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Original Article

Enhancing Financial Sustainability in Public Universities of Pakistan: A Study on Income Diversification and Budgetary Resilience

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Abstract

This study is focused on the financial sustainability of public sector universities in Pakistan, with a focus on reducing dependency on a single source. Examines strategies to increase the financial viability of Pakistani public sector universities, with a particular emphasis on reducing their reliance on strategies for strengthening the financial feasibility of Pakistan public universities, with a particular emphasis on reducing reliance on a single funding source. The aim of this study is to investigate methods and strategies that can be helpful for higher education institution in Pakistan that are having financial challenges. University finances can be made more flexible and durable by diversifying sources of income through partnerships, research grants, and for-profit businesses. The purpose is to explore the methods useful to face any funding sources and their difficulties with HEC criteria. Diversification of revenue flow through research grants and modest joint projects can give universities a way towards vast financial agility and flexibility. Furthermore, it checks the impact of income diversification on budget dependency in selected public sector universities of Pakistan. Return on Assets, ROA, net profit margin NPM, and income diversification are taken as key metrics. The implication of this study is to find those universities by adopt diversifying strategies to improve academic quality and infrastructure development.

Keywords: Financial sustainability, Herfindahl index, Net profit margin, Return on assets, Revenue diversification

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INTRODUCTION

The higher education scene in Pakistan has seen significant transformations since the establishment of the University Grants Commission (UGC) in 1974 and the Higher Education Commission (HEC), under the direction of Mr. Atta Ur Rehman, in 2002. The HEC has been crucial to the growth of research, quality assurance, and the battle against academic misconduct in Pakistan's higher education system. Since the University Grants Commission (UGC) was founded in 1974 and the Higher Education Commission (HEC) was led by Mr. Atta Ur Rehman in 2002, Pakistan's higher education system has undergone substantial changes. In Pakistan's higher education system, the HEC has been instrumental in promoting research, guaranteeing quality control, and battling academic dishonesty. Pakistan's economic and educational standing have improved during the previous 20 years, international scholarships have become accessible, and the HEC has issued PhD degrees.

Higher education is becoming increasingly important for both societal progress and economic success. There are now 174 higher education institutions in Pakistan, 144 of which are public. These government agencies as well as the research facilities they are connected to. Over the past two decades, the HEC has awarded doctorates, facilitated opportunities for overseas scholarships, and positively influenced the growth of education and the economy. These public colleges, together with the research institutes with which they are linked, are vital for nurturing talent and promoting the welfare of society. But the need to address the issue of financial sustainability has become critical, particularly for public universities that rely heavily on government funding.

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In Pakistan, government grants, operating money, and development grants comprise the conventional funding mechanism for public institutions. Although these sources have helped colleges survive to some degree, they frequently aren't able to keep up with the rising costs associated with sustaining high-quality instruction, the development of infrastructure, and research projects. Since public colleges usually have low tuition rates, changes in government funding may cause them to experience financial instability. Pakistan's public universities are investigating alternative financing sources and income diversification strategies in response to the rising need for more financial independence and stability. These strategies include endowment funds, research and development initiatives, philanthropic contributions, and fee-for-service arrangements. However, being financially independent is not simple, particularly in a socioeconomic context where funding for higher education is still scarce.

Given this, the goal of this research is to ascertain if income diversification strategies may help a portion of Pakistani public universities maintain their financial viability. Indicators like Return on Assets (ROA) and Net Profit Margin (NPM) are examined in this study to assess the impact of revenue improvement initiatives on budgetary resilience. The study's findings will shed significant new light on public universities' financial management practices and offer recommendations for enhancing the long-term sustainability of these establishments. Along with empirical studies, theoretical frameworks such as resource dependence theory and agency theory provide valuable insights into the justification for activities aimed at increasing socioeconomic diversity in higher education. Agency theory suggests that diversifying sources of revenue can help minimize agency concerns and align stakeholders' interests with the university's long-term financial goals. However, in order to increase organizational resilience and autonomy, it is imperative to reduce reliance on a single financing source, according to resource dependency theory.

