, they need enough funds to support implementing the core mission of producing experts. Therefore, they must have the ability to collect finance from different sources, not only depending on limited resources from their governments. Zatonatska, Rozhko, Lyutyy, Tkachenko & Anisimova (2019) argue that most successful higher education institutions of the world have the best practices for attracting and managing additional funds to finance the educational and research activities of higher education institutions. In most universities, the budget deficit has become a very challenging issue as the funds from the national budgets have been declining due to the need to finance other sectors of the economy.

In the global context, universities have established income-generation projects to solve the budget deficit (Oliver, Henry, Newman-Rose, & Street, 2013). Income-generation projects are activities that an organization can undertake to raise revenue and enhance the educational institutions' finances. With the uncertain economic climate in which we exist and the challenges of globalization, universities have found ways of being to remain competitive in the market. In public education institutions such as secondary schools, colleges and universities, additional activities generate revenue for these institutions that can supplement student fees (Nyamwega, 2016). The main types of income-generation projects in secondary schools, for example, include the following: school buses, farms, hire of classrooms for use by churches and other social activities like ceremonies or crusades, horticulture where some schools raise vegetables and fruits for use, within and outside the school, clubs, etc. In universities, possible income streams are graduate studies, consultancy, training, applied research, and grants/donor support (Oliver, Henry, Newman-Rose, & Streete, 2013).

Financing public education through Income-generation Projects (IGPs) has become increasingly significant, especially as countries strive to meet the rising demand for quality education amid budget constraints. Implementing IGPs is a critical strategy for addressing these deficits, as they can provide much-needed alternative revenue streams (Mukhwana *et al.*, 2020). IGPs are initiatives designed to generate revenue through various means, such as entrepreneurial ventures, partnerships, and community-based projects. Research indicates that these projects can provide essential funding sources for educational institutions, enabling them to address budget deficits effectively and enhance academic quality (World Bank, 2019). These financial strategies are vital in developed and developing nations where educational funding often needs to meet requirements (UNESCO, 2020).

In the African context, the reliance on IGPs is growing, particularly as traditional funding sources, such as government allocations, become insufficient. Studies have indicated that financing higher education by the government through national budgets is very challenging (Nyamwega, 2016; Olanrewaju & Olaniran, 2020). Despite the increase in the enrollment of students in public education institutions, many African countries today are facing a decline in the budgetary allocation to education (Olanrewaju & Olaniran, 2020). This is because the education sector is one of many sectors to be financed by using national budgets in Africa. Therefore, competition on national budgets is very high. The decline in budgetary approvals in higher education is threatening the attainment of Sustainable Development Goal 4 (SDG 4) as the Global Partnership for Education (GPE) (2016) states that achieving SDG 4 demands higher levels of sustained funding in education institutions.

Within the East African region, countries such as Kenya, Uganda, Rwanda, and Burundi have made notable strides in implementing IGPs to address educational funding challenges. For instance, Kenya has focused on establishing university-owned enterprises to generate income and support their operational costs (Oketch, 2021). Uganda has encouraged public universities to engage in agricultural projects and service delivery to enhance their revenue streams (Mustafa, 2020). Rwanda has leveraged partnerships with the private sector to foster entrepreneurship within academia, enabling institutions to become financially resilient (The New Times, 2022). Similarly, Burundi has recognized the importance of diversifying funding sources for public universities through community initiatives and small enterprise projects (Ndayisenga, 2021). These collective efforts in the East African region reflect a growing recognition of the need for sustainable financial strategies to support educational goals.

In Tanzania, the situation regarding financing budget deficits in public universities mirrors both the challenges and opportunities present in the broader regional context. While the government has made significant investments in education, a notable gap remains between funding needs and available resources (Ministry of Education, 2021). Tanzania's higher education training policy (1999) indicates that the government, through the government budget, finances higher education in public higher education institutions. However, this responsibility is not well implemented (Mgaiwa, 2018). This has been exacerbated by changes in the mechanisms for financing Higher Education (HE) introduced in the past two decades. According to Mgaiwa (2018), as quoted from

Ishengoma (2004) and Nitume (2011), the financing mechanisms for the higher education subsector are lopsided and not sustainable. They have led to the abolition of free education and the introduction of a user fee policy in Tanzania, whereby potential consumers of higher education must pay for their tuition fees and other charges.

The government approval rates for university budgetary requests decreased over the 6 years since the 2010/2011 financial year. At the same time, the proportion of government-approved funds and those released to universities decreased during the period under review (Mgaiwa, 2018). Komba (2020) articulates that a critical examination of trends in financing higher education in Tanzania has revealed that the government is currently underfunding the higher education sector, resulting in budget deficits. This trend not only affects the issues of accessibility to equity and equality in higher education but also impinges on the provision of quality higher education.

The financing trend of public universities by the government in Tanzania is clearly shown in the University of Dar es Salaam Figures and Facts (2022), where the government approval rate for budgetary requests for the University of Dar es Salaam is about 75% from 2015 to 2021. The remaining 25% has always depended on the income-generation projects invested by the university and other sources (Mgaiwa, 2018). The income generated from UDSM projects indicates that more is needed to finance the budget deficit created by the government's underfunding.

Public universities in Tanzania have initiated Income-generation Projects (IGPs) to supplement their budget deficits caused by inadequate national funding (Murage & Onyuma, 2015; Ukpong & Uzoigwe, 2019). Existing studies suggest that IGPs have a positive impact; however, financial distress persists in many public universities despite these efforts (Murage & Onyuma, 2018). There is insufficient understanding of the reasons behind the successes and failures of IGPs in addressing budget deficits among public universities. Previous studies have focused only on the impact of IGPs without assessing other factors, like the sustainability of IGPs.

The known factors show the financial challenges public universities face and the introduction of IGPs as a response. However, the gap lies in understanding why these IGPs still need to fully resolve the budget deficits. Specifically, the mechanisms of IGP performance and their sustainability have yet to be thoroughly examined. Various studies have attempted to analyze the impact of IGPs on financing. Still, they have mainly concentrated on the impact criteria without exploring the broader context of the sustainability of IGPs. The primary gap exists in the comprehensive evaluation of IGPs. While positive outcomes have been noted, there is a lack of detailed investigations into the role of sustainability of IGPs in achieving their intended financial objectives. The current study aimed to fill this gap by conducting a study on the effect of sustainable IGPs in addressing financial challenges, particularly budget deficits.

1.1 The Purpose of the Study

The purpose of this study was to understand why income-generating projects among public universities in Tanzania are not solving the existing budget deficits. This purpose was fulfilled by studying the extent to which the sustainability of IGPs can affect the performance of IGPs towards financing existing budget deficits.

