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SOCIAL COST AND HUMAN CAPITAL DEVELOPMENT IN STATE-OWNED UNIVERSITIES IN OGUN STATE, NIGERIA

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Abstract

Higher education plays an important role in economic growth, technological development, and social transformation in today's global knowledge economy. This study examined the relationship between social cost and human capital development in state-owned universities in Ogun State, Nigeria. However, despite substantial government investment in salaries, research funding, infrastructure, and staff training, concerns remain about whether these expenditures translate into effective human capital development and institutional efficiency. The study adopted an ex-post facto research design and relied on secondary institutional data drawn from selected state-owned universities in Ogun State covering ten years (2015–2024). A panel dataset was developed using a purposive and census approach, focusing on available records of research funding, staff salaries, infrastructure, training, and graduate output. Data were collected using a structured extraction template. The instrument was validated by an expert in Educational Management using face and content validity to ensure its suitability and alignment with the study purpose. Reliability was established through a pilot test, and Cronbach's Alpha yielded a coefficient of 0.90, indicating high internal consistency. Data were analysed using descriptive statistics and Pearson Product-Moment Correlation (PPMC), with the hypothesis tested at the 0.05 level of significance. Findings revealed a very strong positive and significant relationship between research funding and internal efficiency of human capital development ($r = 0.904$, $p < 0.05$). The result showed that increased investment in research funding enhances graduate turnout and institutional efficiency, although efficiency tends to fluctuate at higher funding levels, suggesting the influence of other qualitative factors. The study concludes that social cost, particularly research funding, and has a strong and significant influence on human capital development in state-owned universities in Ogun State. The study recommended that the government should increase and sustain funding for research activities in state-owned universities to strengthen human capital development.

Keywords: Social Cost; Human Capital Development; Research Funding; Institutional Efficiency; Higher Education**.**

Introduction

Higher education plays an important role in economic growth, technological development, and social transformation in today's global knowledge economy. Universities are no longer focused only on teaching and learning; they also contribute to human capital development, innovation, and national competitiveness. The effectiveness of universities largely depends on the quality of academic staff and the proper utilization of available resources. Human capital development involves equipping academic staff with the knowledge, skills, and competencies needed for teaching, research, and community service. However, this process requires huge financial investments in salaries, research, infrastructure, and staff training, collectively known as social cost. In developing countries like Nigeria, these costs are mainly financed by the government and educational institutions, making higher education a major area of public expenditure.

In this context, we are considering the social cost borne by the government and related government financing agencies. In the context of Ogun State, state-owned universities play a significant role in expanding access to higher education and contributing to human capital development. Institutions such as Olabisi Onabanjo University and Tai Solarin University of Education were established to meet the educational needs of the state and contribute to national development. It is noteworthy that Tai Solarin University of Education, one of the institutions examined in this study, was converted to a Federal University in March 2025. However, during the period covered by this study (2015–2024), the institution operated as a state-owned university, and this transition does not affect the scope or findings of the study.

Globally, advanced economies have shifted from traditional input-based education systems to performance-driven and efficiency-oriented models, where funding allocation is closely tied to measurable outputs such as graduate employability, research productivity, and institutional competitiveness. In line with global best practices, countries across Europe, North America, and parts of Asia have adopted output-based funding mechanisms, in which universities are evaluated on internal efficiency indicators such as graduation rates, completion times, and research output. As emphasized by Gary Becker (1993) and further reinforced by modern empirical analyses, education functions as a form of capital investment that yields measurable returns in productivity, innovation, and institutional efficiency.

According to the World Bank (2021), the emerging paradigm in higher education financing emphasizes not only increased funding but also the efficient utilization of resources, noting that inefficiencies in educational spending can lead to significant wastage estimated at 20–30% in developing systems. This shift underscores a fundamental transformation in educational policy: from "how much is spent" to "how well it is spent." The Organization for Economic Co-operation and Development (2021) reported that leading higher education systems allocate up to 30% of

institutional budgets to research and innovation, while maintaining strong accountability frameworks that ensure alignment between funding and performance outcomes. These systems emphasize efficiency, accountability, and sustainability in the management of educational resources. In Nigeria, public universities depend greatly on government funding and support agencies such as the Tertiary Education Trust Fund for infrastructure, staff development, and research support. However, challenges such as inadequate funding, delayed release of funds, poor infrastructure, and weak research capacity still affect university performance and human capital development. Although government and society invest heavily in salaries, training, research, and facilities, these investments do not always produce the expected improvements in educational quality and institutional efficiency.