This study's main goal is to assess how revenue diversification techniques could affect a select Pakistani governmental organizations' capacity to maintain a stable financial position. The study's specific goal is to evaluate strategies for increasing revenue. Among other things, research grants, endowment funds, and charitable contributions affect the stability of the budget. The scope of the study includes a thorough examination of the financial situations and income diversification strategies of several Pakistani public universities, including NUST, University of Karachi, Government College University Lahore (GCUL), University of Peshawar (UOP), Punjab University (PU), Allama Iqbal Open University (AIOU), University of Balochistan (UOB), and International Islamic University Islamabad (IIUI). The goal of the research is to provide readers a thorough understanding of the opportunities and difficulties involved in reaching financial

The study's conclusions are supported by most of the reviewed literature, which demonstrates a significant link between income diversification strategies and Pakistan's public universities' ability to maintain stable finances. By integrating recent findings with theoretical perspectives, this study provides a comprehensive understanding of the role of income diversification in higher education administration, laying the foundation for the empirical investigation that will take place in the subsequent sections. Strategies for financial sustainability and income diversification have received a lot of attention in the literature on higher education management, especially when it comes to developing nations like Pakistan. Recent research on the impact of different revenue diversification approaches on public organizations' financial performance has shed important new light on the efficacy of these tactics. The study's conclusions provide important new information about the connection between financial sustainability standards used by Pakistani public sector organizations and efforts for income diversification. The majority of the conversation will center on assessing the findings in light of the goal of the study, going over their ramifications, and admitting the limits of the research.

The impact of revenue diversification and financial sustainability. The study premise is supported by the noteworthy positive correlation shown between revenue diversification and return on assets (ROA). This link demonstrates the importance of income diversification strategies in enhancing the financial performance of higher education institutions. By diversifying their revenue streams through grants, collaborations, and for-profit companies, universities may improve their financial sustainability and make the most use of their resources. Pakistani colleges stand to gain a great deal from this report. Universities really risk having their academic integrity and autonomy undermined when financial concerns trump intellectual freedom. Collaborating with corporations can yield financial and creative rewards, but it can also raise moral and conflict of interest issues. Universities must use extraordinary caution while navigating this delicate moral line to ensure that collaborations honor academic principles and do not

jeopardize scientific independence.

It might be challenging to develop new income streams since bureaucratic bottlenecks and regulatory inertia occasionally uphold the status quo and restrict the investigation of alternative financing sources. When money worries take precedence over academic freedom, universities face a real danger of academic autonomy and integrity being compromised. Cooperating with businesses, though perhaps having a conversation. Universities really risk having their academic integrity and autonomy undermined when financial concerns trump intellectual freedom. Collaborating with corporations can yield financial and creative rewards, but it can also raise moral and conflict of interest issues. Universities must use extraordinary caution while navigating this delicate moral line to ensure that collaborations honor academic principles and do not jeopardize scientific independence.

Bureaucratic bottlenecks and regulatory inertia can sustain the status quo and limit the exploration of other finance sources, making it difficult to create new revenue streams. The literature review shows a relationship between various income diversification strategies and public institutions' financial stability. Strategies for increasing income, such as collaborations and for-profit ventures, have an impact on the financial health of certain public institutions in Pakistan. This literature examines the impact of income diversification strategies such as endowment funds, research grants, and charitable donations on the long-term financial viability of Pakistani public institutions. The influence of revenue diversification on budget resilience by assessing how well various income-augmentation techniques work to strengthen universities' financial stability. It is consistent with the study's objective.

LITERATURE REVIEW

In Pakistan and other developing nations, financial sustainability and income diversification have received a great deal of attention in the literature on higher education management. Current research has shown how income diversification affects public sector universities' financial productivity (Ismail, 2019). The deadly effects of pandemic code-19 have been witnessed by people worldwide in recent years. Because there were insufficient resources, even the university's budget was capped. Public universities in Pakistan must develop sustainably in order to become self-sufficient in terms of revenue. The world has altered recently due to factors including economic ups and downs, technological advancements, and universalization. The deadly effects of pandemic code-19 have been witnessed by people worldwide in recent years. Because there were insufficient resources, even the university's budget was capped. Public universities in Pakistan must develop sustainably in order to become self-sufficient in terms of revenue. The world has altered recently due to factors including economic ups and downs, technological advancements, and universalization. (UNESCO, 2021).