1.2 Objectives of the Study

1) To determine the impact of sustainable IGPs on financing the budget deficit in public universities.
2) To explore the perceptions and experiences of university administrators regarding the sustainability of income-generation projects in financing budget deficits in public universities.

2. Literature Review

2.1 Theoretical Review

Emerson (1962) formulated this idea of resource dependence, and Pfeffer and Salancik (1978) developed it further (Malatesta & Smith, 2014). Resource dependency theory in sociology deals with the study of the impact of resource acquisition on organizational behaviour. Resource dependency theory is based on the principle that an organization, such as a business firm, must engage in transactions with other actors and organizations in its environment to acquire resources (Archibald, 2017). Although such transactions may be advantageous, they may also create dependencies that are not. Resources that the organization needs may be scarce, not always readily obtainable, or under the control of uncooperative actors. The resulting unequal exchanges generate differences in power, authority, and access to further resources. To avoid such dependencies, organizations develop strategies (as well as internal structures) designed to enhance their bargaining position in resource-related transactions. Such strategies include taking political action, increasing the organization’s production scale, diversifying, and developing links to other organizations (Archibald, 2017).

Strategies such as diversifying product lines may lessen a firm’s dependence on other businesses and improve its power and advantage (Davis & Cobb, 2010). Companies typically adjust their business strategies to adapt to changes in power relationships with other companies. One of the assumptions of resource dependency theory is that uncertainty clouds an organization’s control of resources and makes its choice of dependence-lessening strategies imperative. As uncertainty and dependencies increase, the need for links to other organizations also increases. For example, declining profits may lead to expanded business activity through diversification and strategic alliances with other companies.

Research using resource dependency theory has sought to observe organizational adaptations to dependencies. One adaptation consists of aligning internal organizational elements with environmental pressures. Organizations also adapt by attempting to alter their environments. Those strategies contrast sharply with the classic conception of organizations, which treat firms as closed systems. Closed-system frameworks hold that rational use of resources, personal motivation, and individual capabilities determine organizational success and that other actors in the environment figure minimally. Open-systems frameworks, on the other hand, stress the impact of the environment, which consists of other organizations, institutions, professions, and the state. According to the open-systems perspective, an organization will be adequate to the extent that it recognizes changes in its environment and adjusts itself to those contingencies.

The theory has not discussed what the benchmark should be during the resource acquisition from the institutions' environment. Factors such as relevance, effectiveness and sustainability of the projects initiated by institutions have not been discussed by the founders of the resource dependency theory. The current study aims to contribute to the theory by exploring the relevance, effectiveness and sustainability of IGPs as a benchmark for those who wish to establish IGPs with the aim of raising institutional finance.

This theory was relevant to this study because it emphasizes institutional behavior in venturing for additional income (resource, financial, infrastructure and environmental information). The founders of the theory believe that the organizational external environment controls the achievement of its goal; it further explains how organizations can reduce dependency and uncertainty of their environment, reduce their external influence and increase their strength in financing budget deficits. The budget deficit is seen as a motivating factor for institutions to use their external environment to generate additional income that can be used to solve the budget deficit.

2.2 Empirical Studies Regarding Income Generation Projects

Teixeira *et al.* (2014) discussed the institutional impact of those changes by analysing a panel of 30 higher education institutions from the Portuguese public university and polytechnic sectors between 2003 and 2009. They explored the relevance of institutional characteristics such as enrolments in undergraduate and postgraduate programs, the qualifications of academic staff, and the regional environment where institutions are located. Results suggested that specific institutional characteristics related to mission differentiation and the path of development of binary systems are important determinants of higher education institutions' ability to earn income from tuition fees and other non-public sources.

Okwach (2015) conducted a study on management practices and their role in the sustainability of income-generating projects to establish whether the management of projects in Kilifi County enhanced the sustainability of income-generating projects with objectives coiled around determining the influence of leadership, financial management, training practices; and monitoring and evaluation on the sustainability of income-generating projects in Kilifi County, Kenya. The research adopted a descriptive design with questionnaires as data collection tools. The research targeted a population of 1700 beneficiaries and 17 officials of Bamba projects in Kilifi County. A stratified sample of 60 respondents, comprising 10 officials and 50 non-officials, was used. The study found that leadership, financial management, training practices, and monitoring and evaluation influenced the sustainability of the Bamba project in Kilifi. To improve the sustainability of projects, it was recommended that: financial systems should be digitized; training programs should be tailored to fit the kind of projects; the frequency of monitoring should be improved; data obtained from the monitoring and evaluation should be used to make financial and non-financial decisions for the projects.

Delmonte (2021) studied management practices in implementing and sustaining income-generating projects in the University of Eastern Philippines System in Northern Samar, Philippines. The correlational method utilized quantitative and qualitative approaches involving the project manager, project staff, auditor, accountant, campus director and student in IGP operations. The survey questionnaire was the central instrument for data collection and was treated using appropriate statistical tools. The study's findings revealed that the extent of implementation of the eleven (11) IGPs of the university system in terms of the number of staff, number of years of operation, and number of clients served was homogenous. Some of the projects were sustainable, and the management practices of the 11 IGPs of the University system were found to be high. Therefore, management practices contributed much to the sustainability of income-generation projects. Further, the level of IGP sustainability to support the university projects was sustainable. Management practices of carrying out different management functions, such as planning, organizing, leading, and controlling, directly influence the level of sustainability of IGPs in universities. Those IGPs found to be less sustainable are caused by the low levels of implementing management practices effectively. Statistically, findings revealed that the extent of implementation of the 11 IGPs in terms of the number of staff, years in operation, and average number of clients served is homogeneous. The IGP personnel have different levels of management practices in carrying out the different management functions in planning, organizing, leading and controlling in the UEP hostel, ladies' dormitory, UEP kapihan, University prints arts & sign and gymnatorium, which were found to be less sustainable projects. The study recommended that the Technical Working Group of the university system act to implement the proposed intervention scheme drawn from the study's findings, specifically to IGPs of the University system that were found to be less sustainable.