The social cost of human capital development in this context encompasses indirect and direct expenses borne by the Government (University/institution and Tertiary Education Trust Fund in maintaining university operations. These expenses include government subventions, budget allocation on human capital development for academic staff, Personal training costs by academic staff, and opportunity costs associated with the costs of training. Ogun State-owned universities struggle with inadequate funding, infrastructural deficits, and high student-to-lecturer ratios, resulting in increased financial strain on both the government and students (Omoregie& Hartnett, 2020).

However, in Nigeria, many university lecturers face significant financial constraints in pursuing further education and attending academic conferences due to insufficient government and institutional support (Adelabu & Adebayo, 2022). Addressing these challenges requires sustainable funding mechanisms, improved governance structure, better staff welfare policies and government agencies' intervention and support, investments in digital learning tools and research facilities, can significantly enhance the productivity and motivation of academic staff, leading to better institutional outcomes, quality, productivity and global competitiveness of academic staff in state-owned universities.

The major problem confronting many state-owned universities in Nigeria is the inability of available financial and institutional investments to adequately promote human capital development among academic staff. Despite substantial government and intervention-agency spending on salaries, research funding, staff training, and infrastructure, many university academic staff continue to face poor working conditions, inadequate research support, limited professional development opportunities, and heavy workloads. These challenges have negatively affected staff productivity, research output, graduate quality, and institutional performance. The situation is particularly evident in state-owned universities in Ogun State, including Olabisi Onabanjo University and Tai Solarin University of Education, where inadequate funding, poor infrastructure, understaffing, and administrative constraints hinder effective human capital development.

Although significant resources are invested in higher education, it remains unclear whether these expenditures effectively improve academic staff capacity and productivity. Limited support for research, conferences, and advanced training has contributed to low morale, brain drain, and declining research productivity. Existing studies have focused largely on educational funding and institutional performance, with little attention to the relationship between social cost and human capital development in state-owned universities. This study addresses this gap by examining how investments in salaries, infrastructure, research funding, and staff training influence human capital development in Ogun State universities. The findings are expected to assist governments, funding agencies, university administrators, researchers, academic staff, and students in improving resource allocation, staff productivity, graduate output, and overall university efficiency.

The specific purpose of this study is to:

i. examine how the social cost on research funding affect internal efficiency of human capital in state -owned universities in Ogun State, Nigeria

The following research questions guided the study:

i. How does the social cost on research funding affect internal efficiency of human capital development in state -owned universities in Ogun State, Nigeria?

H_{01}: There is no significant relationship between social cost on research funding and internal efficiency of human capital in state-owned universities in Ogun State, Nigeria.

Previous studies

Human Capital Theory proposed by Theodore Schultz (1961) and later developed by Gary Becker (1964) explains that education and training are important investments that improve people's knowledge, skills, productivity, and economic value. The theory views universities as centres for developing skilled manpower needed for national growth and development. Social Cost Theory developed by Arthur Cecil Pigou (1877–1959) emphasizes that government and society bear huge financial costs in funding education through salaries, infrastructure, research grants, and staff training. When these resources are not properly utilized, it leads to wastage, poor output, and inefficiency. Internal Efficiency Theory, propounded by Farrell (1957) focuses on how educational institutions effectively convert available resources into quality outputs such as competent graduates, research productivity, and timely completion of programmes with minimal wastage. In the same way, Systems Theory developed by Ludwig von Bertalanffy (1968) views universities as systems where funding, infrastructure, staff welfare, training, and administration must work together effectively to achieve institutional goals. These theories are relevant to this study because they explain that government investment in salaries, research funding, infrastructure, and staff development should improve human capital development in universities. They also show that poor

management of these resources can reduce staff productivity, research output, graduate quality, and overall university performance in state-owned universities in Ogun State, Nigeria.