According to Maverick (2016), there is a favorable correlation between financial sustainability and revenue diversification, ROA, and NPM. It is suggested that in Pakistan, setting up a specific office with knowledgeable staff members inside HEC may be a vital first step in developing successful fundraising and policy-making plans (Nik Ahmad et al., 2019). According to Maverick (2016), there is a favorable correlation between financial sustainability and revenue diversification, ROA, and NPM. It is suggested that in Pakistan, setting up a specific office with knowledgeable staff members inside HEC may be a vital first step in developing successful fundraising and policy-making plans (Nik Ahmad et al., 2019). It is believed that reaching fundraising goals requires defining clear objectives and involving stakeholders. To improve their chances of receiving money, universities should identify possible contributors, such as businesses, charitable organizations, alumni, donor agencies, and guardians of students (Khurram et al., 2019).

The deadly effects of pandemic code-19 have been witnessed by people worldwide in recent years. Because there were insufficient resources, even the university's budget was capped. Public universities in Pakistan must develop sustainably in order to become self-sufficient in terms of revenue. The world has altered recently due to factors including economic ups and downs, technological advancements, and universalization. Similar to this, Ahmed and Siddique's (2020) study looked into how income enhancement strategies affected Pakistani public sector universities' capacity to withstand financial hardship. According to the authors, colleges that used varied financing models saw an increase in financial stability and were better able to allocate funds for infrastructure improvements, faculty development, and academic quality. These results support the study's predictions and show that income diversification has a major effect on institutions' capacity to remain financially sustainable.

Higher commissions have examined public university growth closely, with a particular emphasis on fiscal sustainability measures. Higher Education Commission (HEC) funding is allocated according to performance and compliance with predetermined standards of quality (Lorig, 1941). Income diversification has been acknowledged as a prudent strategy for universities to reduce reliance on assets in the context of the universal funding crisis in the education sector. Various government policies have been initiated to address concerns regarding the funding of universities (Makadok, 2011). At one research, Khan et al. (2021) looked at the connection between financial sustainability and revenue diversification at Pakistani institutions. The authors discovered a favorable correlation between university financial performance as determined by measures like ROA and NPM and income diversification initiatives, such as partnerships, research grants, and for-profit businesses. The results of this study corroborate the hypotheses a and b empirically, indicating that revenue diversification has a major impact on ROA and NPM.

Maverick (2016) asserts that income diversification, ROA, and NPM are positively correlated with financial sustainability. According to Nik Ahmad et al. (2019), establishing a dedicated office inside HEC with competent staff members may be a crucial first step in creating effective strategies for policy-making and fundraising in Pakistan. It is thought that establishing precise goals and including stakeholders are necessary to meet fundraising targets. Universities should identify potential donors, including companies, nonprofits, alumni, donor agencies, and guardians of students, in order to increase their chances of acquiring funding (Khurram et al., 2019). The monotonous effects of pandemic code-19 have been witnessed by people worldwide in recent years. Because there were insufficient resources, even the university's budget was capped. Public universities in Pakistan must develop sustainably in order to become self-sufficient in terms of revenue. The world has altered recently due to factors including economic ups and downs, technological advancements, and universalization.

Additionally, a study conducted recently by Ali et al. (2019) emphasized the significance of strategic financial management in assisting Pakistani institutions in overcoming funding obstacles. In order to secure long-term financial viability, the report underlined the necessity for universities to investigate new revenue sources outside of government subsidies and tuition fees. These results highlight how important income diversification tactics are for strengthening higher education institutions' financial stability. The study's hypothesis is that income diversification strategy has a major impact on Pakistani public sector universities' return on assets (ROA). This hypothesis states that when revenue diversification strategies such as endowment funds, research grants, and charity donations are used, public sector universities' return on assets (ROA) will be measured. A higher return on assets (ROA) indicates better financial performance and efficient use of assets, both of which are indicators of successful income diversification strategies. The income diversification plan has a significant influence on Pakistan's public universities' net profit margin (NPM).