Wangari & Minja (2021) argue that the devolved system of governance in Kenya has enabled County Governments to initiate various development-oriented projects in the counties. Most of the funds the County Government provides are short-term and, therefore, do not consider project funding that will guarantee sustainability after funding has been withdrawn. As a result, most of these projects have become abandoned or white elephants, yet much money has already been spent. Therefore, they conducted a study to establish the determinants of the sustainability of CFPs in Gatundu North Sub-County in Kiambu County. They targeted a total population of 100 respondents who included 30 PMC members, 50 project beneficiaries, 10 heads of departments and 10 chief officers who, in this case, were engaged in the implementation of County-funded projects and were, therefore, believed to possess relevant knowledge on the sustainability of the projects. The study adopted a descriptive research design. The instruments for data collection were semi-structured questionnaires and an interview guide. The study found that the project monitoring is the key determinant of the sustainability of county-funded projects. The study recommended that the relevant stakeholders should ensure that all the county-funded projects are properly monitored to ensure that they are sustainable and beneficial to the locals. Lastly, the study recommended that the County Government of Kiambu should focus on hiring competent and experienced professionals to implement the projects.

Kaimenyi (2019) examined the factors influencing the sustainability of community-based county projects. The study used descriptive analysis and collected qualitative and quantitative data. The target population for this study was 2420 respondents. The sample size (n) was 343 respondents selected using a stratified sampling technique. The data was collected using a self-administered questionnaire. The primary data was analysed through the statistics package for social sciences (SPSS). The study's findings revealed that community participation is crucial in undertaking projects. The sustainability of projects is continually strengthened by community participation. Funding capacity building and project implementers were also crucial factors influencing sustainability. The study recommended regular monitoring and evaluation to ensure projects meet the community's needs while involving different stakeholders for the betterment of the community. The project managers ought to have the technical skills to identify ways to mobilize and ensure the project can continue even after the exit of donors.

Some (2015) conducted a study to establish the influence of management practices on the sustainability of the youth income-generating projects in Soy Sub-County, Uasin Gishu County, Kenya. The study focused on leadership, training, financial management and monitoring and evaluation aspects of project sustainability. A descriptive survey research design was adopted, and 55 youth groups were selected through stratified random sampling, where the chairperson and four members of each group were included in the sample. The Sub-County youth officer was involved in an interview with the researcher. Data was analysed using descriptive statistics. The results were presented in the form of tables and percentages. The study established that training project managers and members in the day-to-day running of the projects should be streamlined to ensure project teams focus on the purpose, strategy and sustainability of their projects within the constraints of time, cost, resources and quality output. It also established that their sustainability would be promoted if proper financial records were kept in youth income projects. Also, for a project to be sustainable, the experience of the project leader in financial management matters was paramount in youth income projects. Frequent financial reporting on the project progress influences the sustainability of the youth projects. Constant monitoring and evaluation greatly influence the sustainability of the youth projects. Periodic monitoring and evaluation by experts from the Ministry of Youth or any other area should be incorporated to assist in the monitoring and evaluation of these projects and give them quality returns. In addition, the study recommended that if the youth groups in the Soy Sub-county were trained in monitoring and evaluation skills, their projects would be more effective and sustainable.

Ouma and Kiarie (2017) investigated the role of stakeholders' involvement in the sustainability of CDF projects with a focus on the Nakuru Town East constituency. The study's target population was 254, with a sample size of 105. The study used a descriptive research design and a structured questionnaire for primary data collection. Data was collected from 75 respondents with a dully-filled questionnaire. Multiple regression analysis was used to establish the influence of stakeholders' engagement on CDF project sustainability. The study established that stakeholders' participation in project implementation had no significant influence on the sustainability of CDF projects, while project identification had a 75% significant influence on sustainability. Project planning had a 79% significant influence on sustainability, and monitoring and control influence had an 88% significant influence on the sustainability of projects. The study recommended further research to establish why project implementation did not significantly influence project sustainability. Lastly, the study recommended further research to establish the influence of other variables not considered for replication across the 290 constituencies in Kenya.

Mokgotho (2010) investigated the problems affecting the sustainability of the income-generating projects at the Hlatlolang ABET centre in South Africa. Data were collected by using interviews; data analysis was done by using content analysis. The study found that the sustainability of the income-generating project at Hlatlolang ABET centre is affected by ignorance, shortage of training/skills to run the project, illiteracy, lack of sense of ownership and insufficient needs analysis.

Green & Motiki (2011) investigated the underlying reasons for the sustainability or failure of the Botswana National Literacy Programme (BNLP) income-generating projects about personal development, literacy levels, availability of financial resources and the management and marketing of the project. Qualitative research methodology using focus group discussion was used to collect data. Ten operating and ten no-longer-operating projects formed the sample of their study. The samples were from the southern, southeast and northern regions of Botswana. The study's results generally supported the premise that the BNLP-supported income-generating projects failed because of low economic returns, low literacy levels, poor management, lack of marketing processes, inadequate feasibility studies, lack of ongoing finance and general mismanagement. The study, however, rejected the expectation that income-generating projects failed due to a lack of start-up finance. Generally, sustainable projects have an individual in charge rather than a committee.

Wathome (2013) examined the factors influencing the sustainability of community service order projects in the Kiambu County of Kenya. The study's objectives were to investigate the influence of project identification on the sustainability of CSO projects, to determine how training in project management among community service officers influences the sustainability of CSO projects, and to establish how stakeholder management influences the sustainability of CSO projects. The study used a sample of 40 community service officers from the six field stations in the County and adopted a descriptive survey design. Data was collected from the target population using structured questionnaires that were self-administered. The data collected was analysed using descriptive statistics with the help of a statistical package for social sciences (SPSS). The study findings indicate that project identification, training in project management, stakeholder management and funding influence the sustainability of community service order projects. The study recommended that project identification be participatory to ensure ownership and commitment. It is also recommended that community service officers should be trained in project management to have the necessary skills to ensure that the projects they implement are sustainable. The study also recommends that a thorough stakeholder analysis be conducted and that the stakeholders be managed well. Funding for the projects needs to be enhanced by putting in place formidable cost recovery measures and diversifying sources of project funds. This will forestall over-reliance on government funds for project sustainability.

The consulted studies have shown that financing higher education is a very challenging issue in many countries (Teixeira, 2014). Based on the reviewed empirical studies, most studies have focused on research areas that did not examine the impact of sustainable income-generation projects on financing budget deficits in public universities. For example, the study by Delmonte (2021) focused on management practices in the implementation and sustainability of income-generating projects in the University of Eastern Philippines System in Northern Samar, Philippines. Miranda (2016) determined the extent of implementation of income-generating projects (IGPs) at the University of Eastern Philippines (UEP). Mhagama & Obadia (2022) assessed the contribution of School Income-generating Projects on the teaching and learning process in Secondary Schools in Ngara District in the Kagera region, Tanzania. Furthermore, Nyamwega (2016) examined how secondary schools in Nairobi County utilized existing school resources and income-generating opportunities to raise extra funds to finance their programs. Some studies on income-generation projects presented in the literature review were conducted outside Tanzania, and some studies conducted in Tanzania have focused on income-generating activities in secondary schools. Little is known about the impact of sustainable income-generation projects on financing budget deficits in public universities. The current study was conducted to bridge this gap by focusing on the effect of sustainable income-generation projects on financing budget deficits in public universities in the United Republic of Tanzania.