Social cost in higher education refers to the total financial and non-financial resources expended by government, institutions, and society in the provision of university education. These include direct expenditures such as salaries, infrastructure, research funding, and staff development, as well as indirect costs like opportunity costs and inefficiencies (Barr, 2018). From an economics of education perspective, such expenditures are treated as investments in human capital that are expected to yield returns in productivity, innovation, and growth (Becker, 1993). I According to recent education economics literature, social cost is no longer limited to government expenditure but includes shared financing responsibilities among stakeholders such as students, families, government, and donors. This is commonly described as cost-sharing in higher education systems (Psacharopoulos & Patrinos, 2018). Social cost in higher education can be categorized into: Direct institutional cost (salaries, infrastructure, and administration). Private cost (tuition, accommodation, feeding, and textbooks), Opportunity cost (income forgone by students during study period), and societal cost (lost productivity due to inefficiency or unemployment of graduates).

Recent studies emphasize that inefficiencies in higher education systems increase social cost by producing graduates who are not fully absorbed into the labour market, thereby reducing return on investment in education (Marginson, 2022). Recent global discourse emphasizes that the effectiveness of social cost depends not merely on the magnitude of expenditure but on the efficiency of its utilization. The World Bank (2021) notes that inefficiencies in education systems can lead to substantial resource wastage, often estimated at 20–30% in developing contexts. Similarly, the Organization for Economic Co-operation and Development (2021) highlights a shift toward performance-oriented funding models that link expenditure to outputs such as graduation rates and research productivity. This study focuses on four major components of social cost: research funding, academic staff salaries, physical infrastructure, and training and development. These indicators represent core areas of investment that directly influence human capital development and institutional performance.

Research funding is a critical input in university systems as it supports knowledge creation, innovation, and postgraduate training. Universities with robust research funding tend to demonstrate higher levels of academic output and global competitiveness (Salmi, 2019). Philip Altbach (2020) argues that research-intensive institutions depend heavily on sustained financial investment to drive productivity and institutional efficiency.

Empirical evidence further shows that research output is strongly correlated with funding availability and institutional support (Hanushek, 2020). In the Nigerian context, limited access to

research grants has been identified as a major constraint on academic productivity (Ibrahim & Salami, 2023). Inadequate research funding constrains knowledge production and reduces the efficiency of human capital development.

Academic staff salaries constitute a significant portion of university expenditure and play a vital role in motivating staff and enhancing productivity. According to Bennell (2021), staff remuneration and incentives significantly influence performance and retention in higher education. The Human Capital Theory posits that investment in human resources yields improved productivity and efficiency (Becker, 1993). In Nigeria, poor remuneration and irregular salary payments have been linked to low morale and brain drain among lecturers (Afolabi&Ojo, 2023). This undermines teaching effectiveness and research output. Adequate and timely remuneration enhances staff motivation, productivity, and internal efficiency.

Physical infrastructure includes classrooms, laboratories, libraries, and ICT facilities necessary for teaching and research. Nicholas Barr (2018) notes that infrastructure quality directly affects learning outcomes and institutional efficiency. The World Bank (2020) also emphasizes that infrastructure investment is essential for improving educational quality and productivity. Studies in Nigeria have shown that inadequate infrastructure leads to overcrowding, poor learning conditions, and reduced academic performance (Omoregie& Hartnett, 2020).

Implication: Infrastructure deficits reduce teaching effectiveness and hinder internal efficiency.

Training and development involve continuous professional development of academic staff through workshops, conferences, and postgraduate programs. Schultz (1961) established that investment in education and training enhances productivity. More recent work by Daron Acemoglu (2020) shows that skill development significantly improves organizational performance. In Nigeria, limited access to training opportunities has been identified as a major constraint on academic staff development (Adelabu & Adebayo, 2022).

Implication: Continuous training enhances staff competence and institutional efficiency.

Modern literature connects social cost to institutional efficiency and resource allocation. For example: Inefficient spending increases total societal burden, Poor graduate output leads to wasted public investment, Underfunding increases hidden costs such as dropout rates and reduced productivity A systematic review shows that education-related costs can extend into other sectors such as employment, healthcare, and social welfare, making education a cross-sectoral cost driver. In summary, social cost in higher education refers to: "The total economic, opportunity, and societal sacrifices incurred by government, institutions, students, and society in the production and consumption of higher education services." It is increasingly viewed as a dynamic and shared burden system influenced by policy, funding structure, and institutional efficiency.