These theories align with the goals of the research, which is to investigate how income diversification tactics affect Pakistani public institutions' financial performance, with a specific emphasis on measures like ROA and NPM.

Problem Statement

This research will study the importance of revenue diversification strategy and its impact on the financial sustainability of the public sector universities in Pakistan.

Research Objectives

To assess the impact of revenue diversification strategy on the (ROA) return on Assets of public sector universities in Pakistan.To assess the impact of revenue diversification strategy on the (NPM) Net profit Margin of public sector universities in Pakistan.

RESEARCH METHODOLOGY

This study is based on secondary data; it will mainly cater observational data. Mainly sleeted pattern of 15 public sector universities. Planning to generate 200 observations. Data will be collected through online sources. Some special referencing will be used for the financial data gathering process.

Research Design

Research is quantitative and casual and effect. The data analysis will be conducted by using to utilize annually information on 15 universities of public sector in Pakistan, with total time period of past 10 years is taken. Estimated time and academic year will be from December 2022-2023.Different sizes and

levels of monetary prosperity from public universities will be search. Panel data Regression analysis is a reliable tool with generalized method of moment (GMM) will be used for the empirical affirmation.

Sample

Total number of public sector universities is 144.The sample of 15 universities/institutions with total time period of past 10 years is taken. Sample is selected on the basis of revenue diversification strategy. Sample size in this study will be small, so one step estimator would be used in order to avoid any biasness. Pooled regression OLS will be used as error structure going to be simple. Fixed effect and random effect estimation are will be used in the study.

Data Collection & Variables of the Study

Independent variable

Revenue diversification is the independent variable.

Dependent variable

This study used return on assets (ROA) and net profit margin (NPM) proxies for financial sustainability. Profitability and return indices will be used if need to calculate the long-term performance of universities. RDIV represents the revenue diversification variables. Experimental variable Revenue diversification Hirschman-Herfindahl index (HHI). That will gratify two extents as number of sources and amount of revenue sources. Whereas

Control variable

Here control variable will be used as model estimator. i.e.: financial leverage, university size and university age. Financial leverage will be used by Debt ratio, SIZE will be used by the logarithm of total assets and AGE will be measured by subtracting the year of assessment. It will be secondary data from financial statement.

Research Hypotheses

- The revenue diversification strategy significantly influences the return on assets (ROA) of public sector universities in Pakistan.
- The revenue diversification strategy significantly impacts the net profit margin (NPM) of public sector universities in Pakistan.

The methodology of the study is quantitative, using panel data regression analysis, to compare income diversification strategies with financial sustainability indicators, such as ROA and NPM, of public sector universities across Pakistan.

Measure: Measurements of Revenue diversification (ROA) and Net Profit Margin (NPM) are independent variables that are operational with the help of Hirschman and Herfindahl (HHI) index. These variables represent financial sustainability. Control variables include FLEV (Debt ratio) and Size (SIZE) (logarithm to total assets).

Participant and data Collection: Participants Public Sector Universities in Pakistan Financial Statements and Annual Reports of Public Sector Universities Sample Size: 99 Multiple Universities over the last 10 years of data have been studied.

Procedure: Two models are used to do regression analysis on panel data. Model 1 evaluates how income diversification affects ROA, whereas Model 2 looks at how it affects NPM. Both models use control variables in order to take any confounding factors into consideration.

Data Analysis: The means, standard deviations, skewness, and kurtosis of the variables are all summarized using descriptive statistics. To investigate the connections between variables, correlation analysis is carried out. The Hausman test is used to determine which of the fixed and random effects models to use, and the Augmented Dickey-Fuller (ADF) test is used to evaluate stationary.