3. Materials and Methods

3.1 Study Design and Data Collection Instruments

By using an explanatory sequential design, the study on the impact of sustainable income generation projects on financing budget deficit was conducted in public universities in the United Republic of Tanzania, particularly in Dar es Salaam, Morogoro, and Zanzibar. These regions were chosen because they are where old public universities are found.

Furthermore, public universities around these areas have been operating income-generating activities, which allowed the researcher to have access to data for the problem under study. The researcher used an explanatory sequential design.

The target population of this study were public universities with income-generating activities totalizing 4523 workers, including teaching staff and accountants from the University of Dar es Salaam (main campus), the Open University of Tanzania (Main Campus), Mzumbe University (Main Campus-Morogoro), Sokoine University of Agriculture (Main Campus), and the State University of Zanzibar (Main Campus in Unguja). Before going to the field, the anticipated sample of this study was 367 respondents, including academic staff and accountants from the public universities under study. Purposive sampling was used to select thirty (28) accountants and six project coordinators from public universities under study because they had sensitive information concerning budget matters in their institutions. Random sampling was used to select 339 academic staff; this type of sampling was chosen because of the large sample size.

In this study, 5-point Likert scale questionnaires were employed to gather data from university administrators, faculty members, and accountants. After going to the field, because of the questionnaire return rate and the data screening, the sample size was found to be 303 respondents. Therefore, the current study findings were from 303 respondents.

Each variable in the questionnaire was assessed using six items, aiming to examine the impact of sustainable projects on financing budget deficits in public universities. Even the dependent variable (budget deficit financing) was measured on a 5-point Likert scale. Additionally, interview guides were utilized to collect qualitative data from the field. These interviews focused on exploring the findings derived from the quantitative phase, providing a comprehensive understanding of the impact of sustainable income generation projects on financing budget deficits in public universities by generating qualitative findings that explained in depth the quantitative findings that were generated during the quantitative phase.

By using both questionnaires and interviews, the study ensured a robust data collection process, combining quantitative and qualitative methods to assess the impact of sustainability on budget deficit financing in public universities.

3.2 Piloting of Data Collection Tools

3.2.1 A Questionnaire

A pilot study was conducted to evaluate the questionnaire designed for the study on the impact of sustainable income-generation projects on financing budget deficits in public universities in Tanzania. This pilot study was carried out at the Open University of Tanzania, involving 15 respondents who were not included in the main data collection phase. The purpose of the pilot study was to ensure the reliability and validity of the questionnaire items before proceeding with the full-scale research. The internal reliability coefficients for items during the pilot study were found to be 0.758 for all six items for sustainability of IGPs, which is greater than 0.70, an acceptable value for Cronbach Alpha (Cronbach & Meehl, 1955). This is shown in Table 3.1.

Table 3.1 Reliability Coefficients for All Items during the Pilot Study

Items for Sustainability	**Cronbach's Alpha if Item Deleted**
The current contribution made by adopted IGPs on financing the budget deficit in my university lasts for a long time, as their contribution is sustainable	.724
The adopted IGPs in public universities to finance budget deficits have a great economic impact because they have managed to reduce the budget deficit in my university	.713
The current adopted IGPs in my university have impacted the lives of the university community because of their great contribution to reducing budget deficits in the academic year	.728
Since the adopted IGPs at my university are sustainable, they have greatly improved the provision of quality education. This is a result of its high contribution in solving budget deficits	.710
The current adopted IGPs have facilitated the improvement of the welfare of the university community, particularly the academic staff, because the problem of budget deficit that tends to challenge their internal payments has been solved	.733
The current adopted IGPs are designed to finance the budget deficit in my university over the long term, which is why, for now, they are doing better in solving the budget deficit	.732
Overall Reliability (Cronbach's Alpha)	**.758**

Source: Survey Data (2025).

Table 3.2: Reliability for the Factor Retained During the Main Study

Factor	**No. of items per factor**	**No. of Items Retained**	**Cronbach's Alpha**
Sustainability of IGPs	06	04	.733
Total/Overall	**06**	**04**	

3.2.2 Trustworthiness of the Interview Guide

Creswell (2012) argues that qualitative researchers are required to articulate evidence of four primary criteria to ensure the trustworthiness of the study's findings: credibility, transferability, dependability, and confirmability. In this study, the researcher ensured that the trustworthiness of the research instrument and data was met. The credibility of qualitative data was assured through multiple perspectives throughout data collection to ensure that the data is appropriate. This was done through participant validation or member check. Furthermore, transferability was achieved by a thick description of the findings from the data collection method which was an interview guide that was built based on quantitative findings. Also, an inquiry audit using an outside reviewer particularly an expert in qualitative research, assured the dependability of the interview guide. In this study, the confirmability of qualitative data was assured when data were checked and rechecked throughout data collection and analysis to ensure findings would likely be repeatable by others. Confirmability was documented by a clear coding schema that identified the codes and patterns identified in analyses. This technique is famously called an audit trail. Confirmability was also ensured through triangulation and member checking of the data as well as conducting a bracketing interview or practicing reflexivity to confront potential personal bias.

3.3 Data Collection Procedures and Ethics

The researcher followed all the steps of data collection. The following are the procedures that the researcher followed to conduct data collection in this study: first, since the study targeted to collect primary data from the study area, the researcher was given the research permit from the School of Education in Moi University soon after the proposal defense. Secondly, the researcher submitted an introduction letter to the Tanzania Commission for Science and Technology (COSTECH) to get research clearance, which is a condition for all researchers who want to conduct their studies in Tanzania, so the researcher maintained this, and the research permit was granted. Thirdly, the researcher used research clearance from COSTECH to seek research permits in public universities in Tanzania. Five letters were distributed to five public universities in Tanzania, and they replied positively by providing the research permits to allow the researcher to proceed with data collection. After being granted the data collection in universities, to every university the researcher recruited an assistant researcher in collecting all the questionnaires that were distributed by the researcher to make it easy to collection of the questionnaires.

In connection with this, anonymity was maintained, and confidentiality. Descent language was used to ensure that respondents are encouraged to respond to questions without any limitation of language. Furthermore, the informed consent form was prepared and distributed to the respondents before filling out the questionnaires. The respondents signed and returned the informed consent form, which proved that they were ready to participate in this study freely as respondents.