Human capital is a foundational concept in economics, education, and development studies, describing the productive value embedded in individuals through their knowledge, skills, competencies, experiences, and health. It shifts attention from physical assets to human beings as key drivers of productivity, innovation, and economic growth. The concept is widely used in explaining how education and training contribute to national development and labour market outcomes. The modern formulation of human capital theory is strongly associated with Theodore Schultz (1961), who argued that investment in education should be treated as a form of capital formation because it enhances future productivity and earnings. Schultz emphasized that education, health, and training are not consumption expenditures but productive investments in human beings that yield long-term economic returns.

Building on this foundation, Becker (1964) further developed human capital theory by formally analysing how individuals and societies allocate resources to education and training in expectation of future income benefits. Becker's work demonstrated that differences in earnings among individuals are largely explained by differences in accumulated human capital, particularly education and skill acquisition. Similarly, Mincer (1974) contributed significantly through the Mincer earnings function, which established a measurable relationship between years of schooling, work experience, and income levels. His model reinforced the idea that additional years of education and experience increase productivity and lifetime earnings.

Human capital is widely recognized as a major driver of economic development. Countries with higher levels of educational attainment and skill acquisition tend to experience faster economic growth, higher productivity, and improved technological advancement. Education increases the ability of individuals to adopt new technologies, solve problems, and participate effectively in modern labor markets. In developing countries such as Nigeria, human capital development is particularly critical due to challenges such as unemployment, skill mismatch, and low productivity. Investment in education, vocational training, and health systems is seen as essential for improving workforce quality and achieving sustainable development goals. Studies have shown that inadequate investment in human capital contributes to persistent poverty and underdevelopment in many African economies.

Human Capital Development (HCD) is a multidimensional concept that refers to the process of improving the knowledge, skills, competencies, health, and productive capacities of individuals through education, training, and experience. It is widely regarded as a central driver of economic growth, productivity, and institutional performance. The concept is rooted in classical economic thought but was formally developed within the framework of Human Capital Theory by Schultz (1961) and Becker (1964). These scholars conceptualized education and training as forms of investment that enhance the productive value of individuals and generate future economic returns. The effectiveness of human capital development depends largely on the productivity of academic

staff and the availability of resources. Recent studies show that human capital development is closely linked to institutional efficiency and economic performance (Acemoglu, 2020). Modern interpretations extend beyond productivity to include capability enhancement, innovation capacity, and sustainable development outcomes. For instance, human capital development is now understood as a continuous process involving formal education, informal learning, and institutional capacity-building (Olowookere et al., 2022). Recent literature further emphasizes that human capital development is not only an economic construct but also a social and institutional development tool, essential for achieving sustainable development goals (SDGs) and improving governance systems (Nwachukwu,2024).

Dimensions of human capital development

Human capital development in higher education is typically analyzed through several interrelated dimensions:

(a) Educational development

This involves formal learning through universities and tertiary institutions. It includes curriculum content, teaching quality, and academic attainment. Universities serve as the primary institutions for structured human capital formation. Recent studies confirm that investment in education significantly enhances human capital quality and contributes to long-term economic development (Egbaseimokumo, 2025).

(b) Skill acquisition and training

Human capital development includes the acquisition of technical, vocational, and soft skills. These skills improve employability and workplace productivity. According to Ugada and Sampson (2023), Nigerian universities increasingly face challenges in aligning graduate skills with labour market demands, thereby affecting the effectiveness of human capital development.

(c) Health and well-being component

Health is a critical component of human capital. A healthy population is more productive and capable of sustained learning and performance. Empirical evidence shows that investments in education and health jointly enhance human capital outcomes and national productivity (Olowookere et al., 2022).

(d) Innovation and cognitive capacity

Human capital development also includes innovation, creativity, and problem-solving abilities. In modern economies, these cognitive skills are essential for competitiveness.

Recent global literature highlights that human capital now includes cognitive flexibility and adaptability, especially in knowledge-driven economies.