Income diversification affects the income sustainability measured by ROA and NPM. Past studies reveals that foreseeing panel examination and ideal instrument for foreseeing conditions including subordinate and free factors. (Hair et al., 2014; Pallant, 2010; Robert Ho, 2006).the observational demonstration comprises two parts ROA proxies money related supportability, whereas demonstration 2 shows NPM incorporated RDIV, FLEV, SIZE, AGE. Control factors are moreover coordinates the demonstration.

- ROAit = 0 + -1RDIVit + -2FLEVit + -3SIZEit + -4AGEit + it Model 1
- NPMit = 0 + -1RDIVit + -2FLEVit + -3SIZEit + -4AGEit + it Model 2

Income diversification said by the Hirschman-Herfindahl (HHI) served as the autonomous variable. ROA and NPM were used a intermediaries for monetary diversibilty.control factor include budgetary use of the obligation proportion, panel data regression used to control for heteroscedasticity.

Description of the variables

Variable	Symbol	Measurement	Formula	Reference
Financial Sustainability	ROA NPM	Return on Asset Net Profit Margin	Net Income/Total Assets Net Income/Total Revenue	Bowman (2011), Deandre's-et al. (2016), Prentice (2016) Greenlee and Trussed (2000), Gupta et al.(2011),Prentice (2016)
Revenue Diversification	RDIV	Hirschman Herfindahl Index (HHI)	$HHI(DI)=(r_1/R)^2+(r_2/R)^2+(r_3/R)^2+(r_4/R)^2\ldots\ldots+(r_n/R)^2$	Carroll (2009),Carroll and Stater (2009),Change and Tuck- man(1994),Chikoto et al.(2016),Kim(2017)
Financial Leverage	FLEV	Debt Ratio	Total Liability/Total Assets	A-Rdaydeh et al. (2018),Bobinaite (2015)
Size	SIZE	The logarithm of total Assets	L_n (Total Assets)	Hartarska (2005), Marshland and Strom (2009)

Panel data regression, it extensively presented its empirical data for researchers. Panel designs meant to rise in various field of research. It's been used .it's the most beneficial to use inferences. Its ability to control heterogeneity or the existence of the heteroscedasticity and serial correlation. One of the key focuses of using panel data here was to get an opportunity thoroughly casual proposition. Another limitation of using panel data here would be as it allows the inputs precede a change in overall outcome. Panel data was the size of the dataset were larger and containing multiple observations over a period of time. As it's said that bigger the number of the data point increases the degree of freedom.

RESULT & DISCUSSION

Table 1

Descriptive Statistics

Variables	FLEV	RDIV	NPM	ROA	US_ACRES
Mean	1.060606	0.583931	0.156721	0.792303	10.41154
Std. Dev.	0.47997	0.950999	0.469733	1.915207	3.902225
Skewness	-0.23363	4.716002	6.942507	4.615966	0.786548
Kurtosis	1.160347	25.10977	56.58142	29.02792	2.376751
Observations	99	99	99	99	99

The variables FLEV, RDIV, NPM, ROA, and US_ACRES.FLEV (financial leverage) has a mean of approximately 1.06 and a standard deviation of around 0.48. It exhibits a slightly negatively skewed distribution with skewness of -0.23 and a moderately peaked distribution with a kurtosis of 1.16.RDIV (revenue diversification) has a mean of about 0.58 and a higher standard deviation of approximately 0.95. It shows a highly positively skewed distribution with a skewness of 4.72 and a very peaked distribution with a kurtosis of 25.11. NPM (net profit margin) has a mean of roughly 0.16 and a standard deviation of about 0.47. It is highly positively skewed with a skewness of 6.94 and exhibits a very peaked distribution with a kurtosis of 56.58.ROA (return on assets) has a mean of around 0.79 and a higher standard deviation of approximately 1.92. It also displays a highly positively skewed distribution with a skewness of 4.62 and a very peaked distribution with a kurtosis of 29.03.US_ACRES (university size measured in acres) has a mean of about 10.41 acres and a standard deviation of approximately 3.90 acres. It has a slightly positively skewed distribution with skewness of 0.79 and a moderately peaked distribution with a kurtosis of 2.38.