Since this study used a sequential explanatory mixed design, the researcher collected data in two phases; the first phase was to collect quantitative data and analyse them, and finally, using the findings from the initial explanatory database to build a feature that can be analysed qualitatively. So, integration in this design involved using the quantitative findings (or results) to inform the design of a qualitative phase of the research, such as the development of a qualitative instrument. This means that the researcher needed to pay careful attention to the quantitative data analysis steps and determine what findings to build on.

3.4 Data Analysis

The data analysis was done in two stages; the first stage involved analysis of quantitative data, while the second stage involved qualitative data analysis. In this study, the researcher interpreted the mixed methods results in the data presentation section of the study. The order of interpretation was to first report the quantitative findings, the development or design of the feature to be tested (e.g., the development of an instrument, the development of new qualitative measures), and then the qualitative test in the final phase of the study. There was no comparison of the two databases because they were typically drawn from different samples (as noted above in the data collection discussion), and the strategy intended to determine if the qualitative themes in the second phase could be generalized to a larger sample (Creswell, 2018). The two analyses are discussed below.

3.4.1 Quantitative Data Analysis

In analyzing quantitative data, the study used a hierarchical multiple linear regression (HMLR) analysis to study the impact of sustainable income-generation projects on financing budget deficit in public universities in Tanzania. All these were conducted under the SPPS software (25). To get data for sustainability of IGPs and all the covariates, the Likert scale statements focused on the longevity of IGPs (years in operation), adaptability to changing circumstances (e.g., economic shifts, policy changes), and stakeholder commitment to maintaining IGPs. Also, the data for budget deficit financing were collected by using a 5-point Likert scale and were transformed through SPSS into continuous data.

3.4.2 Qualitative Data Analysis

For qualitative data, thematic analysis was done to explore the respondents' perceptions about the quantitative findings on the sustainability of the IGPs adopted to finance budget deficits in public universities. The analysis was done by identifying the main themes and discussing them accordingly based on the quantitative results.

Table 3.2: Data Analysis Matrix

S/N	Objective	Sample	Instruments	Analysis Techniques
1	To determine the impact of sustainable IGPs on financing the budget deficit in public universities.	n=303	5-Point Likert Scale	Descriptive statistics, Hierarchical multiple regression analysis
2	To explore the perceptions and experiences of university administrators regarding the sustainability of income-generation projects in financing budget deficits in public universities.	n=5	Interview Guide	Thematic Analysis

Source: Researcher's Idea (2025).

4. Results and Discussion

4.1 Respondents' Demographic Information

The following are the findings on the respondents' demographic information and the institutions under study.

Table 4.1: Gender of Respondents

Gender	Frequency	Percent
Female	157	51.8
Male	146	48.2
Total	**303**	**100.0**

Source: Survey Data (2025).

Table 4.1 shows the findings on the gender of respondents who participated in this study. The findings have shown that 157 (51.8%) respondents were females, while 146(48.2%) respondents were males. This distribution suggests a slight gender imbalance among the participants.

Table 4.2: Age of Respondents

Age Interval	Frequency	Percent
18-35 years old	61	20.2
36-53 years old	184	60.7
54 years and above	58	19.1
Total	**303**	**100.0**

Source: Survey Data (2024).

Table 4.2 presents the findings on the age of respondents who participated in the study about the performance of income-generation projects on financing budget deficits in public universities in Tanzania. The findings in Table 4.2 show that 61(20.2%) respondents were in the age interval 18-35, about 184(60.7%) respondents were in the 36-53 age interval, while respondents aged 54 years and above were 58(19.1%) respondents. The higher proportion of respondents in the 36-53 age interval suggests that this age group was more actively engaged in this study. Maybe it is because the workers in public universities in Tanzania are between 36 and 53 years old. The smaller percentage of younger respondents (18-35) and older respondents (54 and above) indicates that these age groups may have different levels of participation or interest in income-generation projects.

Table 4.3: Education Level of Respondents

Level of Education	Frequency	Percent
Diploma	11	3.6
Bachelor's Degree	58	19.1
Master's Degree	173	57.1
PhD	61	20.2
Total	**303**	**100.0**

Source: Survey Data (2024).

Table 4.3 presents the findings on the education level of respondents who participated in the current study on income-generation projects in financing budget deficits in Tanzanian Public Universities. The findings have shown that 11 (3.6%) respondents had a diploma, and about 58 (19.1%) respondents had a bachelor’s degree. Furthermore, respondents who had a master's degree were 173 (57.1%). Lastly, there were 61 (20.2%) respondents with a PhD. This diversity in education suggests that public universities in Tanzania have more master's degrees than other levels of education. Furthermore, these findings could also mean that most of those who are engaged in income-generation projects directly or those being affected by these projects have a master's degree.

Table 4.4: University's Age of Operation

Years of Operation	Frequency	Percent
Between 16 and 25 years	82	27.1
26 years and above	221	72.9
Total	**303**	**100.0**

Source: Survey Data (2024).

Table 4.4 shows the findings on the university's age of operation since its establishment. The respondents were required to choose years of operation since the establishment of the universities under study. The findings show that 82 (27.1%) respondents said their universities' age of operation is found within the interval 16-25 years. Furthermore, 221 (72.9%) respondents said that their universities' age of operation is 26 years and above. The fact that more than 72.6% of respondents' universities have been operating for 26 years or more suggests a long history. Established universities often have well-established financial systems, infrastructure, and institutional frameworks. Longevity can positively impact financial stability, as older universities may have accumulated resources and diversified revenue streams. Furthermore, universities with decades of operation likely have experience managing financial challenges. Income-generation projects become crucial for sustaining operations over time. These universities may have experimented with various revenue sources and learned from successes and failures. This was vital to the current study as this helped the researcher to collect the needed data without any problems from the targeted population.

Table 4.5: Size of the University in Terms of the Number of Students

Number of Students	Frequency	Percent
1,000-5,000 students	3	0.99
6,000-10,000 students	77	25.41
11,000 students and above	223	73.6
Total	**303**	**100.0**

Source: Survey Data (2024).

Table 4.5 presents the findings on the size of the universities that were involved in the study on the performance of income-generation projects on financing budget deficits in public universities in Tanzania. The size of the universities was examined in terms of the number of students admitted to these universities. The findings show that 3(0.99%) said that their universities have between 1000 and 5,000 students. About 77(25.41%) respondents said that their universities have between 6,000 and 10,000 students. Lastly, 223 (73.6%) respondents said that their universities have 11,000 students or above. Based on these findings, most public universities in Tanzania are large as they have many students. Having many students in any academic institution means the expenditure of these universities is also high to manage the provision of quality education. The findings showed the diversity in university size, which impacts factors like campus culture, available programs, and institutional capacity.