Methodology

The study adopted an ex-post facto research design. This was suitable for this study as it allowed for the collection of quantitative data on social cost indicators (research funding, staff salaries, infrastructure, and training) and measurement of internal efficiency using graduate turnout performance. The study population comprises all state-owned universities in Ogun State, Nigeria. The sample for this study consists of a panel (institutional) dataset derived from selected universities in Ogun State, Nigeria. The dataset comprises annual secondary institutional records on staff salaries, staff training and development, other educational expenditures, and graduate output covering ten years (2015–2024). A purposive sampling technique was used to select the universities based on the relevance of their academic structure and the availability of consistent data across the variables of interest. In addition, a census approach was adopted, in which all available and relevant institutional records within the specified period were utilised, resulting in a balanced panel dataset for analysis. The study employed a structured data extraction template as the primary instrument for data collection. The validity of the research instrument was established through expert review by a specialist in Educational Management, who critically examined the instrument to ensure its suitability for the study. All corrections and recommendations provided during the validation process were incorporated. Face and content validity techniques were employed to ascertain that the instrument adequately captured the relevant variables and aligned with the purpose of the study. The reliability of the instrument was determined through a pilot test and consistent data collection procedures. Internal consistency was assessed using Cronbach's Alpha, which yielded a reliability coefficient of 0.90, indicating a high level of reliability and consistency of the instrument. Data were analysed using both descriptive and inferential statistics. Descriptive statistics were used, while Pearson Product-Moment Correlation (PPMC) was employed to test the relationship between the study variables. The formulated hypothesis was tested at the 0.05 level of significance.

Results

The analysis of the data collected and the results that were obtained are presented as well as graphical illustrations to further explain the results clearly.

Answering the Research Questions

How does the social cost of research funding affect the internal efficiency of human capital in state -owned universities in Ogun State, Nigeria?

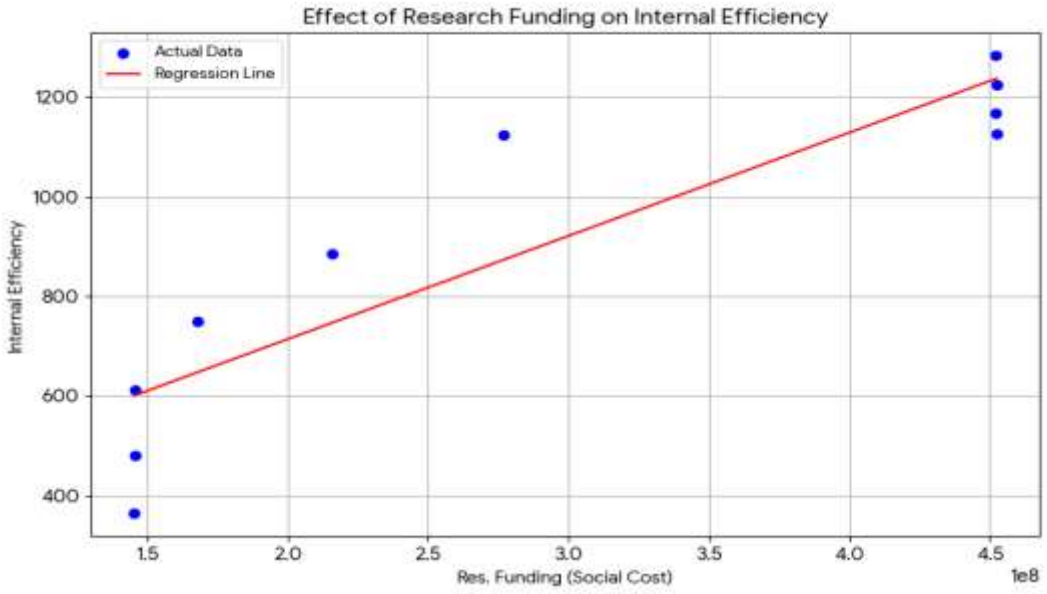

Figure 1: A scatter plot showing the impact of research funding on internal efficiency

Figure 1 shows that the internal efficiency of human capital rises sharply as funding grows from ₦145M to ₦451M. However, in the final stages of Figure 1 (where funding stabilises around ₦452M), the internal efficiency scores begin to fluctuate between 1,126 and 1,284. This suggests that while social cost on research funding is crucial, other qualitative factors may begin to influence internal efficiency of human capital once a certain budget threshold is reached.

Test of Hypothesis

H_{01}: There is no significant relationship between social cost on research funding and internal efficiency of human capital in state-owned universities in Ogun State, Nigeria. In order to test this hypothesis, the data collected are presented in Table 1.