Table 2

Correlation Analysis

t-Statistic	RDIV	FLEV	NPM	ROA	US_ACRES
RDIV	1				
FLEV	-0.00842	1			
NPM	0.031854	0.117543	1		
ROA	0.006775	0.158055	-0.0165	1	
US_ACRES	-0.00699	0.025011	-0.02502	-0.01348	1

RDIV (revenue diversification), FLEV (financial leverage), NPM (net profit margin), ROA (return on assets), and US_ACRES (university size measured in acres).RDIV and FLEV have a very weak negative correlation (-0.00842).FLEV and NPM have a weak positive correlation (0.117543).NPM and ROA have a very weak positive correlation (0.006775).ROA and US_ACRES have a very weak negative correlation (-0.01348).The correlations between RDIV and NPM, RDIV and ROA, RDIV and US_ACRES, FLEV and ROA, FLEV and US_ACRES, NPM and US_ACRES are not statistically significant as indicated by the t-statistic.

Table3

ADF (Augmented Dickey fuller test)

Variables	ADF Statistic	Prob
RDIV	-9.11	0.00
FLEV	-2.00	0.02
NPM	-4.24	0.00
ROA	-20.22	0.00
US_ACRES	-4.35	0.00

The Augmented Dickey-Fuller (ADF) for the variables RDIV (revenue diversification), FLEV (financial leverage), NPM (net profit margin), ROA (return on assets), and US_ACRES (university size measured in acres).All variables show statistically significant ADF statistics with p-values less than 0.05, indicating that they are stationary. This suggests that the time series data for each variable does not exhibit a unit root, implying stability over time. The table displays the (ADF) test results of invariability of the variables RDIV (revenue diversification), FLEV (financial leverage), NPM (net profit margin), ROA (return on assets), and US_ACRES (university size measured in acres).RDIV, NPM, ROA, and US_ACRES exhibit statistically significant ADF statistics with p-values of 0.00, indicating they are stationary. This suggests these variables are stable over time and do not possess a unit root.FLEV has a marginally significant ADF statistic with a p-value of 0.02, suggesting it is also likely to be stationary. However, its significance level is lower compared to the other variables.

Table 4

Hausman analysis

Variables	Chi-Sq Statistic	Prob
ROA	1.62	0.65
NPM	1.32	0.72

The chi-square test for the variables ROA and NPM (net profit margin).ROA and NPM have chi-square statistics of 1.62 and 1.32, respectively. The p-values for both variables are relatively high at 0.65 and 0.72, indicating that there is insufficient evidence to eliminate the void proposition that there is no significant relationship amid these variables.

Panel Data Regression

Table 5

Ppanel Data Analysis for ROA

Variables	Fixed	random	Prob.
FLEV	0.734938**	0.671593	0.04
RDIV	0.193296***	0.053327	0.00
US-acres	-0.068972	-0.016681	0.43

This table presents the results of fixed and random effects models for the variables FLEV (financial leverage), RDIV (revenue diversification), and US-acres (university size measured in acres).FLEV, the

fixed effects coefficient is 0.734938 with a significance level of 0.04, indicating a statistically significant positive relationship with the dependent variable. The arbitrary special effects coefficient is 0.671593. For RDIV, the unchanging special effects coefficient is 0.193 with a significance level of 0.00, indicating a statistically significant positive relationship with the dependent variable. The random effects coefficient is 0.05.For US-acres, neither the fixed effects nor the random effects coefficients are statistically significant, with p-values of 0.43 and above. Showed that university size shows a considerable influence on DV

Table 6

Panel data analysis for NPM

Variables	Fixed	random	Prob.
FLEV	0.12	0.11	0.20
RDIV	0.05***	0.02	0.00
US-acres	0.13	-.00	0.37

This table presents the results of fixed and random effects models for the variables FLEV (financial leverage), RDIV (revenue diversification), and US-acres (university size measured in acres).The fixed effects coefficient for FLEV is 0.12 and for RDIV is 0.05, both with p-values above 0.05, suggesting no statistically significant relationship with the dependent variable. The corresponding random effects coefficients are 0.11 and 0.02, respectively. The coefficient of US-acres is 0.13.with a P-value of 0.37.the coeffiecnt of US-acres is near to Zero(-0.00),hence no critical relationship.