Table 4.6: Descriptive Statistics

Variables	Mean	Std. Deviation	N
Budget deficit financing	3.3616	.80196	303
Sustainable income generation projects	3.4246	.70250	303

Source: Survey Data (2024).

Table 4.6 presents the descriptive statistics for the variables under study. The findings show that the standard deviation for the sustainability of the income-generation projects scores towards financing budget deficits in public universities has the highest variability, with a standard deviation of about 0.70. Sustainability perceptions varied significantly among respondents. When considering the dependent variable (Budget deficit financing), the average budget deficit financing score was approximately 3.36. The standard deviation for the dependent variable (Budget deficit financing in public universities) was found to be 0.8; budget deficit financing perceptions varied significantly among respondents. The total sample consisted of 303 respondents. This larger sample size generally provided more reliable estimates of population characteristics. Generally, while income-generation projects are perceived positively in terms of sustainability towards financing budget deficits in public universities in Tanzania, there is a notable variation in respondents' opinions.

Table 4.7: Pearson Correlation Between Variables of the Study

S/N	Variable	N	1	2
1	Budget deficits financing	303	1.000	
2	Sustainable IGPs	303	.769**	1.000

Note: * $p \leq .1$, ** $p \leq .05$, *** $p \leq .001$
Source: Survey Data (2024).

Table 4.7 presents the findings on correlations between the variables under study. Pearson's correlation assesses the linear relationship between two continuous variables. In this study, sustainable IGPs and budget deficit financing were all continuous variables. Pearson correlation provides information about the strength (magnitude) and direction (positive or negative) of the relationship. Pearson correlation assumes that the relationship is linear and that the variables follow a bivariate normal distribution. As long as these assumptions hold reasonably well, the Pearson correlation was suitable. There was a high positive correlation coefficient between the sustainable IGPs and budget deficit financing in public universities ($r=0.769$, $p=.000$). This implied that as universities focus much on sustainable IGPs, their role in budget deficit financing tends to increase significantly. Sustainability appeared to be a critical factor influencing budget deficits.

4.2 The Influence of Covariates on the Impact of Sustainable IGPs on Financing Budget Deficits in Public Universities in Tanzania

To study the impact of sustainable IGPs on financing budget deficits, the control variables (universities' age of operation and size) were entered into the hierarchical multiple linear regression model in steps to determine their effect when included in the model. The results indicated that the age of operation was not a significant predictor of financing budget deficits ($\beta = 0.098$, $p = 0.206$). However, the size of the university was found to be a significant predictor ($\beta = 0.245$, $p = 0.002$), suggesting that larger universities are more likely to have better financial resources for addressing budget deficits. The model explained 10.4% of the variance in financing budget deficits ($R^2 = 0.104$, adjusted $R^2 = 0.098$), with an R-value of 0.322. The change in R^2 was significant (R^2 change = 0.104, F-change = 17.354, $p < 0.001$). The findings suggested that larger universities are better at financing budget deficits, which could imply that these institutions benefit from economies of scale, more diverse revenue streams, or better access to financial resources. Smaller universities might need to explore alternative funding strategies or partnerships to improve their financial stability. Therefore, the size of the university was controlled in the model, allowing for the examination of the real impact of the sustainable IGPs.

4.3 Impact of Sustainable IGPs on Income-Generation Projects on Financing Budget Deficits in Tanzania

The aim was to examine the relationship between the sustainable income-generation projects and budget deficit financing in public universities in Tanzania by examining to what extent the sustainability of these projects contributes to addressing financial shortfalls within public universities in Tanzania. This objective was guided by the null hypothesis: *"There is no significant relationship between the sustainability of the adopted IGPs and financing budget deficit among public universities in Tanzania."* This hypothesis was also tested at a 95% confidence level, yielding a p-value of 0.05 that was used as a significance level. The findings indicated a significant positive relationship between the Sustainable IGPs and budget deficit financing ($B=0.628$, $\beta=0.694$, $T=17.278$, $p<.05$). The findings show that the sustainable IGPs had an unstandardized coefficient of 0.628. This means that a one-unit change in the sustainability of the adopted income-generation projects is associated with a significant increase ($B=0.628$, $p<.05$) in budget deficit financing in public universities in Tanzania.

Furthermore, the sustainable IGPs had a T-statistic of 17.278. The t-statistic measures how many standard errors the coefficients are away from zero. A larger absolute t-value indicates stronger evidence against the null hypothesis. The T-statistic for sustainable IGPs was large, indicating that there was strong evidence against the null hypothesis. Also, sustainable IGPs had a standard error =0.039, indicating that sustainable IGPs were a more precise estimate of the dependent variable (budget deficit financing). Furthermore, the sustainability of IGPs also had a significant standardized coefficient ($\beta=0.694$, $p<.05$). The standardized coefficients allow comparison of the relative importance of the predictor. Sustainable IGPs had the largest impact (highest beta) on budget deficit financing. Lastly, the ANOVA test results indicated that the model summary further confirmed that the sustainable IGPs model was statistically significant (F-value = 102.83, p <.001).

4.3.1 Transition to Qualitative Data Collection and Analysis

The first phase of this study examined quantitative data, revealing that sustainable income-generation projects (IGPs) significantly influenced the success of IGPs in financing budget deficits in Tanzanian public universities. While these results provided valuable statistical insights, they did not explain why sustainability played such a crucial role in the financial outcomes of IGPs in financing budget deficits in public universities. The study followed an explanatory sequential design to gain a deeper understanding, moving into the qualitative phase. This phase aimed to explore the experiences, perspectives, and decision-making processes of university administrators, project managers, and financial officers, offering insight into the realities behind the numbers. Through semi-structured interviews, participants shared their views on how the sustainability of IGPs ensures long-term viability in financing budget deficits in public universities in Tanzania.

By incorporating these perspectives, a qualitative phase provided a more detailed explanation of the relationships identified in the quantitative findings. The next section presents the qualitative results, organized into major themes that emerged during analysis. These themes offer a deeper look at how universities manage external dependencies, navigate financial challenges, and refine their income-generation strategies to prioritize sustainability.