Table 1: Relationship between social cost on research funding and internal efficiency of human capital in state-owned universities in Ogun State, Nigeria

Variables	N	Mean	SD	R	Sig.	Remark
Research funding	10	290612386.80	144647357.40	0.904	.001	Significant
Internal efficiency		901.80	332.42			

The result of the test performed indicates that there is a very strong, positive and significant relationship between social cost on research funding and internal efficiency of human capital in state-owned universities in Ogun State, Nigeria ($r = 0.904$, $N = 10$, $p < 0.05$). The coefficient of 0.904 suggests that as financial investment in research funding increases, the internal efficiency of human capital in these universities also tends to increase significantly. The relationship is highly statistically significant at the 0.01 level (Sig. 2-tailed < .001), meaning there is less than a 1% probability that this relationship occurred by chance. In simple terms, the probability value obtained from the analysis was 0.001, which is less than the stipulated level of significance of 0.05 ($0.001 < 0.05$). Since the probability value is lower than the alpha level, the null hypothesis was rejected. The implication of this is that research funding has to do with the internal efficiency of human capital, non-inversely. This result provides strong empirical evidence for university management that allocating resources toward research is a primary driver of overall human capital efficiency. This indicates that there is a statistically significant relationship between social cost of research funding and internal efficiency of human capital in state-owned universities in Ogun State, Nigeria.

Discussion

The result of the test performed indicates that there is a very strong, positive and significant relationship between social cost on research funding and internal efficiency of human capital in state-owned universities in Ogun State, Nigeria ($r = 0.904$, $N = 10$, $p < 0.05$). The coefficient of 0.904 suggests that as financial investment in research funding increases, the internal efficiency of human capital in these universities also tends to increase significantly. The correlation and regression results demonstrated that increased expenditure on research activities contributed positively to graduate turnout and institutional productivity. The null hypothesis was therefore rejected. This implies that investment in research funding enhances the quality of teaching, academic engagement, innovation, and knowledge production within universities. Research activities improve the intellectual capacity of academic staff, which subsequently influences instructional delivery and graduate quality.

The result aligns with the study conducted by Ibrahim and Salami (2023), who reported that research funding significantly improves academic productivity and institutional effectiveness in Nigerian universities. Similarly, Altbach (2020) observed that universities with strong research support systems tend to achieve higher levels of academic efficiency and global competitiveness. The World Bank (2021) also emphasized that research investment contributes significantly to human capital development and knowledge-based economic growth. Quantitatively, previous studies reported significant positive coefficients between research funding and educational outcomes, while qualitatively, researchers observed improvements in staff research engagement, publication output, and instructional innovation. However, the finding contrasts with Ofem (2021),

who found that increased educational expenditure does not automatically improve efficiency where accountability and proper utilisation mechanisms are weak. The difference may be attributed to variations in institutional management practices and the effectiveness of monitoring systems. Based on the observation and experience within private school administration, research-oriented environments tend to improve teacher effectiveness, curriculum delivery, and institutional reputation. Institutions that invest in academic development and knowledge creation often experience improved operational performance and educational outcomes. Irrefutably, the finding suggests that sustainable investment in research funding remains critical for improving internal efficiency and strengthening human capital development in higher education institutions.

Conclusion

The study concludes that social cost, particularly research funding, and has a strong and significant influence on human capital development in state-owned universities in Ogun State. When financial resources are adequately invested and effectively utilized, they enhance academic staff productivity, improve research output, and strengthen graduate turnout performance. However, inefficiencies in resource allocation and utilization can limit the expected returns on these investments. Therefore, internal efficiency remains a critical factor in ensuring that public expenditure in higher education translates into meaningful human capital development and institutional effectiveness.

Recommendations

i. The Government should increase and sustain funding for research activities in state-owned universities to strengthen human capital development.

ii. University management should ensure transparent and efficient utilization of social cost components to improve institutional performance.

iii. Funding agencies should adopt strict monitoring and evaluation mechanisms to ensure accountability in the use of research grants and staff development funds.

iv. Universities should prioritize continuous training and capacity development programmes for academic staff to enhance productivity and innovation.

v. Improved infrastructure, including ICT and research facilities, should be provided to support effective teaching and research output.

vi. Policies should be strengthened to link funding allocation directly to measurable performance indicators such as graduate turnout and research productivity.

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