RESULT

Descriptive Analysis: The distributional properties of the variables, such as FLEV, RDIV, NPM, ROA, and US_ACRES, are disclosed via descriptive statistics. The presentation of each variable's mean, standard deviation, skewness, and kurtosis sheds light on its distributional characteristics.

Correlation: The study of correlations examines the connections between different variables. There are weak connections found between ROA and US_ACRES, RDIV and FLEV, FLEV and NPM, and NPM and ROA. With t-statistics, the significance of these connections is ascertained.

Unit Root: To evaluate the stationary of variables, the ADF test is utilized. ADF statistics show that all variables are statistically significant, meaning that they are stationary and steady throughout time.

Hausman Test: In panel data regression, the Hausman test is used to select between fixed and random effects models. The test findings indicate that there is no discernible difference in ROA and NPM between the two models.

Panel Data Regression: To determine the association between financial sustainability metrics (NPM and ROA) and income diversification, panel data regression analysis is used. The findings corroborate hypothesis a by showing a considerable favorable impact of revenue diversification on ROA. On the other hand, the influence on NPM is not statistically significant, indicating conflicting results with respect to Hypothesis b.

These results advance our knowledge of how income diversification techniques might improve Pakistan's public universities' capacity to maintain themselves financially.

Discussion

The study provides important light on the connection between Pakistani public sector institutions' financial sustainability metrics and income diversification tactics. The conversation will center on analyzing the findings in light of the goal of the study, talking about their ramifications, and admitting the study's shortcomings. Impact of Revenue Diversification on Financial Sustainability: The research hypothesis is supported by the considerable positive link between revenue diversification and return on assets (ROA), which highlights the significance of income diversification measures in improving universities' financial performance. Universities may increase their financial sustainability and optimize asset use by diversifying their revenue streams through grants, partnerships, and for-profit businesses. According to this research, Pakistani universities stand to gain by taking a more strategic approach to financial management, giving efforts aimed at increasing income diversification top priority in order to reduce financial risk and improve long-term sustainability.

Nonetheless, more research is necessary because there is no discernible correlation between revenue diversification and net profit margin (NPM). Revenue diversification raises ROA, but it also affects NPM.

Variable cost structures, spending habits, and outside economic situations are some of the variables that may have an impact. Higher education institutions' financial management is complicated, which makes it necessary to have all-encompassing plans that take a variety of financial indications and aspects into account.

CONCLUSION

Descriptive stats indicate non-normal distributions inferences for FLEV, RDIV, NPM, ROA, and US_ACRES, with varied skewness and kurtosis. Weak correlations among variables: RDIV-FLEV (-0.00842), FLEV-NPM (0.117543), NPM-ROA (0.006775), ROA-US_ACRES(-0.01348). Augmented Dickey-Fuller tests show stationary ($p < 0.05$) for all variables. Chi-square tests for ROA and NPM favor fixed effects models ($p = 0.65, 0.72$). Fixed effects model reveals significant positive relationships for FLEV ($p = 0.04$) and RDIV ($p = 0.00$), while US-acres lacks significance. Public sector universities in Pakistan are grappling with a crippling dependence on government funding, hindering their academic ambitions. While diversifying revenue streams appears promising, it unveils a host of challenges. Universities run a serious risk when fiscal concerns take precedence over intellectual freedom because it might jeopardize academic autonomy and integrity. While working with corporations can be advantageous in terms of funding and creativity, it also presents ethical and conflict of interest issues. Universities need to exercise extreme moral caution while navigating this narrow moral line, making sure that partnerships uphold academic principles and do not jeopardize intellectual autonomy.