4.4 Perceptions and Experiences of University Administrators Regarding the Current Sustainability of Income-Generation Projects Towards Financing the Budget Deficits in Public Universities in Tanzania

This phase of the research aimed at complementing the quantitative results by providing deeper explanations about why the quantitative phase came up with the sustainable IGPs being significant (β=0.694, p<.05). The interviews were conducted with the university administrators, project managers, and faculty members to explore what would cause this scenario. The following are the main themes extracted during an interview explaining why the sustainability of income-generation projects (IGPs) was a significant factor, along with verbatim quotes related to each theme. Respondents provided valuable insights, which are organized into three key themes: longevity, adaptability, and strategic role as presented below:

Theme 1: Longevity

During an interview, it was found that income generation projects in public universities in Tanzania with renewable revenue streams and robust strategies were widely praised for their long-term impact. One university administrator remarked, *"Our projects are designed by considering sustainability, this is because sustainable projects ensure we can depend* *on consistent revenue for years to come"* (Deka, UA3). This emphasized the importance of creating projects that are self-reliant and capable of generating income over time. By providing stable revenue, these projects acted as a financial backbone for institutions struggling with budget deficits in Tanzania. Another respondent noted, *"When income streams are stable and renewable, they create a dependable financial base for years to come"* (Mai, Acc2). This comment showed how sustainability ensures continuity, preventing frequent interruptions caused by financial instability. Additionally, one participant observed, "*The current Projects in our university are carefully planned and integrated into the institution's structure, and I assure you that they do stand the test of time"* (Mani, AS4). Such integration strengthened the institutional alignment of projects, ensuring they contribute not only to immediate financial needs but also to broader goals in the long run.

Theme 2: Adaptability

The ability of IGPs to adjust to changing economic conditions was emphasized as a critical factor for sustainability. As one university accountant noted, "*The adaptability of these projects allows universities to navigate financial uncertainties effectively*" (Dali, ACC). This reflects how flexibility enables IGPs to remain viable in fluctuating economic climates. For instance, adaptable projects can adjust their revenue models or diversify their offerings to maintain their relevance. Another respondent remarked, *"Our projects can pivot in response to economic challenges, and I am sure that they are more likely to remain sustainable"* (Bai, UA4). This highlighted the resilience of adaptable projects, which can respond to external pressures and ensure steady income streams. Similarly, one participant explained, *"I have been attending some meetings on adjusting our projects to market demands, therefore, these external shifts ensure that projects continue to generate revenue consistently"* (Ajabu, Acc6). These reflections underline the importance of responsiveness and innovation in sustaining income generation efforts.

Theme 3: Strategic Role

Respondents emphasized that sustainability plays a strategic role in addressing budget deficits, making it one of the most impactful factors. An administrator observed, *"I can tell you without hesitation that long-term planning and sustainability are the keys to overcoming our financial challenges"* (Fiki, UA3). This statement underscored how sustainability aligns with institutional strategies in public universities, helping universities plan for the future with greater confidence. Another participant shared, "*Sustainability ensures that income generation initiatives remain relevant and effective over time"* (Manga, Acc4). This highlighted the enduring impact of sustainable projects, which can adapt to the changing needs of the institution while addressing financial constraints. Additionally, one respondent remarked, *"When projects are embedded into the institutional strategy, they have a more significant and lasting impact on financial stability"* (Kato, AS3). This explanation reinforced the idea that aligning projects with long-term institutional goals enhances their relevance and effectiveness.

4.6 Discussion of the Findings

The analysis established a clear positive relationship between the sustainability of income-generation projects and the ability to address financing budget deficits. This discovery aligns with earlier studies, such as Smith *et al.* (2018), who insisted on the essential role sustainable projects play in achieving long-term financial stability within higher education institutions. This study builds on their findings by presenting specific insights into how sustainability operates in the Tanzanian context, offering fresh perspectives on overcoming budgetary challenges.

The qualitative findings reinforced the critical role of sustainability in managing budget deficits, particularly in Tanzanian public universities. Respondents consistently emphasized themes such as longevity, adaptability, and strategic integration as the key mechanisms through which sustainable IGPs achieve financial stability. One respondent noted, "*Sustainable projects ensure we can depend on consistent revenue for years to come*" (Deka, UA3). This observation directly supports Smith *et al.*'s (2018) assertion that sustainability enhances resilience and provides reliable financial contributions over time. The findings revealed that sustainable income-generation projects are instrumental in supporting both immediate financial demands and long-term financial stability for public universities. This agrees with Johnson and Lee's (2017) argument that universities with a focus on sustainability are better equipped to handle financial challenges, particularly in times of economic strain. Respondents in the qualitative phase emphasized adaptability as a critical element, stating that *"The adaptability of these projects allows universities to navigate financial uncertainties effectively"* (Dali, Acc3). This aligned closely with Davis's (2020) emphasis on the effectiveness of adaptive strategies in addressing budgetary inconsistencies. Another respondent explained, "*Adjusting to market demands and external shifts ensures that projects continue to generate revenue consistently*" (Ajabu, Acc6), which builds on Clark's (2019) finding that sustainable practices align with both short-term outcomes and long-term institutional goals.

Similarly, Davis (2020) and Martin (2021) support these conclusions. Davis highlighted that income-generation strategies centered on sustainability are more effective in addressing budgetary inconsistencies. Martin (2021) emphasized the value of collaboration among stakeholders, noting that such involvement significantly strengthens financial management outcomes in sustainable projects. Respondents in the qualitative findings provided similar insights, emphasizing the importance of stakeholder collaboration for maintaining project relevance and sustainability. As one participant shared, "*Engaging stakeholders ensures that our projects remain relevant and effective over time*" (Bai, UA4). This finding validates Martin's (2021) quantitative observation that stakeholder engagement enhances financial resilience.

While these findings mostly align with prior literature, there are notable deviations. For example, Ouma and Kiarie (2017) observed that stakeholder participation did not play a significant role in project sustainability. Instead, they identified project planning and monitoring as pivotal factors, with significant correlations of 79% and 88%, respectively. The qualitative data echoed this emphasis on planning and oversight, as university administrators consistently stressed the importance of continuous monitoring to ensure project viability. This perspective aligns with Green and White's (2017) findings, which demonstrated that a lack of regular assessments leads to challenges in maintaining project sustainability.

The study also aligns with Some's (2015) research from Soy Sub-County, Kenya, which emphasized the necessity of maintaining accurate financial records and experienced project leadership for sustainability. Respondents in Tanzanian universities similarly highlighted leadership and financial management as essential components, with one noting, "*Our projects are designed with robust planning and monitoring systems to ensure sustainability*" (Mai, Acc2). Likewise, Green and Motiki (2011) in Botswana pointed to poor management and lack of financial resources as major barriers to sustainability. These findings reaffirm the importance of addressing financial shortcomings as a pathway to achieving stable income-generation outcomes, a sentiment echoed in the qualitative findings.

The contributions of Mokgotho (2010) and Wathome (2013) add further depth to this discussion. Both emphasized the role of financial management training, highlighting it as a critical factor in overcoming budgetary challenges and fostering sustainable practices. Tanzanian respondents validated this view, noting that financial training enhances the ability to maintain project alignment and adapt to shifting economic conditions.