The creation of novel revenue streams is hampered by bureaucratic roadblocks and regulatory inertia, which frequently maintain the status quo and restrict the investigation of other financing sources. In order to overcome these obstacles, colleges must work together to simplify rules and administrative procedures, giving them more freedom to implement income diversification plans. As a result, this study emphasizes how crucial income diversification techniques are to improving the financial viability of Pakistan's public institutions. In a continuously changing world of higher education, institutions may maintain their long-term survival and more successfully navigate financial issues by developing comprehensive financial management strategies and utilizing varied income streams.

Limitations

This work has yielded interesting insights; nonetheless, it is important to note numerous limitations. First off, the research relies on secondary data which may not be entirely accurate or complete that was gathered from publicly accessible financial accounts. Furthermore, the study may not fully portray the complexity of financial management in higher education institutions because it only looks at a limited number of factors. Prospective investigations may utilize a more all-encompassing methodology, incorporating qualitative techniques and case analyses, in order to furnish a more profound comprehension of the elements impacting the financial sustainability of public institutions.

Recommendation and Future

Scholastic independence faces risk as universities prioritize budgetary insights. Collaboration with businesses raises concern. This issue needs to address with fragile moral adjustment. Regulations idleness and bureaucratic obstacles hinder the invention income methodologies.somtimes arises with propagating the status quo. Advertize benefits of income enhancement incorporated moved forward framework and workforce quality, as a result observational alignment prove remains uncertain. Government arrangement can be catalyzed or block broadening goings-on. Highlighting the require for adjusted administrative systems, the question of long-term adequacy in spite of the basic enhancement victory pivots picky arrangements. Moral watchfulness and collaborative activities need to protect scholastic intelligence.

The results of this study have a number of ramifications for stakeholders in the higher education industry, legislators, and administrators of universities. First and foremost, legislators have to give top priority to programs that encourage income diversification and assist in looking into funding options outside of tuition and government handouts. Policymakers may assist universities in strengthening their financial sustainability and resilience by promoting partnerships with business, bringing in research funds, and cultivating charitable gifts. Second, managers at universities should create thorough financial management plans that promote income diversification and fit in with the interests and goals of the institution. To increase financial efficiency, this may entail making investments in fundraising endeavors, forming alliances with other groups, and putting cost-cutting strategies into action.

Furthermore, stakeholders in the higher education sector faculty, staff, students, and alumni are

essential to the success of initiatives aimed at revenue diversification. Involving stakeholders via industry partnerships, alumni outreach initiatives, and fundraising campaigns may foster a culture of community support and financial responsibility, which will support institutions' long-term viability.

Competing Interests

The authors did not declare any competing interest.

References

Alam, J., Muhammad, M., & Iqbal, A. (n.d.). Struggling with Uncertainty.

www.cber.iba.edu.pk.

Bowman, W. (2011). Financial capacity and sustainability of ordinary nonprofits. *Nonprofit Management and Leadership*, *22*(1), 37-51.

https://doi.org/10.1002/nml.20039

Commission on Science and Technology for Sustainable Development in the South. (n.d.). 100 Years of Excellence.

Lorig, A. N. (1941). Determining the current financial position of a city. *The Accounting Review*, *16*(1), 41-49.

https://www.jstor.org/stable/239652

Makadok, R. (2011). Invited editorial: The four theories of profit and their joint effects. *Journal of Management*, *37*(5), 1316-1334.

https://doi.org/10.1177/0149206310385697

Maverick, J. B. (2016). What is the best measure of a company's financial health.

Niazi, M. K. S., & Malik, Q. A. (2019). Financial attitude and investment decision making-moderating role of financial literacy. *NUML International Journal of Business & Management*, *14*(1), 102-115.

Nik Ahmad, N. N., Siraj, S. A., & Ismail, S. (2019). Revenue diversification in public higher learning institutions: an exploratory Malaysian study. *Journal of Applied Research in Higher Education*, *11*(3), 379-397.

https://doi.org/10.1108/JARHE-04-2018-0057

NTF_Financial_Statements_2018 (1)_230912_141554 (3). (n.d.).