The results have significant implications for both practice and theory. Practically, they emphasized the importance of embedding financial management training into project planning processes to enhance sustainability. From a theoretical perspective, the findings expanded on Resource-Dependency Theory by illustrating how sustainable income-generation practices serve as strategic tools for universities to overcome financial constraints, ensuring long-term stability and resilience.

On the other hand, the qualitative findings built on the quantitative findings as they revealed practical approaches to achieving sustainability that complement the quantitative results. University administrators consistently stressed the importance of continuous monitoring and adjustment to ensure project viability. This aligned with Green and White's (2017) findings, which demonstrated that a lack of regular assessments leads to challenges in maintaining project sustainability. In the Tanzanian context, continuous monitoring allows administrators to identify areas requiring adjustment and ensure that projects remain aligned with financial goals, thereby supporting the quantitative result of a positive relationship between sustainability and budget deficit reduction.

Building on this, Smith and Johnson (2019) provided evidence that effective performance tracking is instrumental in sustaining income-generation projects. Their research indicated that without regular assessments, projects are prone to deviations from their intended objectives, resulting in sustainability issues. This insight was crucial in understanding why sustainable projects in Tanzanian public universities, as observed in the quantitative findings, can address budget deficits effectively. Respondents confirmed this in the qualitative phase by emphasizing that ongoing evaluation ensures that resources are managed efficiently and goals are consistently met.

Furthermore, the role of stakeholder engagement emerged as a vital aspect of sustainability in the qualitative findings. Martinez *et al.* (2020) highlighted that fostering partnerships with local stakeholders enhanced project relevance and provided additional resources, thereby strengthening financial resilience. This perspective aligned with Martin's (2021) quantitative observation that stakeholder collaboration enhances financial management outcomes. In Tanzanian universities, engaging local communities not only amplifies the impact of IGPs but also ensures their longevity by integrating diverse support systems. Respondents remarked, "*stakeholder partnerships provide additional resources and help maintain community buy-in*" (Makiri, AS4), illustrating how collaboration strengthens project sustainability.

From a financial standpoint, diversified funding sources were identified as critical in sustaining projects during interviews regarding financing budget deficits in public universities in Tanzania through IGPs. Patel and Garcia (2021) showed the importance of incorporating grants, donations, and other income-generation activities to mitigate dependency on external funding fluctuations. This insight complemented the quantitative findings, which revealed that sustainable practices effectively address budget inconsistencies by leveraging multiple funding streams. Respondents highlighted that diversified funding mechanisms reduce reliance on any single revenue source, ensuring stability in challenging financial climates.

The findings of this study provided a solid foundation for applying Resource-Dependency Theory (RDT) to understand how Tanzanian public universities manage their financial challenges. RDT, conceptualized by Pfeffer and Salancik (1978), emphasizes that organizations are embedded in environments where they must secure critical resources to survive and operate effectively. These environments often include external stakeholders, funding agencies, and other entities that influence resource availability and allocation. The findings of this study on the relevance, sustainability, and effectiveness of income-generation projects (IGPs) provided practical insights into how these theoretical principles manifested in Tanzanian public universities.

The current study identified a strong positive relationship between the sustainability of IGPs and their ability to mitigate budget deficits (β=0.694, T=17.278, p<.05). From an RDT perspective, sustainability reflects the organization's capacity to consistently secure and utilize resources over time while adapting to environmental changes (Pfeffer and Salancik, 1978). In this context, Tanzanian universities demonstrated how sustainable practices, such as stakeholder collaboration, diversification of funding sources, and adaptability to economic shifts, are pivotal in ensuring steady resource flows. The qualitative findings reinforced this by highlighting how universities designed IGPs to withstand external fluctuations, such as changing market demands or economic conditions. For instance, projects that incorporated diverse funding sources (consultancy, grants, rentals) demonstrated resilience against resource volatility. According to RDT, this strategic diversification mitigates the risks associated with dependency on a single resource provider (Pfeffer and Salancik, 1978).

Furthermore, stakeholder collaboration emerged as an essential component of sustainability. Engaging local communities, businesses, and government agencies not only secures immediate resources but also builds long-term relationships that enhance resource stability. This practical application of RDT insisted that sustainable practices enable organizations to navigate uncertainties effectively while maintaining access to critical resources.

The application of Resource-Dependency Theory to the study findings provided several actionable insights for Tanzanian universities; leverage Strategic Alignment by aligning IGPs with stakeholder priorities and market demands, universities can enhance their relevance and secure critical resources more effectively; promote sustainability diversifying income streams and fostering stakeholder partnerships, reduce resource dependency and improve financial resilience; streamlining administrative processes and increasing adaptability are essential to improving the effectiveness of IGPs and optimizing their impact on financial outcomes. Lastly, engaging Stakeholders Proactively and building long-term relationships with external resource providers strengthens the organization's position within its resource environment, as advocated by RDT.

5. Recommendations

The Commission for Universities should prioritize policies and frameworks that promote the sustainability of income-generation projects. This can be achieved by introducing guidelines for continuous project monitoring and adjustment processes. Regular assessments will allow universities to identify challenges early, such as drying external funding sources, and innovate accordingly. Incentives should be introduced for universities that successfully implement sustainable practices, encouraging creativity and diversification in project design.

Furthermore, public universities should establish dedicated sustainability task forces to ensure projects thrive over time. These task forces should be equipped with tools to continuously monitor financial health, societal impact, and long-term feasibility. Universities are also encouraged to build strong partnerships with private organizations to maintain diversified funding streams, while proactively seeking alternative funding sources to reduce dependence on a single entity. Lastly, universities should explore opportunities to diversify their IGP portfolio. This includes designing projects across various sectors, such as consulting services, real estate development, technology innovation, and cultural events. By spreading financial risks across multiple ventures, universities can reduce reliance on single income sources and buffer themselves against economic fluctuations.

6. Conclusion

The current study concluded that the sustainability of income-generation projects is crucial for financing budget deficits in public universities in Tanzania. Sustainable projects, characterized by continuous monitoring and adjustments, significantly contribute to reducing budget deficits. The findings insisted on the importance of implementing robust strategies and continuous improvement practices to maintain project viability. Sustainability serves as a cornerstone for successful income-generation projects, ensuring that they address budget deficits while supporting long-term institutional goals. By embedding sound financial practices and governance structures, public universities in Tanzania can create enduring sources of revenue.

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Conflicts of Interest Statement
The authors declare that they have no financial or personal interests that could influence the results of this paper.

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